FOR CONTRACT NO.: 04-2908V4

INFORMATION HANDOUT

FOUNDATION REPORT

Final Foundation Report Arroyo Las Positas Bridge – Eastbound
At Interstate 580 (Widening)
(BRIDGE NO. 33-0203)
Livermore, Alameda County California
Contract No. 04-2908U1 Post Mile 13.13

Final Foundation Report Arroyo Las Positas Bridge – Eastbound
At Interstate 580 (Widening)
(BRIDGE NO. 33-0085)
Livermore, Alameda County California
Contract No. 04-2908U1 Post Mile 11.72

Foundation Report Retaining Walls No. 7,8,10 &18
I - 580 Eastbound Auxiliary Lane Project
Alameda County California
04-Ala-580 R7.8/19.1 Project No. 04000007831

STORM WATER INFORMATION HANDOUT

I – 580 EB Auxiliary Lanes Project
Dublin, Pleasanton, and Livermore, Alameda County, California
Project ID 04000007831 (EA 04-2908U1)

PERMITS

California Regional Water Quality Control Board
Permit 401
(Database No.: 02-01-C1132)

Department of the Army, U.S Army Corps of Engineers
Nationwide Permit 404
(File Number SPN-2007-00740S)

California Department of Fish and Game
Final Lake or Streambed Alteration Agreement
Permit 1602
(Notification No. 1600-2012-0040-R3)

Biological Opinion and Amendment
(Service File No. 81420-2008-F-0495-R001-3)
Issued by United States Fish and Wildlife Service (USFWS)

SITE INVESTIGATION REPORT

Excerpts from Final Site Investigation Report
I – 580 Eastbound HOV Lane Improvement Project
Alameda County, California
EA No. 04-290814

ROUTE: 04-Ala-580-R7.8/19.1

PERMITS

Biological Opinion and Amendment
(Service File No. 81420-2008-F-0487-2)
Issued by United States Fish and Wildlife Service (USFWS)

Department of the Army, U.S. Army Corps of Engineers
Nationwide Permit 404
(File Number SPN-2008-00090 S)

California Regional Water Quality Control Board Certification
(Site No. 02-01-C1093)

Department of Fish and Game
1602 Land and Streambed Alteration Agreement
(Notification Number 1600-2010-0284-3)

Department of Fish & Game
California Endangered Species Act Incidental Take
Permit No. 2081-2010-026-03

SITE INVESTIGATION REPORT

Site Investigation Report
I-580 Westbound HOV Lane Widening Project
Alameda County, California
(November 2010)

CAL-OSHA

Cal-OSHA Mining and Tunneling Unit Underground Classification

STORM WATER INFORMATION HANDOUT

ASBESTOS AND LEAD-CONTAINING PAINT SURVEY

Asbestos and Lead-Containing Paint Survey
I-580 Westbound HOV Widening Project
Alameda County, California
(November 2010)

ROUTE: 04-Ala-580-R8.4/R14.6

Department of the Army, U.S Army Corps of Engineers
Nationwide Permit 404
(File Number SPN-2007-00740S)

California Department of Fish and Game
Final Lake or Streambed Alteration Agreement
Permit 1602
(Notification No. 1600-2012-0040-R3)

Biological Opinion and Amendment
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I – 580 Eastbound HOV Lane Improvement Project
Alameda County, California
EA No. 04-290814

ROUTE: 04-Ala-580-R7.8/19.1

FINAL FOUNDATION REPORT
ARROYO LAS POSITAS BRIDGE - WESTBOUND
AT INTERSTATE 580 (WIDENING)
(BRIDGE NO. 33-0203)
LIVERMORE, ALAMEDA COUNTY CALIFORNIA
EA 290861, POST MILE 13.13

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Job No. 208102.AL2

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FINAL FOUNDATION REPORT
ARROYO LAS POSITAS BRIDGE – WESTBOUND
AT INTERSTATE 580 (WIDENING)
(BRIDGE NO. 33-0203)
LIVERMORE, ALAMEDA COUNTY, CALIFORNIA
EA 290861, POST MILE 13.13

INTRODUCTION

This report presents the results of our geotechnical engineering investigation for the proposed widening of the westbound Arroyo Las Positas Bridge (Bridge No. 33-0203) on Interstate 580 (I-580) in Livermore, Alameda County, California. Our work was performed generally in accordance with the scope of work as per our agreement. The eastbound structure submittal has been separated from the westbound project. The general location of the site and its vicinity are shown on the Project Location Map, Plate 1.

The geotechnical recommendations presented in this report are intended for design input and are not intended to use as specifications. These recommendations should not be used for direct bidding purposes.

PROPOSED CONSTRUCTION

The proposed project will consist of widening the existing three-span four-lane westbound Arroyo Las Positas Bridge (Bridge No. 33-0203) to accommodate an HOV lane. The project is part of the Interstate 580 Westbound HOV Lane Project. A companion project (Route 580 Eastbound Auxiliary Lane Project) is in progress: the adjacent eastbound Arroyo Las Positas Bridge will be widened as part of that project.

A 25.4-ft widening on the outer (northern) side is proposed. The widened section will be supported on two two-column bents. Rectangular concrete columns, 2.5' x 3', will be constructed, matching the existing adjacent structure. The columns will be supported on individual pile caps on driven steel H-piles (HP12x53). Diaphragm type concrete abutments will be constructed, also matching the existing adjacent structure. The abutments will also be supported on driven steel H-piles (HP12x53).

PURPOSE AND SCOPE

The purpose of this investigation was to evaluate the general soil conditions at the project site, to

evaluate their engineering properties, and to provide recommendations for foundation support of the proposed project.

The scope of work performed for this investigation included a review of the readily available soils and geologic literature, obtaining representative soil samples and logging soil materials encountered in one drilled boring and one cone penetrometer test (CPT), laboratory testing of the collected samples, engineering analysis of the field and laboratory data, and preparation of this report. The basis for this investigation is the preliminary plans provided to us by BKF Engineers. We have presented the descriptive log of the boreholes in Appendix A.

Due to limitations inherent in geotechnical investigations, it is neither uncommon to encounter unforeseen variations in the soil conditions during construction nor is it practical to determine all such variations during an acceptable program of drilling and sampling for a project of this scope. Such variations, when encountered, generally require additional engineering services to attain a properly constructed project. We, therefore, recommend that a contingency fund be provided to accommodate any additional charges resulting from technical services that may be required during construction.

Our recommendations in this report are based on the above information. Any major deviation should be reported to this office for consideration.

SITE CONDITIONS

The project is located along Interstate 580 (I-580) in Livermore, Alameda County, approximately 200 feet east of Portola Avenue and 3200 feet west of North Livermore Avenue. Per the As-Built drawings, the existing westbound bridge consists of a 176.5-ft long three-span concrete bridge constructed in 1970. The bridge accommodates 4 lanes of traffic in each direction – east and west. The east and west bridges are separated by a longitudinal expansion joint and behave independently of each other. The bents rest on four 2.5' x 3' rectangular concrete columns. The bridge abutments are supported on 45-ton Class I concrete piles and the four columns at the two bents are supported on Class II concrete piles. The deck of the bridge is roughly 10 feet above the adjacent grade.

The existing bridge deck is at approximately Elev. 445 feet at the western end and at approximately Elev. 448 feet at the eastern end. The Las Positas Creek passes below the bridge. At the bridge location, the creek is approximately 180 feet wide and the bottom elevations of the creek are approximately at Elev. 420 feet. The terrain at the location adjacent to the bridge, outside of the creek is relatively flat, sloping gently towards the north.

FIELD EXPLORATION

Field exploration was planned with the understanding that both the eastbound and westbound bridges would be widened at the outer edges. The field exploration was therefore planned such that the information will be applicable to both bridges. Based on the plans, discussions with design engineer, and readily available data of the proposed project, one (1) exploratory boring (Boring A-09-AL2-01) was drilled and one cone penetrometer test (CPT) was performed. Another boring (Boring A-09-200), drilled as part of retaining wall investigations is in close proximity to Abutment 1 of the subject bridge and is considered applicable to the project. The two boring locations and the CPT location are shown on the plan portion of the Log of Test Borings in Appendix A.

Soil Borings

Boring A-09-AL2-01 was drilled on February 18, 2009, from the top of the road embankment adjacent to Abutment 4 of the subject bridge. It was advanced with a truck-mounted drill rig, using hollow stem auger drilling method. The boring was drilled to a depth of 80 feet below the existing ground surface.

Selected samples were obtained at various depths primarily from 3.0-inch O.D. & 2.5 inches I.D. (Modified California) samplers; or 2.0-inch O.D. & 1.4-inch I.D. (Standard Penetration Test) samplers. The samplers were driven in subsurface soils under the impact of a 140-lb hammer having a free fall of 30 inches. The blow counts are presented on the "Log of Test Borings". When correlating standard penetration data in similar soils, the blow counts for the Modified California Sampler can be taken as roughly 1.6 times that for the Standard Penetration Test in similar soils (Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California). The samples were sealed and transported to our laboratory for further evaluation and testing. The field investigation was conducted under the

supervision of our field engineer who logged the test borings and prepared the samples for subsequent laboratory testing and evaluation.

Cone Penetration Testing (CPT)

A CPT (CPT-08-AL2-02) was performed from the top of the road embankment adjacent to Abutment 4 of the eastbound bridge to a depth of 67 feet below ground surface. The CPT work was performed by Gregg Drilling & In Situ, Inc. on December 19, 2008 using a truck mounted CPT rig. The CPT was conducted using a 60-degree cone attached to a 1.7-inch diameter rod pushed into the subsurface. The soil resistance exerted to the tip and side of the cone were recorded and correlated to soil type, classification and strength characteristics. Groundwater level was estimated from pore pressure dissipation measurements during CPT operation. Detailed information from the CPT investigation is presented in Appendix C.

Laboratory Testing

Laboratory tests were performed on selected samples obtained during field exploration to determine the physical and engineering properties of the subsoils. Laboratory data of moisture contents, total density, grain size distribution, Atterberg Limits, and unconfined compression strengths on the Log of Test Borings. A detailed description of laboratory tests, including Plasticity Charts for Atterberg Limits, and grain size distribution curves are presented in Appendix B.

Boring Logs

The bore logs presented in Appendix A were prepared from the field logs which were edited after visual re-examination of the soil samples in the laboratory and results of classification tests on selected soil samples as indicated on the logs. The abrupt stratum changes shown on these logs may be gradual and relatively minor changes in soil types within a stratum may not be noted on the logs due to field limitations.

SUBSURFACE CONDITIONS

Subsurface conditions as revealed by the borings at the project location indicate predominantly very stiff to hard lean clays and sandy clays with layers of medium dense to sands (As-built borings from 1965 indicate predominance of silts and sandy silts, which probably are lean clays and sandy clays in today's terminology).

As indicated by the two boreholes, Boring No. A-09-AL2-01 on the western side of the bridge and A-09-200 on the eastern side, the foundation materials are predominantly stiff to hard lean clay and sandy clay. Two layers of sandy soils are noted in Boring No. A-09-AL2-01 on the western side of the bridge: a 5-ft thick dense silty sand layer at a depth of 5 feet and a 15-ft thick layer of layer of medium dense to dense sand with clay and gravel. A 5-ft thick layer of hard sandy silt is noted in Boring No. A-09-200 at a depth of 7 feet.

Below Elev. 404, the recent borings and CPT all indicate hard clay.

Groundwater was not encountered during drilling in the 80-ft deep Boring A-09-AL2-01 and in the 35-ft deep Boring A-09-200. Groundwater is also not indicated in the as-built borings drilled in 1965. A pore pressure dissipation test performed as part of CPT-08-AL2-02 indicated groundwater presence at Elev. 411 feet. Groundwater was encountered during drilling at Elevs. 400 feet and 411 feet in borings drilled in 2001 for Arroyo Las Positas Bridge No. 33-0722, approximately 250 feet west of the present bridge location. However, the groundwater depth may vary with the passage of time due to seasonal groundwater fluctuation, surface and subsurface flows in the creek, ground surface run-off and other factors that may not be present at the time of investigation. A design groundwater elevation of 415 feet was used in view of the potential influence of the Arroyo Las Positas creek below the bridge.

GEOLOGY

General geologic features pertaining to the site were evaluated with reference to the "Geologic Map of Quaternary Geology of Alameda County and Surrounding Areas, CA: Derived from Digital Database open-file 97-98" by E.J. Helley and R.W. Graymer 1997; Scale 1:100000. Based on the map, the site is located in an area covered by Pleistocene alluvial deposits (Qpaf) and Pleistocene alluvial terrace deposits (Qpaf1). A geologic map of the general project area is shown on Plate 2. Description of the main geologic units is as follows:

> *Qpaf (Alluvial Fans and Fluvial Deposits (Pleistocene)) – Brown dense gravely and clayey sand or clayey gravel that fines upward to sandy clay. These deposits display various sorting and are located in most stream channels in the county. All Qpaf deposits can be related to modern stream courses. They are distinguished from younger alluvial fans and fluvial*

deposits by higher topographic position, greater degree of dissection, and stronger soil profile development. They are less permeable than Holocene deposits, and locally contain fresh water mollusks and extinct late Pleistocene vertebrate fossils. They are overlain by Holocene deposits on lower parts of the alluvial plain, and incised by channels that are partly filled with Holocene alluvium on higher parts of the alluvial plain. Maximum thickness is unknown but at least 50m (150 feet).

Qpaf1 (Alluvial Terrace Deposits (Pleistocene)) – Qpaf1 consists of first Pleistocene alluvial terrace. Deposits consist of crudely-bedded, clast supported gravels, cobbles, and boulders with a sandy matrix. Clasts as much as 35 cm (14 inches) intermediate diameter are present. Coarse sand lenses may be locally present. Pleistocene terrace deposits are cut into Qpaf alluvial fan deposits a few meters and lie up to several meters above Holocene deposits. These terrace deposits are so similar in lithology and texture as to be almost identical. They are distinguished for mapping purposes based on topographic position (the highest is the oldest) and degree of dissection and soil profile development. The highest terrace displays the thickest argillic B horizon as well as the dark A horizon (Mollic epipedon). The sequence is best observed along both banks of Arroyo Valle south of Livermore. The terraces on the left (south-west) bank are more continuous than on the right (north-east). Each terrace represents the cutting and filling of previous deposits.

EARTHQUAKE CONSIDERATIONS

The Type Selection Meeting for the North Livermore Avenue Undercrossing (Bridge No. 33-0153) was held prior to the cut-off date of September 30, 2009. Therefore, for the present project earthquake considerations are not based on the recently published 2009 Caltrans Deterministic PGA Map and ARS Online Report.

Seismic Sources

The project is located in a seismically active part of Northern California. Many faults exist in the area, which are capable of producing earthquakes which may cause strong ground shaking at the site.

Maximum credible earthquake magnitudes for some of the major faults in the area determined by Mualchin (1996) are summarized below. These maximum credible earthquake magnitudes represent the largest earthquakes that could occur on the given fault based on the current understanding of the regional tectonic structure. A fault map is shown on Plate 3.

SEISMIC SOURCES

Fault	Fault Type	Distance from Site (miles)	Maximum Credible Earthquake Magnitude
Greenville Fault	Strike-Slip	4.8	7.25
Verona-Williams Fault	Not known	5.4	6.00
Calavares-Pacines-San Benito Fault	Strike-Slip	7.1	7.50
Coast Ranges-Sierran Block Boundary Zone	Reverse	9.4	7.00

Based on the seismic hazard map prepared by Mualchin (1996) and the attenuation relationship by Sadigh et al. (1997), the governing fault is the Greenville Fault (Mw = 7.25)g.

Seismic Design Criteria

Based on the seismic hazard map prepared by Mualchin (1996), the Peak Bedrock Acceleration (PBA) at the project site falls between 0.4g and 0.5g. According to Caltrans Guidelines for Structures Foundation Report (March 2006), the value of PBA (for a specific project site) from the seismic hazard map should be verified with that calculated using the attenuation relation by Sadigh et al. (1997). Based on Sadigh attenuation relation, the maximum PBA computed for the project site is 0.46g. A design PBA of 0.5g is recommended.

Based on the available boring information in the vicinity of the project site, the subsurface soil conditions at the project site generally matches the criteria for Soil Type D, as per Caltrans Seismic Design Criteria (Version 1.4, June 2006). Based on Caltrans Seismic Design Criteria and the above information, the seismic design criteria are as follows:

1. Closest Distance to Fault = 4.8 miles (7.7 km)
2. PBA = 0.5 g

3. Design ARS Curve = Caltrans Seismic Design Criteria June 2006 Version 1.4 Figure B.8 (Soil Profile Type D).

4. Design ARS Curve (see Plate 4): Curve based on Caltrans SDC (v. 1.4, 6/2006) for different structural periods. The curve is based on (Governing Fault – Greenville Fault; Mw =7.25) Figure B.8, PBA = 0.5g.

The Design ARS Curve is presented in Plate No. 4 of this report.

Seismic Hazards/Liquefaction Impact

Potential seismic hazards may arise from three sources: surface fault rupture, ground shaking and liquefaction. Since no active faults pass through the site, the potential for fault rupture is relatively low. Based on available geological and seismic information, the possibility of the site experiencing strong ground shaking may be considered significant.

Liquefaction is a phenomenon in which saturated soils are subject to a temporary but essentially total loss of shear strength under the reversing, cyclic shear stresses associated with earthquake shaking. Submerged, cohesionless sands and silts of low relative density are the type of soils which usually are susceptible to liquefaction - the susceptibility increases with decreasing relative density (reflected by the number of blows (blow counts) to drive a sampler), and decreasing fines content. Accepted procedures for the assessment for liquefaction potential for cohesionless soils have evolved over the years through research and field observations (Youd et al, 2001). Recent research and field observations have shown that clays of low plasticity are also potentially liquefiable, based on the moisture content and plasticity characteristics of the clay. Procedures for the assessment of liquefaction potential for clay soils have also been established and have received general acceptance. (Bray et. al., 2004).

A few isolated sand layers, 1 to 2 feet thick were encountered below the design groundwater table of 415.0 feet in CPT-AL2-02. Dense sands with clay and gravel were encountered in boring A-09-AL2-02. Sand layers were not encountered in boring A-09-200. As-built borings only

indicated dense sands. Based on all the above, potential for occurrence of liquefaction at the site is considered low.

FINDINGS AND RECOMMENDATIONS

General

This report was prepared specifically for the proposed widening of the bridge structure according to the plans provided to us. Normal construction procedures were assumed throughout our analysis and represent one of the bases of recommendations presented herein. Our design criteria have been based upon the materials encountered at the site. Therefore, we should be notified in the event that these conditions are changed, so as to modify or amend our recommendations.

Scour

Per the Bridge Hydraulics Report and Floodplain Analysis Report for the project (Ref. 11), "The channel through the project reach is rock lined. There is a potential for about 6 feet of scour during a 100-year storm event."

Corrosion

The corrosion investigations performed are in general accordance with the provisions of California Test Method 643. A summary of the corrosion test data is presented below.

Boring	Depth (ft)	pH	Resistivity (ohms-cm)	Sulfate (ppm)	Chloride (ppm)
A-09-AL2-01	4.5	7.67	1740	10.2	7.4
A-09-AL2-01	54.5 & 59.5*	8.02	1070	27.8	27.6
A-09-200	3.0	7.85	1580	36.2	13.5
* Combined Sample					

Per Caltrans Corrosion Guidelines, a site is considered corrosive if tests on representative soil or water samples indicate a minimum resistivity of 1000 ohm-cm, and in addition, (a) chloride

concentration is 500 ppm or greater; (b) sulfate content is 2000 ppm or greater; or the pH is 5.5 or less. Based on the data, the site subsoil is non-corrosive per Caltrans corrosion design guidelines, and standard Type II modified or Type I-P (MS) modified cement may be used for the concrete substructures. The minimum cement factor and cover thickness should be per Caltrans Bridge Design Specifications (Section 8.22).

Foundations

Driven steel H piles (HP 12x53) are recommended for foundation support for both the abutments and the columns at the two bents in the new (widening) structure. H piles were chosen because of their ability to penetrate through the dense sands and hard clays present at the site.

Pile Design

Pertinent foundation design information was provided by Biggs Cardosa Associates (Structural Engineers for the project), which are presented in the following tables (Foundation Design Data and Foundation Design Loads).

FOUNDATION DESIGN DATA

Support No	Design Method	Pile Type	Finish Grade Elev. (ft)	Bottom of Footing Elev. (ft)	Pile Cap Size (ft)		Permissible Settlement (inch)	No. of Piles per Support
					B	L		
Abutment 1	WSD	Steel H Pile HP 12 x 53	438.5	435.0	2.5	25.8	1.0	4
Bent 2	LRFD	Steel H Pile HP 12 x 53	423.2	410.8	6	9	1.0	6
Bent 3	LRFD	Steel H Pile HP 12 x 53	422.3	410.8	6	9	1.0	6
Abutment 4	WSD	Steel H Pile HP 12 x 53	436.5	432.5	2.5	25.8	1.0	4

FOUNDATION LOADS

Support No.	Service-I Limit State (kips)			Strength Limit State (Controlling Group, (kips)				Extreme Limit State (Controlling Group, kips)			
	Total Load		Permanent Loads	Compression		Tension		Compression		Tension	
	Per Supp.	Per Pile	Per Support	Per Supp.	Max. Per Pile.	Per Supp.	Max. Per Pile.	Per Supp.	Max. Per Pile.	Per Supp.	Max. Per Pile.
Abutment 1	385	97	236	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bent 2(2)	530	N/A	390	900	155	0	0	690	135	0	-12
Bent 3(2)	535	N/A	400	900	155	0	0	690	135	0	-12
Abutment 4	390	98	240	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes: (1) Total Load for Service I – Limit State = DL + LL
(2) Per support loads are per foundation. Bents with multiple columns have each column as a support and loads are given only per one footing under the column. If information is not repeated, then it is assumed that other column in the bent have same loads.

Consistent with the current Caltrans requirements, the abutment foundations were evaluated for the foundation design data and loading conditions using Caltrans November 2003 Bridge Design Specifications for foundations, using Working Stress Design (WSD) methods. The bent foundations were evaluated for the foundation design data and loading conditions using AASHTO LRFD Bridge Design Specifications – 3rd Edition, with Interims Through 2006 and current Caltrans Amendments (v3.06.01). The actual load demands on the piles, based upon WSD and LRFD will be presented in the table below for the proposed widened section of the bridge.

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LOAD DEMANDS

Support No.	Design Method	Service Loads (kips)		Required Nominal Resistance (kips)				Required Nominal Resistance (kips)[1]	
				Strength Limit		Extreme Limit			
		Comp.	Tens.	Comp. (ϕ=0.7)	Tens. (ϕ=0.7)	Comp. (ϕ=1.0)	Tens. (ϕ=1.0)	Comp.	Tens.
Abutment 1	WSD	97	0	N/A	N/A	N/A	N/A	194	0
Bent 2[1]	LRFD	N/A	N/A	221	0	135	-12	221	-12
Bent 3	LRFD	N/A	N/A	221	0	135	-12	221	-12
Abutment 4	WSD	98	0	N/A	N/A	N/A	N/A	196	0

(1) Information pertains to each individual (identical pile cap in the bent

Estimation of the pile capacities was made for each support location using the site-specific subsurface conditions. The top of pile (bottom of footing) elevations were based on the information provided by the designer. The computer program APILE developed by Ensoft, Inc. was used for the computations. The program computes pile capacities for driven piles using four different methods: FHWA Method; US Corps of Engineers Method; Lambda Method; and API-RP2A Method from the American Petroleum Institute. The API-RP2A Method was chosen as the basis for the recommended pile tip elevations, since this method was judged to be the most appropriate for clay soils. Pile capacity computations (APILE output) are presented in Appendix C.

The recommended specified pile tip elevations are shown in the pile data table below.

PILE DATA TABLE

Location	Pile Type	Nominal Resistance (kips)		Finish Grade (ft)	Bottom of Footing Elev. (ft)	Design Tip Elev. (ft)[1]	Specified Tip Elev. (ft)	Nominal Driving Resistance (kips)
		Compression	Tension					
Abutment 1	Steel H Pile HP 12 x 53	200	0	438.5	435.0	406.0(a) 418.0 (c)	406.0	200
Bent 2[2]	Steel H Pile HP 12 x 53	230	15	423.2	410.8	387.5(a) 406.0(b) 392.3 (c)	387.5	230
Bent 3[2]	Steel H Pile HP 12 x 53	230	15	422.3	410.8	387.0(a) 406.0(b) 392.3(c)	387.0	230
Abutment 4	Steel H Pile HP 12 x 53	200	0	436.5	432.5	405.5(a) 414.0(c)	405.5	200

Notes:
1. Design Tip Elevation is controlled by the following demands: (a) Compression; (b) Tension; (c) Lateral
2. Information pertains to each individual (identical) pile cap in the bent.
3. Assumed abutment piles driven in oversized predrilled holes through embankment fill, drilled to Elev. 430.0.

Pile Installation

Piles at abutment locations should be driven in predrilled holes through the embankment fills to the top of the existing ground surface estimated at 430.0 feet. The predrilled hole should have a diameter of not less than the greatest dimension of the pile cross-section plus 6 inches, consistent with the Caltrans Standard Specifications. After driving the pile, the annular space around the pile should be filled with pea gravel to ground surface.

Hard driving is anticipated through hard clays and dense sands at the site. An adequate hammer should be chosen for the pile driving. Also, it is highly recommended that prior to start of production pile driving, a pile drivability analysis be performed to assess the adequacy of the hammer and to establish a field pile driving criterion. In the event the piles do not attain the required bearing value at the end of driving, the piles should be allowed to stand for a "set period" of at least 24 hours without driving. After the required "set period", at least two piles in the footing should be redriven to determine if the bearing value has been attained. If it is determined that the bearing value has been attained, then the remaining piles should be considered satisfactory. In the event unanticipated driving conditions are encountered, the Contractor should consult the Geotechnical Engineer for further course of action.

Lateral Pile Capacity

Analyses for lateral load behavior of the piles may be performed using the LPILE computer program. Geotechnical parameters for the development of p-y curves for the LPILE program are presented in the tables below. The parameters are based on field borings, CPT and lab testing data. The elevation information is based on the topographic data provided to us. It is recommended to use a p-multiplier of 0.6 (60% effective) and a y-multiplier of 1.0 to consider group effect for piles spaced at minimum 3 times the maximum dimension.

Geotechnical Parameters For LPILE Analysis

Abutment 1

Elevation (ft.)	Generalized Soil Profile	LPILE Soil Type	Probable Soil Strength	K (pci)	e_{50} (in/in)	Effect Unit Weight (pci)
Above 415	Very Stiff Sandy Lean Clay	3, STIFF CLAY w/o water	Su = 20.83 psi	----	.005	.0723
415 to 404	Very Stiff to Hard Lean Clay	3, STIFF CLAY w/o water	Su = 17.36 psi	----	.005	.0376
Below 404	Hard Silty Clay to Clayey Silt	3, STIFF CLAY w/o water	Su = 31.25 psi	----	.004	.0405
Design Groundwater Level assumed at El. 415.0						

Abutment 4

Elevation (ft.)	Generalized Soil Profile	LPILE Soil Type	Probable Soil Strength	K (pci)	e_{50} (in/in)	Effect Unit Weight (pci)
444 to 432	Very Stiff Sandy Lean Clay	3, STIFF CLAY w/o water	Su = 20.83 psi	----	.005	.0723
432 to 422	Stiff Sandy Clay	3, STIFF CLAY w/o water	Su = 9.72 psi	----	.007	.0723
422 to 417	Medium Dense Well Graded Sand	8, SAND (API)	$\varphi = 35°$	90	--	.0752
417 to 415	Dense Poorly Graded Sand	8, SAND (API)	$\varphi = 38°$	225	--	.0752
415 to 408	Dense Poorly Graded Sand	8, SAND (API)	$\varphi = 38°$	225	--	.0405
408 to 360	Hard Clay	3, STIFF CLAY w/o water	Su = 31.25 psi	----	.004	.0405
Ground Surface @ El +444		Design Groundwater Level assumed at El. 415.0				

Bents 2 & 3

Elevation (ft.)	Generalized Soil Profile	LPILE Soil Type	Probable Soil Strength	K (pci)	e_{50} (in/in)	Effect Unit Weight (pci)
Above 415	Very Stiff Sandy Lean Clay	3, STIFF CLAY w/o water	Su = 20.83 psi	----	.005	.0723
415 to 404	Very Stiff to Hard Lean Clay	3, STIFF CLAY w/o water	Su = 17.36 psi	----	.005	.0405
Below 404	Hard Silty Clay to Clayey Silt	3, STIFF CLAY w/o water	Su = 31.25 psi	----	.004	.0405
Note: Since no borings were drilled near the bents, the parameters recommended above are identical to parameters for Abutment 1, which are generally conservative of the two presented above.						

The parameters reported above are based on standard pile sizes. For piles larger than 2 feet in diameter, the K values were scaled up and the e_{50} values should be scaled down by a factor of (pile size/2')$^{0.5}$.

Lateral Earth Pressures

Abutment retaining walls and wing walls should be designed to resist the following Applied Lateral Earth Pressures and live load. These values assume no hydrostatic pore pressure buildup behind the wall and are based on well-drained backfill behind the walls supported in native soil.

Applied Lateral Earth Pressure

Active Condition	36 pcf Equivalent Fluid Pressure (EFP) for engineered fill
At-Rest Condition	55 pcf Equivalent Fluid Pressure (EFP) for engineered fill
Passive Resistance	310 pcf EFP with a maximum value of 3100 psf. 5 ksf (ultimate) for seismic design of the abutment backwall (5.5 feet high or greater); for activated height less than 5.5 feet modify proportionally, i.e. 5 x (H/5.5) ksf. A minimum lateral wall movement of 2% of wall height to mobilize the full ultimate passive pressure is required.

Cantilever walls which are free to rotate at least 0.004 radians may be assumed flexible for the active condition. Walls that are not capable of this movement should be assumed rigid and

designed for the at-rest condition. The effect of any surcharge (dead, live, or traffic load) should be added to the preceding lateral earth pressures. A coefficient of 0.3 may be used to determine the additional earth pressure resulting from the surcharge.

Grading

All grading operations should be performed in accordance with the project specifications and Caltrans Standard Specifications for Earthwork (Section 19).

Slopes. Appropriate slope protection should be placed on the slopes of Arroyo Las Positas passing under the bridge. Details of the slope protection are discussed in the Road Plans.

Plan Review

We recommend that final plans for foundations be reviewed by this office prior to construction so that the intent of our recommendations is included in the project plans and specifications and to further see that no misunderstandings or misinterpretations have occurred.

Construction Observation

To a degree, the performance of any structure is dependent upon construction procedures and quality. Hence, observation of foundation excavations, and pile installations should be carried out by the regulating agencies. If the subsurface conditions different from those forming the basis of our recommendations is encountered this office should be informed in order to assess the need for design changes. Therefore, the recommendations presented in this report are contingent upon good quality control and these geotechnical observations during construction.

INVESTIGATION LIMITATIONS

Our services consist of professional opinions and recommendations made in accordance with generally accepted geotechnical engineering principles and practices and are based on our site reconnaissance and the assumption that the subsurface conditions do not deviate from observed

conditions. All work done is in accordance with generally accepted geotechnical engineering principles and practices. No warranty, expressed or implied, of merchantability or fitness, is made or intended in connection with our work or by the furnishing of oral or written reports or findings. The scope of our services did not include any environmental assessment or investigation for the presence or absence of hazardous or toxic materials in structures, soil, surface water, groundwater or air, below or around this site. Unanticipated soil conditions are commonly encountered and cannot be fully determined by taking soil samples and excavating test borings; different soil conditions may require that additional expenditures be made during construction to attain a properly constructed project. Some contingency fund is thus recommended to accommodate these possible extra costs.

This report has been prepared for the proposed project as described earlier, to assist the engineer in the design of this project. In the event any changes in the design or location of the facilities are planned, or if any variations or undesirable conditions are encountered during construction, our conclusions and recommendations shall not be considered valid unless the changes or variations are reviewed and our recommendations modified or approved by us in writing.

This report is issued with the understanding that it is the designer's responsibility to ensure that the information and recommendations contained herein are incorporated into the project and that necessary steps are also taken to see that the recommendations are carried out in the field.

The findings in this report are valid as of the present date. However, changes in the subsurface conditions can occur with the passage of time, whether they be due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards occur, whether they result from legislation or from the broadening of knowledge. Accordingly, the findings in this report might be invalidated, wholly or partially, by changes outside of our control.

Respectfully submitted,
PARIKH CONSULTANTS, INC.

Partha Sircar, Ph.D., P.E. C54619
Senior Engineer

Gary Parikh, G.E. 666
Project Manager

REFERENCES

1. APILE Program, Version Plus 4.0, A Program for Analysis of Axial Capacity of Driven Piles, ENSOFT, Inc.

2. Bray, J. D., Sancio, R. B., Reimer, M. F., and Durganoglu, T. "Liquefaction Susceptibility of Fine Grained Soils" Proc., 11th Inter. Confc. On Soil Dynamics and Earthquake Engg. And 3rd Inter. Confc. On Earthquake Geotech. Engg., Berkeley, CA, January 7-9, 2004

3. Caltrans as-built plans for North Livermore Avenue Undercrossing (1972) (Br. No. 33-0153)

4. Caltrans California Seismic Hazard Map (1996)

5. California Department of Transportation, May 2006, Bridge Design Specifications

6. California Department of Transportation, May 2006, Standard Plans.

7. California Department of Transportation, May 2006, Standard Specifications

8. Caltrans Memo to Designer, July 2008

9. Caltrans Seismic Design Criteria (V1.4, June 2006)

10. Geologic Map of Quaternary Geology of Alameda County and Parts of Contra Costa, Santa Clara, San Mateo, San Francisco, Stanislaus, and San Joaquin Counties: Derived from the Digital Database, E.J. Helley and R.W. Graymer, 1997; USGS Map Open-File Report 97-97).

11. LPILE Program, Version 5, Analysis of Laterally Load Piles, ENSOFT, Inc.

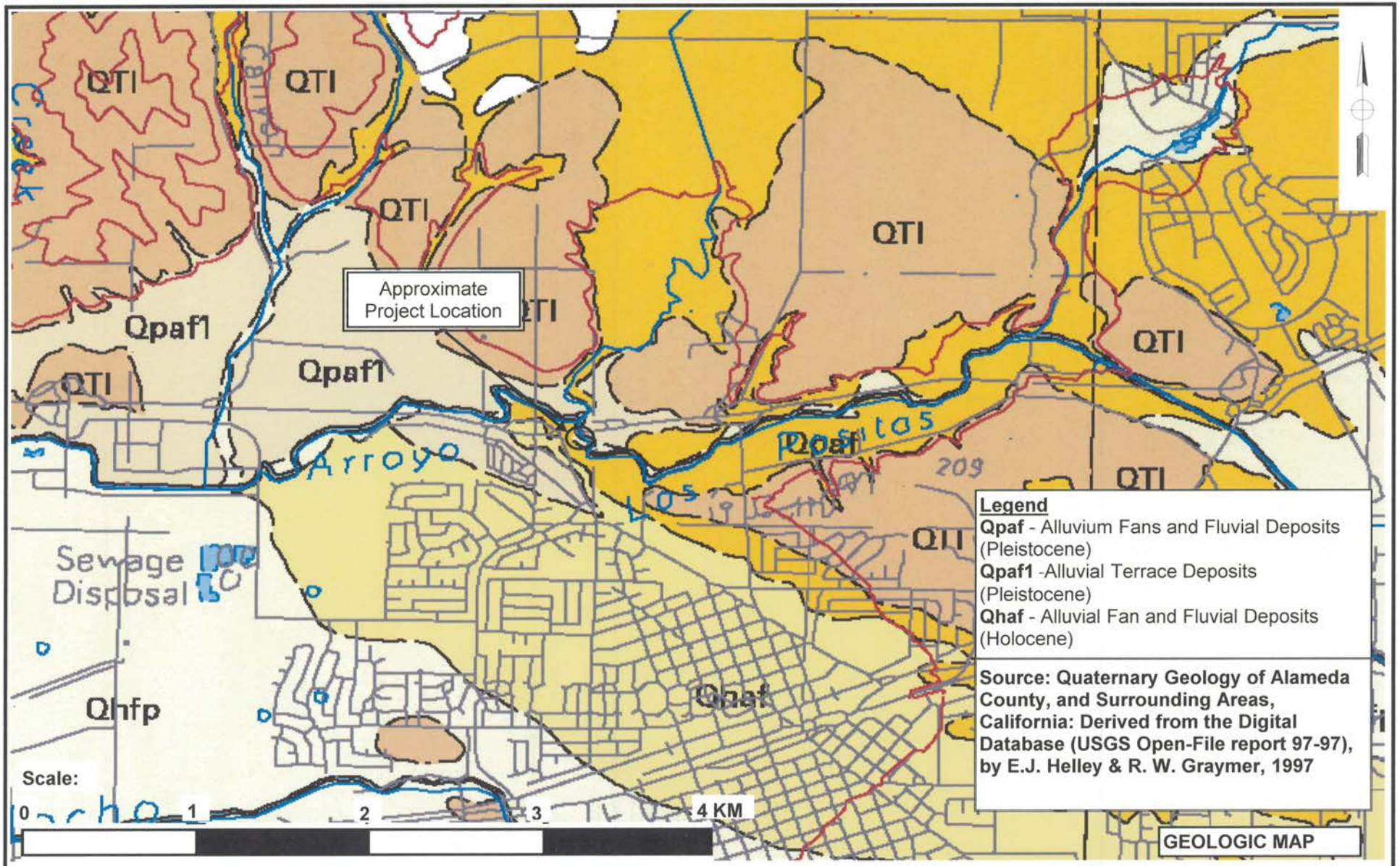
12. Mualchin, L., "A Technical Report to Accompany Caltrans California Seismic Hazard Map (1996)

13. Youd, T.L., Idriss, I.M., Andrus, R.D., Arango, I., Castro, G., Christian, J.T., Dobry, R., Liam Finn, W.D., Harder, L.F., Hynes, M.E., Ishihara, K., Koester, J.P., Liao, S.S.C., Marcuson, W.F., III, Martin, G.R., Mitchell, J.K., Moriwaki, Power, M.S., Robertson, P.K., Seed, R.B., Stokoe, K.H., II, 2001, "Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils, " Journal of Geotechnical and Geoenvironmental Engineering, ASCE, V. 127, No. 10.

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

ARROYO LAS POSITAS BRIDGE-WESTBOUND (WIDENING)
(BRIDGE NO. 33-0203)
LIVERMORE, ALAMEDA COUNTY, CALIFORNIA

JOB NO.: 208102.AL2	PLATE NO.: 1



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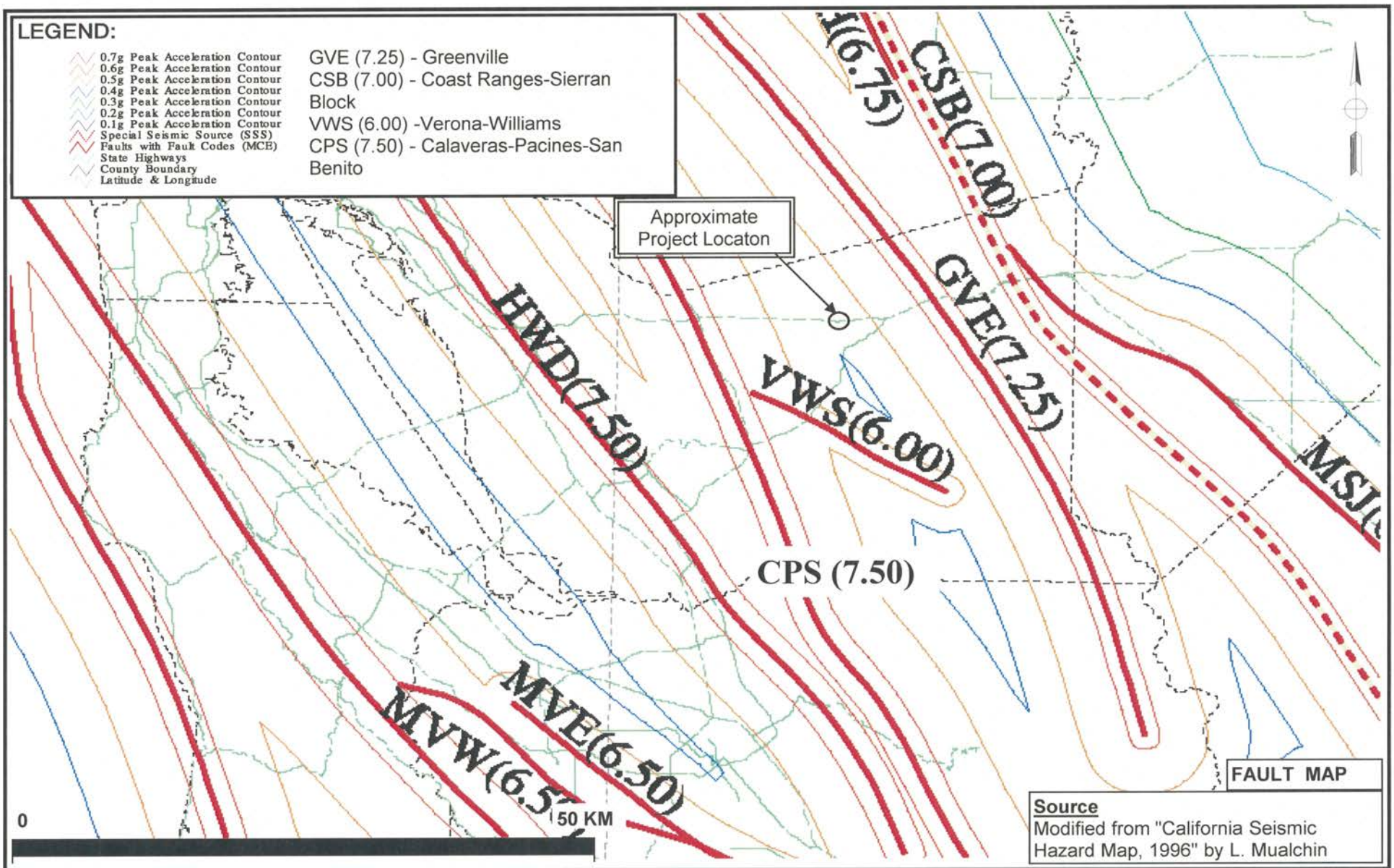
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

ARROYO LAS POSITAS BRIDGE-WESTBOUND (WIDENING)
(BRIDGE NO. 33-0203)
LIVERMORE, ALAMEDA COUNTY, CALIFORNIA

JOB NO.: 208102.AL2

PLATE NO.:2



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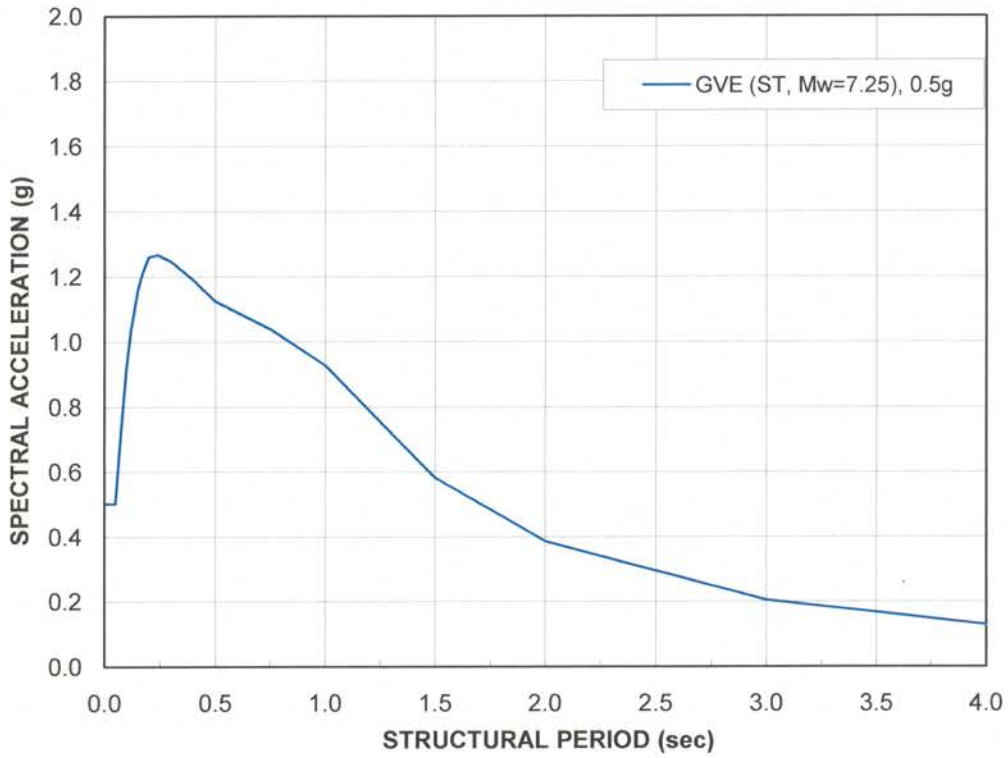
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

ARROYO LAS POSITAS BRIDGE-WESTBOUND (WIDENING)
(BRIDGE NO. 33-0203)
LIVERMORE, ALAMEDA COUNTY, CALIFORNIA

JOB NO.: 208102.AL2

PLATE NO.: 3

ARS DESIGN CURVE



Spectral Data

Period (sec)	Spectral Accel. (g)
0.010	0.500
0.020	0.500
0.030	0.500
0.050	0.500
0.075	0.719
0.100	0.919
0.120	1.037
0.150	1.156
0.170	1.209
0.200	1.259
0.240	1.266
0.300	1.247
0.400	1.190
0.500	1.125
0.750	1.038
1.000	0.927
1.500	0.581
2.000	0.386
3.000	0.204
4.000	0.128

Caltrans SDC (v 1.4, June 2006), Figure B.8,
Governing Fault: Greenville Fault
(Mw = 7.25, Soil Profile Type D, PBA = 0.5 g)
with the following modifications:
(1) No change of Sa for structural periods < 0.5 sec
(2) 20% increase of Sa for structural periods ≥ 1 sec
(3) Linear interpolation for structural periods between 0.5 and 1 sec

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

ARROYO LAS POSITAS BRIDGE - WESTBOUND (WIDENING)
(BRIDGE NO. 33-0203)
LIVERMORE, ALAMEDA COUNTY, CALIFORNIA

JOB NO.: 208102.AL2

PLATE NO.: 4

APPENDIX A

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (2010)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580			

GEOTECHNICAL PROFESSIONAL — 11/8/11 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — CARY PARIKH — No. G.E. 666 — Exp. 12/31/11 GEOTECHNICAL — STATE OF CALIFORNIA

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OAKLAND, CA 94612

PARIKH CONSULTANTS, INC.
2360 QUME DRIVE, SUITE A
SAN JOSE, CA 95131

CEMENTATION

Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

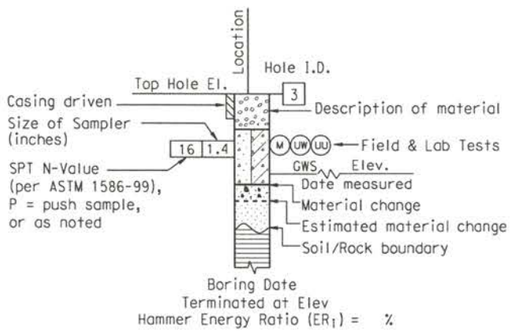
BOREHOLE IDENTIFICATION

Symbol	Hole Type	Description
Size	A	Auger Boring (hollow or solid stem bucket)
Size	R	Rotary drilled boring (conventional)
	RW	Rotary drilled with self-casing wire-line
	RC	Rotary core with continuously-sampled, self-casing wire-line
	P	Rotary percussion boring (air)
Size	R	Rotary drilled diamond core
Size	HD	Hand driven (1-inch soil tube)
	HA	Hand Auger
●	D	Dynamic Cone Penetration Boring
▲	CPT	Cone Penetration Test (ASTM D 5778)
⬚	O	Other (note on LOTB)

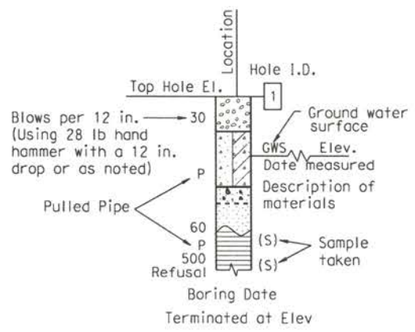
Note: Size in inches.

CONSISTENCY OF COHESIVE SOILS

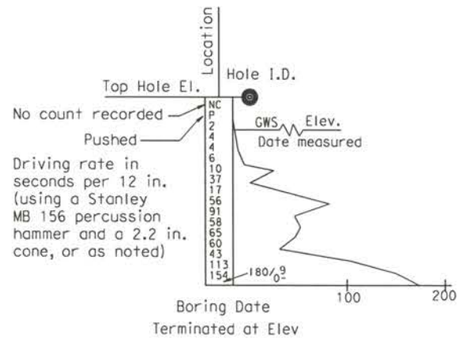
Description	Shear Strength (tsf)	Pocket Penetrometer Measurement, PP, (tsf)	Torvane Measurement, TV, (tsf)	Vane Shear Measurement, VS, (tsf)
Very Soft	Less than 0.12	Less than 0.25	Less than 0.12	Less than 0.12
Soft	0.12 - 0.25	0.25 - 0.5	0.12 - 0.25	0.12 - 0.25
Medium Stiff	0.25 - 0.5	0.5 - 1	0.25 - 0.5	0.25 - 0.5
	0.5 - 1	1 - 2	0.5 - 1	0.5 - 1
Very Stiff	1 - 2	2 - 4	1 - 2	1 - 2
Hard	Greater than 2	Greater than 4	Greater than 2	Greater than 2



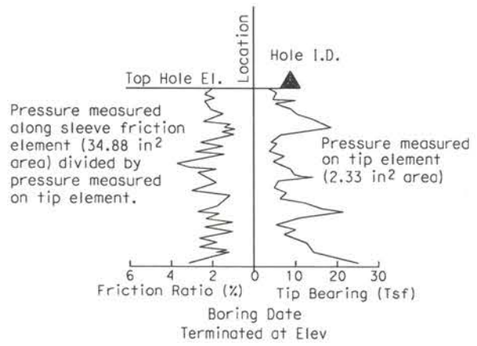
ROTARY BORING



HAND BORING



DYNAMIC CONE PENETRATION BORING



CONE PENETRATION TEST (CPT) BORING

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S.DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO. 33-0203
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008-FEBRUARY-JANUARY 2009		PROJECT ENGINEER	POST MILES 13.13

ARROYO LAS POSITAS BRIDGE (WIDEN)

LOG OF TEST BORINGS 1 OF 4

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES			SHEET	OF
12/23/09	05/26/10	11/8/11	12	15

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REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (JUNE 2007)

GROUP SYMBOLS AND NAMES

Graphic/Symbol	Group Names	Graphic/Symbol	Group Names
GW	Well-graded GRAVEL Well-graded GRAVEL with SAND	CL	Lean CLAY Lean CLAY with SAND Lean CLAY with GRAVEL SANDY lean CLAY SANDY lean CLAY with GRAVEL GRAVELLY lean CLAY GRAVELLY lean CLAY with SAND
GP	Poorly graded GRAVEL Poorly graded GRAVEL with SAND		
GW-GM	Well-graded GRAVEL with SILT Well-graded GRAVEL with SILT and SAND	CL-ML	SILTY CLAY SILTY CLAY with SAND SILTY CLAY with GRAVEL SANDY SILTY CLAY SANDY SILTY CLAY with GRAVEL GRAVELLY SILTY CLAY GRAVELLY SILTY CLAY with SAND
GW-GC	Well-graded GRAVEL with CLAY (or SILTY CLAY) Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GP-GM	Poorly graded GRAVEL with SILT Poorly graded GRAVEL with SILT and SAND	ML	SILT SILT with SAND SILT with GRAVEL SANDY SILT SANDY SILT with GRAVEL GRAVELLY SILT GRAVELLY SILT with SAND
GP-GC	Poorly graded GRAVEL with CLAY (or SILTY CLAY) Poorly graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GM	SILTY GRAVEL SILTY GRAVEL with SAND	OL	ORGANIC lean CLAY ORGANIC lean CLAY with SAND ORGANIC lean CLAY with GRAVEL SANDY ORGANIC lean CLAY SANDY ORGANIC lean CLAY with GRAVEL GRAVELLY ORGANIC lean CLAY GRAVELLY ORGANIC lean CLAY with SAND
GC	CLAYEY GRAVEL CLAYEY GRAVEL with SAND		
GC-GM	SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL with SAND	OL	ORGANIC SILT ORGANIC SILT with SAND ORGANIC SILT with GRAVEL SANDY ORGANIC SILT SANDY ORGANIC SILT with GRAVEL GRAVELLY ORGANIC SILT GRAVELLY ORGANIC SILT with SAND
SW	Well-graded SAND Well-graded SAND with GRAVEL		
SP	Poorly graded SAND Poorly graded SAND with GRAVEL	CH	Fat CLAY Fat CLAY with SAND Fat CLAY with GRAVEL SANDY fat CLAY SANDY fat CLAY with GRAVEL GRAVELLY fat CLAY GRAVELLY fat CLAY with SAND
SW-SM	Well-graded SAND with SILT Well-graded SAND with SILT and GRAVEL		
SW-SC	Well-graded SAND with CLAY (or SILTY CLAY) Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	MH	Elastic SILT Elastic SILT with SAND Elastic SILT with GRAVEL SANDY elastic SILT SANDY elastic SILT with GRAVEL GRAVELLY elastic SILT GRAVELLY elastic SILT with SAND
SP-SM	Poorly graded SAND with SILT Poorly graded SAND with SILT and GRAVEL		
SP-SC	Poorly graded SAND with CLAY (or SILTY CLAY) Poorly graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	OH	ORGANIC fat CLAY ORGANIC fat CLAY with SAND ORGANIC fat CLAY with GRAVEL SANDY ORGANIC fat CLAY SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
SM	SILTY SAND SILTY SAND with GRAVEL		
SC	CLAYEY SAND CLAYEY SAND with GRAVEL	OH	ORGANIC elastic SILT ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY ORGANIC elastic SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
SC-SM	SILTY, CLAYEY SAND SILTY, CLAYEY SAND with GRAVEL		
PT	PEAT	OL/OH	ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	COBBLES COBBLES and BOULDERS BOULDERS		

FIELD AND LABORATORY TESTING

- (C) Consolidation (ASTM D 2435)
- (CL) Collapse Potential (ASTM D 5333)
- (CP) Compaction Curve (CTM 216)
- (CR) Corrosivity Testing (CTM 643, CTM 422, CTM 417)
- (CU) Consolidated Undrained Triaxial (ASTM D 4767)
- (DS) Direct Shear (ASTM D 3080)
- (EI) Expansion Index (ASTM D 4829)
- (M) Moisture Content (ASTM D 2216)
- (OC) Organic Content-% (ASTM D 2974)
- (P) Permeability (CTM 220)
- (PA) Particle Size Analysis (ASTM D 422)
- (PI) Plasticity Index (AASHTO T 90) Liquid Limit (AASHTO T 89)
- (PL) Point Load Index (ASTM D 5731)
- (PM) Pressure Meter
- (PP) Pocket Penetrometer
- (R) R-Value (CTM 301)
- (SE) Sand Equivalent (CTM 217)
- (SG) Specific Gravity (AASHTO T 100)
- (SL) Shrinkage Limit (ASTM D 427)
- (SW) Swell Potential (ASTM D 4546)
- (TV) Pocket Torvane
- (UC) Unconfined Compression-Soil (ASTM D 2166) Unconfined Compression-Rock (ASTM D 2938)
- (UU) Unconsolidated Undrained Triaxial (ASTM D 2850)
- (UW) Unit Weight (ASTM D 4767)
- (VS) Vane Shear (AASHTO T 223)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO	TOTAL SHEETS
04	Ala	580			

GEOTECHNICAL PROFESSIONAL — 11/8/11 DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/11 GEOTECHNICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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1333 BROADWAY, SUITE 220
OAKLAND, CA 94612

PARIKH CONSULTANTS, INC.
2360 QUME DRIVE, SUITE A
SAN JOSE, CA 95131

APPARENT DENSITY OF COHESIONLESS SOILS

Description	SPT N_{60} (Blows / 12 inches)
Very loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	> 50

MOISTURE

Description	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

PERCENT OR PROPORTION OF SOILS

Description	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

PARTICLE SIZE

Description		Size
Boulder		> 12"
Cobble		3" to 12"
Gravel	Coarse	3/4" to 3"
	Fine	No. 4 to 3/4"
Sand	Coarse	No. 10 to No. 4
	Medium	No. 40 to No. 10
	Fine	No. 200 to No. 40

DESIGN OVERSIGHT — SIGN OFF DATE

DRAWN BY: O. GOUTHIER — CHECKED BY: P. SIRCAR

S.DUDDU
FIELD INVESTIGATION BY:
DATE: DECEMBER 2008- FEBRUARY-JANUARY 2009

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

P. SIRCAR
PROJECT ENGINEER

BRIDGE NO. 33-0203
POST MILES 13.13

ARROYO LAS POSITAS BRIDGE (WIDEN)
LOG OF TEST BORINGS 2 OF 4

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES: 12/23/09 | 06/24/10 | 11/8/11

SHEET 13 OF 15

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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO	TOTAL SHEETS
04	Ala	580			

GEOTECHNICAL PROFESSIONAL — 11/8/11 DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/11 GEOTECHNICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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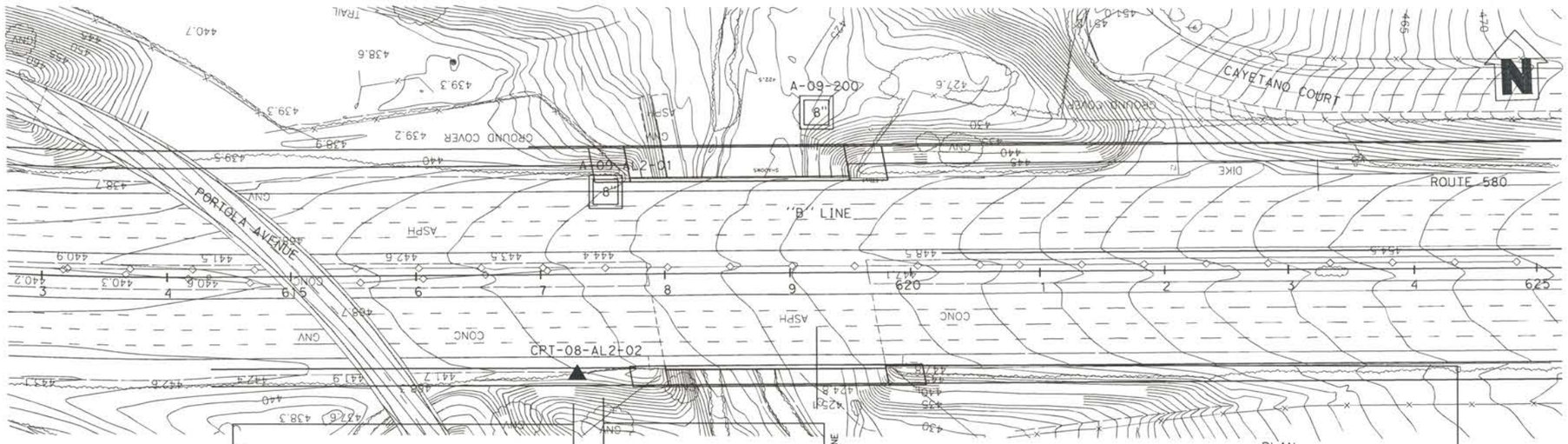
ALAMEDA CTC
1333 BROADWAY, SUITE 220
OAKLAND, CA 94612

PARIKH CONSULTANTS, INC.
2360 QUME DRIVE, SUITE A
SAN JOSE, CA 95131



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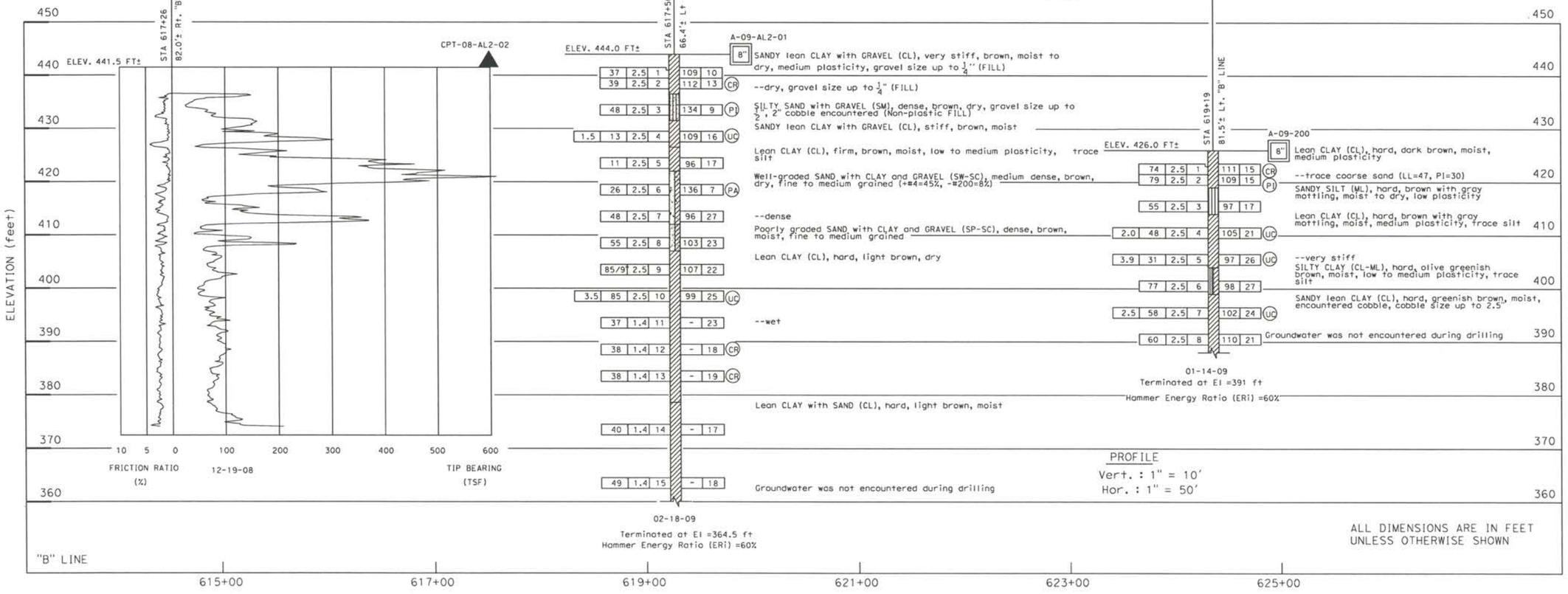


BENCHMARK:
The Vertical Datum shown hereon is based on North American Vertical Datum of 1988 (NAVD). The 1988 Elevations for this project were Established using Digital Levelling & GPS Survey Measurements and a Least Squares Adjustment Holdings NGS Benchmarks GPS control point 35 - PID DE8495, L 1259 - PID HS4075, CHABOT A - PID AI7653, & OLD RM 3 = TIDAL 5 - PID HS3429 fixed to their published values.

All Dimensions are in Feet unless otherwise shown.

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S.DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	BRIDGE NO. 33-0203
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DECEMBER 2008- DATE: JANUARY-FEBRUARY 2009	P. SIRCAR PROJECT ENGINEER	POST MILES 13.13

ARROYO LAS POSITAS BRIDGE (WIDEN)
LOG OF TEST BORINGS 3 OF 4

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES			SHEET	OF
12/15/09	04/30/10	11/8/11	14	15

FILE => $REQUEST

DATE PLOTTED => $DATE
TIME PLOTTED => $TIME
USERNAME => $USER

03-0203-z-ltb03 den Default 11/7/2011 2:30:39 PM

DIVISION OF ENGINEERING SERVICES – GEOTECHNICAL SERVICES					
As-Built Log of Test Borings sheet is considered an informational document only. As such, the State of California registration seal with signature, license number and registration certificate expiration date confirm that this is a true and accurate copy of the original document. This drawing is available and presented only for the convenience of any bidder, contractor or other interested party.					
DIST.	COUNTY	ROUTE	POST MILES–TOTAL PROJECT	Sheet No.	Total Sheets
04	Ala	580			

REGISTERED CIVIL ENGINEER — 11/8/11 DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

ARROYO LAS POSITAS BRIDGE (WIDEN)

LOG OF TEST BORINGS 4 OF 4

NOTE: A COPY OF THIS LOG OF TEST BORINGS IS AVAILABLE AT OFFICE OF STRUCTURE MAINTENANCE AND INVESTIGATIONS, SACRAMENTO, CALIFORNIA

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481

BRIDGE No.	Sheet	of
33-0203	15	15

DIST.	COUNTY	ROUTE	POST MILES	SHEET NO.	TOTAL SHEETS
04	ALA	580	39/18.1	212	248

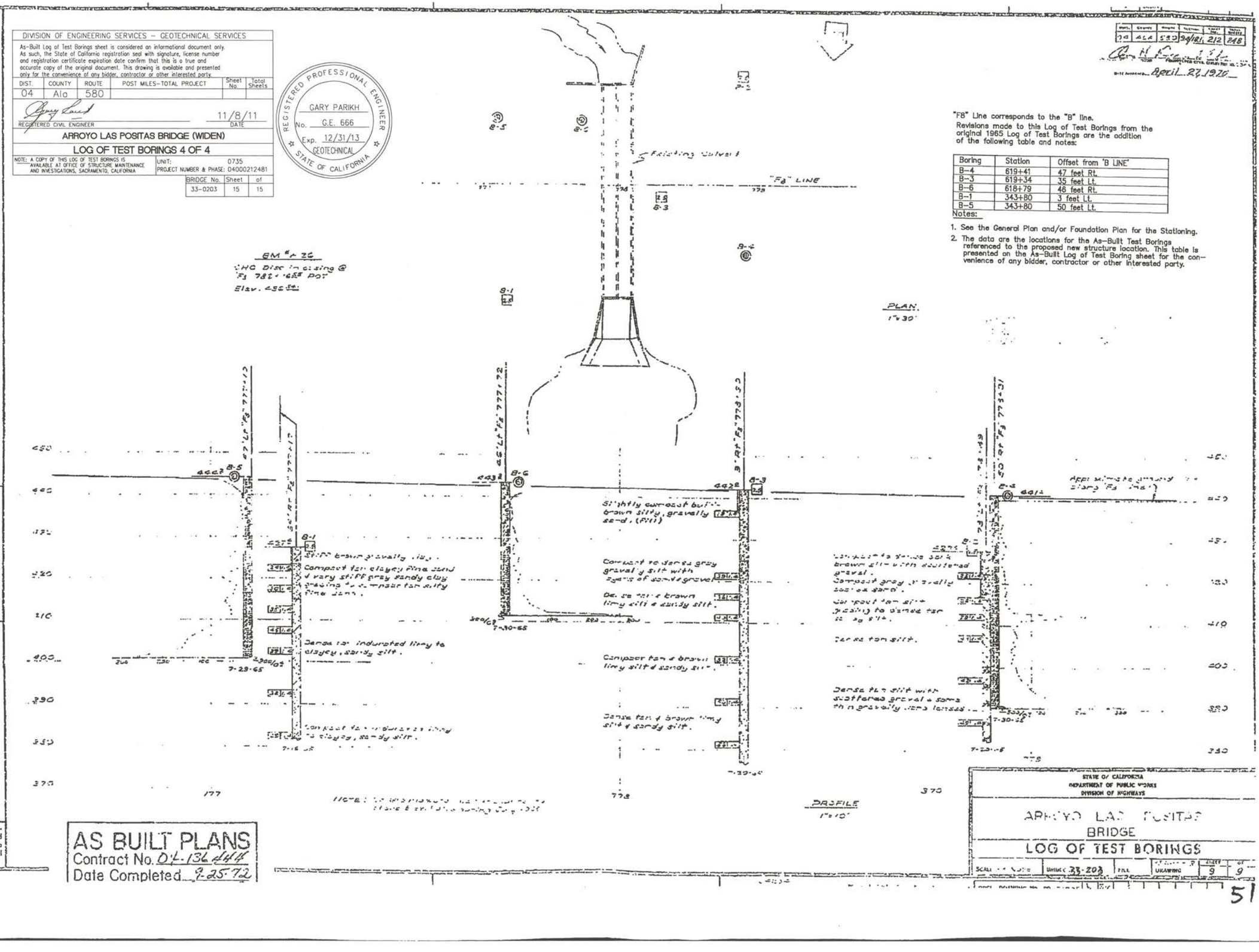
BID ADVERT. April 27, 1970

"F8" Line corresponds to the "B" line.
Revisions made to this Log of Test Borings from the original 1965 Log of Test Borings are the addition of the following table and notes:

Boring	Station	Offset from 'B LINE'
B-4	619+41	47 feet Rt.
B-3	619+34	35 feet Lt.
B-6	618+79	46 feet Rt.
B-1	343+80	3 feet Lt.
B-5	343+80	50 feet Lt.

Notes:

1. See the General Plan and/or Foundation Plan for the Stationing.
2. The data are the locations for the As-Built Test Borings referenced to the proposed new structure location. This table is presented on the As-Built Log of Test Boring sheet for the convenience of any bidder, contractor or other interested party.



LEGEND OF BORING OPERATIONS

LEGEND OF EARTH MATERIALS

NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

AS BUILT PLANS
Contract No. 04-136444
Date Completed 9-25-72

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

ARROYO LAS POSITAS
BRIDGE
LOG OF TEST BORINGS

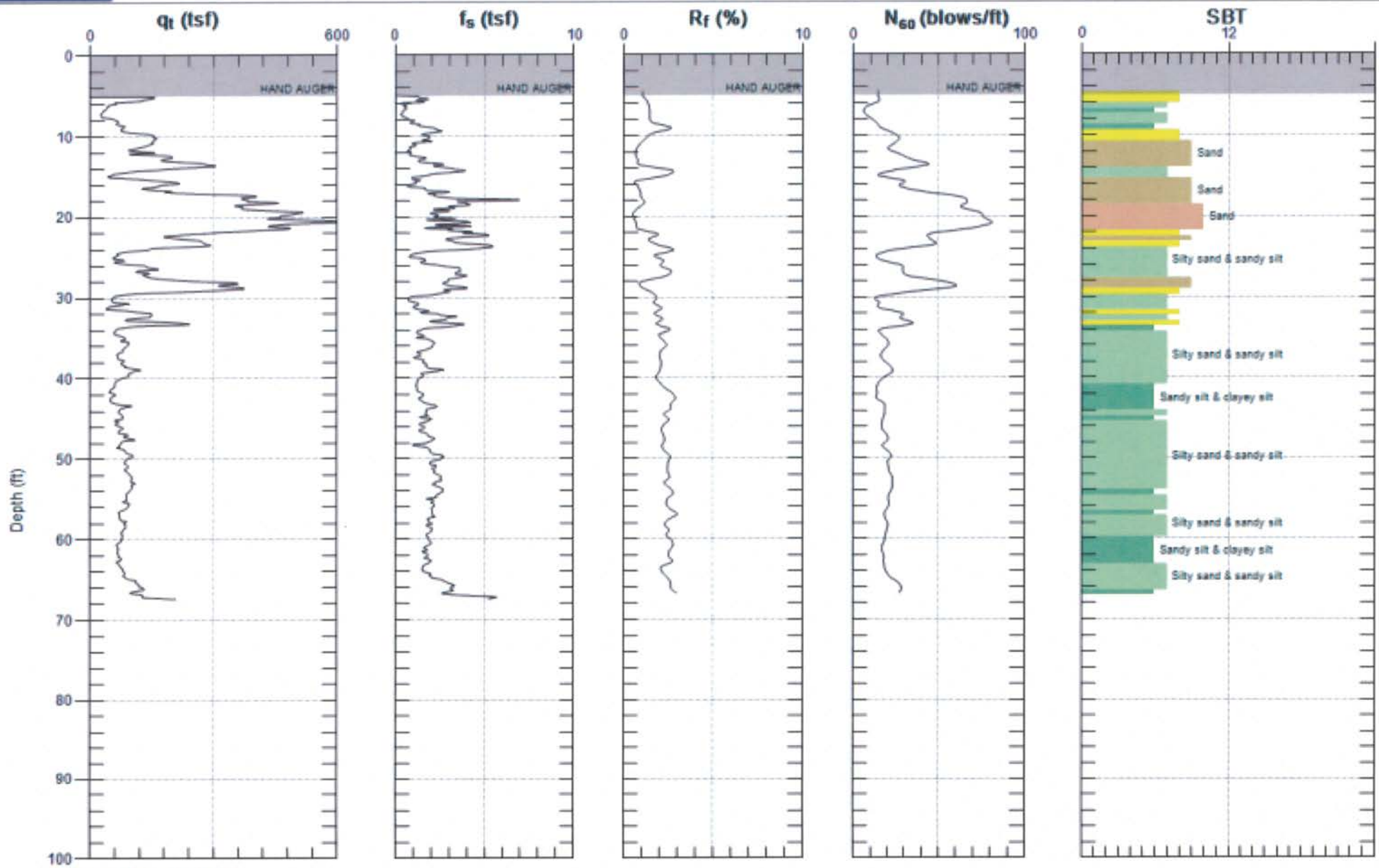
SCALE	UNIT/EC 33-203	FILE	DRAWING	SHEET 9	OF 9

51

PARIKH CONSULTANTS

Site: RTE 580 WB PROJ.
Sounding: CPT-AL2-02

Engineer: G.PARIKH
Date: 12/19/2008 01:59



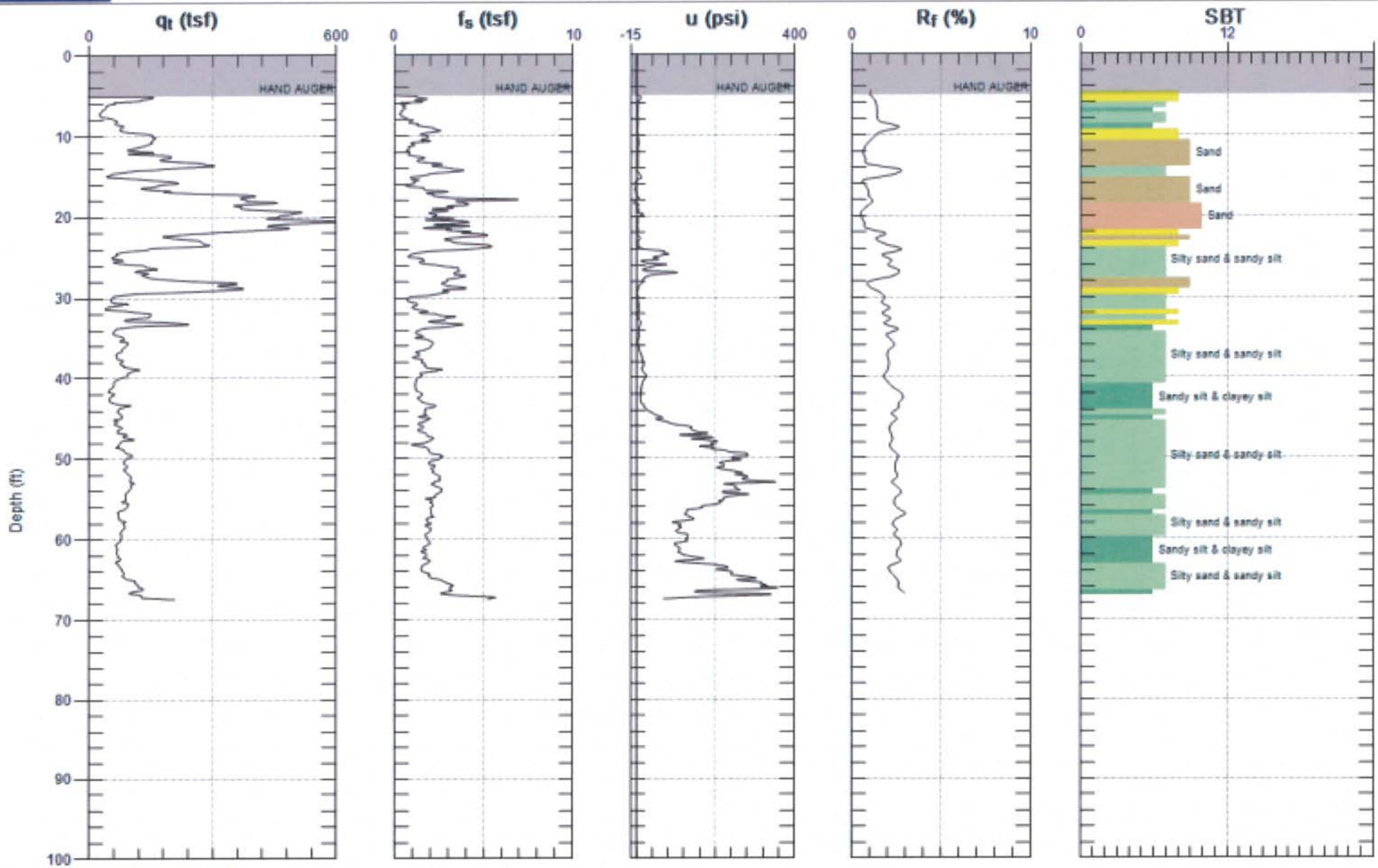
Max. Depth: 67.421 (ft)
Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)

PARIKH CONSULTANTS

Site: RTE 580 WB PROJ.
Sounding: CPT-AL2-02

Engineer: G.PARIKH
Date: 12/19/2008 01:59

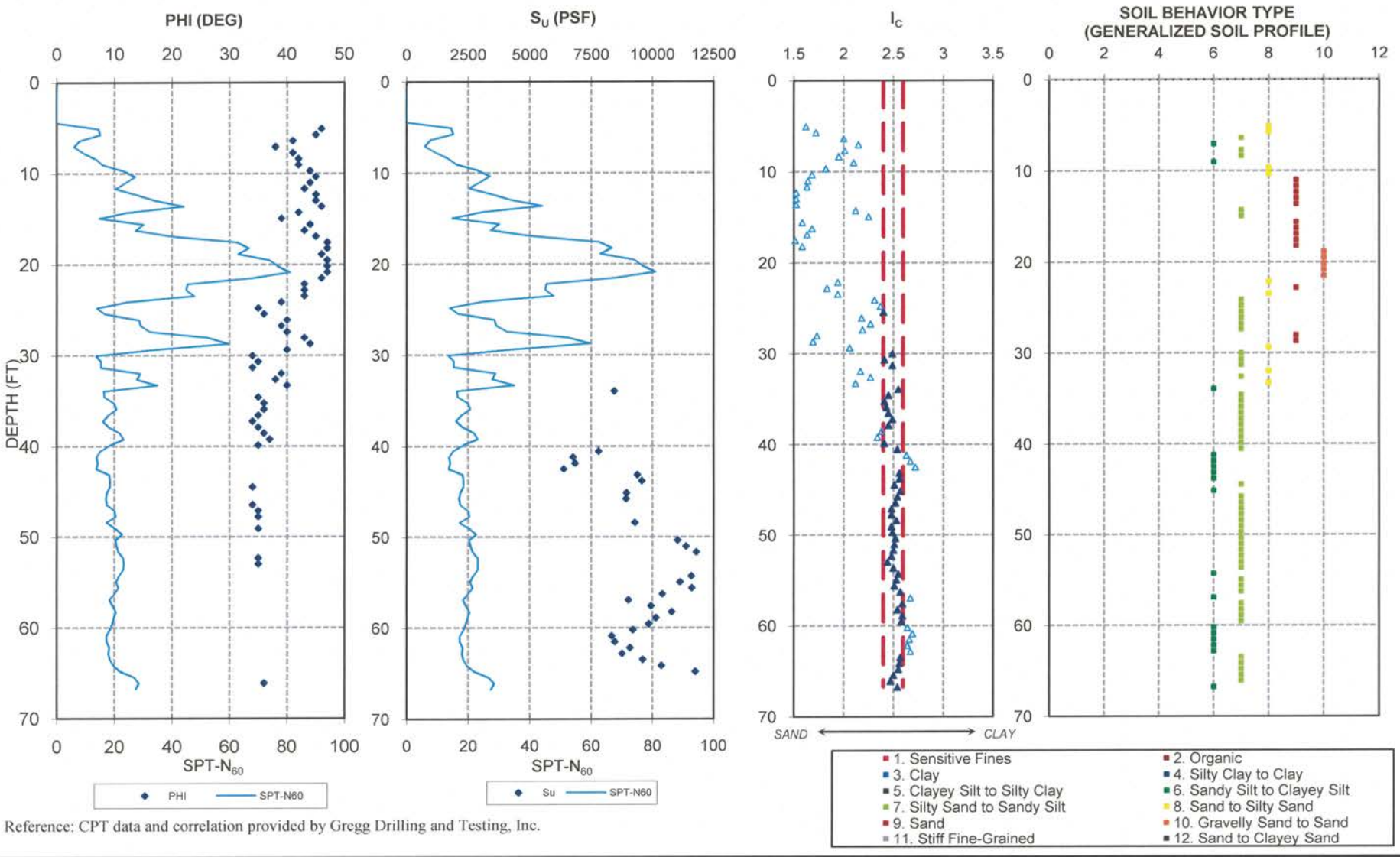


Max. Depth: 67.421 (ft)
Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)

CPT DATA CORRELATION

CPT-09-AL2-02



Reference: CPT data and correlation provided by Gregg Drilling and Testing, Inc.

PARIKH

Practicing in the Geosciences

ARROYO LAS POSITAS BRIDGE-WESTBOUND (WIDENING)
(BRIDGE NO. 33-0203)
LIVERMORE, ALAMEDA COUNTY, CALIFORNIA

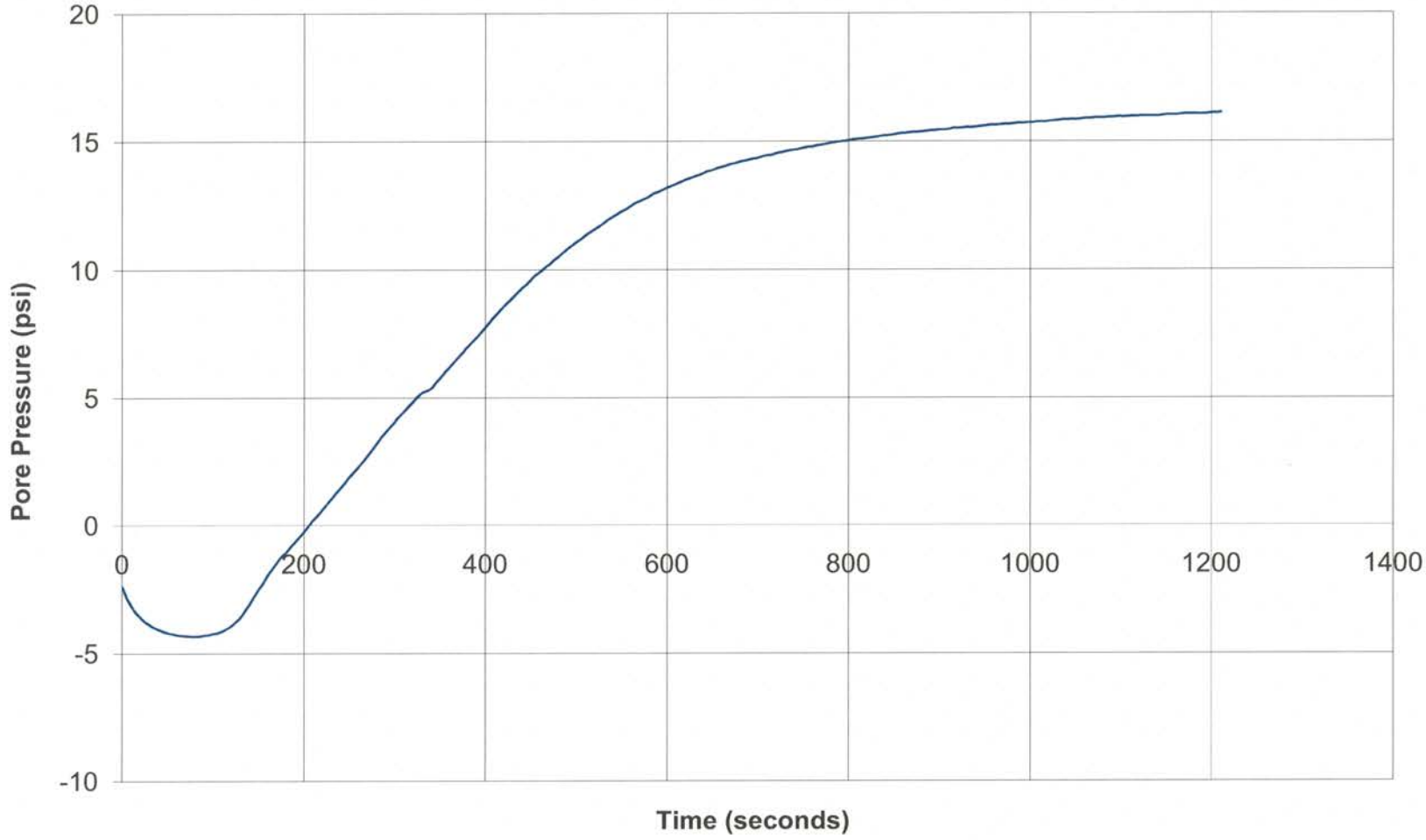
JOB NO.: 208102.AL2

PLATE NO.: 7

GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

Sounding: CPT-AL2-02
Depth: 67.421
Site: RTE 580 WB
Engineer: G.PARIKH



APPENDIX B

APPENDIX B

LABORATORY TESTS

Classification Tests
The field classifications of the samples were visually verified in the laboratory according to the Unified Soil Classification System. The results are presented in "Log of Test Borings", Appendix A.

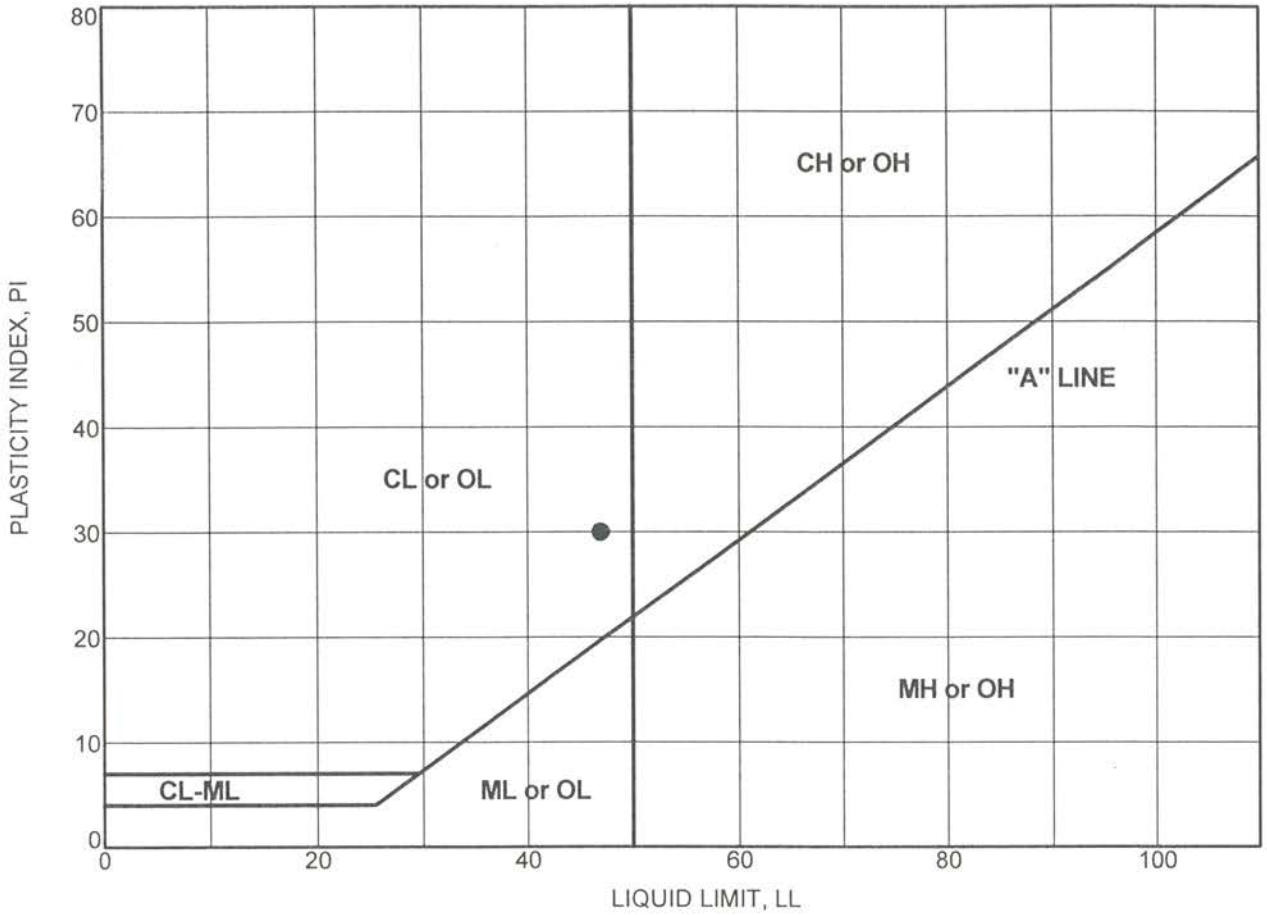
Moisture-Density
The natural moisture contents and dry unit weights were determined for selected undisturbed samples of the soils in general accordance with ASTM Test Method D 2216-92. This information was used to classify and correlate the soils. The results are presented at the appropriate depths In "Log of Test Borings", Appendix A.

Atterberg Limits
The Atterberg Limits were determined for selected samples of the fine-grained materials. These results were used to classify the soils, as well as to obtain an indication of the effective strength characteristics and expansion potential with variations in moisture content. The Atterberg Limits were determined in general accordance with ASTM Test Method D 4318-93. The results of these tests are presented on" Plasticity Chart", Plate No. B-2, Appendix B.

Grain Size Classification
Grain size classification tests (ASTM Test Method D422-63) were performed on selected samples of granular soil to aid in the classification. The results are presented on "Grain Size Distribution Curves", Plate B-3, Appendix B.

Unconfined Compression Tests
Strength tests were performed on selected undisturbed samples using unconfined compression machine. Unconfined compression tests were performed in general accordance with ASTM Test Method D 2166-91. The results are presented in "Log of Test Borings", Appendix A.

Corrosion Tests
Corrosion tests were performed on selected samples to determine the corrosion potential of the soils. The pH and minimum resistively tests were performed according to California Test Method 643. The tests were performed by Sunland Analytical. The test results are presented on Plate B-4A thru Plate B-4C, Appendix B.



PLASTICITY CHART

Boring Number	Sample Number	Depth (feet)	Test Symbol	Moisture Content (%)	LL	PL	PI	Description
A-09-200	MC-2	4.5	●	15	47	17	30	LEAN CLAY (CL)

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS ENGINEERING

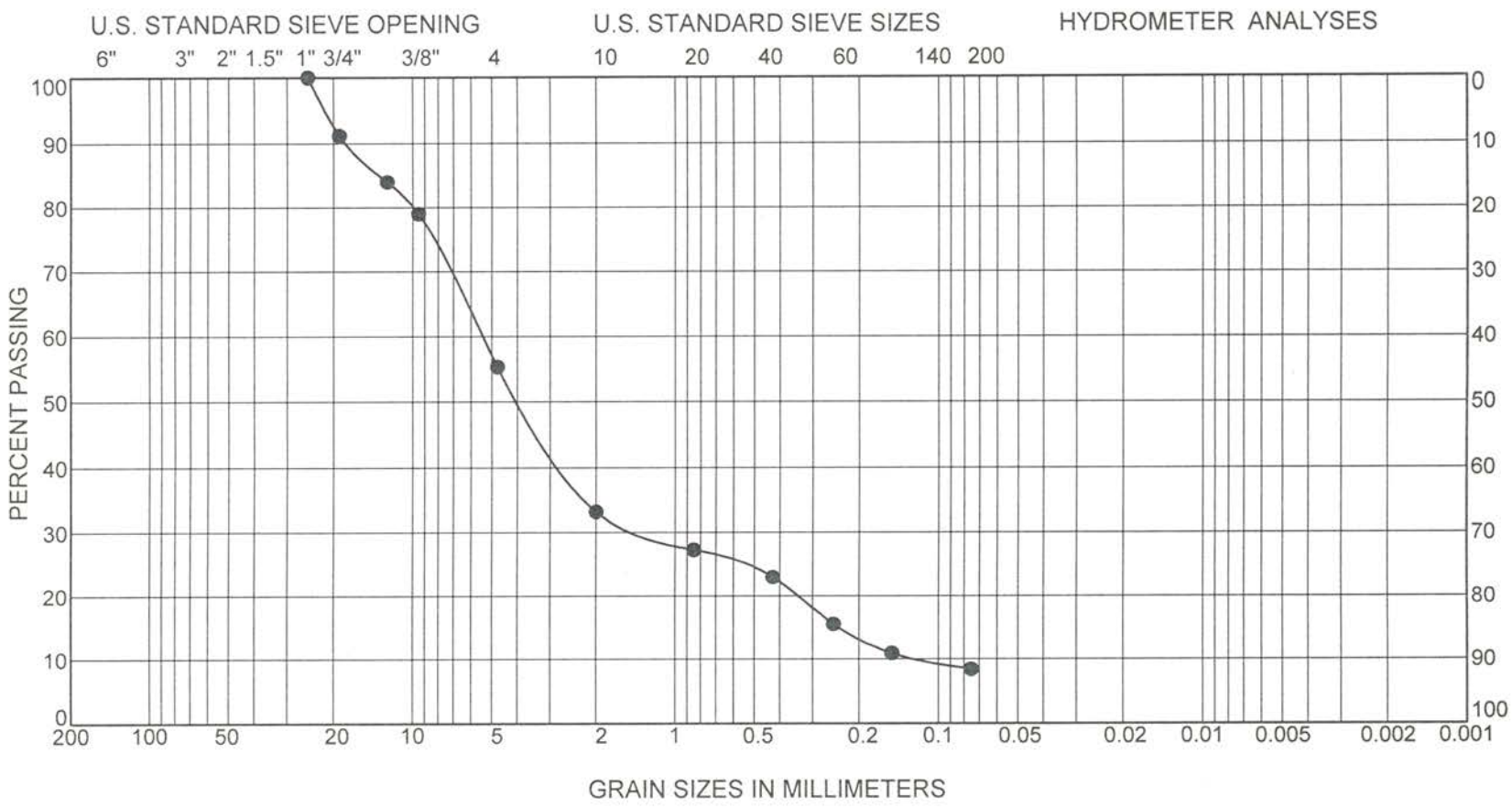
ARROYO LAS POSITAS BRIDGE -WB (WIDENING) (BR. NO.33-0203)
LIVERMORE, ALAMEDA COUNTY, CALIFORNIA

JOB NO: 208102.AL2

PLATE NO: B-2

GRAIN SIZE DISTRIBUTION CURVES

COBBLES	GRAVEL		SAND			SILT AND CLAY
	coarse	fine	coarse	medium	fine	



Boring Number	Sample Number	Depth (feet)	Symbol	LL	PI	Description
A-09-AL2-01	MC-6	24.5	●			WELL-GRADED SAND WITH CLAY AND GRAVEL (SW-SC)

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS ENGINEERING

ARROYO LAS POSITAS BRIDGE -WB (WIDENING) (BR. NO.33-0203)
LIVERMORE, ALAMEDA COUNTY, CALIFORNIA

JOB NO: 208102.AL2

PLATE NO: B-3

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 03/04/2009
Date Submitted 02/25/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.GDR Site ID : A-09-AL2-01 # 2 @4.5'
Thank you for your business.

* For future reference to this analysis please use SUN # 55160-110843.

EVALUATION FOR SOIL CORROSION

Soil pH	7.67		
Minimum Resistivity	1.74 ohm-cm (x1000)		
Chloride	7.4 ppm	00.00074	%
Sulfate	10.2 ppm	00.00102	%

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

PLATE NO.: B-4A

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 03/04/2009
Date Submitted 02/25/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.GDR Site ID : A-09-1L2-01 # 12 @ 54.5'
Thank you for your business.

* For future reference to this analysis please use SUN # 55160-110845.

EVALUATION FOR SOIL CORROSION

Soil pH	8.02		
Minimum Resistivity	1.07 ohm-cm (x1000)		
Chloride	27.6 ppm	00.00276	%
Sulfate	27.8 ppm	00.00278	%

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

PLATE NO.: B-4B

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 03/04/2009
Date Submitted 02/25/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.GDR Site ID : A-09-200 # 1 @ 3'
Thank you for your business.

* For future reference to this analysis please use SUN # 55160-110846.

EVALUATION FOR SOIL CORROSION

Soil pH	7.85		
Minimum Resistivity	1.58 ohm-cm (x1000)		
Chloride	13.5 ppm	00.00135	%
Sulfate	36.2 ppm	00.00362	%

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

RECEIVED
By

PLATE NO.: B-4C

APPENDIX C

APILE Runs – HP 12 x 53 Pile – 70 ton
Arroyo Las Positas Bridge - Westbound (Bridge No. 33-0203)
Job No. 208102.AL2
Pile capacities computed using APILE program – Output follows
(Note: All Pile Capacities are based on API-RP2A Method)
March 23, 2010

Abutment 1 (A-09-200)

Ground Surface Elevation = 438.50
Bottom of Footing = 435.0
Predrill (Fill) Elev. = 430.0
Nominal Compression Load = 200 kips
Reqd. Penetration per APILE output = 32.5 ft
Recommended Penetration = 32.5ft
Reqd. Tip Elevation = 438.5 – 32.5 = 406.0

Abutment 4 (based on A-09-AL2-01)

Ground Surface Elevation = 436.5
Bottom of Footing = 432.5
Predrill (Fill) Elev. = 430.0
Nominal Compression Load = 200 kips
Reqd. Penetration per APILE output = 31.0 ft
Recommended Penetration = 31.0 ft
Reqd. Tip Elevation = 436.5 – 31.0 = 405.5

Bent 2 (based on Boring A-09-200)

Ground Surface Elevation = 423.2
Bottom of Footing = 410.8
No Predrill
Nominal Compression Load = 230 kips
Reqd. Penetration per APILE output = 35.5 ft
Recommended Penetration =35.5 ft
Reqd. Tip Elevation = 423.2 – 35.5 = 387.7 --- Use 387.5 ---- Compression

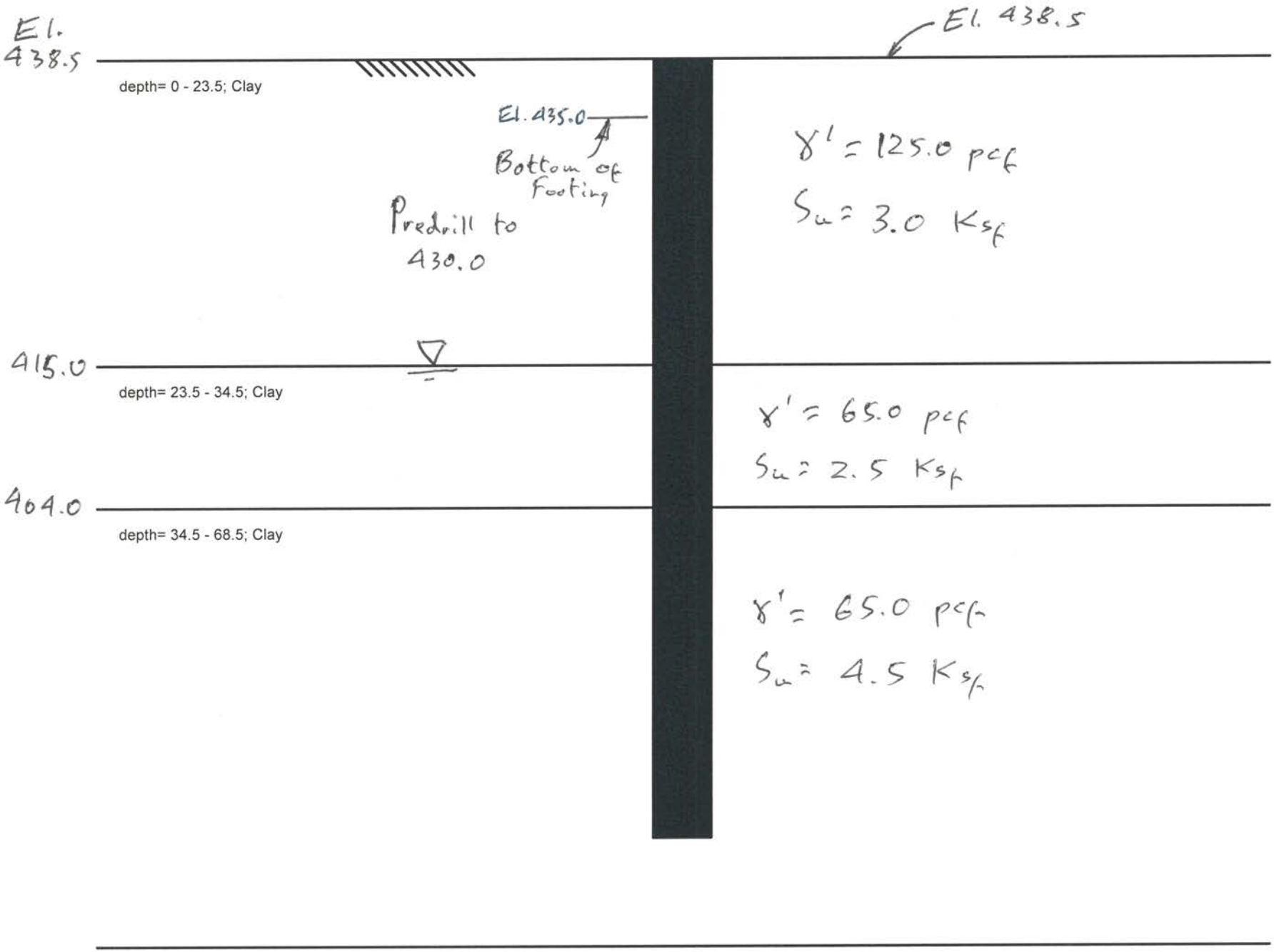
Nominal Tension Load = 15 kips
Equivalent Ultimate Skin Friction = 50/0.5 = 30 kips (using factor of 0.5)
Reqd. Penetration per APILE output = 17.0 ft
Recommended Penetration = 17.0 ft
Reqd. Tip Elevation = 423.2 – 17.0 = 406.2 --- Use 406.0 -- Tension

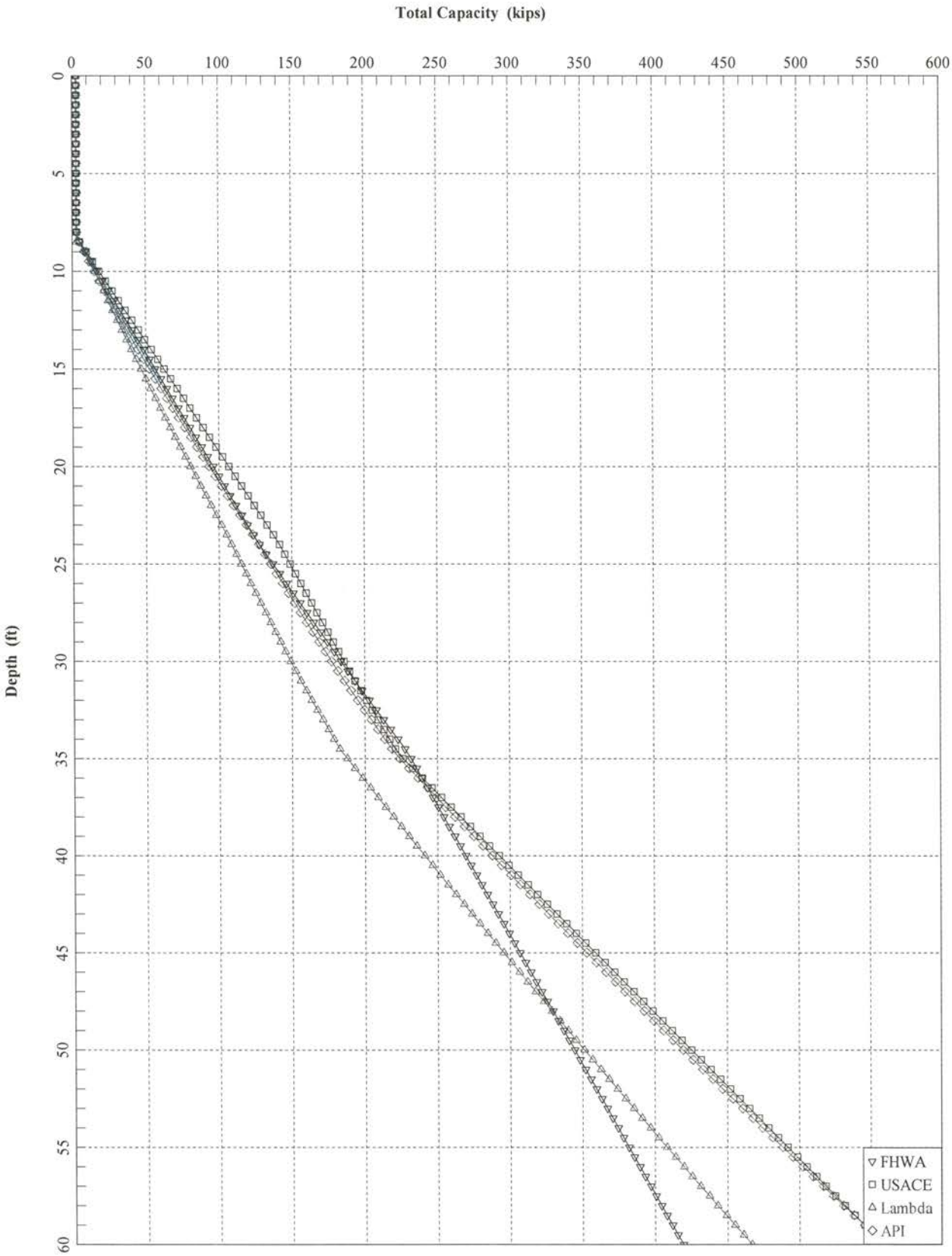
Bent 3(based on boring A-09-200)

Ground Surface Elevation = 422.3
Bottom of Footing = 410.8
No Predrill

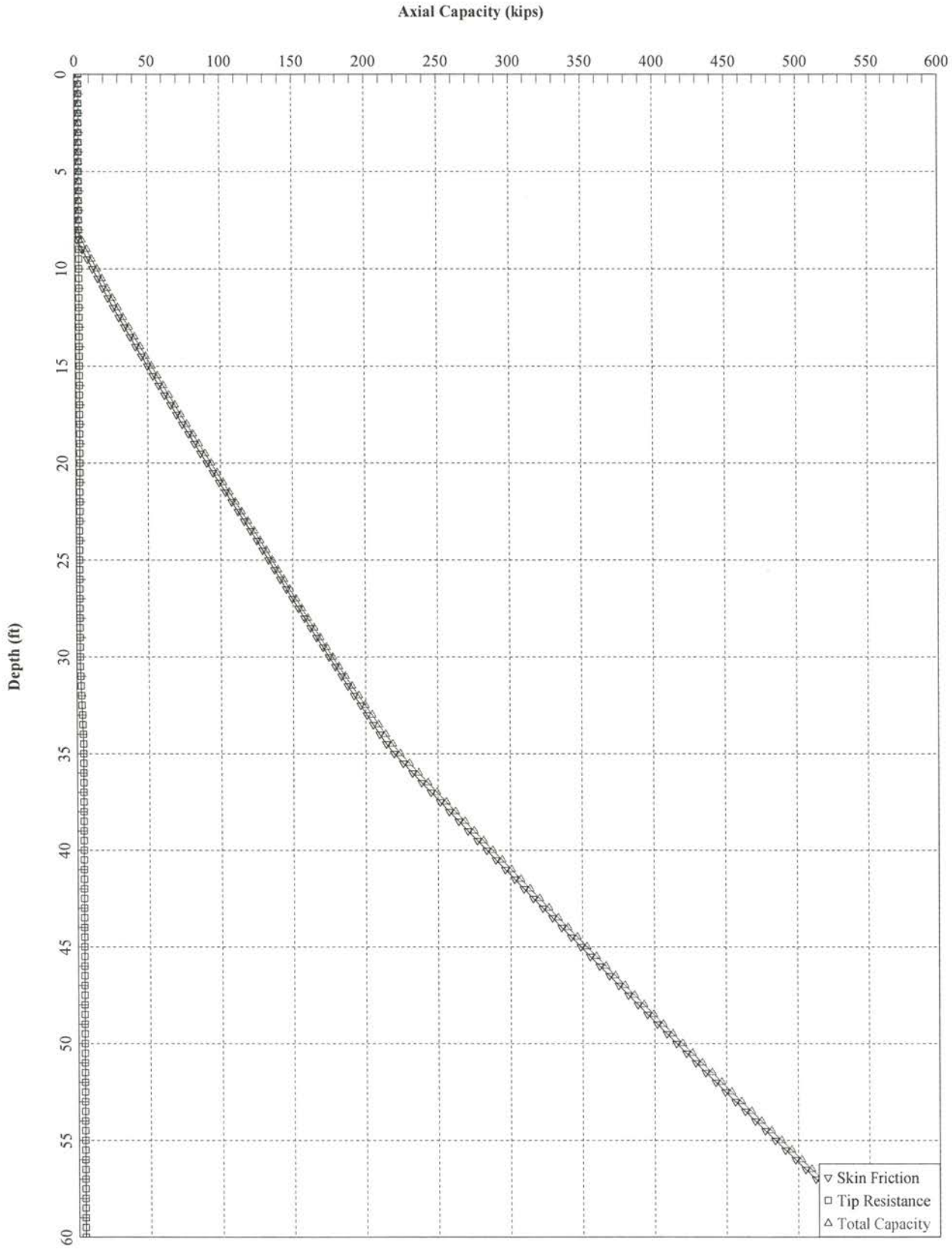
Nominal Compression Load = 230 kips
Reqd. Penetration per APILE output = 35.0 ft
Recommended Penetration = 34.5ft
Reqd. Tip Elevation = 422.3-35.0 = 387.3 -- Use 387.0 --- Compression

Nominal Tension Load = 15 kips
Equivalent Ultimate Skin Friction = 15/0.5 = 30 kips (using factor of o.5)
Reqd. Penetration per APILE output = 16.05 ft
Recommended Penetration = 16.0 ft
Reqd. Tip Elevation = 422.3 – 16.0 = 406.3 --- use 406.0 – Tension


El. 438.5
El. 438.5
depth= 0 - 23.5; Clay
El. 435.0
Bottom of Footing
Predrill to 430.0
γ' = 125.0 pcf
Su = 3.0 Ksf
415.0
depth= 23.5 - 34.5; Clay
γ' = 65.0 pcf
Su = 2.5 Ksf
404.0
depth= 34.5 - 68.5; Clay
γ' = 65.0 pcf
Su = 4.5 Ksf
Abutment 1 - Eastbound
(based on Boring A-09-200)



I-580 - Arroyo Las Positas - Bridge No. 33-0203 - Abutment 1 - Westbound - H Pile HP 12x53



I-580 - Arroyo Las Positas - Bridge No. 33-0203 - Abutment 1 - Westbound - H PIle HP 12x53 - API-R-P2A Method

1

AXIALLY LOADING PILE ANALYSIS PROGRAM - APILEplus
VERSION 4.0 - (C) COPYRIGHT ENSOFT,INC.,1987-2004.

Arroyo Las Positas 33-0203-Abutment 1 Westbound - HP 53x12

DESIGNER : Partha Sircar

DATE : DEcember 16, 2009

PILE PROPERTIES :

PERIMETER OF PILE WITH NONCIRCULAR SECTION	=	70.87 IN.
TIP AREA OF PILE WITH NONCIRCULAR SECTION	=	0.11 SQF
OUTSIDE DIAMETER OF CIRCULAR PILE	=	0.00 IN.
INTERNAL DIAMETER OF CIRCULAR PILE	=	0.00 IN.
PILE LENGTH	=	60.00 FT.
MODULUS OF ELASTICITY	=	0.290E+07 PSI

LENGTH OF SURFACE SECTION WITH ZERO SKIN FRICTION = 8.50 FT.
INCREMENT OF PILE LENGTH USED IN COMPUTATION = 0.50 FT.

SOIL INFORMATIONS :

DEPTH FT.	SOIL TYPE	LATERAL EARTH PRESSURE	EFFECTIVE UNIT WEIGHT LB/CF	FRICTION ANGLE DEGREES	BEARING CAPACITY FACTOR
0.00	CLAY	0.00	125.00	0.00	0.00
23.50	CLAY	0.00	125.00	0.00	0.00
23.50	CLAY	0.00	65.00	0.00	0.00
34.50	CLAY	0.00	65.00	0.00	0.00
34.50	CLAY	0.00	65.00	0.00	0.00
68.50	CLAY	0.00	65.00	0.00	0.00

MAXIMUM UNIT FRICTION KSF	MAXIMUM UNIT BEARING KSF	UNDISTURB SHEAR STRENGTH KSF	REMOLDED SHEAR STRENGTH KSF	BLOW COUNT	UNIT SKIN FRICTION KSF	UNIT END BEARING KSF
3.00	27.00	3.00	1.50	0.00	0.00	0.00
3.00	27.00	3.00	1.50	0.00	0.00	0.00
2.50	22.50	2.50	1.25	0.00	0.00	0.00
2.50	22.50	2.50	1.25	0.00	0.00	0.00
4.50	41.50	4.50	2.25	0.00	0.00	0.00
4.50	41.50	4.50	2.25	0.00	0.00	0.00

1

****

* COMPUTATION RESULT *
****

PILE PENETRATION FT.	FED. HWY. METHOD TOTAL SKIN FRIC KIP	FED. HWY. METHOD END BEARING KIP	FED. HWY. METHOD ULTIM CAPACITY KIP	ARMY CORPS METHOD TOTAL SKIN FRIC KIP	ARMY CORPS METHOD END BEARING KIP	ARMY CORPS METHOD ULTIM CAPACITY KIP	LAMBDA 2 METHOD TOTAL SKIN FRIC KIP	LAMBDA 2 METHOD END BEARING KIP	LAMBDA 2 METHOD ULTIM CAPACITY KIP
0.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
0.5	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
1.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
1.5	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
2.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
2.5	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
3.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
3.5	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
4.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
4.5	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
5.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
5.5	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
6.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
6.5	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
7.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
7.5	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
8.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
8.5	2.0	2.9	4.9	2.2	2.9	5.1	0.0	2.9	2.9
9.0	6.0	2.9	8.9	6.6	2.9	9.6	6.7	2.9	9.6
9.5	9.9	2.9	12.8	11.1	2.9	14.0	9.6	2.9	12.5
10.0	13.9	2.9	16.8	15.5	2.9	18.4	12.6	2.9	15.5
10.5	17.9	2.9	20.8	19.9	2.9	22.8	15.6	2.9	18.5
11.0	21.8	2.9	24.8	24.4	2.9	27.3	18.7	2.9	21.6
11.5	25.8	2.9	28.7	28.8	2.9	31.7	21.7	2.9	24.6
12.0	29.8	2.9	32.7	33.2	2.9	36.1	24.8	2.9	27.7
12.5	33.8	2.9	36.7	37.6	2.9	40.6	27.9	2.9	30.8
13.0	37.7	2.9	40.6	42.1	2.9	45.0	31.1	2.9	34.0
13.5	41.7	2.9	44.6	46.5	2.9	49.4	34.2	2.9	37.1
14.0	45.7	2.9	48.6	50.9	2.9	53.8	37.4	2.9	40.3
14.5	49.7	2.9	52.6	55.4	2.9	58.3	40.6	2.9	43.5
15.0	53.6	2.9	56.5	59.8	2.9	62.7	43.9	2.9	46.8
15.5	57.6	2.9	60.5	64.2	2.9	67.1	47.1	2.9	50.0
16.0	61.6	2.9	64.5	68.7	2.9	71.6	50.4	2.9	53.3
16.5	65.5	2.9	68.4	73.1	2.9	76.0	53.8	2.9	56.7
17.0	69.5	2.9	72.4	77.5	2.9	80.4	57.1	2.9	60.0
17.5	73.5	2.9	76.4	81.9	2.9	84.8	60.5	2.9	63.4
18.0	77.5	2.9	80.4	86.4	2.9	89.3	63.9	2.9	66.8
18.5	81.4	2.9	84.3	90.8	2.9	93.7	67.3	2.9	70.2
19.0	85.4	2.9	88.3	95.2	2.9	98.1	70.7	2.9	73.7
19.5	89.4	2.9	92.3	99.7	2.9	102.6	74.2	2.9	77.1
20.0	93.3	2.9	96.2	104.1	2.9	107.0	77.7	2.9	80.6
20.5	97.3	2.8	100.1	108.5	2.8	111.3	81.2	2.8	84.1
21.0	101.3	2.7	104.0	112.9	2.7	115.7	84.8	2.7	87.5
21.5	105.3	2.7	107.9	117.4	2.7	120.1	88.4	2.7	91.1
22.0	109.2	2.6	111.8	121.8	2.6	124.4	92.0	2.6	94.6
22.5	113.2	2.6	115.8	126.2	2.6	128.8	95.6	2.6	98.2
23.0	117.2	2.5	119.7	130.7	2.5	133.2	99.3	2.5	101.8
23.5	121.1	2.4	123.6	135.1	2.4	137.5	103.0	2.4	105.4
24.0	125.5	2.4	127.9	139.2	2.4	141.6	106.2	2.4	108.7
24.5	130.1	2.4	132.5	142.8	2.4	145.3	109.5	2.4	112.0
25.0	134.8	2.4	137.2	146.5	2.4	149.0	112.9	2.4	115.3

25.5	139.5	2.4	141.9	150.2	2.4	152.7	116.2	2.4	118.6
26.0	144.1	2.4	146.5	153.9	2.4	156.3	119.5	2.4	121.9
26.5	148.8	2.4	151.2	157.6	2.4	160.0	122.9	2.4	125.3
27.0	153.4	2.4	155.9	161.3	2.4	163.7	126.3	2.4	128.7
27.5	158.1	2.4	160.5	165.0	2.4	167.4	129.6	2.4	132.1
28.0	162.8	2.4	165.2	168.7	2.4	171.1	133.0	2.4	135.5
28.5	167.4	2.4	169.8	172.4	2.4	174.8	136.4	2.4	138.9
29.0	172.1	2.4	174.5	176.1	2.4	178.5	139.9	2.4	142.3
29.5	176.7	2.4	179.2	179.8	2.4	182.2	143.3	2.4	145.7
30.0	181.4	2.4	183.8	183.4	2.4	185.9	146.7	2.4	149.2
30.5	186.1	2.4	188.5	187.1	2.4	189.6	150.2	2.4	152.6
31.0	190.7	2.6	193.3	190.8	2.6	193.4	153.7	2.6	156.2
31.5	195.4	2.8	198.2	194.5	2.8	197.3	157.2	2.8	160.0
32.0	200.1	3.1	203.1	198.2	3.1	201.3	160.7	3.1	163.7
32.5	204.7	3.3	208.0	201.9	3.3	205.2	164.2	3.3	167.5
33.0	209.4	3.6	213.0	205.6	3.6	209.2	167.7	3.6	171.3
33.5	214.0	3.8	217.9	209.3	3.8	213.1	171.3	3.8	175.1
34.0	218.7	4.1	222.8	213.0	4.1	217.1	174.8	4.1	178.9
34.5	223.4	4.4	227.7	216.7	4.4	221.0	178.4	4.4	182.8
35.0	227.6	4.4	231.9	221.8	4.4	226.2	183.6	4.4	188.0
35.5	231.3	4.4	235.7	228.5	4.4	232.8	188.9	4.4	193.2
36.0	235.1	4.4	239.4	235.1	4.4	239.5	194.1	4.4	198.5
36.5	238.8	4.4	243.2	241.8	4.4	246.1	199.4	4.4	203.8
37.0	242.6	4.4	246.9	248.4	4.4	252.8	204.7	4.4	209.1
37.5	246.3	4.4	250.7	255.1	4.4	259.4	210.0	4.4	214.4
38.0	250.1	4.4	254.5	261.7	4.4	266.1	215.3	4.4	219.7
38.5	253.9	4.4	258.2	268.3	4.4	272.7	220.7	4.4	225.0
39.0	257.6	4.4	262.0	275.0	4.4	279.3	226.0	4.4	230.4
39.5	261.4	4.4	265.7	281.6	4.4	286.0	231.4	4.4	235.7
40.0	265.1	4.4	269.5	288.3	4.4	292.6	236.7	4.4	241.1
40.5	268.9	4.4	273.2	294.9	4.4	299.3	242.1	4.4	246.5
41.0	272.6	4.4	277.0	301.6	4.4	305.9	247.5	4.4	251.9
41.5	276.4	4.4	280.7	308.2	4.4	312.6	252.9	4.4	257.3
42.0	280.1	4.4	284.5	314.9	4.4	319.2	258.4	4.4	262.7
42.5	283.9	4.4	288.3	321.5	4.4	325.9	263.8	4.4	268.2
43.0	287.6	4.4	292.0	328.1	4.4	332.5	269.3	4.4	273.6
43.5	291.4	4.4	295.8	334.8	4.4	339.1	274.7	4.4	279.1
44.0	295.2	4.4	299.5	341.4	4.4	345.8	280.2	4.4	284.6
44.5	298.9	4.4	303.3	348.1	4.4	352.4	285.7	4.4	290.1
45.0	302.7	4.4	307.0	354.7	4.4	359.1	291.2	4.4	295.6
45.5	306.4	4.4	310.8	361.4	4.4	365.7	296.7	4.4	301.1
46.0	310.2	4.4	314.5	368.0	4.4	372.4	302.3	4.4	306.6
46.5	313.9	4.4	318.3	374.7	4.4	379.0	307.8	4.4	312.2
47.0	317.7	4.4	322.0	381.3	4.4	385.7	313.4	4.4	317.7
47.5	321.4	4.4	325.8	387.9	4.4	392.3	318.9	4.4	323.3
48.0	325.2	4.4	329.6	394.6	4.4	398.9	324.5	4.4	328.9
48.5	328.9	4.4	333.3	401.2	4.4	405.6	330.1	4.4	334.5
49.0	332.7	4.4	337.1	407.9	4.4	412.2	335.7	4.4	340.1
49.5	336.5	4.4	340.8	414.5	4.4	418.9	341.4	4.4	345.7
50.0	340.2	4.4	344.6	421.2	4.4	425.5	347.0	4.4	351.4
50.5	344.0	4.4	348.3	427.8	4.4	432.2	352.7	4.4	357.0
51.0	347.7	4.4	352.1	434.4	4.4	438.8	358.3	4.4	362.7
51.5	351.5	4.4	355.8	441.1	4.4	445.4	364.0	4.4	368.4
52.0	355.2	4.4	359.6	447.7	4.4	452.1	369.7	4.4	374.1
52.5	359.0	4.4	363.3	454.4	4.4	458.7	375.4	4.4	379.8
53.0	362.7	4.4	367.1	461.0	4.4	465.4	381.1	4.4	385.5
53.5	366.5	4.4	370.9	467.7	4.4	472.0	386.9	4.4	391.2
54.0	370.3	4.4	374.6	474.3	4.4	478.7	392.6	4.4	397.0
54.5	374.0	4.4	378.4	481.0	4.4	485.3	398.4	4.4	402.7
55.0	377.8	4.4	382.1	487.6	4.4	492.0	404.1	4.4	408.5
55.5	381.5	4.4	385.9	494.2	4.4	498.6	409.9	4.4	414.3
56.0	385.3	4.4	389.6	500.9	4.4	505.2	415.7	4.4	420.1
56.5	389.0	4.4	393.4	507.5	4.4	511.9	421.5	4.4	425.9
57.0	392.8	4.4	397.1	514.2	4.4	518.5	427.4	4.4	431.7

57.5	396.5	4.4	400.9	520.8	4.4	525.2	433.2	4.4	437.6
58.0	400.3	4.4	404.6	527.5	4.4	531.8	439.1	4.4	443.4
58.5	404.0	4.4	408.4	534.1	4.4	538.5	444.9	4.4	449.3
59.0	407.8	4.4	412.2	540.8	4.4	545.1	450.8	4.4	455.2
59.5	411.6	4.4	415.9	547.4	4.4	551.8	456.7	4.4	461.1
60.0	415.3	4.4	419.7	554.0	4.4	558.4	462.6	4.4	467.0

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* API RP-2A (1994) *
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PILE PENETRATION FT.	TOTAL SKIN FRICTION KIP	END BEARING KIP	ULTIMATE CAPACITY KIP
0.00	0.0	2.9	2.9
0.50	0.0	2.9	2.9
1.00	0.0	2.9	2.9
1.50	0.0	2.9	2.9
2.00	0.0	2.9	2.9
2.50	0.0	2.9	2.9
3.00	0.0	2.9	2.9
3.50	0.0	2.9	2.9
4.00	0.0	2.9	2.9
4.50	0.0	2.9	2.9
5.00	0.0	2.9	2.9
5.50	0.0	2.9	2.9
6.00	0.0	2.9	2.9
6.50	0.0	2.9	2.9
7.00	0.0	2.9	2.9
7.50	0.0	2.9	2.9
8.00	0.0	2.9	2.9
8.50	1.7	2.9	4.6
9.00	5.2	2.9	8.1
9.50	8.6	2.9	11.5
10.00	12.2	2.9	15.1
10.50	15.8	2.9	18.7
11.00	19.4	2.9	22.3
11.50	23.0	2.9	26.0
12.00	26.7	2.9	29.7
12.50	30.5	2.9	33.4
13.00	34.3	2.9	37.2
13.50	38.1	2.9	41.0
14.00	41.9	2.9	44.9
14.50	45.8	2.9	48.7
15.00	49.8	2.9	52.7
15.50	53.7	2.9	56.6
16.00	57.7	2.9	60.6
16.50	61.7	2.9	64.6
17.00	65.8	2.9	68.7
17.50	69.8	2.9	72.7
18.00	73.9	2.9	76.9
18.50	78.1	2.9	81.0
19.00	82.2	2.9	85.2
19.50	86.4	2.9	89.3
20.00	90.7	2.9	93.5
20.50	94.9	2.8	97.7
21.00	99.2	2.7	101.9
21.50	103.5	2.7	106.2
22.00	107.8	2.6	110.4
22.50	112.1	2.6	114.7
23.00	116.5	2.5	119.0
23.50	120.9	2.4	123.3

24.00	125.1	2.4	127.5
24.50	129.2	2.4	131.6
25.00	133.2	2.4	135.6
25.50	137.3	2.4	139.7
26.00	141.4	2.4	143.8
26.50	145.5	2.4	147.9
27.00	149.7	2.4	152.1
27.50	153.8	2.4	156.2
28.00	158.0	2.4	160.4
28.50	162.2	2.4	164.6
29.00	166.4	2.4	168.9
29.50	170.7	2.4	173.1
30.00	174.9	2.4	177.4
30.50	179.2	2.4	181.7
31.00	183.5	2.6	186.1
31.50	187.9	2.8	190.7
32.00	192.2	3.1	195.3
32.50	196.6	3.3	199.9
33.00	201.0	3.6	204.6
33.50	205.4	3.8	209.2
34.00	209.8	4.1	213.9
34.50	214.3	4.4	218.6
35.00	219.7	4.4	224.0
35.50	226.0	4.4	230.4
36.00	232.3	4.4	236.7
36.50	238.7	4.4	243.1
37.00	245.1	4.4	249.4
37.50	251.5	4.4	255.8
38.00	257.8	4.4	262.2
38.50	264.3	4.4	268.6
39.00	270.7	4.4	275.0
39.50	277.1	4.4	281.5
40.00	283.6	4.4	287.9
40.50	290.0	4.4	294.4
41.00	296.5	4.4	300.9
41.50	303.0	4.4	307.3
42.00	309.5	4.4	313.8
42.50	316.0	4.4	320.4
43.00	322.5	4.4	326.9
43.50	329.1	4.4	333.4
44.00	335.6	4.4	340.0
44.50	342.2	4.4	346.5
45.00	348.8	4.4	353.1
45.50	355.3	4.4	359.7
46.00	361.9	4.4	366.3
46.50	368.6	4.4	372.9
47.00	375.2	4.4	379.5
47.50	381.8	4.4	386.2
48.00	388.5	4.4	392.8
48.50	395.2	4.4	399.5
49.00	401.9	4.4	406.2
49.50	408.6	4.4	412.9
50.00	415.3	4.4	419.7
50.50	422.1	4.4	426.5
51.00	428.9	4.4	433.3
51.50	435.7	4.4	440.1
52.00	442.6	4.4	446.9
52.50	449.4	4.4	453.8
53.00	456.3	4.4	460.7
53.50	463.2	4.4	467.6
54.00	470.2	4.4	474.5
54.50	477.1	4.4	481.5
55.00	484.1	4.4	488.5
55.50	491.1	4.4	495.5

56.00	498.1	4.4	502.5
56.50	505.2	4.4	509.5
57.00	512.3	4.4	516.6
57.50	519.4	4.4	523.7
58.00	526.5	4.4	530.8
58.50	533.6	4.4	538.0
59.00	540.8	4.4	545.1
59.50	548.0	4.4	552.3
60.00	555.2	4.4	559.5

AN ASTERISK WILL BE PLACED IN THE END-BEARING COLUMN
IF THE TIP RESISTANCE IS CONTROLLED BY THE FRICTION
OF SOIL PLUG INSIDE AN OPEN-ENDED PIPE PILE.

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**************************************************
* COMPUTE LOAD-DISTRIBUTION AND LOAD-SETTLEMENT *
* CURVES FOR AXIAL LOADING                      *
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T-Z CURVE NO.	NO. OF POINTS	DEPTH TO CURVE FT.	LOAD TRANSFER PSI	PILE MOVEMENT IN.
1	10	0.0000E+00		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.3609E-01
			0.0000E+00	0.6993E-01
			0.0000E+00	0.1286E+00
			0.0000E+00	0.1805E+00
			0.0000E+00	0.2256E+00
			0.0000E+00	0.4512E+00
			0.0000E+00	0.6768E+00
			0.0000E+00	0.1128E+01
			0.0000E+00	0.4512E+01
2	10	0.1178E+02		
			0.0000E+00	0.0000E+00
			0.2614E+01	0.3609E-01
			0.4356E+01	0.6993E-01
			0.6535E+01	0.1286E+00
			0.7842E+01	0.1805E+00
			0.8713E+01	0.2256E+00
			0.7842E+01	0.4512E+00
			0.7842E+01	0.6768E+00
			0.7842E+01	0.1128E+01
			0.7842E+01	0.4512E+01
3	10	0.2346E+02		
			0.0000E+00	0.0000E+00
			0.3100E+01	0.3609E-01
			0.5167E+01	0.6993E-01
			0.7751E+01	0.1286E+00
			0.9301E+01	0.1805E+00
			0.1033E+02	0.2256E+00
			0.9301E+01	0.4512E+00
			0.9301E+01	0.6768E+00
			0.9301E+01	0.1128E+01
			0.9301E+01	0.4512E+01
4	10	0.2350E+02		
			0.0000E+00	0.0000E+00
			0.2973E+01	0.3609E-01
			0.4956E+01	0.6993E-01
			0.7434E+01	0.1286E+00

			0.8920E+01	0.1805E+00
			0.9912E+01	0.2256E+00
			0.8920E+01	0.4512E+00
			0.8920E+01	0.6768E+00
			0.8920E+01	0.1128E+01
			0.8920E+01	0.4512E+01
5	10	0.2902E+02		
			0.0000E+00	0.0000E+00
			0.2997E+01	0.3609E-01
			0.4995E+01	0.6993E-01
			0.7493E+01	0.1286E+00
			0.8991E+01	0.1805E+00
			0.9990E+01	0.2256E+00
			0.8991E+01	0.4512E+00
			0.8991E+01	0.6768E+00
			0.8991E+01	0.1128E+01
			0.8991E+01	0.4512E+01
6	10	0.3446E+02		
			0.0000E+00	0.0000E+00
			0.3141E+01	0.3609E-01
			0.5234E+01	0.6993E-01
			0.7852E+01	0.1286E+00
			0.9422E+01	0.1805E+00
			0.1047E+02	0.2256E+00
			0.9422E+01	0.4512E+00
			0.9422E+01	0.6768E+00
			0.9422E+01	0.1128E+01
			0.9422E+01	0.4512E+01
7	10	0.3450E+02		
			0.0000E+00	0.0000E+00
			0.3803E+01	0.3609E-01
			0.6339E+01	0.6993E-01
			0.9508E+01	0.1286E+00
			0.1141E+02	0.1805E+00
			0.1268E+02	0.2256E+00
			0.1141E+02	0.4512E+00
			0.1141E+02	0.6768E+00
			0.1141E+02	0.1128E+01
			0.1141E+02	0.4512E+01
8	10	0.5152E+02		
			0.0000E+00	0.0000E+00
			0.4828E+01	0.3609E-01
			0.8047E+01	0.6993E-01
			0.1207E+02	0.1286E+00
			0.1448E+02	0.1805E+00
			0.1609E+02	0.2256E+00
			0.1448E+02	0.4512E+00
			0.1448E+02	0.6768E+00
			0.1448E+02	0.1128E+01
			0.1448E+02	0.4512E+01
9	10	0.6846E+02		
			0.0000E+00	0.0000E+00
			0.5084E+01	0.3609E-01
			0.8474E+01	0.6993E-01
			0.1271E+02	0.1286E+00
			0.1525E+02	0.1805E+00
			0.1695E+02	0.2256E+00
			0.1525E+02	0.4512E+00
			0.1525E+02	0.6768E+00
			0.1525E+02	0.1128E+01
			0.1525E+02	0.4512E+01

TIP LOAD KIP	TIP MOVEMENT IN.
0.0000E+00	0.0000E+00
0.2725E+00	0.1128E-01
0.5449E+00	0.2256E-01
0.1090E+01	0.4512E-01
0.2180E+01	0.2933E+00
0.3270E+01	0.9475E+00
0.3923E+01	0.1647E+01
0.4359E+01	0.2256E+01
0.4359E+01	0.3384E+01
0.4359E+01	0.4512E+01

LOAD VERSUS SETTLEMENT CURVE
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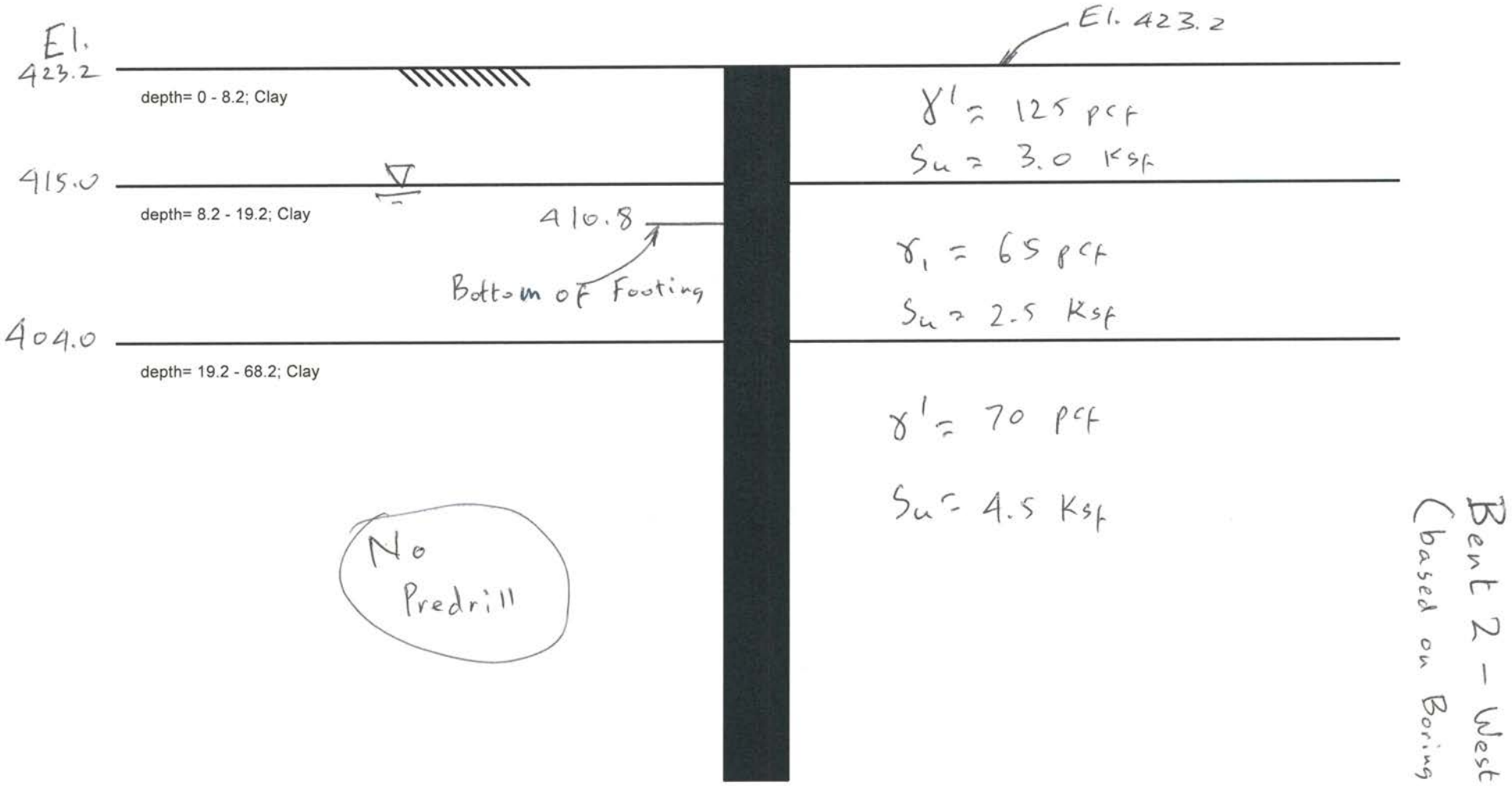
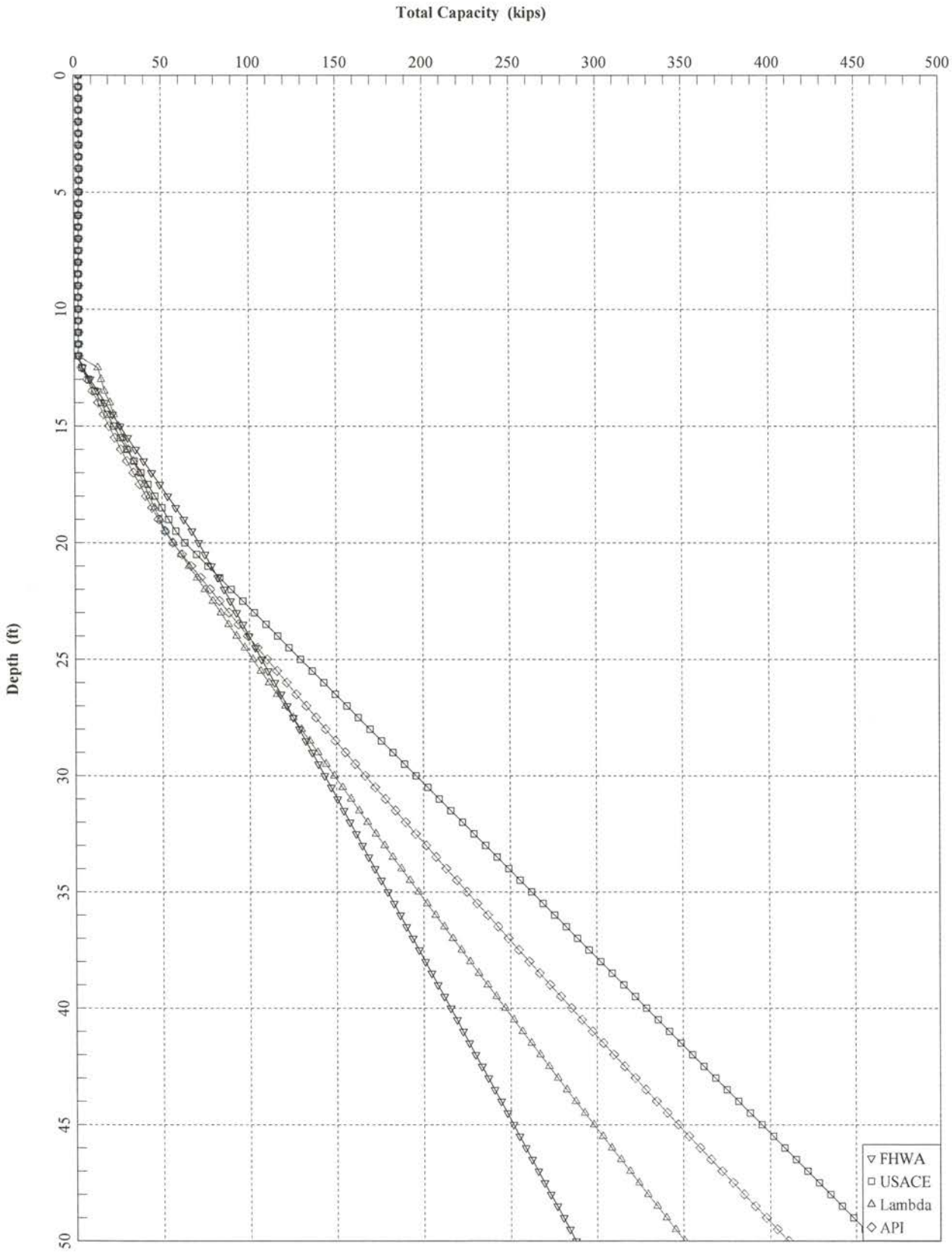
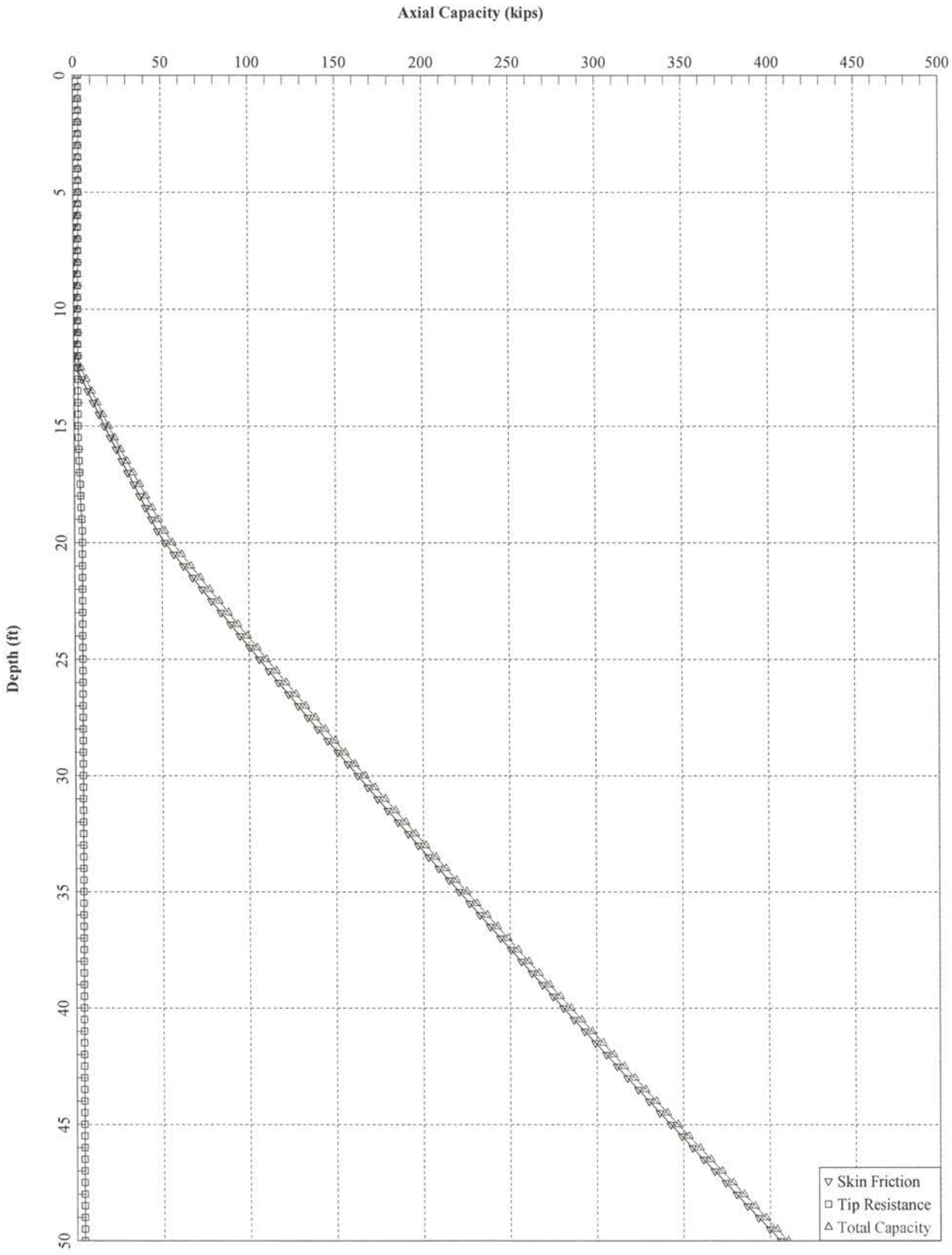
TOP LOAD KIP	TOP MOVEMENT IN.	TIP LOAD KIP	TIP MOVEMENT IN.
0.7454E+02	0.2827E+00	0.2416E-02	0.1000E-03
0.2063E+03	0.1170E+01	0.2416E-01	0.1000E-02
0.3048E+03	0.2201E+01	0.1208E+00	0.5000E-02
0.3513E+03	0.2767E+01	0.2416E+00	0.1000E-01
0.4547E+03	0.4214E+01	0.1111E+01	0.5000E-01
0.4907E+03	0.4796E+01	0.1331E+01	0.1000E+00
0.5051E+03	0.5430E+01	0.2524E+01	0.5000E+00
0.5059E+03	0.5942E+01	0.3319E+01	0.1000E+01
0.5068E+03	0.6956E+01	0.4176E+01	0.2000E+01



Bent 2 - Westbound
(based on Boring A-09-200)



I-580 - Arroyo Las Positas - Bridge No. 33-0203 - Bent 2 - Westbound - H Pile HP 12x53



I-580 - Arroyo Las Positas - Bridge No. 33-0203 - Bent 2 - Westbound - H PIle HP 12x53 - API-R-P2A Method

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AXIALLY LOADING PILE ANALYSIS PROGRAM - APILEplus
VERSION 4.0 - (C) COPYRIGHT ENSOFT,INC.,1987-2004.

Arroyo Las Positas 33-0203-Bent 2 Westbound - HP 53x12

DESIGNER :

DATE :

PILE PROPERTIES :

PERIMETER OF PILE WITH NONCIRCULAR SECTION= 70.87 IN.
TIP AREA OF PILE WITH NONCIRCULAR SECTION = 0.11 SQF
OUTSIDE DIAMETER OF CIRCULAR PILE = 0.00 IN.
INTERNAL DIAMETER OF CIRCULAR PILE = 0.00 IN.
PILE LENGTH = 50.00 FT.
MODULUS OF ELASTICITY = 0.290E+08 PSI

LENGTH OF SURFACE SECTION WITH ZERO SKIN FRICTION = 12.40 FT.
INCREMENT OF PILE LENGTH USED IN COMPUTATION = 0.50 FT.

SOIL INFORMATIONS :

DEPTH FT.	SOIL TYPE	LATERAL EARTH PRESSURE	EFFECTIVE UNIT WEIGHT LB/CF	FRICTION ANGLE DEGREES	BEARING CAPACITY FACTOR
0.00	CLAY	0.00	125.00	0.00	0.00
8.20	CLAY	0.00	125.00	0.00	0.00
8.20	CLAY	0.00	65.00	0.00	0.00
19.20	CLAY	0.00	65.00	0.00	0.00
19.20	CLAY	0.00	70.00	0.00	0.00
68.20	CLAY	0.00	70.00	0.00	0.00

MAXIMUM UNIT FRICTION KSF	MAXIMUM UNIT BEARING KSF	UNDISTURB SHEAR STRENGTH KSF	REMOLDED SHEAR STRENGTH KSF	BLOW COUNT	UNIT SKIN FRICTION KSF	UNIT END BEARING KSF
3.00	27.00	3.00	1.50	0.00	0.00	0.00
3.00	27.00	3.00	1.50	0.00	0.00	0.00
2.50	22.50	2.50	1.25	0.00	0.00	0.00
2.50	22.50	2.50	1.25	0.00	0.00	0.00
4.50	40.50	4.50	2.25	0.00	0.00	0.00
4.50	40.50	4.50	2.25	0.00	0.00	0.00

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* COMPUTATION RESULT *
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PILE PENETRATION FT.	FED. HWY. METHOD TOTAL SKIN FRIC KIP	FED. HWY. METHOD END BEARING KIP	FED. HWY. METHOD ULTIM CAPACITY KIP	ARMY CORPS METHOD TOTAL SKIN FRIC KIP	ARMY CORPS METHOD END BEARING KIP	ARMY CORPS METHOD ULTIM CAPACITY KIP	LAMBDA 2 METHOD TOTAL SKIN FRIC KIP	LAMBDA 2 METHOD END BEARING KIP	LAMBDA 2 METHOD ULTIM CAPACITY KIP
0.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
0.5	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
1.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
1.5	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
2.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
2.5	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
3.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
3.5	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
4.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
4.5	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
5.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
5.5	0.0	2.8	2.8	0.0	2.8	2.8	0.0	2.8	2.8
6.0	0.0	2.7	2.7	0.0	2.7	2.7	0.0	2.7	2.7
6.5	0.0	2.7	2.7	0.0	2.7	2.7	0.0	2.7	2.7
7.0	0.0	2.6	2.6	0.0	2.6	2.6	0.0	2.6	2.6
7.5	0.0	2.6	2.6	0.0	2.6	2.6	0.0	2.6	2.6
8.0	0.0	2.5	2.5	0.0	2.5	2.5	0.0	2.5	2.5
8.5	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
9.0	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
9.5	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
10.0	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
10.5	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
11.0	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
11.5	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
12.0	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
12.5	2.2	2.4	4.6	1.8	2.4	4.3	11.0	2.4	13.4
13.0	6.5	2.4	8.9	5.5	2.4	8.0	12.9	2.4	15.3
13.5	10.8	2.4	13.2	9.2	2.4	11.6	15.0	2.4	17.4
14.0	15.1	2.4	17.6	12.9	2.4	15.3	18.1	2.4	20.5
14.5	19.5	2.4	21.9	16.6	2.4	19.0	20.3	2.4	22.7
15.0	23.8	2.4	26.2	20.3	2.4	22.7	23.0	2.4	25.4
15.5	28.1	2.4	30.5	24.0	2.4	26.4	25.7	2.4	28.1
16.0	32.4	2.6	35.0	27.7	2.6	30.2	28.4	2.6	30.9
16.5	36.8	2.8	39.6	31.4	2.8	34.2	31.1	2.8	33.9
17.0	41.1	3.1	44.1	35.1	3.1	38.1	33.8	3.1	36.9
17.5	45.4	3.3	48.7	38.8	3.3	42.1	36.6	3.3	39.9
18.0	49.7	3.6	53.3	42.4	3.6	46.0	39.3	3.6	42.9
18.5	54.1	3.8	57.9	46.1	3.8	50.0	42.1	3.8	45.9
19.0	58.4	4.1	62.5	49.8	4.1	53.9	44.9	4.1	49.0
19.5	62.7	4.4	67.1	53.5	4.4	57.9	47.7	4.4	52.0
20.0	66.7	4.4	71.0	58.7	4.4	63.0	52.1	4.4	56.5
20.5	70.3	4.4	74.6	65.3	4.4	69.7	56.6	4.4	61.0
21.0	73.9	4.4	78.2	72.0	4.4	76.3	61.1	4.4	65.4
21.5	77.5	4.4	81.9	78.6	4.4	83.0	65.6	4.4	70.0
22.0	81.1	4.4	85.5	85.3	4.4	89.6	70.1	4.4	74.5
22.5	84.7	4.4	89.1	91.9	4.4	96.3	74.6	4.4	79.0
23.0	88.3	4.4	92.7	98.6	4.4	102.9	79.2	4.4	83.6
23.5	91.9	4.4	96.3	105.2	4.4	109.6	83.8	4.4	88.1
24.0	95.6	4.4	99.9	111.8	4.4	116.2	88.3	4.4	92.7
24.5	99.2	4.4	103.5	118.5	4.4	122.8	92.9	4.4	97.3
25.0	102.8	4.4	107.1	125.1	4.4	129.5	97.5	4.4	101.9

25.5	106.4	4.4	110.7	131.8	4.4	136.1	102.2	4.4	106.5
26.0	110.0	4.4	114.4	138.4	4.4	142.8	106.8	4.4	111.2
26.5	113.6	4.4	118.0	145.1	4.4	149.4	111.4	4.4	115.8
27.0	117.2	4.4	121.6	151.7	4.4	156.1	116.1	4.4	120.5
27.5	120.8	4.4	125.2	158.3	4.4	162.7	120.8	4.4	125.2
28.0	124.4	4.4	128.8	165.0	4.4	169.4	125.5	4.4	129.8
28.5	128.1	4.4	132.4	171.6	4.4	176.0	130.2	4.4	134.6
29.0	131.7	4.4	136.0	178.3	4.4	182.6	134.9	4.4	139.3
29.5	135.3	4.4	139.6	184.9	4.4	189.3	139.7	4.4	144.0
30.0	138.9	4.4	143.2	191.6	4.4	195.9	144.4	4.4	148.8
30.5	142.5	4.4	146.9	198.2	4.4	202.6	149.2	4.4	153.5
31.0	146.1	4.4	150.5	204.9	4.4	209.2	154.0	4.4	158.3
31.5	149.7	4.4	154.1	211.5	4.4	215.9	158.8	4.4	163.1
32.0	153.3	4.4	157.7	218.1	4.4	222.5	163.6	4.4	167.9
32.5	156.9	4.4	161.3	224.8	4.4	229.1	168.4	4.4	172.7
33.0	160.6	4.4	164.9	231.4	4.4	235.8	173.2	4.4	177.6
33.5	164.2	4.4	168.5	238.1	4.4	242.4	178.1	4.4	182.4
34.0	167.8	4.4	172.1	244.7	4.4	249.1	182.9	4.4	187.3
34.5	171.4	4.4	175.7	251.4	4.4	255.7	187.8	4.4	192.2
35.0	175.0	4.4	179.4	258.0	4.4	262.4	192.7	4.4	197.1
35.5	178.6	4.4	183.0	264.7	4.4	269.0	197.6	4.4	202.0
36.0	182.2	4.4	186.6	271.3	4.4	275.7	202.6	4.4	206.9
36.5	185.8	4.4	190.2	277.9	4.4	282.3	207.5	4.4	211.9
37.0	189.4	4.4	193.8	284.6	4.4	288.9	212.5	4.4	216.8
37.5	193.1	4.4	197.4	291.2	4.4	295.6	217.4	4.4	221.8
38.0	196.7	4.4	201.0	297.9	4.4	302.2	222.4	4.4	226.8
38.5	200.3	4.4	204.6	304.5	4.4	308.9	227.4	4.4	231.8
39.0	203.9	4.4	208.2	311.2	4.4	315.5	232.4	4.4	236.8
39.5	207.5	4.4	211.9	317.8	4.4	322.2	237.4	4.4	241.8
40.0	211.1	4.4	215.5	324.5	4.4	328.8	242.5	4.4	246.9
40.5	214.7	4.4	219.1	331.1	4.4	335.5	247.5	4.4	251.9
41.0	218.3	4.4	222.7	337.7	4.4	342.1	252.6	4.4	257.0
41.5	221.9	4.4	226.3	344.4	4.4	348.7	257.7	4.4	262.1
42.0	225.6	4.4	229.9	351.0	4.4	355.4	262.8	4.4	267.2
42.5	229.2	4.4	233.5	357.7	4.4	362.0	267.9	4.4	272.3
43.0	232.8	4.4	237.1	364.3	4.4	368.7	273.0	4.4	277.4
43.5	236.4	4.4	240.7	371.0	4.4	375.3	278.2	4.4	282.5
44.0	240.0	4.4	244.4	377.6	4.4	382.0	283.3	4.4	287.7
44.5	243.6	4.4	248.0	384.2	4.4	388.6	288.5	4.4	292.9
45.0	247.2	4.4	251.6	390.9	4.4	395.3	293.7	4.4	298.1
45.5	250.8	4.4	255.2	397.5	4.4	401.9	298.9	4.4	303.3
46.0	254.4	4.4	258.8	404.2	4.4	408.5	304.1	4.4	308.5
46.5	258.1	4.4	262.4	410.8	4.4	415.2	309.3	4.4	313.7
47.0	261.7	4.4	266.0	417.5	4.4	421.8	314.6	4.4	319.0
47.5	265.3	4.4	269.6	424.1	4.4	428.5	319.8	4.4	324.2
48.0	268.9	4.4	273.2	430.8	4.4	435.1	325.1	4.4	329.5
48.5	272.5	4.4	276.9	437.4	4.4	441.8	330.4	4.4	334.8
49.0	276.1	4.4	280.5	444.0	4.4	448.4	335.7	4.4	340.1
49.5	279.7	4.4	284.1	450.7	4.4	455.0	341.0	4.4	345.4
50.0	283.3	4.4	287.7	457.3	4.4	461.7	346.4	4.4	350.7

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* API RP-2A (1994) *
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PILE PENETRATION FT.	TOTAL SKIN FRICTION KIP	END BEARING KIP	ULTIMATE CAPACITY KIP
0.00	0.0	2.9	2.9
0.50	0.0	2.9	2.9
1.00	0.0	2.9	2.9
1.50	0.0	2.9	2.9

2.00	0.0	2.9	2.9
2.50	0.0	2.9	2.9
3.00	0.0	2.9	2.9
3.50	0.0	2.9	2.9
4.00	0.0	2.9	2.9
4.50	0.0	2.9	2.9
5.00	0.0	2.9	2.9
5.50	0.0	2.8	2.8
6.00	0.0	2.7	2.7
6.50	0.0	2.7	2.7
7.00	0.0	2.6	2.6
7.50	0.0	2.6	2.6
8.00	0.0	2.5	2.5
8.50	0.0	2.4	2.4
9.00	0.0	2.4	2.4
9.50	0.0	2.4	2.4
10.00	0.0	2.4	2.4
10.50	0.0	2.4	2.4
11.00	0.0	2.4	2.4
11.50	0.0	2.4	2.4
12.00	0.0	2.4	2.4
12.50	1.6	2.4	4.0
13.00	4.7	2.4	7.2
13.50	7.9	2.4	10.3
14.00	11.1	2.4	13.5
14.50	14.3	2.4	16.7
15.00	17.5	2.4	20.0
15.50	20.8	2.4	23.2
16.00	24.1	2.6	26.6
16.50	27.3	2.8	30.2
17.00	30.6	3.1	33.7
17.50	34.0	3.3	37.3
18.00	37.3	3.6	40.9
18.50	40.6	3.8	44.5
19.00	44.0	4.1	48.1
19.50	47.4	4.4	51.8
20.00	51.7	4.4	56.1
20.50	57.0	4.4	61.4
21.00	62.4	4.4	66.7
21.50	67.7	4.4	72.1
22.00	73.1	4.4	77.5
22.50	78.5	4.4	82.9
23.00	83.9	4.4	88.3
23.50	89.4	4.4	93.8
24.00	94.9	4.4	99.2
24.50	100.4	4.4	104.7
25.00	105.9	4.4	110.2
25.50	111.4	4.4	115.8
26.00	117.0	4.4	121.4
26.50	122.6	4.4	126.9
27.00	128.2	4.4	132.6
27.50	133.8	4.4	138.2
28.00	139.5	4.4	143.8
28.50	145.1	4.4	149.5
29.00	150.8	4.4	155.2
29.50	156.6	4.4	160.9
30.00	162.3	4.4	166.6
30.50	168.0	4.4	172.4
31.00	173.8	4.4	178.2
31.50	179.6	4.4	184.0
32.00	185.4	4.4	189.8
32.50	191.2	4.4	195.6
33.00	197.1	4.4	201.5
33.50	203.0	4.4	207.3

34.00	208.9	4.4	213.2
34.50	214.8	4.4	219.1
35.00	220.7	4.4	225.0
35.50	226.6	4.4	231.0
36.00	232.6	4.4	236.9
36.50	238.6	4.4	242.9
37.00	244.6	4.4	248.9
37.50	250.6	4.4	254.9
38.00	256.6	4.4	261.0
38.50	262.7	4.4	267.0
39.00	268.7	4.4	273.1
39.50	274.8	4.4	279.2
40.00	280.9	4.4	285.3
40.50	287.0	4.4	291.4
41.00	293.1	4.4	297.5
41.50	299.3	4.4	303.7
42.00	305.5	4.4	309.8
42.50	311.6	4.4	316.0
43.00	317.8	4.4	322.2
43.50	324.0	4.4	328.4
44.00	330.3	4.4	334.6
44.50	336.5	4.4	340.9
45.00	342.8	4.4	347.1
45.50	349.1	4.4	353.4
46.00	355.3	4.4	359.7
46.50	361.7	4.4	366.0
47.00	368.0	4.4	372.3
47.50	374.3	4.4	378.7
48.00	380.7	4.4	385.0
48.50	387.0	4.4	391.4
49.00	393.4	4.4	397.8
49.50	399.8	4.4	404.2
50.00	406.2	4.4	410.6

AN ASTERISK WILL BE PLACED IN THE END-BEARING COLUMN
IF THE TIP RESISTANCE IS CONTROLLED BY THE FRICTION
OF SOIL PLUG INSIDE AN OPEN-ENDED PIPE PILE.

****
* COMPUTE LOAD-DISTRIBUTION AND LOAD-SETTLEMENT *
* CURVES FOR AXIAL LOADING *
****

T-Z CURVE NO.	NO. OF POINTS	DEPTH TO CURVE FT.	LOAD TRANSFER PSI	PILE MOVEMENT IN.
1	10	0.0000E+00		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.3609E-01
			0.0000E+00	0.6993E-01
			0.0000E+00	0.1286E+00
			0.0000E+00	0.1805E+00
			0.0000E+00	0.2256E+00
			0.0000E+00	0.4512E+00
			0.0000E+00	0.6768E+00
			0.0000E+00	0.1128E+01
			0.0000E+00	0.4512E+01
2	10	0.4125E+01		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.3609E-01

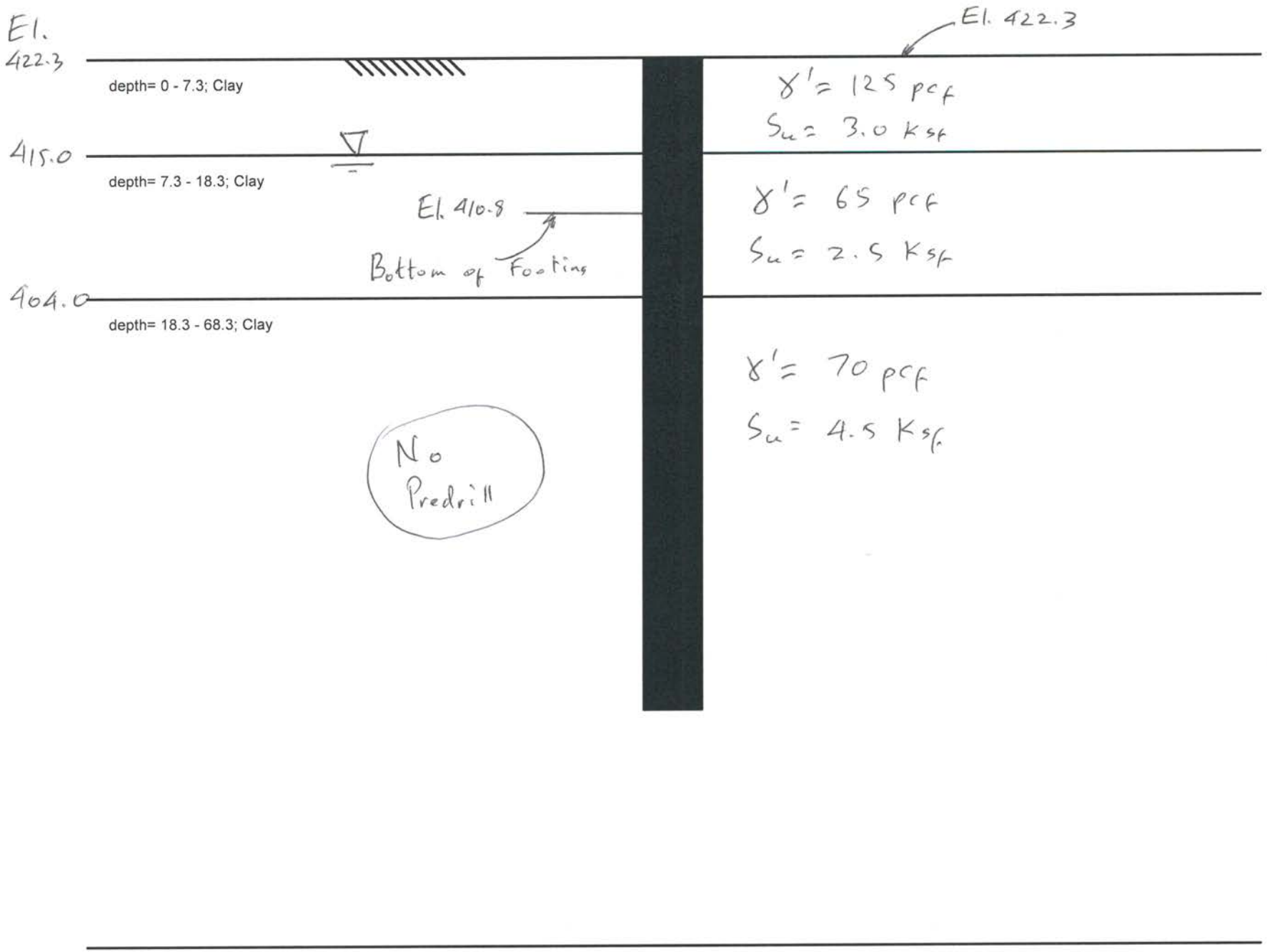
			0.0000E+00	0.6993E-01
			0.0000E+00	0.1286E+00
			0.0000E+00	0.1805E+00
			0.0000E+00	0.2256E+00
			0.0000E+00	0.4512E+00
			0.0000E+00	0.6768E+00
			0.0000E+00	0.1128E+01
			0.0000E+00	0.4512E+01
3	10	0.8158E+01		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.3609E-01
			0.0000E+00	0.6993E-01
			0.0000E+00	0.1286E+00
			0.0000E+00	0.1805E+00
			0.0000E+00	0.2256E+00
			0.0000E+00	0.4512E+00
			0.0000E+00	0.6768E+00
			0.0000E+00	0.1128E+01
			0.0000E+00	0.4512E+01
4	10	0.8200E+01		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.3609E-01
			0.0000E+00	0.6993E-01
			0.0000E+00	0.1286E+00
			0.0000E+00	0.1805E+00
			0.0000E+00	0.2256E+00
			0.0000E+00	0.4512E+00
			0.0000E+00	0.6768E+00
			0.0000E+00	0.1128E+01
			0.0000E+00	0.4512E+01
5	10	0.1372E+02		
			0.0000E+00	0.0000E+00
			0.2254E+01	0.3609E-01
			0.3757E+01	0.6993E-01
			0.5636E+01	0.1286E+00
			0.6763E+01	0.1805E+00
			0.7514E+01	0.2256E+00
			0.6763E+01	0.4512E+00
			0.6763E+01	0.6768E+00
			0.6763E+01	0.1128E+01
			0.6763E+01	0.4512E+01
6	10	0.1916E+02		
			0.0000E+00	0.0000E+00
			0.2386E+01	0.3609E-01
			0.3976E+01	0.6993E-01
			0.5965E+01	0.1286E+00
			0.7157E+01	0.1805E+00
			0.7953E+01	0.2256E+00
			0.7157E+01	0.4512E+00
			0.7157E+01	0.6768E+00
			0.7157E+01	0.1128E+01
			0.7157E+01	0.4512E+01
7	10	0.1920E+02		
			0.0000E+00	0.0000E+00
			0.2386E+01	0.3609E-01
			0.3976E+01	0.6993E-01
			0.5965E+01	0.1286E+00
			0.7157E+01	0.1805E+00
			0.7953E+01	0.2256E+00
			0.7157E+01	0.4512E+00
			0.7157E+01	0.6768E+00
			0.7157E+01	0.1128E+01
			0.7157E+01	0.4512E+01
8	10	0.4373E+02		

		0.0000E+00	0.0000E+00
		0.4394E+01	0.3609E-01
		0.7324E+01	0.6993E-01
		0.1099E+02	0.1286E+00
		0.1318E+02	0.1805E+00
		0.1465E+02	0.2256E+00
		0.1318E+02	0.4512E+00
		0.1318E+02	0.6768E+00
		0.1318E+02	0.1128E+01
		0.1318E+02	0.4512E+01
9	10	0.6816E+02	
		0.0000E+00	0.0000E+00
		0.4521E+01	0.3609E-01
		0.7535E+01	0.6993E-01
		0.1130E+02	0.1286E+00
		0.1356E+02	0.1805E+00
		0.1507E+02	0.2256E+00
		0.1356E+02	0.4512E+00
		0.1356E+02	0.6768E+00
		0.1356E+02	0.1128E+01
		0.1356E+02	0.4512E+01

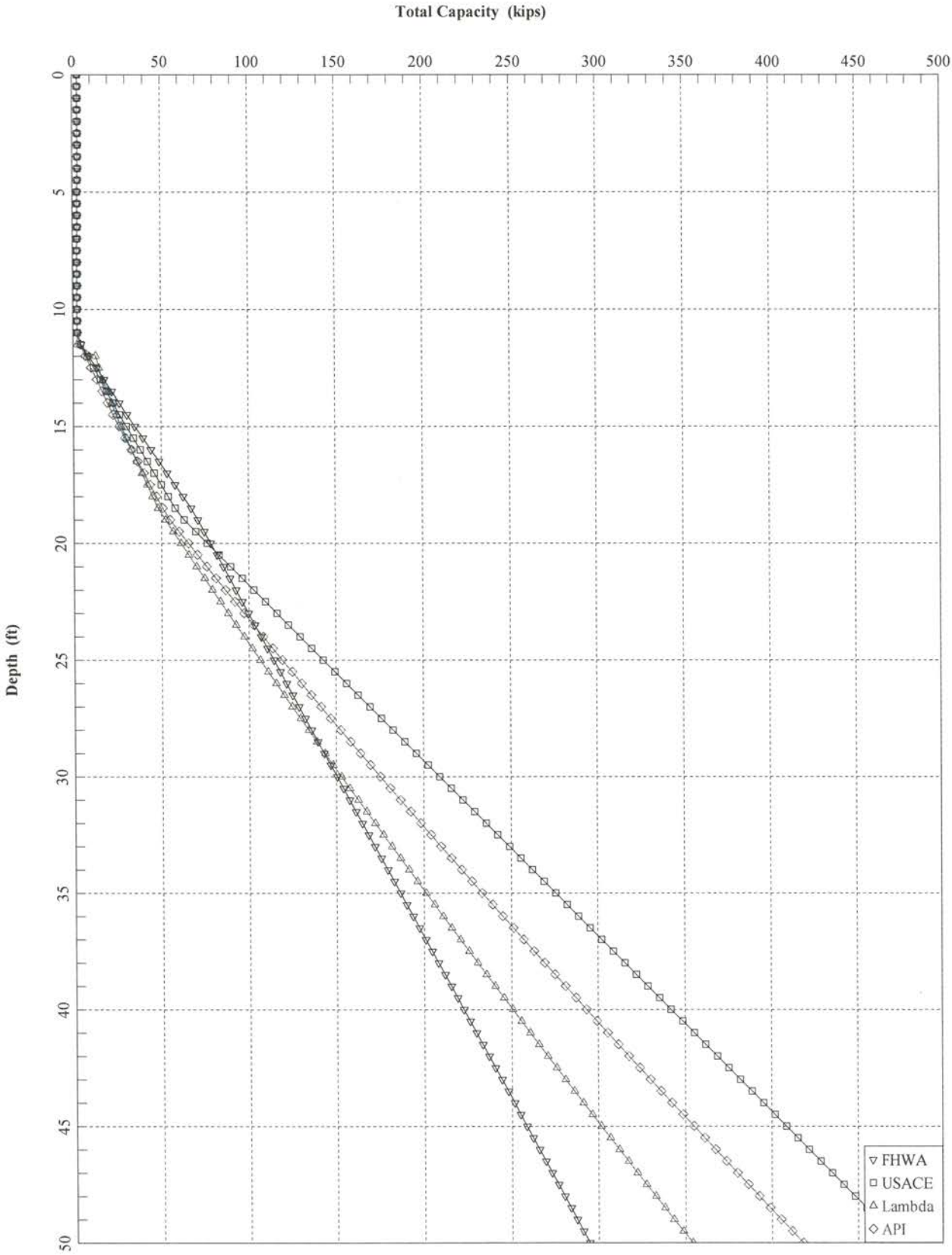
TIP LOAD KIP	TIP MOVEMENT IN.
0.0000E+00	0.0000E+00
0.2725E+00	0.1128E-01
0.5449E+00	0.2256E-01
0.1090E+01	0.4512E-01
0.2180E+01	0.2933E+00
0.3270E+01	0.9475E+00
0.3923E+01	0.1647E+01
0.4359E+01	0.2256E+01
0.4359E+01	0.3384E+01
0.4359E+01	0.4512E+01

LOAD VERSUS SETTLEMENT CURVE
****

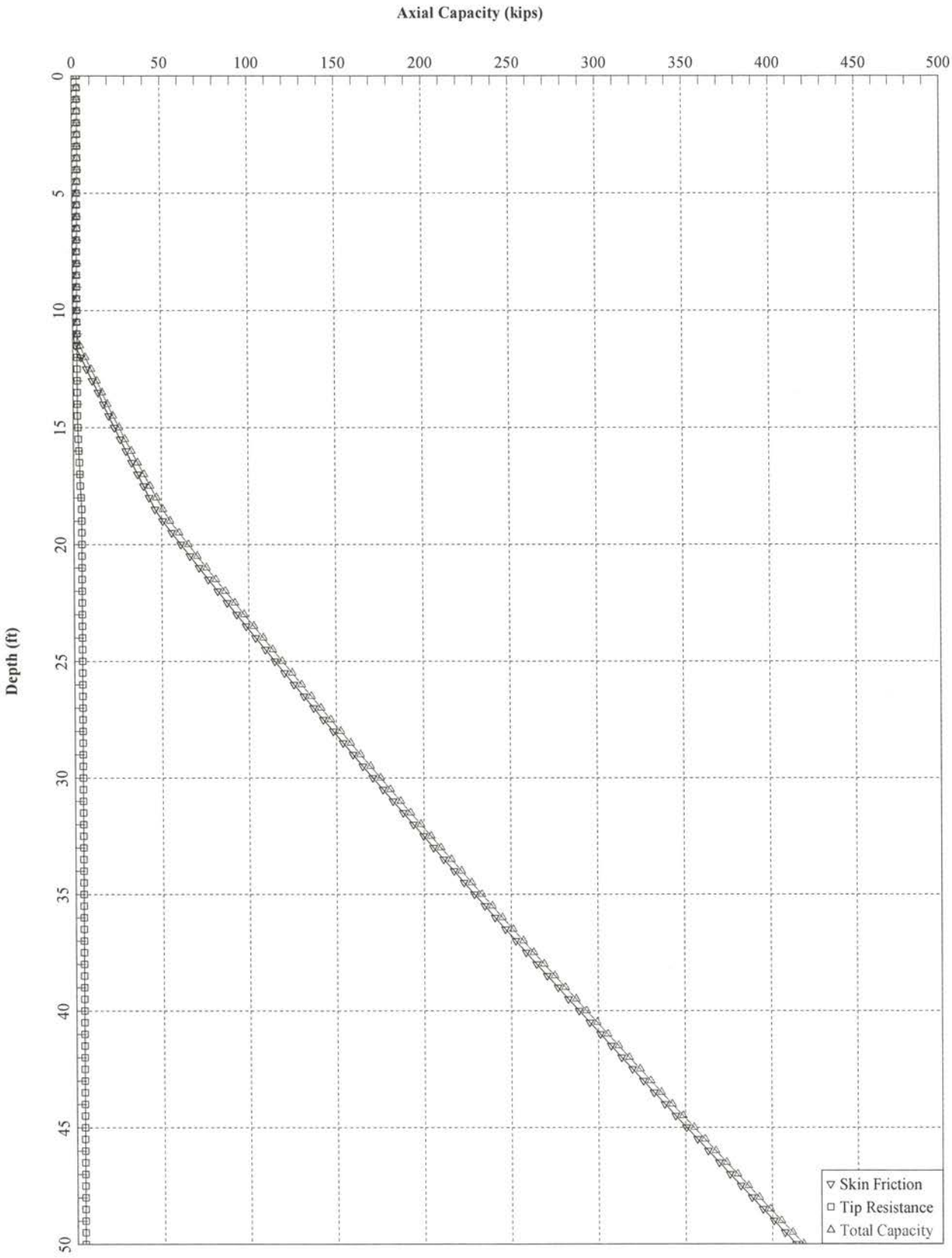
TOP LOAD KIP	TOP MOVEMENT IN.	TIP LOAD KIP	TIP MOVEMENT IN.
0.4917E+00	0.4802E-03	0.2416E-02	0.1000E-03
0.4917E+01	0.4802E-02	0.2416E-01	0.1000E-02
0.2468E+02	0.2405E-01	0.1208E+00	0.5000E-02
0.4954E+02	0.4824E-01	0.2416E+00	0.1000E-01
0.1909E+03	0.2058E+00	0.1111E+01	0.5000E-01
0.2839E+03	0.3385E+00	0.1331E+01	0.1000E+00
0.3335E+03	0.7960E+00	0.2524E+01	0.5000E+00
0.3343E+03	0.1297E+01	0.3319E+01	0.1000E+01
0.3352E+03	0.2298E+01	0.4176E+01	0.2000E+01



Bent 3 - Westbound
(based on Boring A-09-200)



I-580 - Arroyo Las Positas - Bridge No. 33-0203 - Bent 3 - Westbound - H Pile HP 12x53



I-580 - Arroyo Las Positas - Bridge No. 33-0203 - Bent 3 - Westbound - H PIle HP 12x53

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AXIALLY LOADING PILE ANALYSIS PROGRAM - APILEplus
VERSION 4.0 - (c) COPYRIGHT ENSOFT,INC.,1987-2004.

Arroyo Las Positas 33-0203-Bent 3 Westbound - HP 53x12

DESIGNER :

DATE :

PILE PROPERTIES :

PERIMETER OF PILE WITH NONCIRCULAR SECTION= 70.87 IN.
TIP AREA OF PILE WITH NONCIRCULAR SECTION = 0.11 SQF
OUTSIDE DIAMETER OF CIRCULAR PILE = 0.00 IN.
INTERNAL DIAMETER OF CIRCULAR PILE = 0.00 IN.
PILE LENGTH = 50.00 FT.
MODULUS OF ELASTICITY = 0.290E+08 PSI

LENGTH OF SURFACE SECTION WITH ZERO SKIN FRICTION = 11.50 FT.
INCREMENT OF PILE LENGTH USED IN COMPUTATION = 0.50 FT.

SOIL INFORMATIONS :

DEPTH FT.	SOIL TYPE	LATERAL EARTH PRESSURE	EFFECTIVE UNIT WEIGHT LB/CF	FRICTION ANGLE DEGREES	BEARING CAPACITY FACTOR
0.00	CLAY	0.00	125.00	0.00	0.00
7.30	CLAY	0.00	125.00	0.00	0.00
7.30	CLAY	0.00	65.00	0.00	0.00
18.30	CLAY	0.00	65.00	0.00	0.00
18.30	CLAY	0.00	70.00	0.00	0.00
68.30	CLAY	0.00	70.00	0.00	0.00

MAXIMUM UNIT FRICTION KSF	MAXIMUM UNIT BEARING KSF	UNDISTURB SHEAR STRENGTH KSF	REMOLDED SHEAR STRENGTH KSF	BLOW COUNT	UNIT SKIN FRICTION KSF	UNIT END BEARING KSF
3.00	27.00	3.00	1.50	0.00	0.00	0.00
3.00	27.00	3.00	1.50	0.00	0.00	0.00
2.50	22.50	2.50	1.25	0.00	0.00	0.00
2.50	22.50	2.50	1.25	0.00	0.00	0.00
4.50	40.50	4.50	2.25	0.00	0.00	0.00
4.50	40.50	4.50	2.25	0.00	0.00	0.00

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* COMPUTATION RESULT *
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PILE PENETRATION FT.	* FED. HWY. METHOD * TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPACITY KIP	* ARMY CORPS METHOD * TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPACITY KIP	* LAMBDA 2 METHOD * TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPACITY KIP
0.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
0.5	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
1.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
1.5	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
2.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
2.5	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
3.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
3.5	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
4.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
4.5	0.0	2.8	2.8	0.0	2.8	2.8	0.0	2.8	2.8
5.0	0.0	2.7	2.7	0.0	2.7	2.7	0.0	2.7	2.7
5.5	0.0	2.7	2.7	0.0	2.7	2.7	0.0	2.7	2.7
6.0	0.0	2.6	2.6	0.0	2.6	2.6	0.0	2.6	2.6
6.5	0.0	2.6	2.6	0.0	2.6	2.6	0.0	2.6	2.6
7.0	0.0	2.5	2.5	0.0	2.5	2.5	0.0	2.5	2.5
7.5	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
8.0	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
8.5	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
9.0	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
9.5	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
10.0	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
10.5	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
11.0	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
11.5	2.2	2.4	4.6	1.8	2.4	4.3	0.0	2.4	2.4
12.0	6.5	2.4	8.9	5.5	2.4	8.0	10.2	2.4	12.6
12.5	10.8	2.4	13.2	9.2	2.4	11.6	12.1	2.4	14.6
13.0	15.1	2.4	17.6	12.9	2.4	15.3	14.2	2.4	16.6
13.5	19.5	2.4	21.9	16.6	2.4	19.0	17.4	2.4	19.8
14.0	23.8	2.4	26.2	20.3	2.4	22.7	19.4	2.4	21.8
14.5	28.1	2.4	30.5	24.0	2.4	26.4	22.1	2.4	24.5
15.0	32.4	2.6	35.0	27.7	2.6	30.2	24.7	2.6	27.3
15.5	36.8	2.8	39.6	31.4	2.8	34.2	27.4	2.8	30.2
16.0	41.1	3.1	44.1	35.1	3.1	38.1	30.0	3.1	33.1
16.5	45.4	3.3	48.7	38.8	3.3	42.1	32.7	3.3	36.1
17.0	49.7	3.6	53.3	42.4	3.6	46.0	35.4	3.6	39.0
17.5	54.1	3.8	57.9	46.1	3.8	50.0	38.1	3.8	42.0
18.0	58.4	4.1	62.5	49.8	4.1	53.9	40.9	4.1	45.0
18.5	62.7	4.4	67.1	53.5	4.4	57.9	43.6	4.4	48.0
19.0	66.7	4.4	71.0	58.7	4.4	63.0	48.0	4.4	52.4
19.5	70.3	4.4	74.6	65.3	4.4	69.7	52.5	4.4	56.8
20.0	73.9	4.4	78.2	72.0	4.4	76.3	56.9	4.4	61.3
20.5	77.5	4.4	81.9	78.6	4.4	83.0	61.4	4.4	65.7
21.0	81.1	4.4	85.5	85.3	4.4	89.6	65.8	4.4	70.2
21.5	84.7	4.4	89.1	91.9	4.4	96.3	70.3	4.4	74.7
22.0	88.3	4.4	92.7	98.6	4.4	102.9	74.8	4.4	79.2
22.5	91.9	4.4	96.3	105.2	4.4	109.6	79.3	4.4	83.7
23.0	95.6	4.4	99.9	111.8	4.4	116.2	83.8	4.4	88.2
23.5	99.2	4.4	103.5	118.5	4.4	122.8	88.4	4.4	92.7
24.0	102.8	4.4	107.1	125.1	4.4	129.5	92.9	4.4	97.3
24.5	106.4	4.4	110.7	131.8	4.4	136.1	97.5	4.4	101.9
25.0	110.0	4.4	114.4	138.4	4.4	142.8	102.1	4.4	106.5

25.5	113.6	4.4	118.0	145.1	4.4	149.4	106.7	4.4	111.1
26.0	117.2	4.4	121.6	151.7	4.4	156.1	111.3	4.4	115.7
26.5	120.8	4.4	125.2	158.3	4.4	162.7	115.9	4.4	120.3
27.0	124.4	4.4	128.8	165.0	4.4	169.4	120.6	4.4	124.9
27.5	128.1	4.4	132.4	171.6	4.4	176.0	125.2	4.4	129.6
28.0	131.7	4.4	136.0	178.3	4.4	182.6	129.9	4.4	134.3
28.5	135.3	4.4	139.6	184.9	4.4	189.3	134.6	4.4	139.0
29.0	138.9	4.4	143.2	191.6	4.4	195.9	139.3	4.4	143.7
29.5	142.5	4.4	146.9	198.2	4.4	202.6	144.0	4.4	148.4
30.0	146.1	4.4	150.5	204.9	4.4	209.2	148.7	4.4	153.1
30.5	149.7	4.4	154.1	211.5	4.4	215.9	153.5	4.4	157.8
31.0	153.3	4.4	157.7	218.1	4.4	222.5	158.2	4.4	162.6
31.5	156.9	4.4	161.3	224.8	4.4	229.1	163.0	4.4	167.4
32.0	160.6	4.4	164.9	231.4	4.4	235.8	167.8	4.4	172.2
32.5	164.2	4.4	168.5	238.1	4.4	242.4	172.6	4.4	177.0
33.0	167.8	4.4	172.1	244.7	4.4	249.1	177.4	4.4	181.8
33.5	171.4	4.4	175.7	251.4	4.4	255.7	182.2	4.4	186.6
34.0	175.0	4.4	179.4	258.0	4.4	262.4	187.1	4.4	191.5
34.5	178.6	4.4	183.0	264.7	4.4	269.0	192.0	4.4	196.3
35.0	182.2	4.4	186.6	271.3	4.4	275.7	196.8	4.4	201.2
35.5	185.8	4.4	190.2	277.9	4.4	282.3	201.7	4.4	206.1
36.0	189.4	4.4	193.8	284.6	4.4	288.9	206.6	4.4	211.0
36.5	193.1	4.4	197.4	291.2	4.4	295.6	211.5	4.4	215.9
37.0	196.7	4.4	201.0	297.9	4.4	302.2	216.5	4.4	220.8
37.5	200.3	4.4	204.6	304.5	4.4	308.9	221.4	4.4	225.8
38.0	203.9	4.4	208.2	311.2	4.4	315.5	226.4	4.4	230.7
38.5	207.5	4.4	211.9	317.8	4.4	322.2	231.4	4.4	235.7
39.0	211.1	4.4	215.5	324.5	4.4	328.8	236.3	4.4	240.7
39.5	214.7	4.4	219.1	331.1	4.4	335.5	241.3	4.4	245.7
40.0	218.3	4.4	222.7	337.7	4.4	342.1	246.4	4.4	250.7
40.5	221.9	4.4	226.3	344.4	4.4	348.7	251.4	4.4	255.8
41.0	225.6	4.4	229.9	351.0	4.4	355.4	256.4	4.4	260.8
41.5	229.2	4.4	233.5	357.7	4.4	362.0	261.5	4.4	265.9
42.0	232.8	4.4	237.1	364.3	4.4	368.7	266.6	4.4	270.9
42.5	236.4	4.4	240.7	371.0	4.4	375.3	271.7	4.4	276.0
43.0	240.0	4.4	244.4	377.6	4.4	382.0	276.8	4.4	281.1
43.5	243.6	4.4	248.0	384.2	4.4	388.6	281.9	4.4	286.3
44.0	247.2	4.4	251.6	390.9	4.4	395.3	287.0	4.4	291.4
44.5	250.8	4.4	255.2	397.5	4.4	401.9	292.2	4.4	296.5
45.0	254.4	4.4	258.8	404.2	4.4	408.5	297.3	4.4	301.7
45.5	258.1	4.4	262.4	410.8	4.4	415.2	302.5	4.4	306.9
46.0	261.7	4.4	266.0	417.5	4.4	421.8	307.7	4.4	312.1
46.5	265.3	4.4	269.6	424.1	4.4	428.5	312.9	4.4	317.3
47.0	268.9	4.4	273.2	430.8	4.4	435.1	318.1	4.4	322.5
47.5	272.5	4.4	276.9	437.4	4.4	441.8	323.4	4.4	327.7
48.0	276.1	4.4	280.5	444.0	4.4	448.4	328.6	4.4	333.0
48.5	279.7	4.4	284.1	450.7	4.4	455.0	333.9	4.4	338.3
49.0	283.3	4.4	287.7	457.3	4.4	461.7	339.2	4.4	343.5
49.5	286.9	4.4	291.3	464.0	4.4	468.3	344.5	4.4	348.8
50.0	290.5	4.4	294.9	470.6	4.4	475.0	349.8	4.4	354.1

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* API RP-2A (1994) *
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PILE PENETRATION FT.	TOTAL SKIN FRICTION KIP	END BEARING KIP	ULTIMATE CAPACITY KIP
0.00	0.0	2.9	2.9
0.50	0.0	2.9	2.9
1.00	0.0	2.9	2.9
1.50	0.0	2.9	2.9

2.00	0.0	2.9	2.9
2.50	0.0	2.9	2.9
3.00	0.0	2.9	2.9
3.50	0.0	2.9	2.9
4.00	0.0	2.9	2.9
4.50	0.0	2.8	2.8
5.00	0.0	2.7	2.7
5.50	0.0	2.7	2.7
6.00	0.0	2.6	2.6
6.50	0.0	2.6	2.6
7.00	0.0	2.5	2.5
7.50	0.0	2.4	2.4
8.00	0.0	2.4	2.4
8.50	0.0	2.4	2.4
9.00	0.0	2.4	2.4
9.50	0.0	2.4	2.4
10.00	0.0	2.4	2.4
10.50	0.0	2.4	2.4
11.00	0.0	2.4	2.4
11.50	1.5	2.4	4.0
12.00	4.6	2.4	7.0
12.50	7.7	2.4	10.1
13.00	10.8	2.4	13.3
13.50	14.0	2.4	16.4
14.00	17.1	2.4	19.6
14.50	20.3	2.4	22.7
15.00	23.5	2.6	26.1
15.50	26.7	2.8	29.5
16.00	30.0	3.1	33.0
16.50	33.2	3.3	36.5
17.00	36.5	3.6	40.1
17.50	39.8	3.8	43.6
18.00	43.1	4.1	47.2
18.50	46.4	4.4	50.8
19.00	50.7	4.4	55.0
19.50	55.9	4.4	60.2
20.00	61.1	4.4	65.5
20.50	66.4	4.4	70.7
21.00	71.7	4.4	76.0
21.50	77.0	4.4	81.3
22.00	82.3	4.4	86.7
22.50	87.7	4.4	92.1
23.00	93.1	4.4	97.4
23.50	98.5	4.4	102.9
24.00	103.9	4.4	108.3
24.50	109.4	4.4	113.8
25.00	114.9	4.4	119.2
25.50	120.4	4.4	124.8
26.00	125.9	4.4	130.3
26.50	131.5	4.4	135.8
27.00	137.1	4.4	141.4
27.50	142.6	4.4	147.0
28.00	148.3	4.4	152.6
28.50	153.9	4.4	158.3
29.00	159.6	4.4	163.9
29.50	165.2	4.4	169.6
30.00	170.9	4.4	175.3
30.50	176.7	4.4	181.0
31.00	182.4	4.4	186.8
31.50	188.2	4.4	192.5
32.00	194.0	4.4	198.3
32.50	199.8	4.4	204.1
33.00	205.6	4.4	209.9
33.50	211.4	4.4	215.8

34.00	217.3	4.4	221.6
34.50	223.1	4.4	227.5
35.00	229.0	4.4	233.4
35.50	235.0	4.4	239.3
36.00	240.9	4.4	245.2
36.50	246.8	4.4	251.2
37.00	252.8	4.4	257.2
37.50	258.8	4.4	263.2
38.00	264.8	4.4	269.2
38.50	270.8	4.4	275.2
39.00	276.9	4.4	281.2
39.50	282.9	4.4	287.3
40.00	289.0	4.4	293.3
40.50	295.1	4.4	299.4
41.00	301.2	4.4	305.5
41.50	307.3	4.4	311.7
42.00	313.4	4.4	317.8
42.50	319.6	4.4	324.0
43.00	325.8	4.4	330.1
43.50	332.0	4.4	336.3
44.00	338.2	4.4	342.5
44.50	344.4	4.4	348.7
45.00	350.6	4.4	355.0
45.50	356.9	4.4	361.2
46.00	363.1	4.4	367.5
46.50	369.4	4.4	373.8
47.00	375.7	4.4	380.1
47.50	382.0	4.4	386.4
48.00	388.3	4.4	392.7
48.50	394.7	4.4	399.0
49.00	401.0	4.4	405.4
49.50	407.4	4.4	411.8
50.00	413.8	4.4	418.2

AN ASTERISK WILL BE PLACED IN THE END-BEARING COLUMN
IF THE TIP RESISTANCE IS CONTROLLED BY THE FRICTION
OF SOIL PLUG INSIDE AN OPEN-ENDED PIPE PILE.

****
* COMPUTE LOAD-DISTRIBUTION AND LOAD-SETTLEMENT *
* CURVES FOR AXIAL LOADING *
****

T-Z CURVE NO.	NO. OF POINTS	DEPTH TO CURVE FT.	LOAD TRANSFER PSI	PILE MOVEMENT IN.
1	10	0.0000E+00		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.3609E-01
			0.0000E+00	0.6993E-01
			0.0000E+00	0.1286E+00
			0.0000E+00	0.1805E+00
			0.0000E+00	0.2256E+00
			0.0000E+00	0.4512E+00
			0.0000E+00	0.6768E+00
			0.0000E+00	0.1128E+01
			0.0000E+00	0.4512E+01
2	10	0.3675E+01		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.3609E-01

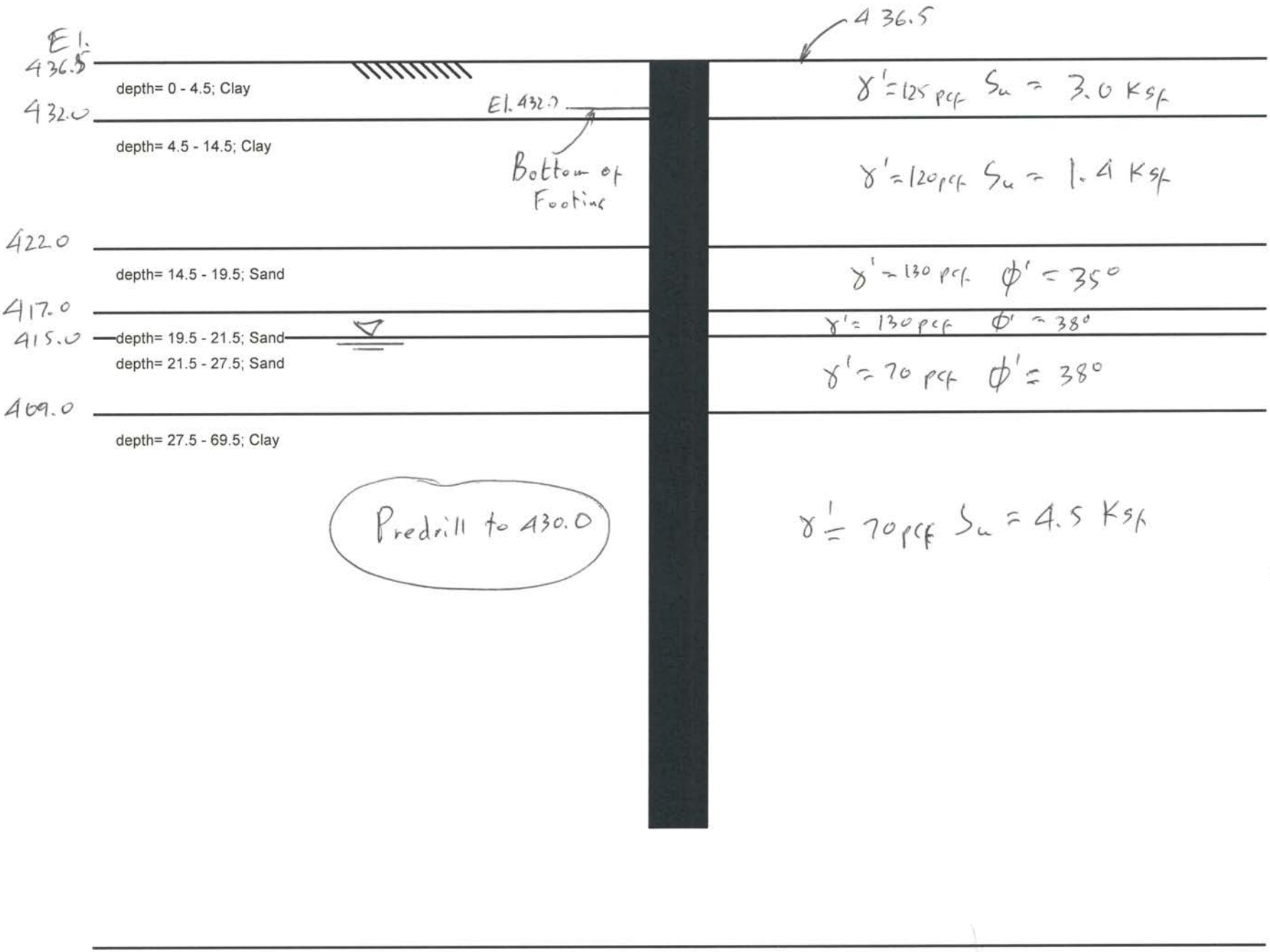
			0.0000E+00	0.6993E-01
			0.0000E+00	0.1286E+00
			0.0000E+00	0.1805E+00
			0.0000E+00	0.2256E+00
			0.0000E+00	0.4512E+00
			0.0000E+00	0.6768E+00
			0.0000E+00	0.1128E+01
			0.0000E+00	0.4512E+01
3	10	0.7258E+01		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.3609E-01
			0.0000E+00	0.6993E-01
			0.0000E+00	0.1286E+00
			0.0000E+00	0.1805E+00
			0.0000E+00	0.2256E+00
			0.0000E+00	0.4512E+00
			0.0000E+00	0.6768E+00
			0.0000E+00	0.1128E+01
			0.0000E+00	0.4512E+01
4	10	0.7300E+01		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.3609E-01
			0.0000E+00	0.6993E-01
			0.0000E+00	0.1286E+00
			0.0000E+00	0.1805E+00
			0.0000E+00	0.2256E+00
			0.0000E+00	0.4512E+00
			0.0000E+00	0.6768E+00
			0.0000E+00	0.1128E+01
			0.0000E+00	0.4512E+01
5	10	0.1282E+02		
			0.0000E+00	0.0000E+00
			0.2202E+01	0.3609E-01
			0.3670E+01	0.6993E-01
			0.5506E+01	0.1286E+00
			0.6607E+01	0.1805E+00
			0.7341E+01	0.2256E+00
			0.6607E+01	0.4512E+00
			0.6607E+01	0.6768E+00
			0.6607E+01	0.1128E+01
			0.6607E+01	0.4512E+01
6	10	0.1826E+02		
			0.0000E+00	0.0000E+00
			0.2342E+01	0.3609E-01
			0.3904E+01	0.6993E-01
			0.5856E+01	0.1286E+00
			0.7027E+01	0.1805E+00
			0.7808E+01	0.2256E+00
			0.7027E+01	0.4512E+00
			0.7027E+01	0.6768E+00
			0.7027E+01	0.1128E+01
			0.7027E+01	0.4512E+01
7	10	0.1830E+02		
			0.0000E+00	0.0000E+00
			0.2342E+01	0.3609E-01
			0.3904E+01	0.6993E-01
			0.5856E+01	0.1286E+00
			0.7027E+01	0.1805E+00
			0.7808E+01	0.2256E+00
			0.7027E+01	0.4512E+00
			0.7027E+01	0.6768E+00
			0.7027E+01	0.1128E+01
			0.7027E+01	0.4512E+01
8	10	0.4333E+02		

		0.0000E+00	0.0000E+00
		0.4365E+01	0.3609E-01
		0.7276E+01	0.6993E-01
		0.1091E+02	0.1286E+00
		0.1310E+02	0.1805E+00
		0.1455E+02	0.2256E+00
		0.1310E+02	0.4512E+00
		0.1310E+02	0.6768E+00
		0.1310E+02	0.1128E+01
		0.1310E+02	0.4512E+01
9	10	0.6826E+02	
		0.0000E+00	0.0000E+00
		0.4505E+01	0.3609E-01
		0.7509E+01	0.6993E-01
		0.1126E+02	0.1286E+00
		0.1352E+02	0.1805E+00
		0.1502E+02	0.2256E+00
		0.1352E+02	0.4512E+00
		0.1352E+02	0.6768E+00
		0.1352E+02	0.1128E+01
		0.1352E+02	0.4512E+01

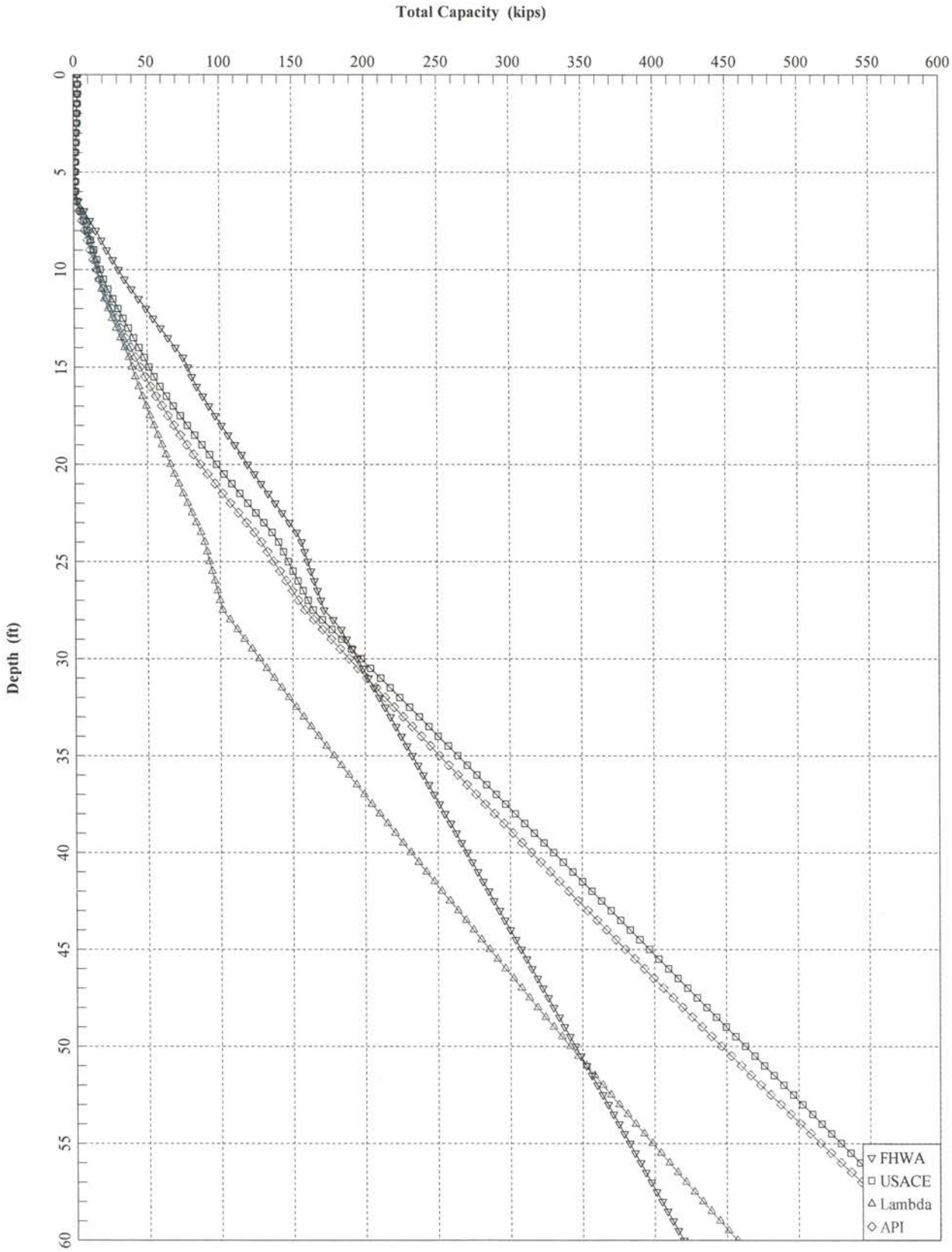
TIP LOAD KIP	TIP MOVEMENT IN.
0.0000E+00	0.0000E+00
0.2725E+00	0.1128E-01
0.5449E+00	0.2256E-01
0.1090E+01	0.4512E-01
0.2180E+01	0.2933E+00
0.3270E+01	0.9475E+00
0.3923E+01	0.1647E+01
0.4359E+01	0.2256E+01
0.4359E+01	0.3384E+01
0.4359E+01	0.4512E+01

LOAD VERSUS SETTLEMENT CURVE
****

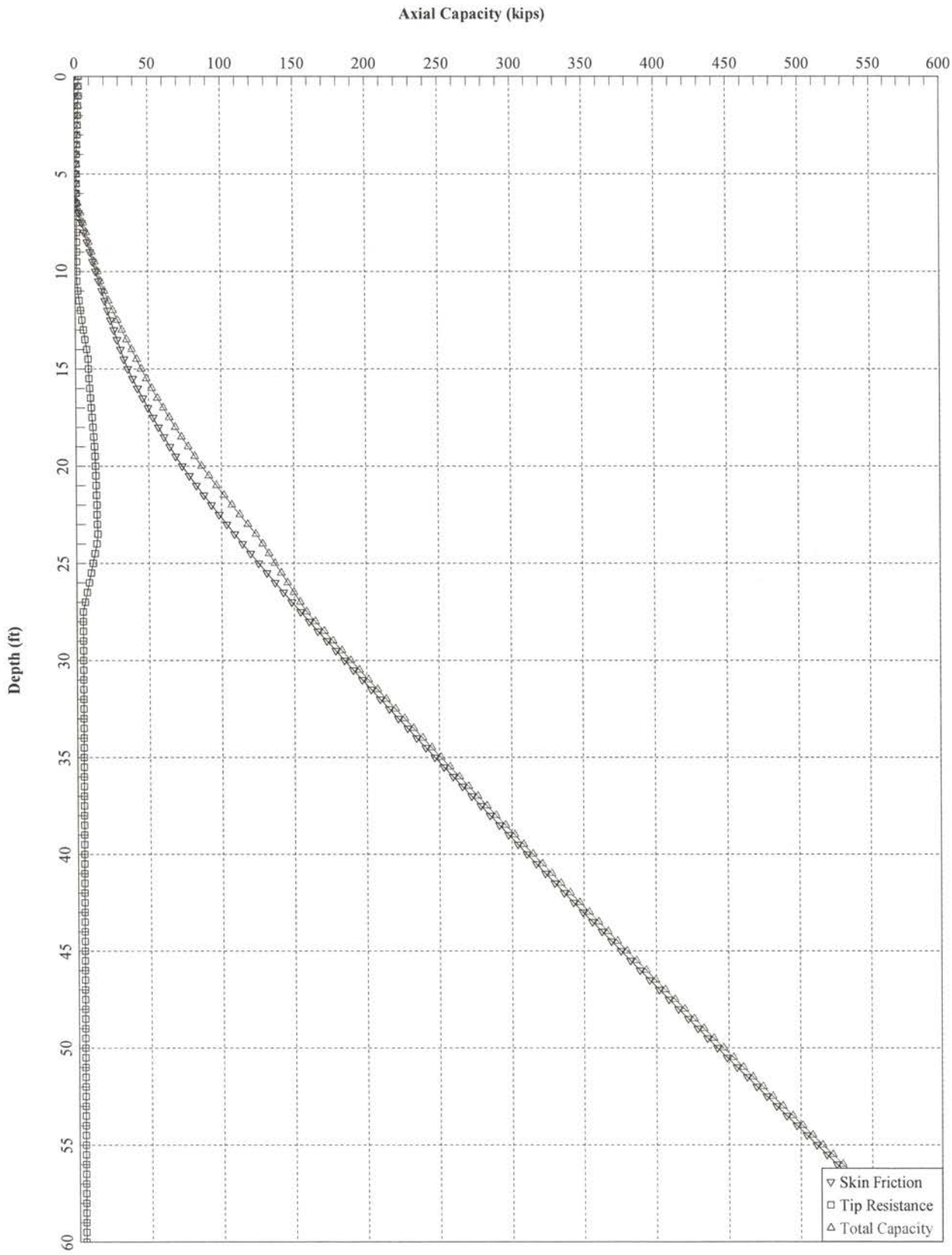
TOP LOAD KIP	TOP MOVEMENT IN.	TIP LOAD KIP	TIP MOVEMENT IN.
0.5070E+00	0.4846E-03	0.2416E-02	0.1000E-03
0.5070E+01	0.4846E-02	0.2416E-01	0.1000E-02
0.2545E+02	0.2427E-01	0.1208E+00	0.5000E-02
0.5108E+02	0.4868E-01	0.2416E+00	0.1000E-01
0.1954E+03	0.2071E+00	0.1111E+01	0.5000E-01
0.2894E+03	0.3400E+00	0.1331E+01	0.1000E+00
0.3386E+03	0.7975E+00	0.2524E+01	0.5000E+00
0.3394E+03	0.1299E+01	0.3319E+01	0.1000E+01
0.3402E+03	0.2300E+01	0.4176E+01	0.2000E+01



Abutment 4 - Westbound
(based on Boring A-09-AL2-01)



I-580 - Arroyo Las Positas - Bridge No. 33-0203 - Abutment 4 - Westbound - H Pile HP 12x53



I-580 - Arroyo Las Positas - Bridge No. 33-0203 - Abutment 4 - Westbound - H PIle HP 12x53 - API-R-P2A Method

AXIALLY LOADING PILE ANALYSIS PROGRAM - APILEplus
VERSION 4.0 - (C) COPYRIGHT ENSOFT,INC.,1987-2004.

Alcosta Birdge 33-0203-Abutment 4 Westbound - HP 12 x 53

DESIGNER :

DATE :

PILE PROPERTIES :

PERIMETER OF PILE WITH NONCIRCULAR SECTION	=	70.87 IN.
TIP AREA OF PILE WITH NONCIRCULAR SECTION	=	0.11 SQF
OUTSIDE DIAMETER OF CIRCULAR PILE	=	0.00 IN.
INTERNAL DIAMETER OF CIRCULAR PILE	=	0.00 IN.
PILE LENGTH	=	60.00 FT.
MODULUS OF ELASTICITY	=	0.290E+08 PSI

LENGTH OF SURFACE SECTION WITH ZERO SKIN FRICTION = 6.50 FT.
INCREMENT OF PILE LENGTH USED IN COMPUTATION = 0.50 FT.

SOIL INFORMATIONS :

DEPTH FT.	SOIL TYPE	LATERAL EARTH PRESSURE	EFFECTIVE UNIT WEIGHT LB/CF	FRICTION ANGLE DEGREES	BEARING CAPACITY FACTOR
0.00	CLAY	0.00	125.00	0.00	0.00
4.50	CLAY	0.00	125.00	0.00	0.00
4.50	CLAY	0.00	120.00	0.00	0.00
14.50	CLAY	0.00	120.00	0.00	0.00
14.50	SAND	1.00	130.00	35.00	40.00
19.50	SAND	1.00	130.00	35.00	40.00
19.50	SAND	1.00	130.00	38.00	46.00
21.50	SAND	1.00	130.00	38.00	46.00
21.50	SAND	1.00	70.00	38.00	46.00
27.50	SAND	1.00	70.00	38.00	46.00
27.50	CLAY	0.00	70.00	0.00	0.00
69.50	CLAY	0.00	70.00	0.00	0.00

MAXIMUM UNIT FRICTION KSF	MAXIMUM UNIT BEARING KSF	UNDISTURB SHEAR STRENGTH KSF	REMOLDED SHEAR STRENGTH KSF	BLOW COUNT	UNIT SKIN FRICTION KSF	UNIT END BEARING KSF
3.00	27.00	3.00	1.50	0.00	0.00	0.00
3.00	27.00	3.00	1.50	0.00	0.00	0.00
1.50	10.50	1.40	0.70	0.00	0.00	0.00
1.50	10.50	1.40	0.70	0.00	0.00	0.00
2.00	200.00	0.00	0.00	0.00	0.00	0.00

2.00	200.00	0.00	0.00	0.00	0.00	0.00
2.36	240.00	0.00	0.00	0.00	0.00	0.00
2.36	240.00	0.00	0.00	0.00	0.00	0.00
2.36	240.00	0.00	0.00	0.00	0.00	0.00
2.36	240.00	0.00	0.00	0.00	0.00	0.00
4.50	40.50	4.50	2.25	0.00	0.00	0.00
4.50	40.50	4.50	2.25	0.00	0.00	0.00

****
* COMPUTATION RESULT *
****

PILE PENETRATION FT.	* FED. HWY. METHOD * TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPACITY KIP	* ARMY CORPS METHOD * TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPACITY KIP	* LAMBDA 2 METHOD * TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPACITY KIP
0.0	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
0.5	0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
1.0	0.0	2.8	2.8	0.0	2.8	2.8	0.0	2.8	2.8
1.5	0.0	2.5	2.5	0.0	2.5	2.5	0.0	2.5	2.5
2.0	0.0	2.3	2.3	0.0	2.3	2.3	0.0	2.3	2.3
2.5	0.0	2.1	2.1	0.0	2.1	2.1	0.0	2.1	2.1
3.0	0.0	1.8	1.8	0.0	1.8	1.8	0.0	1.8	1.8
3.5	0.0	1.6	1.6	0.0	1.6	1.6	0.0	1.6	1.6
4.0	0.0	1.4	1.4	0.0	1.4	1.4	0.0	1.4	1.4
4.5	0.0	1.1	1.1	0.0	1.1	1.1	0.0	1.1	1.1
5.0	0.0	1.1	1.1	0.0	1.1	1.1	0.0	1.1	1.1
5.5	0.0	1.1	1.1	0.0	1.1	1.1	0.0	1.1	1.1
6.0	0.0	1.1	1.1	0.0	1.1	1.1	0.0	1.1	1.1
6.5	2.0	1.1	3.1	1.1	1.1	2.3	0.0	1.1	1.1
7.0	5.9	1.1	7.1	3.4	1.1	4.5	4.6	1.1	5.8
7.5	9.9	1.1	11.0	5.7	1.1	6.8	7.6	1.1	8.7
8.0	13.9	1.1	15.0	8.0	1.1	9.1	9.1	1.1	10.3
8.5	17.8	1.1	19.0	10.2	1.1	11.4	10.6	1.1	11.7
9.0	21.8	1.1	22.9	12.5	1.1	13.6	12.0	1.1	13.1
9.5	25.8	1.1	26.9	14.8	1.1	15.9	13.3	1.1	14.5
10.0	29.7	1.1	30.9	17.1	1.1	18.2	14.6	1.1	15.7
10.5	33.7	1.1	34.8	19.3	1.1	20.5	15.8	1.1	17.0
11.0	37.7	1.8	39.5	21.6	1.9	23.5	17.0	1.8	18.8
11.5	41.6	2.8	44.4	23.9	3.0	26.9	18.3	2.7	21.0
12.0	45.6	3.8	49.4	26.1	4.2	30.3	20.1	3.6	23.6
12.5	49.6	4.8	54.4	28.4	5.4	33.8	21.8	4.5	26.3
13.0	53.5	5.9	59.4	30.7	6.7	37.4	23.6	5.5	29.1
13.5	57.5	7.0	64.5	33.0	8.0	40.9	25.5	6.5	32.0
14.0	61.5	8.2	69.6	35.2	9.3	44.5	27.3	7.6	34.9
14.5	65.4	9.4	74.8	37.5	10.7	48.2	29.2	8.6	37.8
15.0	68.5	9.7	78.2	40.3	11.0	51.3	31.0	8.9	39.9
15.5	70.9	10.0	80.9	43.5	11.4	54.9	32.8	9.2	42.0
16.0	73.3	11.0	84.2	46.9	12.1	58.9	34.7	9.6	44.3
16.5	75.8	12.6	88.3	50.3	13.1	63.4	36.7	10.1	46.8
17.0	78.3	14.2	92.5	53.9	14.1	68.0	38.7	10.6	49.3
17.5	81.0	15.8	96.8	57.6	15.1	72.8	40.8	11.1	51.9
18.0	83.7	17.5	101.2	61.5	16.2	77.6	43.0	11.6	54.6
18.5	86.5	19.2	105.7	65.4	17.2	82.6	45.2	12.1	57.3
19.0	89.4	20.9	110.3	69.4	18.2	87.7	47.5	12.6	60.1

19.5	92.4	22.6	115.0	73.6	19.3	92.9	49.9	13.0	62.9
20.0	96.0	23.0	119.0	78.1	19.6	97.7	52.5	13.3	65.8
20.5	100.3	23.4	123.6	83.0	20.0	102.9	55.1	13.5	68.6
21.0	104.6	23.7	128.4	88.0	20.3	108.2	57.9	13.7	71.6
21.5	109.1	24.1	133.1	93.1	20.5	113.6	60.7	13.9	74.6
22.0	113.6	24.4	138.0	98.3	20.8	119.1	63.5	14.1	77.6
22.5	118.2	24.7	142.9	103.6	21.0	124.6	66.4	14.2	80.6
23.0	122.9	24.9	147.8	108.9	21.3	130.2	69.3	14.4	83.7
23.5	127.6	25.2	152.8	114.3	21.5	135.9	72.3	14.6	86.9
24.0	132.4	23.9	156.3	119.8	20.5	140.3	75.3	14.0	89.3
24.5	137.3	21.2	158.5	125.3	18.3	143.7	78.3	12.7	91.0
25.0	142.2	18.5	160.6	130.9	16.1	147.0	81.4	11.4	92.7
25.5	147.1	15.7	162.8	136.6	13.8	150.4	84.5	10.0	94.5
26.0	152.1	12.9	165.1	142.4	11.5	153.9	87.7	8.6	96.3
26.5	157.2	10.1	167.3	148.2	9.2	157.3	90.8	7.2	98.1
27.0	162.4	7.2	169.6	154.1	6.8	160.9	94.1	5.8	99.9
27.5	167.6	4.4	171.9	160.0	4.4	164.4	97.3	4.4	101.7
28.0	173.8	4.4	178.1	166.3	4.4	170.7	102.3	4.4	106.7
28.5	179.2	4.4	183.6	173.0	4.4	177.4	107.3	4.4	111.7
29.0	183.0	4.4	187.4	179.6	4.4	184.0	112.4	4.4	116.7
29.5	186.8	4.4	191.1	186.3	4.4	190.6	117.4	4.4	121.8
30.0	190.5	4.4	194.9	192.9	4.4	197.3	122.5	4.4	126.8
30.5	194.3	4.4	198.6	199.6	4.4	203.9	127.6	4.4	131.9
31.0	198.0	4.4	202.4	206.2	4.4	210.6	132.7	4.4	137.0
31.5	201.8	4.4	206.1	212.9	4.4	217.2	137.8	4.4	142.1
32.0	205.5	4.4	209.9	219.5	4.4	223.9	142.9	4.4	147.2
32.5	209.3	4.4	213.6	226.1	4.4	230.5	148.0	4.4	152.4
33.0	213.0	4.4	217.4	232.8	4.4	237.1	153.2	4.4	157.5
33.5	216.8	4.4	221.2	239.4	4.4	243.8	158.3	4.4	162.7
34.0	220.5	4.4	224.9	246.1	4.4	250.4	163.5	4.4	167.9
34.5	224.3	4.4	228.7	252.7	4.4	257.1	168.7	4.4	173.1
35.0	228.1	4.4	232.4	259.4	4.4	263.7	173.9	4.4	178.3
35.5	231.8	4.4	236.2	266.0	4.4	270.4	179.2	4.4	183.5
36.0	235.6	4.4	239.9	272.7	4.4	277.0	184.4	4.4	188.7
36.5	239.3	4.4	243.7	279.3	4.4	283.7	189.6	4.4	194.0
37.0	243.1	4.4	247.4	285.9	4.4	290.3	194.9	4.4	199.3
37.5	246.8	4.4	251.2	292.6	4.4	296.9	200.2	4.4	204.5
38.0	250.6	4.4	254.9	299.2	4.4	303.6	205.5	4.4	209.8
38.5	254.3	4.4	258.7	305.9	4.4	310.2	210.8	4.4	215.2
39.0	258.1	4.4	262.5	312.5	4.4	316.9	216.1	4.4	220.5
39.5	261.8	4.4	266.2	319.2	4.4	323.5	221.5	4.4	225.8
40.0	265.6	4.4	270.0	325.8	4.4	330.2	226.8	4.4	231.2
40.5	269.4	4.4	273.7	332.5	4.4	336.8	232.2	4.4	236.5
41.0	273.1	4.4	277.5	339.1	4.4	343.5	237.6	4.4	241.9
41.5	276.9	4.4	281.2	345.7	4.4	350.1	243.0	4.4	247.3
42.0	280.6	4.4	285.0	352.4	4.4	356.7	248.4	4.4	252.7
42.5	284.4	4.4	288.7	359.0	4.4	363.4	253.8	4.4	258.2
43.0	288.1	4.4	292.5	365.7	4.4	370.0	259.2	4.4	263.6
43.5	291.9	4.4	296.2	372.3	4.4	376.7	264.7	4.4	269.1
44.0	295.6	4.4	300.0	379.0	4.4	383.3	270.2	4.4	274.5
44.5	299.4	4.4	303.8	385.6	4.4	390.0	275.6	4.4	280.0
45.0	303.2	4.4	307.5	392.2	4.4	396.6	281.1	4.4	285.5
45.5	306.9	4.4	311.3	398.9	4.4	403.2	286.7	4.4	291.0
46.0	310.7	4.4	315.0	405.5	4.4	409.9	292.2	4.4	296.5
46.5	314.4	4.4	318.8	412.2	4.4	416.5	297.7	4.4	302.1
47.0	318.2	4.4	322.5	418.8	4.4	423.2	303.3	4.4	307.6
47.5	321.9	4.4	326.3	425.5	4.4	429.8	308.9	4.4	313.2
48.0	325.7	4.4	330.0	432.1	4.4	436.5	314.4	4.4	318.8
48.5	329.4	4.4	333.8	438.8	4.4	443.1	320.0	4.4	324.4
49.0	333.2	4.4	337.5	445.4	4.4	449.8	325.7	4.4	330.0
49.5	336.9	4.4	341.3	452.0	4.4	456.4	331.3	4.4	335.6
50.0	340.7	4.4	345.1	458.7	4.4	463.0	336.9	4.4	341.3
50.5	344.5	4.4	348.8	465.3	4.4	469.7	342.6	4.4	346.9
51.0	348.2	4.4	352.6	472.0	4.4	476.3	348.3	4.4	352.6

51.5	352.0	4.4	356.3	478.6	4.4	483.0	353.9	4.4	358.3
52.0	355.7	4.4	360.1	485.3	4.4	489.6	359.6	4.4	364.0
52.5	359.5	4.4	363.8	491.9	4.4	496.3	365.4	4.4	369.7
53.0	363.2	4.4	367.6	498.6	4.4	502.9	371.1	4.4	375.4
53.5	367.0	4.4	371.3	505.2	4.4	509.6	376.8	4.4	381.2
54.0	370.7	4.4	375.1	511.8	4.4	516.2	382.6	4.4	386.9
54.5	374.5	4.4	378.8	518.5	4.4	522.8	388.4	4.4	392.7
55.0	378.2	4.4	382.6	525.1	4.4	529.5	394.1	4.4	398.5
55.5	382.0	4.4	386.4	531.8	4.4	536.1	400.0	4.4	404.3
56.0	385.8	4.4	390.1	538.4	4.4	542.8	405.8	4.4	410.1
56.5	389.5	4.4	393.9	545.1	4.4	549.4	411.6	4.4	416.0
57.0	393.3	4.4	397.6	551.7	4.4	556.1	417.4	4.4	421.8
57.5	397.0	4.4	401.4	558.3	4.4	562.7	423.3	4.4	427.7
58.0	400.8	4.4	405.1	565.0	4.4	569.4	429.2	4.4	433.5
58.5	404.5	4.4	408.9	571.6	4.4	576.0	435.1	4.4	439.4
59.0	408.3	4.4	412.6	578.3	4.4	582.6	441.0	4.4	445.3
59.5	412.0	4.4	416.4	584.9	4.4	589.3	446.9	4.4	451.2
60.0	415.8	4.4	420.2	591.6	4.4	595.9	452.8	4.4	457.2

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* API RP-2A (1994) *
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PILE PENETRATION FT.	TOTAL SKIN FRICTION KIP	END BEARING KIP	ULTIMATE CAPACITY KIP
0.00	0.0	2.9	2.9
0.50	0.0	2.9	2.9
1.00	0.0	2.8	2.8
1.50	0.0	2.5	2.5
2.00	0.0	2.3	2.3
2.50	0.0	2.1	2.1
3.00	0.0	1.8	1.8
3.50	0.0	1.6	1.6
4.00	0.0	1.4	1.4
4.50	0.0	1.1	1.1
5.00	0.0	1.1	1.1
5.50	0.0	1.1	1.1
6.00	0.0	1.1	1.1
6.50	0.9	1.1	2.0
7.00	2.7	1.1	3.8
7.50	4.6	1.1	5.7
8.00	6.4	1.1	7.6
8.50	8.3	1.1	9.5
9.00	10.3	1.1	11.4
9.50	12.2	1.1	13.4
10.00	14.2	1.1	15.4
10.50	16.2	1.1	17.4
11.00	18.3	1.8	20.1
11.50	20.3	2.7	23.0
12.00	22.4	3.6	26.0
12.50	24.5	4.5	29.1
13.00	26.7	5.5	32.2
13.50	28.9	6.5	35.4
14.00	31.2	7.6	38.8
14.50	33.5	8.6	42.1
15.00	36.2	8.9	45.1
15.50	39.4	9.2	48.6
16.00	42.7	9.6	52.3
16.50	46.1	10.1	56.1
17.00	49.6	10.6	60.1
17.50	53.2	11.1	64.3

18.00	56.9	11.6	68.5
18.50	60.7	12.1	72.8
19.00	64.7	12.6	77.3
19.50	68.7	13.0	81.8
20.00	73.2	13.3	86.5
20.50	78.0	13.5	91.5
21.00	82.9	13.7	96.6
21.50	88.0	13.9	101.9
22.00	93.2	14.1	107.2
22.50	98.4	14.2	112.6
23.00	103.7	14.4	118.1
23.50	109.0	14.6	123.6
24.00	114.5	14.0	128.4
24.50	120.0	12.7	132.6
25.00	125.5	11.4	136.9
25.50	131.1	10.0	141.1
26.00	136.8	8.6	145.5
26.50	142.6	7.2	149.8
27.00	148.4	5.8	154.2
27.50	154.3	4.4	158.7
28.00	160.3	4.4	164.7
28.50	166.4	4.4	170.8
29.00	172.5	4.4	176.9
29.50	178.6	4.4	183.0
30.00	184.7	4.4	189.1
30.50	190.9	4.4	195.2
31.00	197.0	4.4	201.4
31.50	203.2	4.4	207.6
32.00	209.4	4.4	213.7
32.50	215.6	4.4	220.0
33.00	221.8	4.4	226.2
33.50	228.1	4.4	232.4
34.00	234.3	4.4	238.7
34.50	240.6	4.4	244.9
35.00	246.9	4.4	251.2
35.50	253.2	4.4	257.5
36.00	259.5	4.4	263.8
36.50	265.8	4.4	270.2
37.00	272.1	4.4	276.5
37.50	278.5	4.4	282.9
38.00	284.9	4.4	289.2
38.50	291.3	4.4	295.6
39.00	297.7	4.4	302.0
39.50	304.1	4.4	308.4
40.00	310.5	4.4	314.9
40.50	317.0	4.4	321.3
41.00	323.4	4.4	327.8
41.50	329.9	4.4	334.2
42.00	336.4	4.4	340.7
42.50	342.9	4.4	347.2
43.00	349.4	4.4	353.8
43.50	355.9	4.4	360.3
44.00	362.5	4.4	366.8
44.50	369.0	4.4	373.4
45.00	375.6	4.4	379.9
45.50	382.2	4.4	386.5
46.00	388.8	4.4	393.1
46.50	395.4	4.4	399.7
47.00	402.0	4.4	406.4
47.50	408.6	4.4	413.0
48.00	415.3	4.4	419.6
48.50	422.0	4.4	426.3
49.00	428.7	4.4	433.0
49.50	435.4	4.4	439.8

50.00	442.1	4.4	446.5
50.50	448.9	4.4	453.3
51.00	455.7	4.4	460.1
51.50	462.6	4.4	466.9
52.00	469.4	4.4	473.8
52.50	476.3	4.4	480.7
53.00	483.2	4.4	487.6
53.50	490.1	4.4	494.5
54.00	497.1	4.4	501.4
54.50	504.1	4.4	508.4
55.00	511.1	4.4	515.4
55.50	518.1	4.4	522.5
56.00	525.1	4.4	529.5
56.50	532.2	4.4	536.6
57.00	539.3	4.4	543.7
57.50	546.4	4.4	550.8
58.00	553.6	4.4	558.0
58.50	560.8	4.4	565.1
59.00	568.0	4.4	572.3
59.50	575.2	4.4	579.5
60.00	582.4	4.4	586.8

AN ASTERISK WILL BE PLACED IN THE END-BEARING COLUMN
IF THE TIP RESISTANCE IS CONTROLLED BY THE FRICTION
OF SOIL PLUG INSIDE AN OPEN-ENDED PIPE PILE.

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**************************************************
* COMPUTE LOAD-DISTRIBUTION AND LOAD-SETTLEMENT *
* CURVES FOR AXIAL LOADING                       *
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T-Z CURVE NO.	NO. OF POINTS	DEPTH TO CURVE FT.	LOAD TRANSFER PSI	PILE MOVEMENT IN.
1	10	0.0000E+00		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.3609E-01
			0.0000E+00	0.6993E-01
			0.0000E+00	0.1286E+00
			0.0000E+00	0.1805E+00
			0.0000E+00	0.2256E+00
			0.0000E+00	0.4512E+00
			0.0000E+00	0.6768E+00
			0.0000E+00	0.1128E+01
			0.0000E+00	0.4512E+01
2	10	0.2275E+01		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.3609E-01
			0.0000E+00	0.6993E-01
			0.0000E+00	0.1286E+00
			0.0000E+00	0.1805E+00
			0.0000E+00	0.2256E+00
			0.0000E+00	0.4512E+00
			0.0000E+00	0.6768E+00
			0.0000E+00	0.1128E+01
			0.0000E+00	0.4512E+01
3	10	0.4458E+01		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.3609E-01
			0.0000E+00	0.6993E-01

		0.0000E+00	0.1286E+00
		0.0000E+00	0.1805E+00
		0.0000E+00	0.2256E+00
		0.0000E+00	0.4512E+00
		0.0000E+00	0.6768E+00
		0.0000E+00	0.1128E+01
		0.0000E+00	0.4512E+01
4	10	0.4500E+01	
		0.0000E+00	0.0000E+00
		0.0000E+00	0.3609E-01
		0.0000E+00	0.6993E-01
		0.0000E+00	0.1286E+00
		0.0000E+00	0.1805E+00
		0.0000E+00	0.2256E+00
		0.0000E+00	0.4512E+00
		0.0000E+00	0.6768E+00
		0.0000E+00	0.1128E+01
		0.0000E+00	0.4512E+01
5	10	0.9525E+01	
		0.0000E+00	0.0000E+00
		0.1401E+01	0.3609E-01
		0.2335E+01	0.6993E-01
		0.3502E+01	0.1286E+00
		0.4203E+01	0.1805E+00
		0.4670E+01	0.2256E+00
		0.4203E+01	0.4512E+00
		0.4203E+01	0.6768E+00
		0.4203E+01	0.1128E+01
		0.4203E+01	0.4512E+01
6	10	0.1446E+02	
		0.0000E+00	0.0000E+00
		0.1622E+01	0.3609E-01
		0.2704E+01	0.6993E-01
		0.4056E+01	0.1286E+00
		0.4867E+01	0.1805E+00
		0.5407E+01	0.2256E+00
		0.4867E+01	0.4512E+00
		0.4867E+01	0.6768E+00
		0.4867E+01	0.1128E+01
		0.4867E+01	0.4512E+01
7	10	0.1450E+02	
		0.0000E+00	0.0000E+00
		0.6391E+00	0.1000E-01
		0.1278E+01	0.2000E-01
		0.2556E+01	0.4000E-01
		0.3834E+01	0.6000E-01
		0.5113E+01	0.8000E-01
		0.5752E+01	0.9000E-01
		0.6391E+01	0.1000E+00
		0.6391E+01	0.5000E+00
		0.6391E+01	0.2000E+01
8	10	0.1702E+02	
		0.0000E+00	0.0000E+00
		0.8500E+00	0.1000E-01
		0.1700E+01	0.2000E-01
		0.3400E+01	0.4000E-01
		0.5100E+01	0.6000E-01
		0.6800E+01	0.8000E-01
		0.7650E+01	0.9000E-01
		0.8500E+01	0.1000E+00
		0.8500E+01	0.5000E+00
		0.8500E+01	0.2000E+01
9	10	0.1946E+02	
		0.0000E+00	0.0000E+00

		0.9542E+00	0.1000E-01
		0.1908E+01	0.2000E-01
		0.3817E+01	0.4000E-01
		0.5725E+01	0.6000E-01
		0.7634E+01	0.8000E-01
		0.8588E+01	0.9000E-01
		0.9542E+01	0.1000E+00
		0.9542E+01	0.5000E+00
		0.9542E+01	0.2000E+01
10	10	0.1950E+02	
		0.0000E+00	0.0000E+00
		0.1042E+01	0.1000E-01
		0.2085E+01	0.2000E-01
		0.4169E+01	0.4000E-01
		0.6254E+01	0.6000E-01
		0.8338E+01	0.8000E-01
		0.9380E+01	0.9000E-01
		0.1042E+02	0.1000E+00
		0.1042E+02	0.5000E+00
		0.1042E+02	0.2000E+01
11	10	0.2052E+02	
		0.0000E+00	0.0000E+00
		0.1161E+01	0.1000E-01
		0.2323E+01	0.2000E-01
		0.4645E+01	0.4000E-01
		0.6968E+01	0.6000E-01
		0.9290E+01	0.8000E-01
		0.1045E+02	0.9000E-01
		0.1161E+02	0.1000E+00
		0.1161E+02	0.5000E+00
		0.1161E+02	0.2000E+01
12	10	0.2146E+02	
		0.0000E+00	0.0000E+00
		0.1191E+01	0.1000E-01
		0.2381E+01	0.2000E-01
		0.4762E+01	0.4000E-01
		0.7143E+01	0.6000E-01
		0.9525E+01	0.8000E-01
		0.1072E+02	0.9000E-01
		0.1191E+02	0.1000E+00
		0.1191E+02	0.5000E+00
		0.1191E+02	0.2000E+01
13	10	0.2150E+02	
		0.0000E+00	0.0000E+00
		0.1213E+01	0.1000E-01
		0.2426E+01	0.2000E-01
		0.4852E+01	0.4000E-01
		0.7279E+01	0.6000E-01
		0.9705E+01	0.8000E-01
		0.1092E+02	0.9000E-01
		0.1213E+02	0.1000E+00
		0.1213E+02	0.5000E+00
		0.1213E+02	0.2000E+01
14	10	0.2452E+02	
		0.0000E+00	0.0000E+00
		0.1308E+01	0.1000E-01
		0.2616E+01	0.2000E-01
		0.5231E+01	0.4000E-01
		0.7847E+01	0.6000E-01
		0.1046E+02	0.8000E-01
		0.1177E+02	0.9000E-01
		0.1308E+02	0.1000E+00
		0.1308E+02	0.5000E+00
		0.1308E+02	0.2000E+01

15	10	0.2746E+02		
			0.0000E+00	0.0000E+00
			0.1387E+01	0.1000E-01
			0.2774E+01	0.2000E-01
			0.5547E+01	0.4000E-01
			0.8321E+01	0.6000E-01
			0.1109E+02	0.8000E-01
			0.1248E+02	0.9000E-01
			0.1387E+02	0.1000E+00
			0.1387E+02	0.5000E+00
			0.1387E+02	0.2000E+01
16	10	0.2750E+02		
			0.0000E+00	0.0000E+00
			0.4232E+01	0.3609E-01
			0.7053E+01	0.6993E-01
			0.1058E+02	0.1286E+00
			0.1270E+02	0.1805E+00
			0.1411E+02	0.2256E+00
			0.1270E+02	0.4512E+00
			0.1270E+02	0.6768E+00
			0.1270E+02	0.1128E+01
			0.1270E+02	0.4512E+01
17	10	0.4852E+02		
			0.0000E+00	0.0000E+00
			0.4729E+01	0.3609E-01
			0.7882E+01	0.6993E-01
			0.1182E+02	0.1286E+00
			0.1419E+02	0.1805E+00
			0.1576E+02	0.2256E+00
			0.1419E+02	0.4512E+00
			0.1419E+02	0.6768E+00
			0.1419E+02	0.1128E+01
			0.1419E+02	0.4512E+01
18	10	0.6946E+02		
			0.0000E+00	0.0000E+00
			0.5111E+01	0.3609E-01
			0.8518E+01	0.6993E-01
			0.1278E+02	0.1286E+00
			0.1533E+02	0.1805E+00
			0.1704E+02	0.2256E+00
			0.1533E+02	0.4512E+00
			0.1533E+02	0.6768E+00
			0.1533E+02	0.1128E+01
			0.1533E+02	0.4512E+01

TIP LOAD KIP	TIP MOVEMENT IN.
0.0000E+00	0.0000E+00
0.2725E+00	0.1128E-01
0.5449E+00	0.2256E-01
0.1090E+01	0.4512E-01
0.2180E+01	0.2933E+00
0.3270E+01	0.9475E+00
0.3923E+01	0.1647E+01
0.4359E+01	0.2256E+01
0.4359E+01	0.3384E+01
0.4359E+01	0.4512E+01

LOAD VERSUS SETTLEMENT CURVE

Abutment 4 Westbound - HP12x53.apo
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TOP LOAD KIP	TOP MOVEMENT IN.	TIP LOAD KIP	TIP MOVEMENT IN.
0.1234E+01	0.1043E-02	0.2416E-02	0.1000E-03
0.1234E+02	0.1043E-01	0.2416E-01	0.1000E-02
0.6232E+02	0.5253E-01	0.1208E+00	0.5000E-02
0.1225E+03	0.1047E+00	0.2416E+00	0.1000E-01
0.3714E+03	0.3767E+00	0.1111E+01	0.5000E-01
0.4787E+03	0.5546E+00	0.1331E+01	0.1000E+00
0.5335E+03	0.1033E+01	0.2524E+01	0.5000E+00
0.5343E+03	0.1534E+01	0.3319E+01	0.1000E+01
0.5352E+03	0.2535E+01	0.4176E+01	0.2000E+01

APPENDIX D

OSFP Review Comment & Response Form

General Project Information	Review Phase	Reviewer Information
Dist: 04 EA: 290821 Project Name: ARROYO LAS - POSITAS BRIDGE WESTBOUND (WIDENING) OSFP Liaison: _____ Phone: _____ e-mail: _____	☐ PSR/PDS (Review No. _) ☐ APS/PSR (Review No. _) ☐ APS/PR (Review No. _) ☐ Type Selection ☐ 65% PS&E Unchecked Details ☐ PS&E (Review No. _) ☐ Construction Support ☒ Other: Foundation Report **Structure Information** (Use when necessary to document comments by individual structure) Structure Name: _____ Br No: 33-0203	Reviewer Name: E. Ortega/R. Nashed Functional Unit: GS-GDW Phone Number: (510)286-4821 e-mail: eduardo_ortega@dot.ca.gov Date of Review: 01/14/2010

Consultant Information (to be filled in by Consultant)				
Consultant Structure Lead (First and Last Name)	Structure Consultant Firm	Phone Number	e-mail	Response Date

#	Doc. (See Note 1)	Page, Section, or SSP	Review Comments	Consultant Responses	
1	FR	N/A	FR prepared by Parikh Consultant, Inc., dated Decmber 2009.	N/A	
2	FR	**Field Exploration** Cone Penetration Testing (CPT) Page 4	1- CPT Boring No. CPT-08-AL2-02 is located in the eastbound side of the bridge and is considered far from the northern side of the bridge side in concern.	It provides some general information, like the water table, etc.	
3	FR	**Subsurface Conditions** Page 4	1- Description of the foundation materials Should be precise as follows: "As indicated by the two boreholes No. A-09-AL2-02 & A-09-200, the foundation materials are predominately hard to firm sandy silty clean clay interbeded by two layers of sand. The upper sand layer is 5 ft dense silty sand with gravels and the l	1 Agreed. The text will be revised to reflect the comment.	

Note 1: Abbreviations for Typical Documents (if Abbr. is not below, type in the document type)					
P=Structure Plans	SP=Special Provisions	FR=Foundation Rpt	DC=Design Calcs	TS=Type Sel. Report	QCC=Quant. Check Calcs
RP=Road Plans	E=Estimate	H=Hydraulics Rpt	CC=Check Calcs	QC=Quant. Calcs	

✓= Comment Resolved
(for Reviewer's use)

			lower one is 15 ft of medium dense to dense sand. ". 2- The foundation materials show inconsistency between the recent borings and CPT boring, is this due to this boring is located far away from the northern side of the bridge in concern? 3- The water surface elevation in Las Positas Creek can be considered the Groundwater elevation.	2. The inconsistencies between the borings and the CPT may due to the inherent limitations/differences in the interpretation soil types from the CPT measurements. Also, as noted in the Eastbound bridge report, the CPT is probably in a different geological unit. 3. As noted in the report,groundwater was not encountered in the borings. However, the dissipation test performed on CPT-08-AL2-02 indicated a groundwater table at El. 411 feet. Groundwater elevations of 403 feet and 407 feet are noted in the borings for nearby Portola Avenue structures. A design groundwater elevation of 415 was established and used in the revised design.	
4	FR General Plan	**FG** Sheet 4 Section B-B	What is the proposed slope of the FG ?		
5					
6					
7					
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9					
10					
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12					
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19					
20					
21					

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FINAL FOUNDATION REPORT
NORTH LIVERMORE AVENUE UNDERCROSSING
AT INTERSTATE 580 (WIDENING)
(BRIDGE NO. 33-0153)
LIVERMORE, ALAMEDA COUNTY CALIFORNIA
EA 290861, POST MILE 12.53

For

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November 18, 2011

Job No. 208102.LIV

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FINAL FOUNDATION REPORT
NORTH LIVERMORE AVENUE UNDERCROSSING
AT INTERSTATE 580 (WIDEN)
(BRIDGE NO. 33-0153)
LIVERMORE, ALAMEDA COUNTY, CALIFORNIA
EA 290861, POST MILE 12.53

INTRODUCTION

This report presents the results of our geotechnical engineering investigation for the proposed widening of the North Livermore Avenue Undercrossing (Bridge No. 33-0153) on Interstate 580 (I-580) in Livermore, Alameda County, California. Our work was performed generally in accordance with the scope of work as per our agreement. The general location of the site and its vicinity are shown on the Project Location Map, Plate 1.

The geotechnical recommendations presented in this report are intended for design input and are not intended to use as specifications. These recommendations should not be used for direct bidding purposes.

EXISTING STRUCTURES AND PROPOSED CONSTRUCTION

The existing North Livermore Avenue Undercrossing (Bridge No. 33-0153) consists of two parallel bridges: one carrying the westbound traffic and the other the eastbound traffic. Four lanes of traffic are accommodated on each bridge. The proposed project will consist of widening the existing bridges to accommodate an HOV lane for each direction. The project is part of the Interstate 580 Westbound HOV Lane Project.

The existing structure was constructed in the early 1970s. The bridges are three-span reinforced concrete box girder structures, each approximately 159 feet long and 77 feet wide and carry four lanes of traffic. Each of the two bents in a bridge is supported on three inclined rectangular pier walls. The pier walls are 1'-6"x7'-0" at the base and 2'-9"x10'-0" at the bridge soffit. Each pier wall is supported on a 14'-0" long, 6'-0" wide. 2'-6" deep spread footing. A footing pressure of 4.0 tsf is indicated for both 'allowable' and 'design' in the as-built drawings. The existing abutments are diaphragm type abutments, supported on 45-ton H-piles (10BP42).

A 14-ft outside widening is proposed for each bridge. The inclined piers walls and the abutments are proposed to match the existing structure. The pier walls will be supported on spread footings similar to the existing structure. The abutments will be supported on driven steel H-piles (HP12x53).

PURPOSE AND SCOPE

The purpose of this investigation was to evaluate the general soil conditions at the project site, to evaluate their engineering properties, and to provide recommendations for foundation support of the proposed project.

The scope of work performed for this investigation included a review of the readily available soils and geologic literature, obtaining representative soil samples and logging soil materials encountered in one drilled boring, laboratory testing of the collected samples, engineering analysis of the field and laboratory data, and preparation of this report. The basis for this investigation is the preliminary plans provided to us by BKF Engineers. We have presented the descriptive log of the borehole in Appendix A.

Due to limitations inherent in geotechnical investigations, it is neither uncommon to encounter unforeseen variations in the soil conditions during construction nor is it practical to determine all such variations during an acceptable program of drilling and sampling for a project of this scope. Such variations, when encountered, generally require additional engineering services to attain a properly constructed project. We, therefore, recommend that a contingency fund be provided to accommodate any additional charges resulting from technical services that may be required during construction.

Our recommendations in this report are based on the above information. Any major deviation should be reported to this office for consideration.

SITE CONDITIONS

The project is located at the intersection of Interstate 580 (I-580) and North Livermore Avenue in Livermore, Alameda County. Per the As-Built drawings, the deck elevation of the existing North Livermore Avenue Undercrossing (Bridge No. 33-0153) is approximately at 479 feet at the eastern end and approximately 480 feet at the western end. North Livermore Avenue has approximately 15 feet of vertical clearance beneath the bridge.

The native terrain adjacent to the North Livermore Avenue Interchange slopes downward from north to south. On the north side of the undercrossing, North Livermore Avenue passes through a canyon between two ridges. Arroyo Las Positas crosses North Livermore Avenue approximately 300 feet south of the undercrossing.

FIELD EXPLORATION

Based on the existing plans, discussions with design engineer, available as-built borings for the existing bridge and other readily available data of the proposed project, one (1) exploratory boring (Boring A-08-LIV-01) was drilled. Another boring (Boring A-09-219), drilled as part of retaining wall investigations for the project is in close proximity to Abutment 4 of the eastbound bridge. The two boring locations are shown on the plan portion of the Log of Test Borings in Appendix A. LOTB sheet for as-built borings for the existing bridge, drilled in 1964 and 1968 are also presented in Appendix A.

Soil Borings

Boring A-08-LIV-01 was drilled on December 15, 2008, from the top of the road embankment adjacent to Abutment 1 (east abutment) of the eastbound bridge. It was advanced with a truck-mounted drill rig, using hollow stem auger drilling method. The boring was drilled to a depth of 75 feet below the existing ground surface.

Selected samples were obtained at various depths predominantly from 3.0-inch O.D. & 2.5 inches I.D. (Modified California) samplers to a depth of 45 feet and from 2.0-inch O.D. & 1.4-inch I.D.

(Standard Penetration Test) samplers below a depth of 45 feet. The samplers were driven in subsurface soils under the impact of a 140-lb hammer having a free fall of 30 inches. The blow counts are presented on the "Log of Test Borings". When correlating standard penetration data in similar soils, the blow counts for the Modified California Sampler can be taken as roughly 1.6 times that for the Standard Penetration Test in similar soils (Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California). The samples were sealed and transported to our laboratory for further evaluation and testing. The field investigation was conducted under the supervision of our field engineer who logged the test borings and prepared the samples for subsequent laboratory testing and evaluation.

Laboratory Testing

Laboratory tests were performed on selected samples obtained during field exploration to determine the physical and engineering properties of the subsoils. Laboratory data of moisture contents, total density, grain size distribution, Atterberg Limits, and unconfined compression strengths are presented on the Log of Test Borings. A detailed description of laboratory tests, including Plasticity Charts for Atterberg Limits, and grain size distribution curves are presented in Appendix B.

Boring Logs

The bore logs presented in Appendix A were prepared from the field logs which were edited after visual re-examination of the soil samples in the laboratory and results of classification tests on selected soil samples as indicated on the logs. The abrupt stratum changes shown on these logs may be gradual and relatively minor changes in soil types within a stratum may not be noted on the logs due to field limitations.

SUBSURFACE CONDITIONS

Boring A-08-LIV-01 (Elev. 480.0 feet), drilled from the road surface near Abutment 1 of the eastbound bridge indicates predominantly stiff lean clays and sandy clays to a depth of 18 feet

below ground surface (Elev. 462 feet), underlain by medium dense to very dense silty and clayey sands to a depth of 67 feet ground surface (Elev. 413 feet). A very stiff to hard clay layer was encountered at Elev. 413 feet to the bottom of the boring at Elev. 405 feet. Predominantly very stiff lean clays were encountered in the 15-ft deep Boring A-08-219 drilled from the road surface near Abutment 1 of the eastbound bridge. As-built borings drilled in 1964 and 1968 indicated predominantly dense to very dense sandy soils up to Elev. 425 feet, the maximum depth explored. (the boring elevations ranged from Elev. 461 feet to Elev. 470 feet). Very dense gray siltstone was noted at Elev. 425 feet, near the bottom of As-Built Boring No. B-5 at the southeast corner.

During field explorations in December 2008, groundwater was encountered in boring A-08-LIV-01 approximately at Elev. 444 feet. Groundwater is reported at Elev. 451.5 feet in the as-built boring B-1 drilled in October, 1964. However, the groundwater may vary with the passage of time due to seasonal groundwater fluctuation, surface and subsurface flows, ground surface run-off and other factors that may not be present at the time of investigation.

GEOLOGY

General geologic features pertaining to the site were evaluated with reference to the "Geologic Map of Quaternary Geology of Alameda County and Surrounding Areas, CA: Derived from Digital Database open-file 97-98" by E.J. Helley and R.W. Graymer 1997; Scale 1:100000. Based on the map, the site is located in an area covered by Pleistocene alluvial fans and fluvial deposits (Qpaf). A geologic map of the general project area is shown on Plate 2. Description of the main geologic unit is as follows:

> *Qpaf (Alluvial Fans and Fluvial Deposits (Pleistocene)) – Brown dense gravely and clayey sand or clayey gravel that fines upward to sandy clay. These deposits display various sorting and are located in most stream channels in the county. All Qpaf deposits can be related to modern stream courses. They are distinguished from younger alluvial fans and fluvial deposits by higher topographic position, greater degree of dissection, and stronger soil profile development. They are less permeable than Holocene deposits, and locally contain fresh water mollusks and extinct late Pleistocene vertebrate fossils. They are overlain by Holocene deposits on lower parts of the alluvial plain, and incised by channels that are partly*

filled with Holocene alluvium on higher parts of the alluvial plain. Maximum thickness is unknown but at least 50m (150 feet).

EARTHQUAKE CONSIDERATIONS

The Type Selection Meeting for the North Livermore Avenue Undercrossing (Bridge No. 33-0153) was held prior to the cut-off date of September 30, 2009. Therefore, for the present project earthquake considerations are not based on the recently published 2009 Caltrans Deterministic PGA Map and ARS Online Report.

Seismic Sources

The project is located in a seismically active part of Northern California. Many faults exist in the area, which are capable of producing earthquakes which may cause strong ground shaking at the site.

Maximum credible earthquake magnitudes for some of the major faults in the area determined by Mualchin (1996) are summarized below. These maximum credible earthquake magnitudes represent the largest earthquakes that could occur on the given fault based on the current understanding of the regional tectonic structure. A fault map is shown on Plate 3.

SEISMIC SOURCES

Fault	Fault Type	Distance from Site (miles)	Maximum Credible Earthquake Magnitude
Greenville Fault	Strike-Slip	4.8	7.25
Verona-Williams Fault	Not known	5.2	6.00
Calavares-Pacines-San Benito Fault	Strike-Slip	7.0	7.50
Coast Ranges-Sierran Block Boundary Zone	Reverse	9.4	7.00

Based on the seismic hazard map prepared by Mualchin (1996) and the attenuation relationship by Sadigh et al. (1997), the governing fault is the Greenville Fault (Mw = 7.25)g.

Seismic Design Criteria

Based on the seismic hazard map prepared by Mualchin (1996), the Peak Bedrock Acceleration (PBA) at the project site falls between 0.4g and 0.5g. According to Caltrans Guidelines for Structures Foundation Report (March 2006), the value of PBA (for a specific project site) from the seismic hazard map should be verified with that calculated using the attenuation relation by Sadigh et al. (1997). Based on Sadigh attenuation relation, the maximum PBA computed for the project site is 0.46g. A design PBA of 0.5g is recommended.

Based on the available boring information in the vicinity of the project site, the subsurface soil conditions at the project site generally matches the criteria for Soil Type D, as per Caltrans Seismic Design Criteria (Version 1.4, June 2006). Based on Caltrans Seismic Design Criteria and the above information, the seismic design criteria are as follows:

1.	Closest Distance to Fault	=	4.8 miles (7.7 km)
2.	PBA	=	0.5 g
3.	Design ARS Curve	=	Caltrans Seismic Design Criteria June 2006 Version 1.4 Figure B.8 (Soil Profile Type D).
4.	Design ARS Curve (see Plate 4)	=	Curve based on Caltrans SDC (v. 1.4, 6/2006) for different structural periods. The curve is based on (Governing Fault – Greenville Fault; Mw =7.25) Figure B.8, PBA = 0.5g.

The Design ARS Curve is presented in Plate No. 4 of this report.

Seismic Hazards/Liquefaction Impact

Potential seismic hazards may arise from three sources: surface fault rupture, ground shaking and liquefaction. Since no active faults pass through the site, the potential for fault rupture is relatively low. Based on available geological and seismic information, the possibility of the site experiencing strong ground shaking may be considered significant.

Liquefaction is a phenomenon in which saturated soils are subject to a temporary but essentially total loss of shear strength under the reversing, cyclic shear stresses associated with earthquake shaking. Submerged, cohesionless sands and silts of low relative density are the type of soils which usually are susceptible to liquefaction - the susceptibility increases with decreasing relative density (reflected by the number of blows (blow counts) to drive a sampler), and decreasing fines content. Accepted procedures for the assessment for liquefaction potential for cohesionless soils have evolved over the years through research and field observations (Youd et al, 2001). Recent research and field observations have shown that clays of low plasticity are also potentially liquefiable, based on the moisture content and plasticity characteristics of the clay. Procedures for the assessment of liquefaction potential for clay soils have also been established and have received general acceptance. (Bray et. al., 2004).

A potentially liquefiable medium dense silty sand layer, approximately 10 feet thick is indicated at approximately 40 feet depth (approx Elev. 440.0) in the boring (A-08-LIV-01) drilled in 2008. A similar layer is not evident in any of the three as-built borings from 1964 and 1968 and boring B-5 is close to LIV-01. It is therefore inferred that the potential for liquefaction indicated in boring LIV-01 is probably an isolated pocket and not reflective of a significant areal extent. The potential for liquefaction at the site is therefore inferred as low.

FINDINGS AND RECOMMENDATIONS

General

This report was prepared specifically for the proposed widening of the bridge structures according to the plans provided to us. Normal construction procedures were assumed throughout our analysis and represent one of the bases of recommendations presented herein. Our design criteria have been based upon the materials encountered at the site. Therefore, we should be notified in the event that these conditions are changed, so as to modify or amend our recommendations.

Foundations

Driven steel H piles (HP 12x53) are recommended for foundation support for both the abutments H piles were chosen because of their ability to penetrate through the dense sands present at the site. Steel H piles have also been used for the existing bridge. The pier walls at the bents will be supported on isolated spread footings.

Pile Design

Pertinent foundation design information was provided by Biggs Cardosa Associates (Structural Engineers for the project), which are presented in the following tables (Foundation Design Data and Foundation Design Loads).

FOUNDATION DESIGN DATA – Left and Right Bridges

Support No	Design Method	Pile Type	Finish Grade Elev. (ft)	Top of Pile Elev. (ft)	Pile Cap Size (ft)		Permissible Settlement (inch)	No. of Piles per Support
					B	L		
Abutment 1	WSD	Steel H Pile HP 12 x 53	480.0	472.0	N/A	N/A	N/A	N/A
Abutment 4	WSD	Steel H Pile HP 12 x 53	481.0	473.0	N/A	N/A	N/A	N/A

FOUNDATION LOADS – Left and Right Bridges

Support No.	Service-I Limit State (kips)			Strength Limit State (Controlling Group, (kips)				Extreme Limit State (Controlling Group, kips)			
	Total Load		Permanent Loads	Compression		Tension		Compression		Tension	
	Per Supp.	Per Pile	Per Support	Per Supp.	Max. Per Pile.	Per Supp.	Max. Per Pile.	Per Supp.	Max. Per Pile.	Per Supp.	Max. Per Pile.
Abutment 1	N/A	85	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Abutment 4	N/A	85	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Consistent with the current Caltrans requirements, the abutment foundations were evaluated for the foundation design data and loading conditions using Caltrans November 2003 Bridge Design Specifications for foundations, using Working Stress Design (WSD) methods. The actual load

demands on the piles, based upon WSD are presented in the table below for the proposed widened sections of the bridges.

LOAD DEMANDS – Left and Right Bridges

Support No.	Design Method	Service Loads (kips)		Required Nominal Resistance (kips)				Required Nominal Resistance (kips)	
				Strength Limit		Extreme Limit			
		Comp.	Tens.	Comp. (ϕ=0.7)	Tens. (ϕ=0.7)	Comp. (ϕ=1.0)	Tens. (ϕ=1.0)	Comp.	Tens.
Abutment 1	WSD	85	0	N/A	N/A	N/A	N/A	170	0
Abutment 4	WSD	85	0	N/A	N/A	N/A	N/A	170	0

Estimation of the pile capacities was made for each support location using the site-specific subsurface conditions. The top of pile (bottom of footing) elevations were based on the information provided by the designer. The computer program APILE developed by Ensoft, Inc. was used for the computations. The program computes pile capacities for driven piles using four different methods: FHWA Method; US Corps of Engineers Method; Lambda Method; and API-RP2A Method from the American Petroleum Institute. The FHWA Method was chosen as the basis for the recommended pile tip elevations, since this method was judged to be the most appropriate for steel H piles in sandy soils. Pile capacity computations (APILE output) are presented in Appendix C.

The recommended specified pile tip elevations are shown in the pile data table below.

PILE DATA TABLE – Left and Right Bridges

Location	Pile Type	Nominal Resistance (kips)		Finish Grade (ft)	Top of Pile Elev. (ft)	Design Tip Elev. (ft)[1]	Specified Tip Elev. (ft)	Nominal Driving Resistance (kips)
		Compression	Tension					
Abutment 1	Steel H Pile HP 12 x 53	170	0	480.0	472.0	448.0 (a) 457.0 (c)	448.0	170
Abutment 4	Steel H Pile HP 12 x 53	170	0	481.0	473.0	447.0 (a) 459.0 (c)	447.0	170

Notes:
Design Tip Elevation is controlled by the following demands: (a) Compression; (b) Tension; (c) Lateral

Pile Installation

Hard driving is anticipated through the dense sands at the site. An adequate hammer should be chosen for the pile driving. Also, it is highly recommended that prior to start of production pile driving, a pile drivability analysis be performed to assess the adequacy of the hammer and to establish a field pile driving criterion.

Lateral Pile Capacity

Analyses for lateral load behavior of the piles may be performed using the LPILE computer program. Geotechnical parameters for the development of p-y curves for the LPILE program are presented in the tables below. The parameters are based on field borings, and laboratory test data. The elevation information is based on the topographic data provided to us. It is recommended to use a p-multiplier of 0.6 (60% effective) and a y-multiplier of 1.0 to consider group effect for piles spaced at minimum 3 times the maximum dimension.

Geotechnical Parameters for LPILE Analysis

Abutment 1

Elevation (ft.)	Generalized Soil Profile	LPILE Soil Type	Probable Soil Strength	K (pci)	e_{50} (in/in)	Effect Unit Weight (pci)
480 to 462	Stiff Lean Clay & Sandy Lean Clay	3, STIFF CLAY w/o water	Su = 9.03 psi	500	0.007	.0723
462 to 452	Medium Dense to Dense Clayey Sand	8, SAND (API)	$\varphi = 30°$	90	--	.0723
452 to 444	Medium Dense to Very Dense Silty Sand	8, SAND (API)	$\varphi = 35°$	90	--	.0752
444 to 412	Medium Dense to Very Dense Silty Sand	8, SAND (API)	$\varphi = 35°$	125	--	.0405
412 to 400	Very Stiff to Hard Lean Clay	3, STIFF CLAY w/o water	Su = 20.83 psi	1000	0.005	.0376
Ground Surface @ El +480		Groundwater Table @ El +444				

Abutment 4

Elevation (ft.)	Generalized Soil Profile	LPILE Soil Type	Probable Soil Strength	K (pci)	e_{50} (in/in)	Effect Unit Weight (pci)
481 to 473	Very Stiff Lean Clay	3, STIFF CLAY w/o water	Su = 17.36 psi	1000	0.005	.0723
473 to 467	Stiff Silt to Sandy Silt	8, SAND (API)	$\varphi = 25°$	90	--	.0723
467 to 462	Very Stiff Lean Clay	3, STIFF CLAY w/o water	Su = 15.23 psi	1000	0.005	.0723
462 to 452	Medium Dense to Dense Clayey Sand	8, SAND (API)	$\varphi = 30°$	90	--	.0723
452 to 444	Medium Dense to Very Dense Silty Sand	8, SAND (API)	$\varphi = 35°$	90	--	.0752
444 to 412	Medium Dense to Very Dense Silty Sand	8, SAND (API)	$\varphi = 35°$	125	--	.0405
412 to 400	Very Stiff to Hard Lean Clay	3, STIFF CLAY w/o water	Su = 20.83 psi	1000	0.005	.0376
Ground Surface @ El +481		Groundwater Table @ El +444				

The parameters reported above are based on standard pile sizes. For piles larger than 2 feet in diameter, the K values should be scaled up and the e_{50} values should be scaled down by a factor of $(\text{pile size}/2')^{0.5}$.

Spread Footing Foundations

Each pier wall at the bents will be founded on spread footings. Per the Designer, the dimensions of the spread footings will be 14.0-ft long, and 7.0-ft wide. The 'bottom of footing' elevations are proposed at approximately 453.9 feet. Based on the information from the available soil borings, the bottom of the footing should be on dense to very dense sand. An ultimate capacity of 31.0 ksf was computed for the footing.

Presented in the table below are the foundation recommendations for spread footings, based on Caltrans Memo to Designers 4-1, April 2008 and pertinent information provided by the Designer. Associated calculation are presented in Appendix C.

Support Location	Footing Size (ft)		Bottom of Footing Elevation (ft)	Minimum Footing Embedment Depth (ft)	WSD (LRFD Service-I Limit State Load Combination)		LRFD		
	B	L			Permissible Gross Contact Stress (ksf)	Allowable Gross Bearing Capacity (ksf)	Service	Strength φ_b=0.45	Extreme Event φ_b=1.00
							Permissible Net Contact Stress (ksf)	Factored Gross Nominal Bearing Resistance (ksf)	Factored Gross Nominal Bearing Resistance (ksf)
Abut 1							N/A	N/A	N/A
Bent 2	7	14	453.9	2	N/A	N/A	8.6	14.0	31.0
Bent 3	7	14	453.9	2	N/A	N/A	8.6	14.0	31.0
Abut 4							N/A	N/A	N/A

Notes:
1. Recommendations are based on the foundation geometry and the loads and settlements provided by Structure Design and Foundation Design Data Sheet. The footing contact area is taken as equal to the effective footing area, wherever applicable. [Settlement under Service Load = 1.0 inch]
2. See MTD 4-1 for definitions and applications of the recommended design parameters.

For lateral stability of the footings, an equivalent fluid pressure of 400 pcf is recommended for allowable passive resistance on the footings from the surrounding soil. It should the noted that the recommended allowable passive resistance is one-half of the ultimate (available) passive resistance. A friction coefficient of 0.4 is recommended for the footing-soil interface at the base of the footings. Based on the overburden depth and the footing depth, a uniform ultimate passive pressure of 5 ksf is recommended for seismic design of the bent footings. To mobilize the ultimate passive pressure, a lateral movement of 2 percent of the footing depth is required.

Lateral Earth Pressures

Abutment retaining walls and wing walls should be designed to resist the following Applied Lateral Earth Pressures and live load. These values assume no hydrostatic pore pressure buildup behind the wall and are based on well-drained backfill behind the walls supported in native soil.

	Applied Lateral Earth Pressure
Active Condition	36 pcf Equivalent Fluid Pressure (EFP) for engineered fill
At-Rest Condition	55 pcf Equivalent Fluid Pressure (EFP) for engineered fill
Passive Resistance	310 pcf EFP with a maximum value of 3100 psf. 5 ksf (ultimate) for seismic design of the abutment backwall (5.5 feet high or greater); for activated height less than 5.5 feet modify proportionally, i.e. 5 x (H/5.5) ksf. A minimum lateral wall movement of 2% of wall height to mobilize the full ultimate passive pressure is required.

Cantilever walls which are free to rotate at least 0.004 radians may be assumed flexible for the active condition. Walls that are not capable of this movement should be assumed rigid and designed for the at-rest condition. The effect of any surcharge (dead, live, or traffic load) should be added to the preceding lateral earth pressures. A coefficient of 0.3 may be used to determine the additional earth pressure resulting from the surcharge.

Grading

All grading operations should be performed in accordance with the project specifications and Caltrans Standard Specifications for Earthwork (Section 19).

Slopes.

The approach embankment will have a 2(H): 1(V) slope on both sides. Under the bridge, paved slopes may be constructed at 1.5(H):1 (V) slope.

Corrosion

The corrosion investigations performed are in general accordance with the provisions of California Test Method 643. A summary of the corrosion test data is presented below.

Boring	Depth (ft)	pH	Resistivity (ohms-cm)	Sulfate (ppm)	Chloride (ppm)
LIV-01	3.0	7.85	1370	8.5	40.1
LIV-01	9.5	7.74	1420	32.8	28.7

Per Caltrans Corrosion Guidelines, a site is considered corrosive if tests on representative soil or water samples indicate a minimum resistivity of 1000 ohm-cm, and in addition, (a) chloride concentration is 500 ppm or greater; (b) sulfate content is 2000 ppm or greater; or the pH is 5.5 or less. Based on the data, the site subsoil is non-corrosive per Caltrans corrosion design guidelines, and standard Type II modified or Type I-P (MS) modified cement may be used for the concrete substructures. The minimum cement factor and cover thickness should be per Caltrans Bridge Design Specifications (Section 8.22).

Plan Review

We recommend that final plans for foundations be reviewed by this office prior to construction so that the intent of our recommendations is included in the project plans and specifications and to further see that no misunderstandings or misinterpretations have occurred.

Construction Observation

To a degree, the performance of any structure is dependent upon construction procedures and quality. Hence, observation of foundation excavations, and pile installations should be carried out by the regulating agencies. If the subsurface conditions different from those forming the basis of our recommendations is encountered this office should be informed in order to assess the need for design changes. Therefore, the recommendations presented in this report are contingent upon good quality control and these geotechnical observations during construction.

INVESTIGATION LIMITATIONS

Our services consist of professional opinions and recommendations made in accordance with generally accepted geotechnical engineering principles and practices and are based on our site reconnaissance and the assumption that the subsurface conditions do not deviate from observed conditions. All work done is in accordance with generally accepted geotechnical engineering principles and practices. No warranty, expressed or implied, of merchantability or fitness, is made or intended in connection with our work or by the furnishing of oral or written reports or findings. The scope of our services did not include any environmental assessment or investigation for the

presence or absence of hazardous or toxic materials in structures, soil, surface water, groundwater or air, below or around this site. Unanticipated soil conditions are commonly encountered and cannot be fully determined by taking soil samples and excavating test borings; different soil conditions may require that additional expenditures be made during construction to attain a properly constructed project. Some contingency fund is thus recommended to accommodate these possible extra costs.

This report has been prepared for the proposed project as described earlier, to assist the engineer in the design of this project. In the event any changes in the design or location of the facilities are planned, or if any variations or undesirable conditions are encountered during construction, our conclusions and recommendations shall not be considered valid unless the changes or variations are reviewed and our recommendations modified or approved by us in writing.

This report is issued with the understanding that it is the designer's responsibility to ensure that the information and recommendations contained herein are incorporated into the project and that necessary steps are also taken to see that the recommendations are carried out in the field.

The findings in this report are valid as of the present date. However, changes in the subsurface conditions can occur with the passage of time, whether they be due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards occur, whether they result from legislation or from the broadening of knowledge. Accordingly, the findings in this report might be invalidated, wholly or partially, by changes outside of our control.

Respectfully submitted,

PARIKH CONSULTANTS, INC.

Partha Sircar, Ph.D., P.E. C54619
Senior Engineer

Gary Parikh, G.E. 666
Project Manager

REGISTERED PROFESSIONAL ENGINEER
GAURANG R. PARIKH
No. 666
EXP. 12-31-13
GEOTECHNICAL
STATE OF CALIFORNIA

REFERENCES

1. APILE Program, Version Plus 4.0, A Program for Analysis of Axial Capacity of Driven Piles, ENSOFT, Inc.

2. Bray, J. D., Sancio, R. B., Reimer, M. F., and Durganoglu, T. "Liquefaction Susceptibility of Fine Grained Soils" Proc., 11th Inter. Confc. On Soil Dynamics and Earthquake Engg. And 3rd Inter. Confc. On Earthquake Geotech. Engg., Berkeley, CA, January 7-9, 2004

3. Caltrans as-built plans for North Livermore Avenue Undercrossing (1972) (Br. No. 33-0153)

4. Caltrans California Seismic Hazard Map (1996)

5. California Department of Transportation, May 2006, Bridge Design Specifications

6. California Department of Transportation, May 2006, Standard Plans.

7. California Department of Transportation, May 2006, Standard Specifications

8. Caltrans Memo to Designer, July 2008

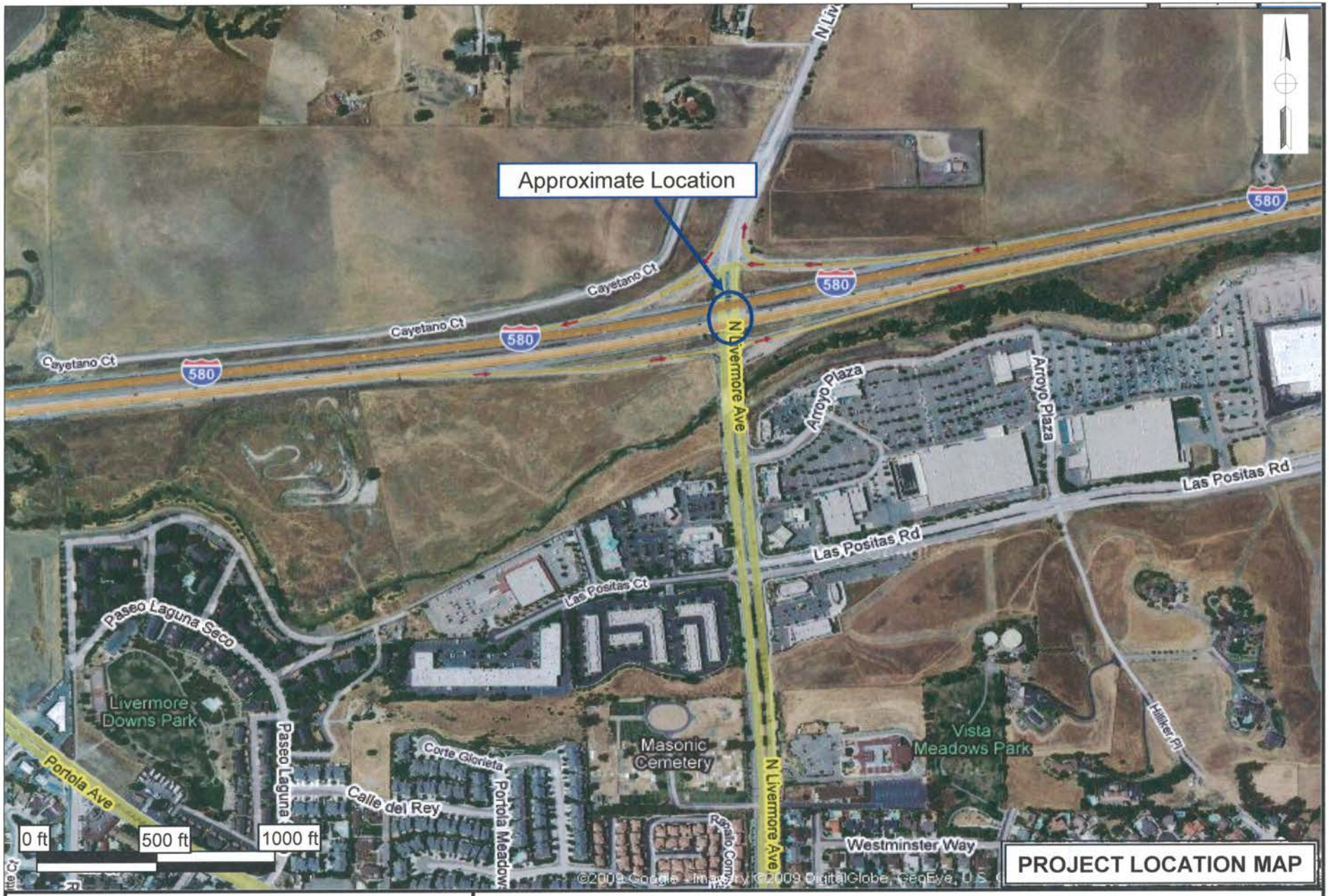
9. Caltrans Seismic Design Criteria (V1.4, June 2006)

10. Geologic Map of Quaternary Geology of Alameda County and Parts of Contra Costa, Santa Clara, San Mateo, San Francisco, Stanislaus, and San Joaquin Counties: Derived from the Digital Database, E.J. Helley and R.W. Graymer, 1997; USGS Map Open-File Report 97-97).

11. LPILE Program, Version 5, Analysis of Laterally Load Piles, ENSOFT, Inc.

12. Mualchin, L., "A Technical Report to Accompany Caltrans California Seismic Hazard Map (1996)

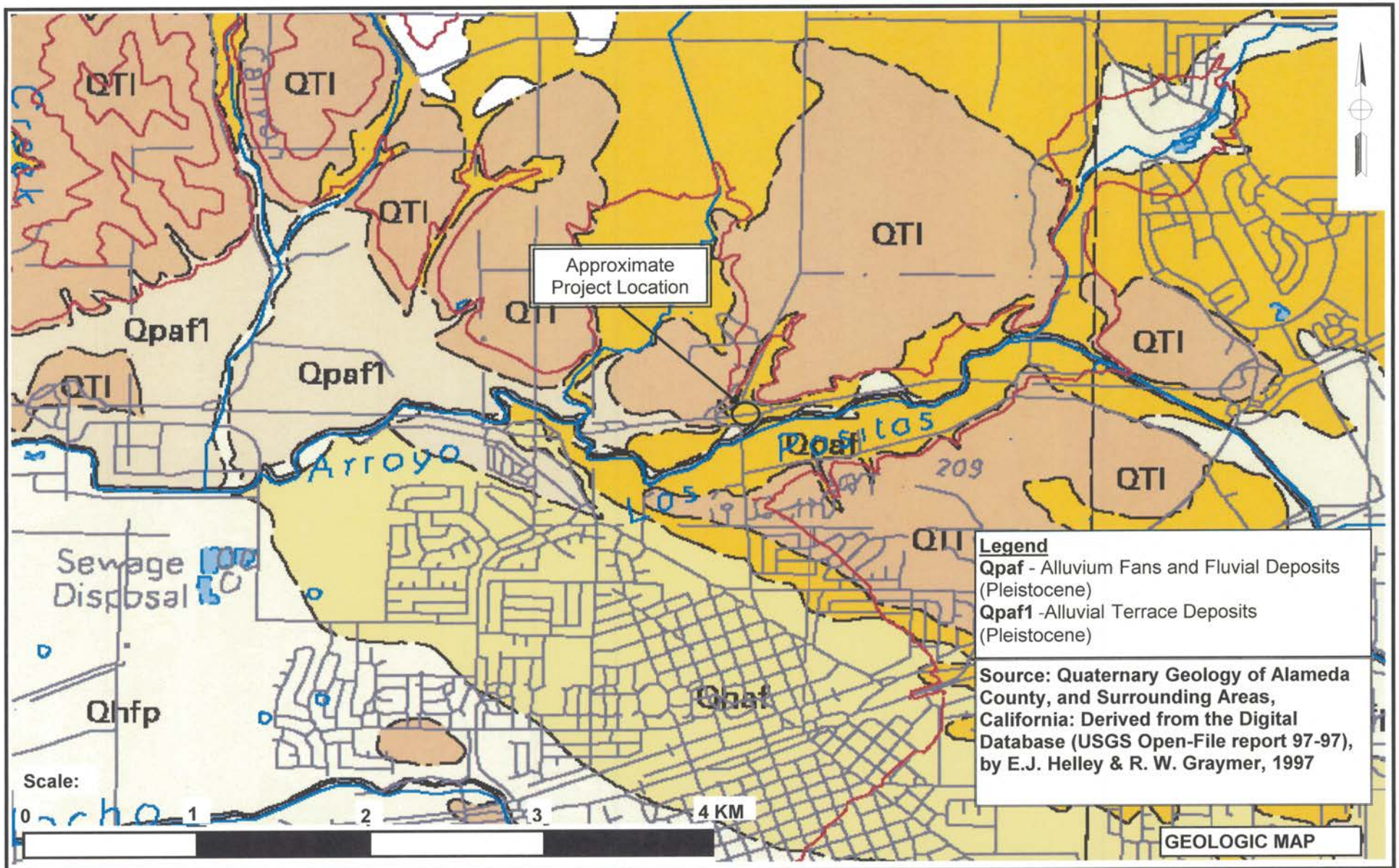
13. Youd, T.L., Idriss, I.M., Andrus, R.D., Arango, I., Castro, G., Christian, J.T., Dobry, R., Liam Finn, W.D., Harder, L.F., Hynes, M.E., Ishihara, K., Koester, J.P., Liao, S.S.C., Marcuson, W.F., III, Martin, G.R., Mitchell, J.K., Moriwaki, Power, M.S., Robertson, P.K., Seed, R.B., Stokoe, K.H., II, 2001, "Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils, " Journal of Geotechnical and Geoenvironmental Engineering, ASCE, V. 127, No. 10.



PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

NORTH LIVERMORE AVE UNDERCROSSING (WIDEN)
LIVERMORE, CALIFORNIA

JOB NO.: 208102.LIV	PLATE NO.: 1

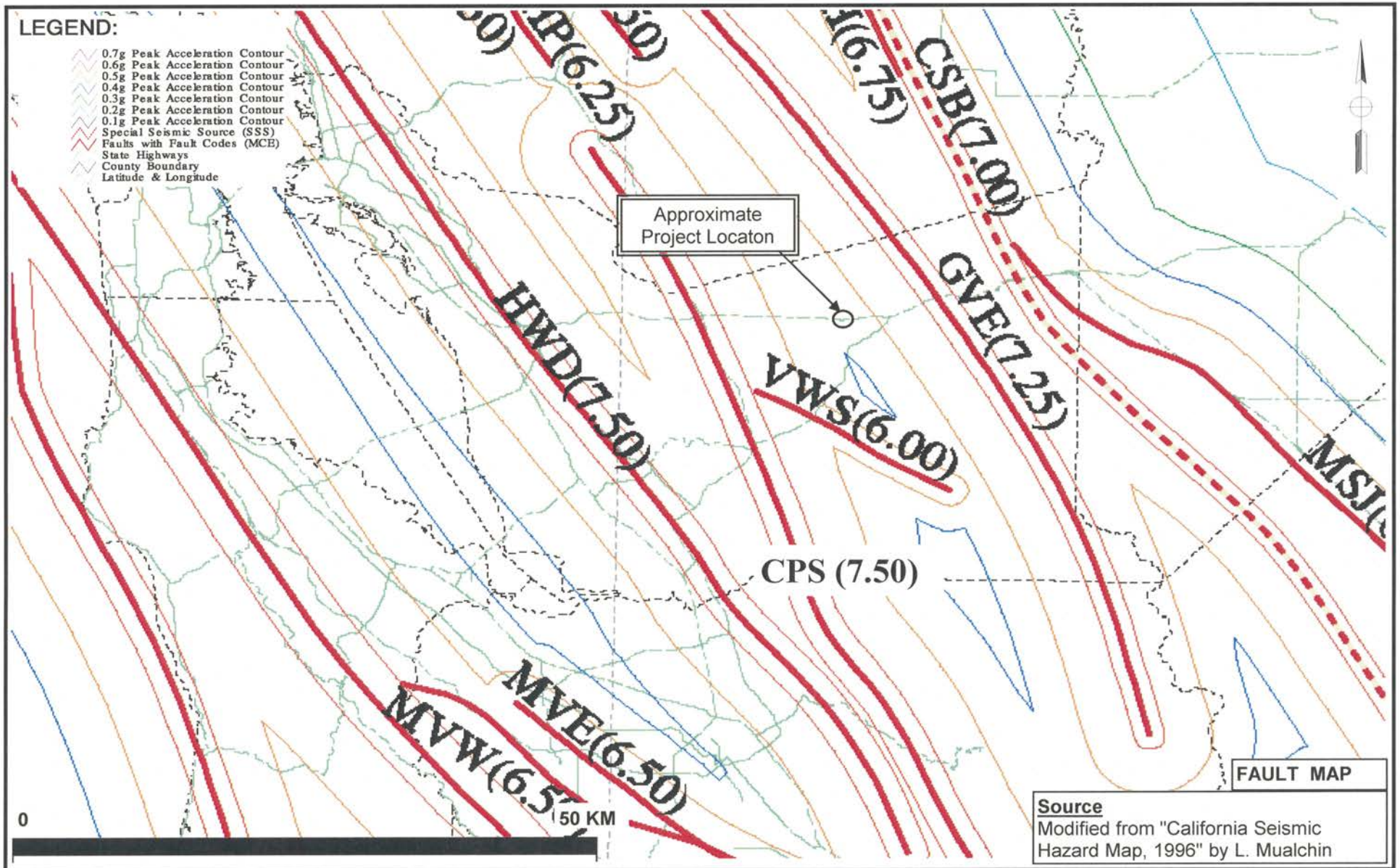


PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

NORTH LIVERMORE AVENUE UNDERCROSSING (WIDEN)
LIVERMORE, CALIFORNIA

JOB NO.: 208102.LIV

PLATE NO.:2



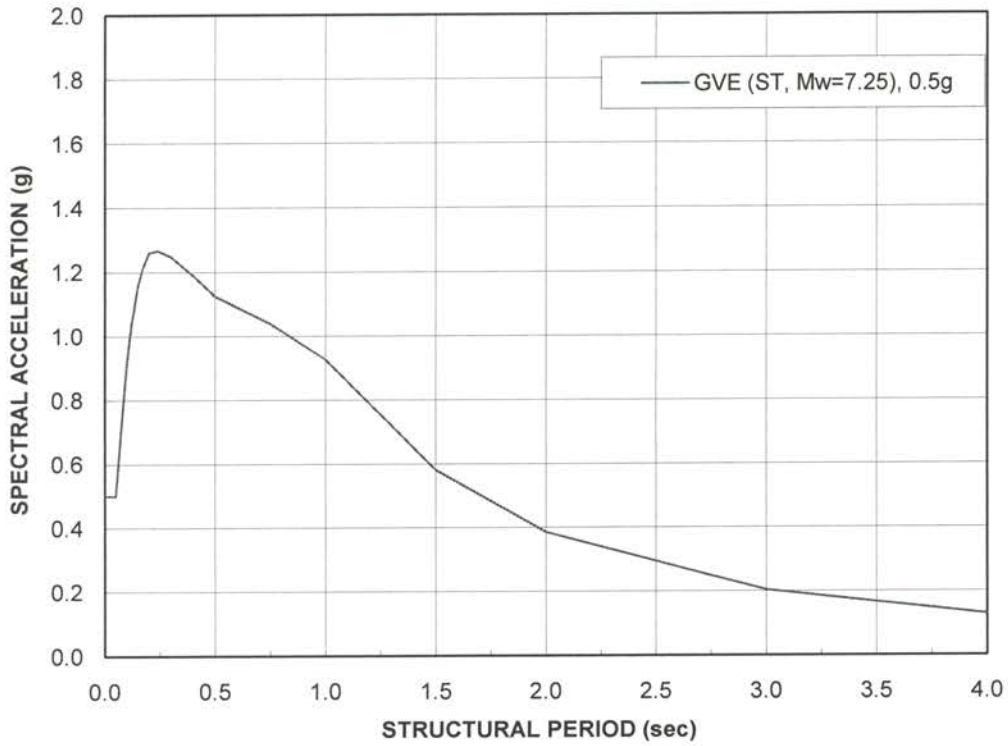
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

NORTH LIVERMORE AVENUE UNDERCROSSING (WIDEN)
LIVERMORE, CALIFORNIA

JOB NO.: 208102.LIV

PLATE NO.: 3

ARS DESIGN CURVE



Spectral Data

Period (sec)	Spectral Accel. (g)
0.010	0.500
0.020	0.500
0.030	0.500
0.050	0.500
0.075	0.719
0.100	0.919
0.120	1.037
0.150	1.156
0.170	1.209
0.200	1.259
0.240	1.266
0.300	1.247
0.400	1.190
0.500	1.125
0.750	1.038
1.000	0.927
1.500	0.581
2.000	0.386
3.000	0.204
4.000	0.128

Caltrans SDC (v 1.4, June 2006), Figure B.8,
Governing Fault: Greenville Fault
(Mw = 7.25, Soil Profile Type D, PBA = 0.5 g)
with the following modifications:
(1) No change of Sa for structural periods < 0.5 sec
(2) 20% increase of Sa for structural periods ≥ 1 sec
(3) Linear interpolation for structural periods between 0.5 and 1 sec

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

NORTH LIVERMORE AVENUE UNDERCROSSING (WIDEN)
LIVERMORE, CALIFORNIA

JOB NO.: 208102.LIV

PLATE NO.: 4

APPENDIX A

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (JUNE 2007)

GROUP SYMBOLS AND NAMES

Graphic/Symbol	Group Names	Graphic/Symbol	Group Names
GW	Well-graded GRAVEL Well-graded GRAVEL with SAND	CL	Lean CLAY Lean CLAY with SAND Lean CLAY with GRAVEL SANDY lean CLAY SANDY lean CLAY with GRAVEL GRAVELLY lean CLAY GRAVELLY lean CLAY with SAND
GP	Poorly graded GRAVEL Poorly graded GRAVEL with SAND		
GW-GM	Well-graded GRAVEL with SILT Well-graded GRAVEL with SILT and SAND	CL-ML	SILTY CLAY SILTY CLAY with SAND SILTY CLAY with GRAVEL SANDY SILTY CLAY SANDY SILTY CLAY with GRAVEL GRAVELLY SILTY CLAY GRAVELLY SILTY CLAY with SAND
GW-GC	Well-graded GRAVEL with CLAY (or SILTY CLAY) Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GP-GM	Poorly graded GRAVEL with SILT Poorly graded GRAVEL with SILT and SAND	ML	SILT SILT with SAND SILT with GRAVEL SANDY SILT SANDY SILT with GRAVEL GRAVELLY SILT GRAVELLY SILT with SAND
GP-GC	Poorly graded GRAVEL with CLAY (or SILTY CLAY) Poorly graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GM	SILTY GRAVEL SILTY GRAVEL with SAND	OL	ORGANIC lean CLAY ORGANIC lean CLAY with SAND ORGANIC lean CLAY with GRAVEL SANDY ORGANIC lean CLAY SANDY ORGANIC lean CLAY with GRAVEL GRAVELLY ORGANIC lean CLAY GRAVELLY ORGANIC lean CLAY with SAND
GC	CLAYEY GRAVEL CLAYEY GRAVEL with SAND		
GC-GM	SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL with SAND	OL	ORGANIC SILT ORGANIC SILT with SAND ORGANIC SILT with GRAVEL SANDY ORGANIC SILT SANDY ORGANIC SILT with GRAVEL GRAVELLY ORGANIC SILT GRAVELLY ORGANIC SILT with SAND
SW	Well-graded SAND Well-graded SAND with GRAVEL		
SP	Poorly graded SAND Poorly graded SAND with GRAVEL	CH	Fat CLAY Fat CLAY with SAND Fat CLAY with GRAVEL SANDY fat CLAY SANDY fat CLAY with GRAVEL GRAVELLY fat CLAY GRAVELLY fat CLAY with SAND
SW-SM	Well-graded SAND with SILT Well-graded SAND with SILT and GRAVEL		
SW-SC	Well-graded SAND with CLAY (or SILTY CLAY) Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	MH	Elastic SILT Elastic SILT with SAND Elastic SILT with GRAVEL SANDY elastic SILT SANDY elastic SILT with GRAVEL GRAVELLY elastic SILT GRAVELLY elastic SILT with SAND
SP-SM	Poorly graded SAND with SILT Poorly graded SAND with SILT and GRAVEL		
SP-SC	Poorly graded SAND with CLAY (or SILTY CLAY) Poorly graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	OH	ORGANIC fat CLAY ORGANIC fat CLAY with SAND ORGANIC fat CLAY with GRAVEL SANDY ORGANIC fat CLAY SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
SM	SILTY SAND SILTY SAND with GRAVEL		
SC	CLAYEY SAND CLAYEY SAND with GRAVEL	OH	ORGANIC elastic SILT ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY ORGANIC elastic SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
SC-SM	SILTY, CLAYEY SAND SILTY, CLAYEY SAND with GRAVEL		
PT	PEAT	OL/OH	ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	COBBLES COBBLES and BOULDERS BOULDERS		

FIELD AND LABORATORY TESTING

- (C) Consolidation (ASTM D 2435)
- (CL) Collapse Potential (ASTM D 5333)
- (CP) Compaction Curve (CTM 216)
- (CR) Corrosivity Testing (CTM 643, CTM 422, CTM 417)
- (CU) Consolidated Undrained Triaxial (ASTM D 4767)
- (DS) Direct Shear (ASTM D 3080)
- (EI) Expansion Index (ASTM D 4829)
- (M) Moisture Content (ASTM D 2216)
- (OC) Organic Content-% (ASTM D 2974)
- (P) Permeability (CTM 220)
- (PA) Particle Size Analysis (ASTM D 422)
- (PI) Plasticity Index (AASHTO T 90)
Liquid Limit (AASHTO T 89)
- (PL) Point Load Index (ASTM D 5731)
- (PM) Pressure Meter
- (PP) Pocket Penetrometer
- (R) R-Value (CTM 301)
- (SE) Sand Equivalent (CTM 217)
- (SG) Specific Gravity (AASHTO T 100)
- (SL) Shrinkage Limit (ASTM D 427)
- (SW) Swell Potential (ASTM D 4546)
- (TV) Pocket Torvane
- (UC) Unconfined Compression-Soil (ASTM D 2166)
Unconfined Compression-Rock (ASTM D 2938)
- (UU) Unconsolidated Undrained Triaxial (ASTM D 2850)
- (UW) Unit Weight (ASTM D 4767)
- (VS) Vane Shear (AASHTO T 223)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO	TOTAL SHEETS
04	Ala	580			

GEOTECHNICAL PROFESSIONAL — 11/8/11 DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/11 GEOTECHNICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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ALAMEDA CTC
1333 BROADWAY, SUITE 220
OAKLAND, CA 94612

PARIKH CONSULTANTS, INC.
2360 OUME DRIVE, SUITE A
SAN JOSE, CA 95131

APPARENT DENSITY OF COHESIONLESS SOILS

Description	SPT N_{60} (Blows / 12 inches)
Very loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	¢ 50

MOISTURE

Description	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

PERCENT OR PROPORTION OF SOILS

Description	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

PARTICLE SIZE

Description		Size
Boulder		¢ 12"
Cobble		3" to 12"
Gravel	Coarse	3/4" to 3"
	Fine	No. 4 to 3/4"
Sand	Coarse	No. 10 to No. 4
	Medium	No. 40 to No. 10
	Fine	No. 200 to No. 40

DESIGN OVERSIGHT

SIGN OFF DATE

DRAWN BY: O. GOUTHIER

CHECKED BY: P. SIRCAR

S.DUDDU
FIELD INVESTIGATION BY:

DATE: DECEMBER 2008

PREPARED FOR THE STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

P. SIRCAR
PROJECT ENGINEER

BRIDGE NO. 33-0153
POST MILES 12.53

NORTH LIVERMORE AVE UC (WIDEN)

LOG OF TEST BORINGS 1 OF 4

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481
CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES: 12/29/08 | 05/07/10 | 11/8/11

SHEET 18 OF 21

FILE = ¢ $REQUEST

USERNAME = ¢ $USER DATE PLOTTED = ¢ $DATE TIME PLOTTED = ¢ $TIME

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (2010)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO	TOTAL SHEETS
04	Ala	580			

GEOTECHNICAL PROFESSIONAL — 11/8/11 DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/11 — GEOTECHNICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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ALAMEDA CTC
1333 BROADWAY, SUITE 220
OAKLAND, CA 94612

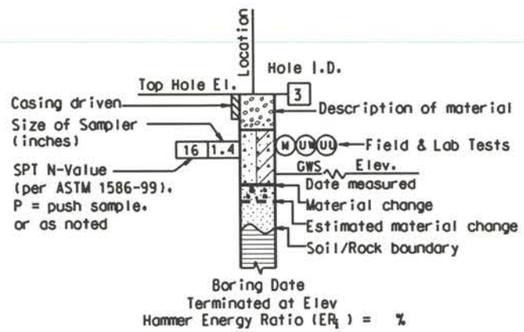
PARIKH CONSULTANTS, INC.
2360 QUME DRIVE, SUITE A
SAN JOSE, CA 95131

CEMENTATION	
Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

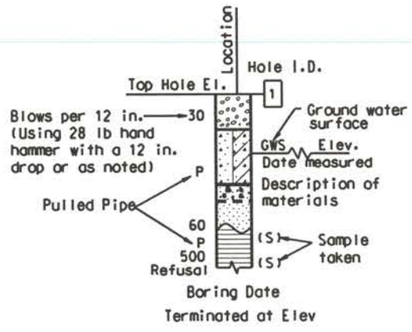
BOREHOLE IDENTIFICATION		
Symbol	Hole Type	Description
Sonic	A	Auger Boring (hollow or solid stem bucket)
Rotary	R RW RC P	Rotary drilled boring (conventional) Rotary drilled with self-casing wire-line Rotary core with continuously-sampled, self-casing wire-line Rotary percussion boring (air)
Rotary	R	Rotary drilled diamond core
Hand	HD HA	Hand driven (1-inch soil tube) Hand Auger
●	D	Dynamic Cone Penetration Boring
▲	CPT	Cone Penetration Test (ASTM D 5778)
[ ]	O	Other (note on LOTB)

Note: Size in inches.

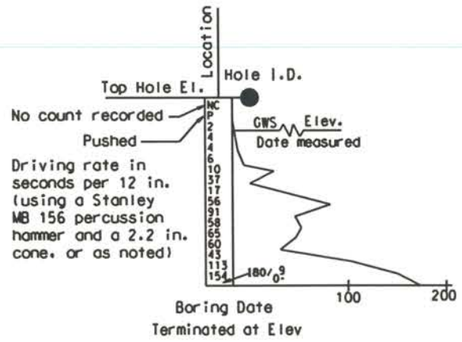
CONSISTENCY OF COHESIVE SOILS				
Description	Shear Strength (tsf)	Pocket Penetrometer Measurement, PP, (tsf)	Torvane Measurement, TV, (tsf)	Vane Shear Measurement, VS, (tsf)
Very Soft	Less than 0.12	Less than 0.25	Less than 0.12	Less than 0.12
Soft	0.12 - 0.25	0.25 - 0.5	0.12 - 0.25	0.12 - 0.25
Medium Stiff	0.25 - 0.5	0.5 - 1	0.25 - 0.5	0.25 - 0.5
	0.5 - 1	1 - 2	0.5 - 1	0.5 - 1
Very Stiff	1 - 2	2 - 4	1 - 2	1 - 2
Hard	Greater than 2	Greater than 4	Greater than 2	Greater than 2



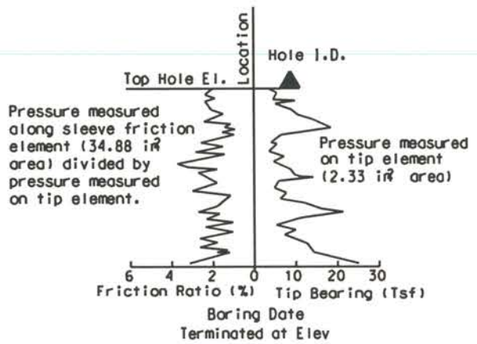
ROTARY BORING



HAND BORING



DYNAMIC CONE PENETRATION BORING



CONE PENETRATION TEST (CPT) BORING

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S.DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR PROJECT ENGINEER	BRIDGE NO. 33-0153	NORTH LIVERMORE AVE UC (WIDEN)
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008			POST MILES 12.53	LOG OF TEST BORINGS 2 OF 4

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735 PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES: 12/30/10 | 06/07/11 | 11/9/11

SHEET 19 OF 21

FILE = $REQUEST

DATE PLOTTED = $DATE TIME PLOTTED = $TIME USERNAME = $USER

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580			

GEOTECHNICAL PROFESSIONAL — 11/8/11 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/11 — GEOTECHNICAL — STATE OF CALIFORNIA

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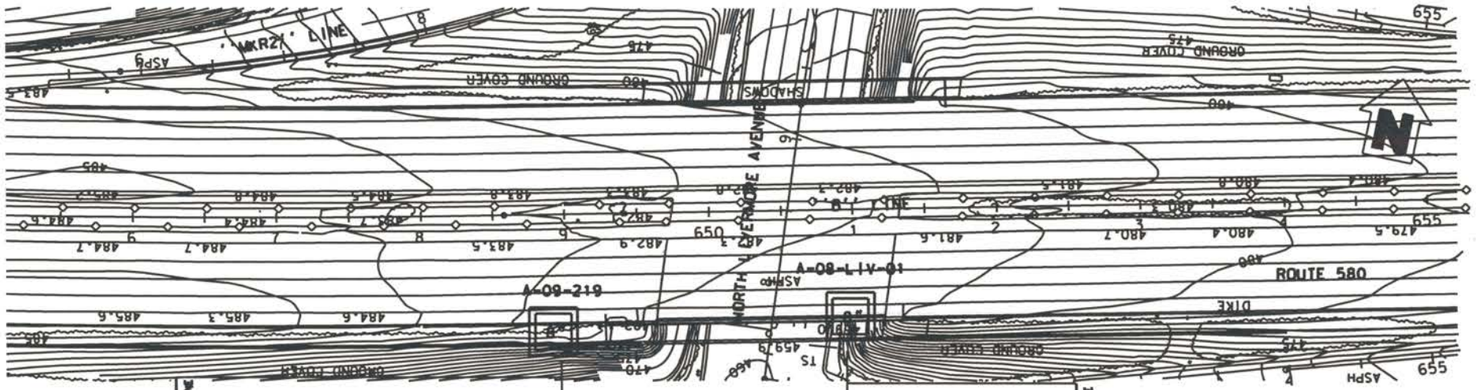
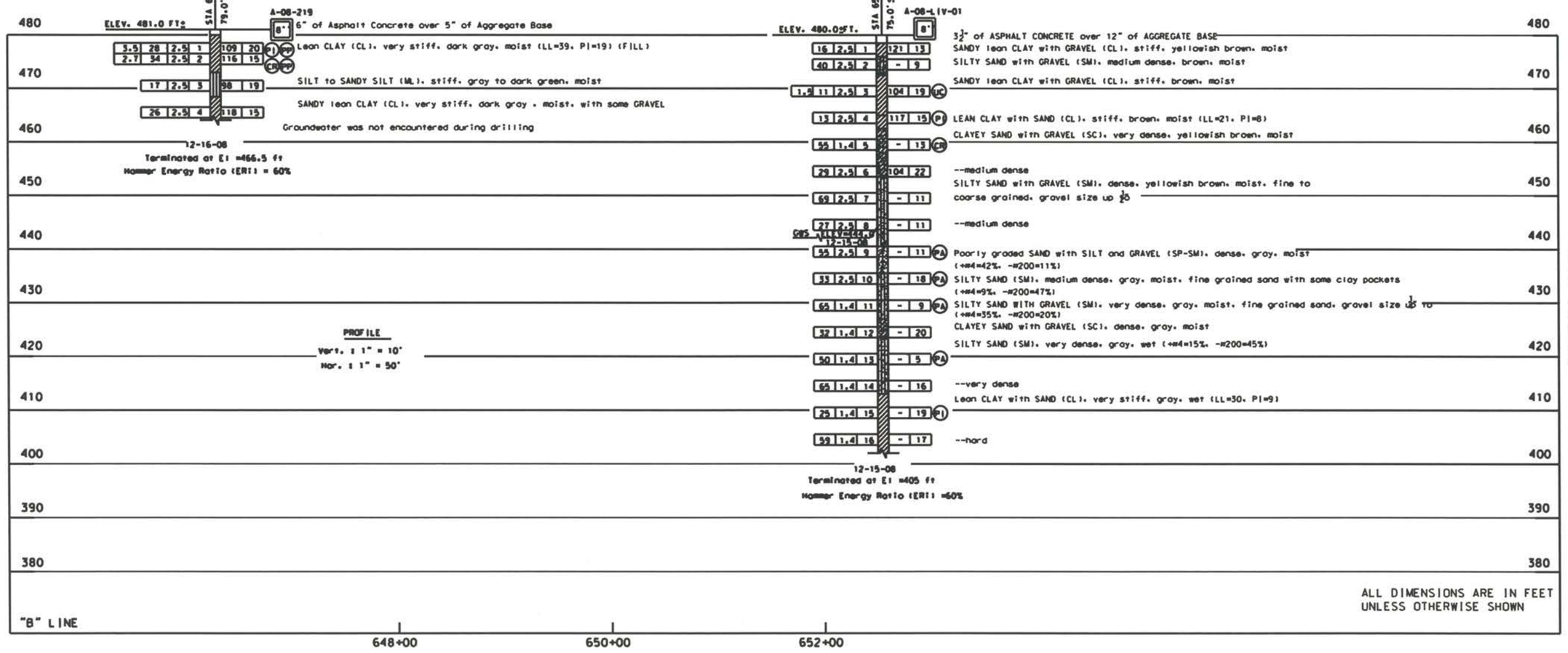
OAKLAND, CA 94612

PARIKH CONSULTANTS, INC.
2360 OUME DRIVE, SUITE A
SAN JOSE, CA 95131



The Vertical Datum shown hereon is based on North American Vertical datum of 1988 (NAVD). The 1988 Elevations for this project were establish using digital Levelling & GPS Survey Measurements and a least Squares Adjustment Holdings NGS Benchmarks GPS Control Point 35 - PID DE8495. L 1259 - PID HS4075. CHABOT A - PID AI7653. & OLD RM 3 = TIDAL 5 - PID HS3429 fixed to their published values.



DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S.DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR PROJECT ENGINEER	BRIDGE NO. 33-0153	NORTH LIVERMORE AVE UC (WIDEN)
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008			POST MILES 12.53	LOG OF TEST BORINGS 3 OF 4

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
12/30/08	04/30/10	11/8/11		20	21

FILE = ℄ $REQUEST

USERNAME = ℄ $USER DATE PLOTTED = ℄ $DATE TIME PLOTTED = ℄ $TIME

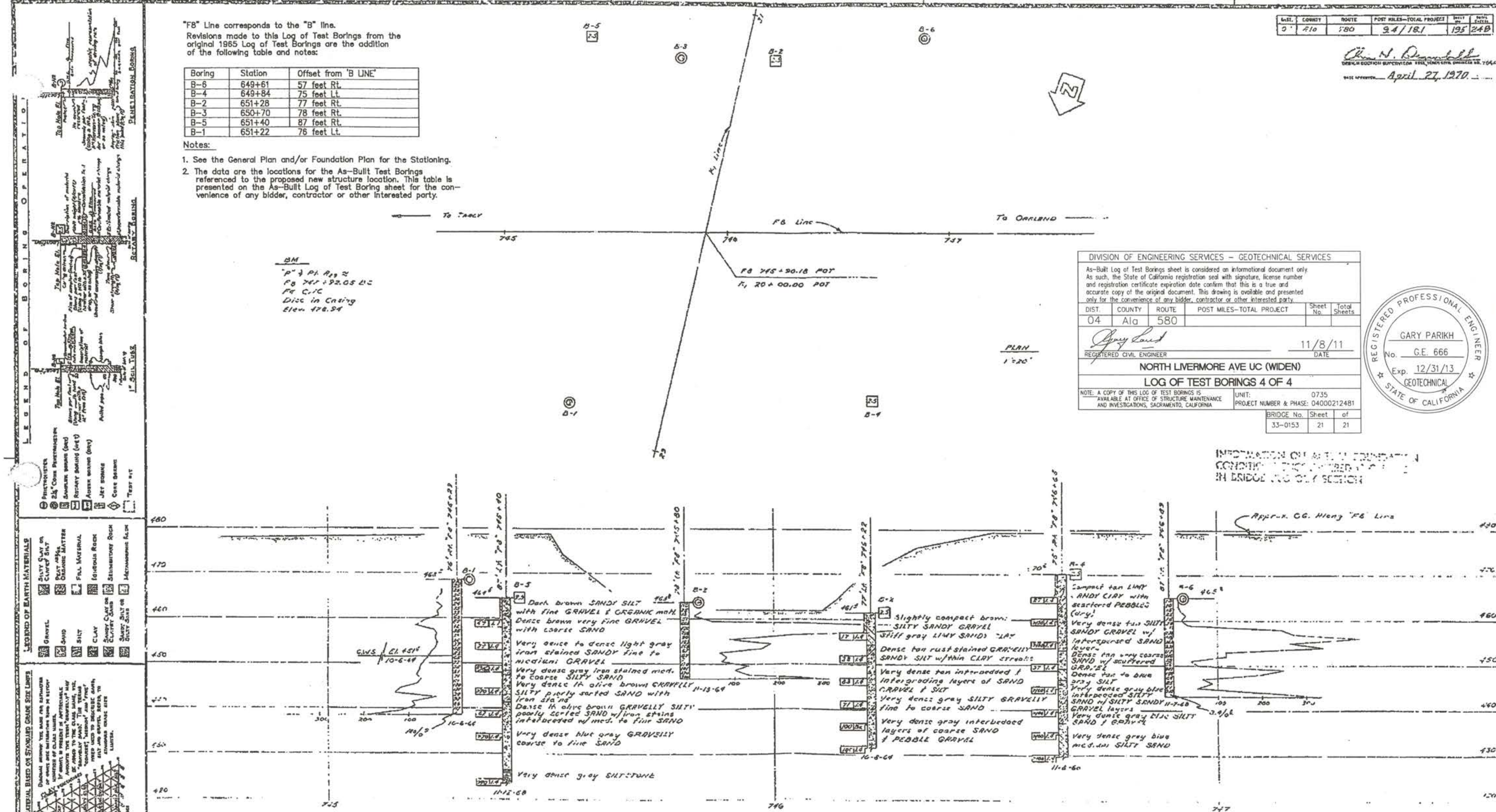
"F8" Line corresponds to the "B" line.

Revisions made to this Log of Test Borings from the original 1965 Log of Test Borings are the addition of the following table and notes:

Boring	Station	Offset from 'B LINE'
B-6	649+61	57 feet Rt.
B-4	649+84	75 feet Lt.
B-2	651+28	77 feet Rt.
B-3	650+70	78 feet Rt.
B-5	651+40	87 feet Rt.
B-1	651+22	76 feet Lt.

Notes:

1. See the General Plan and/or Foundation Plan for the Stationing.
2. The data are the locations for the As-Built Test Borings referenced to the proposed new structure location. This table is presented on the As-Built Log of Test Boring sheet for the convenience of any bidder, contractor or other interested party.



DIST.	COUNTY	ROUTE	POST MILES—TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	580	34/181	195	248

April 27, 1970

DIVISION OF ENGINEERING SERVICES – GEOTECHNICAL SERVICES

As-Built Log of Test Borings sheet is considered an informational document only. As such, the State of California registration seal with signature, license number and registration certificate expiration date confirm that this is a true and accurate copy of the original document. This drawing is available and presented only for the convenience of any bidder, contractor or other interested party.

DIST.	COUNTY	ROUTE	POST MILES–TOTAL PROJECT	Sheet No.	Total Sheets
04	Ala	580			

REGISTERED CIVIL ENGINEER — DATE 11/8/11

NORTH LIVERMORE AVE UC (WIDEN)

LOG OF TEST BORINGS 4 OF 4

NOTE: A COPY OF THIS LOG OF TEST BORINGS IS AVAILABLE AT OFFICE OF STRUCTURE MAINTENANCE AND INVESTIGATIONS, SACRAMENTO, CALIFORNIA

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481

BRIDGE No.	Sheet	of
33-0153	21	21

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

AS BUILT PLANS
Contract No. 04-136444
Date Completed 9-25-72
Document No. 6229

STATE OF CALIFORNIA
TRANSPORTATION AGENCY
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

NORTH LIVERMORE AVE. UNDERCROSSING

LOG OF TEST BORINGS

BRIDGE NO. 33-153 — POST MILE 12.53 — SHEET 10 OF 10

APPENDIX B

APPENDIX B

LABORATORY TESTS

Classification Tests
The field classifications of the samples were visually verified in the laboratory according to the Unified Soil Classification System. The results are presented in "Log of Test Borings", Appendix A.

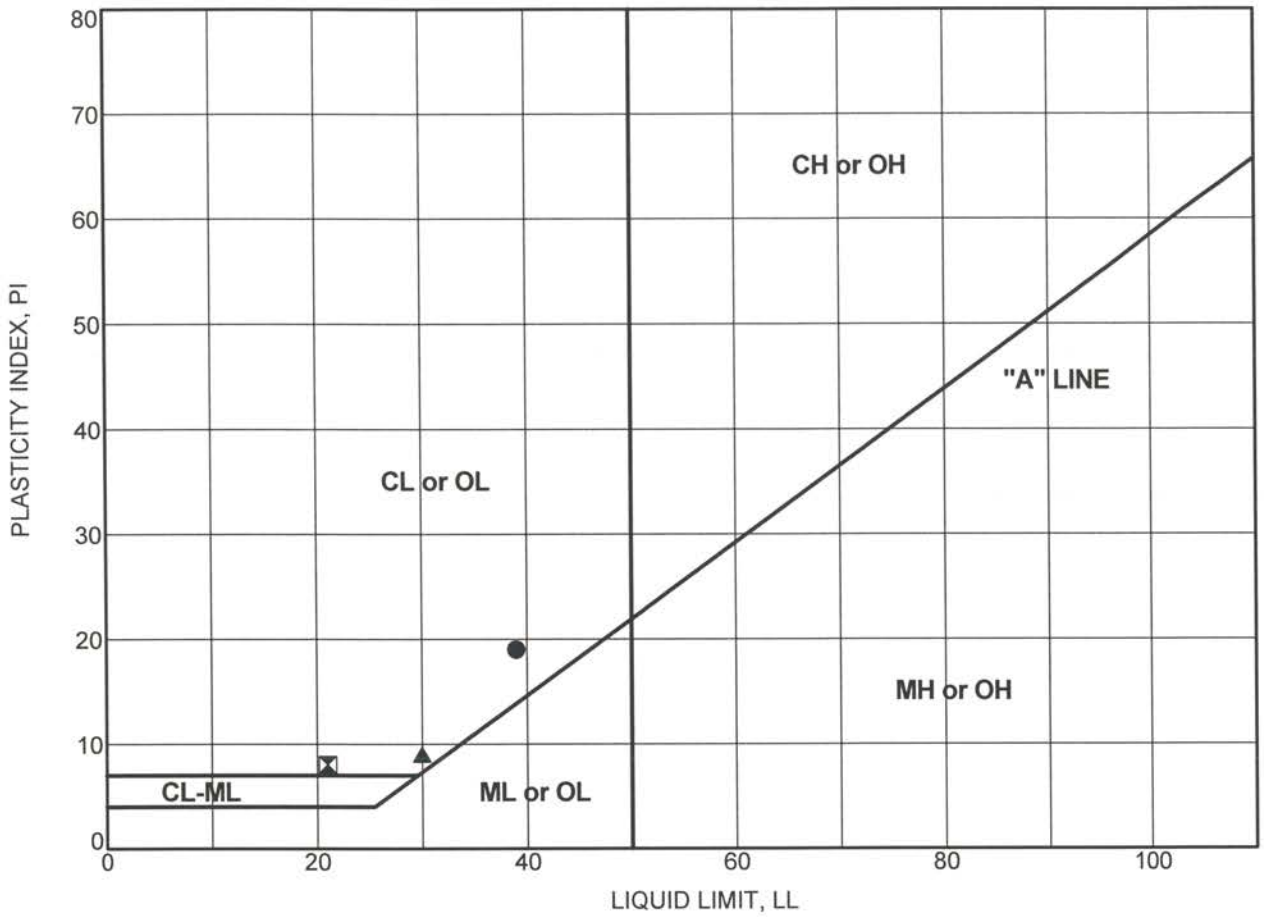
Moisture-Density
The natural moisture contents and dry unit weights were determined for selected undisturbed samples of the soils in general accordance with ASTM Test Method D 2216-92. This information was used to classify and correlate the soils. The results are presented at the appropriate depths In "Log of Test Borings", Appendix A.

Atterberg Limits
The Atterberg Limits were determined for selected samples of the fine-grained materials. These results were used to classify the soils, as well as to obtain an indication of the effective strength characteristics and expansion potential with variations in moisture content. The Atterberg Limits were determined in general accordance with ASTM Test Method D 4318-93. The results of these tests are presented on" Plasticity Chart", Plate No. B-2, Appendix B.

Grain Size Classification
Grain size classification tests (ASTM Test Method D422-63) were performed on selected samples of granular soil to aid in the classification. The results are presented on "Grain Size Distribution Curves", Plate B-3, Appendix B.

Unconfined Compression Tests
Strength tests were performed on selected undisturbed samples using unconfined compression machine. Unconfined compression tests were performed in general accordance with ASTM Test Method D 2166-91. The results are presented in "Log of Test Borings", Appendix A.

Corrosion Tests
Corrosion tests were performed on selected samples to determine the corrosion potential of the soils. The pH and minimum resistively tests were performed according to California Test Method 643. The tests were performed by Sunland Analytical. The test results are presented on Plate B-4A and Plate B-4B, Appendix B.



PLASTICITY CHART

Boring Number	Sample Number	Depth (feet)	Test Symbol	Moisture Content (%)	LL	PL	PI	Description
A-08-219	MC-1	2.5	●	20	39	20	19	LEAN CLAY (CL)
LIV-01	MC	14.5	⊠	15	21	13	8	LEAN CLAY (CL)
LIV-01	SPT	69.5	▲	19	30	21	9	LEAN CLAY (CL)

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS ENGINEERING

NORTH LIVERMORE AVENUE UNDERCROOSING (WIDEN)
LIVERMORE, CALIFORNIA

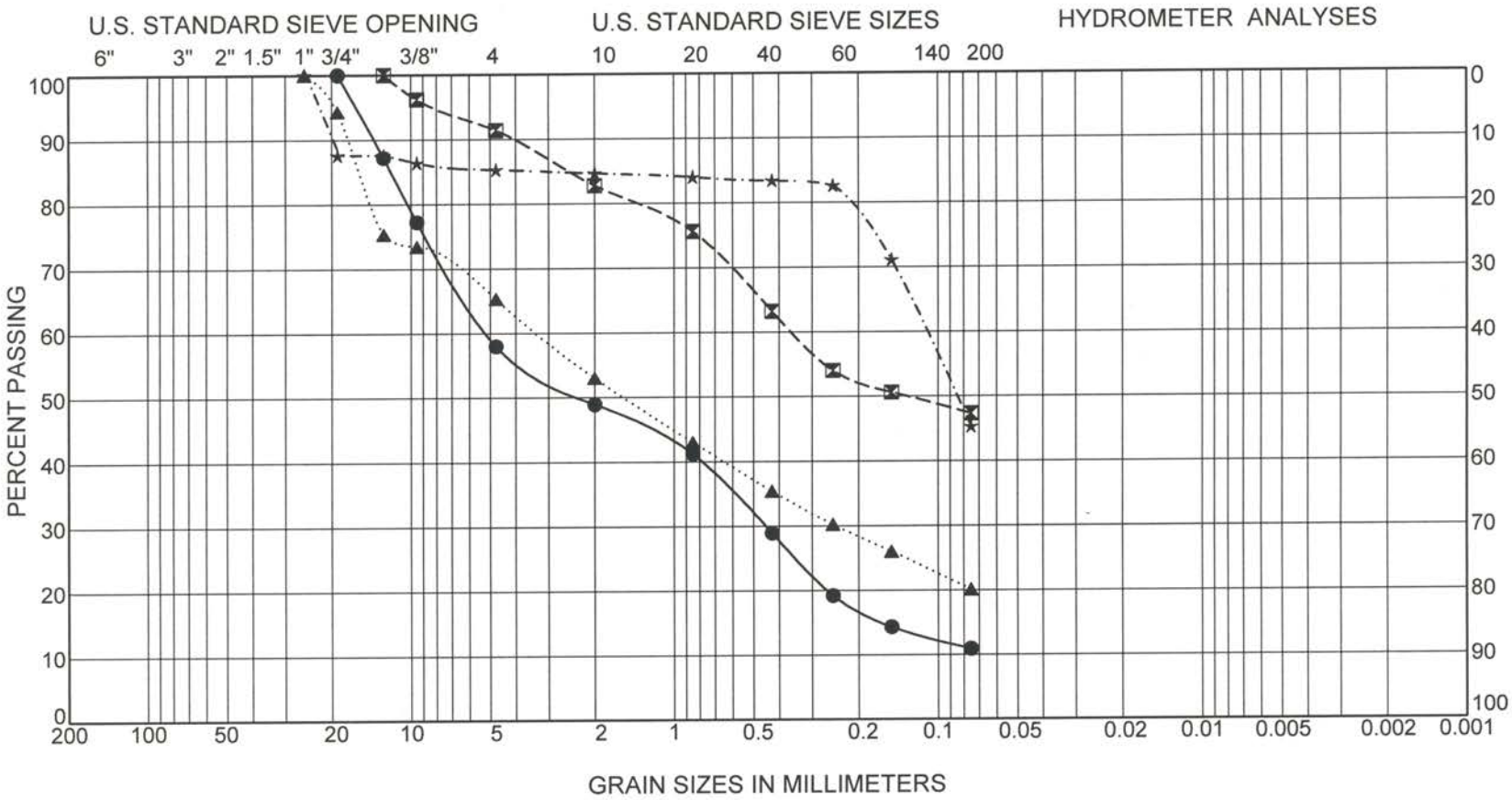
JOB NO: 208102.LIV

PLATE NO: B-2

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS ENGINEERING

GRAIN SIZE DISTRIBUTION CURVES

COBBLES	GRAVEL		SAND			SILT AND CLAY
	coarse	fine	coarse	medium	fine	



Boring Number	Sample Number	Depth (feet)	Symbol	LL	PI	Description
LIV-01	MC	39.5	●			POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM)
LIV-01	MC	44.5	⊠			SILTY SAND (SM)
LIV-01	SPT	49.5	▲			SILTY SAND WITH GRAVEL (SM)
LIV-01	SPT	59.5	★			SILTY SAND (SM)

JOB NO: 208102.LIV

NORTH LIVERMORE AVENUE UNDERCROOSING (WIDEN)
LIVERMORE, CALIFORNIA

PLATE NO: B-3

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 02/04/2009
Date Submitted 01/29/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.LIV/I-580 Site ID : LN01#1 @ 3'.
Thank you for your business.

* For future reference to this analysis please use SUN # 55070-110651.

EVALUATION FOR SOIL CORROSION

Soil pH	7.85	
Minimum Resistivity	1.37 ohm-cm (x1000)	
Chloride	40.1 ppm	00.00401 %
Sulfate	8.5 ppm	00.00085 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

PLATE NO.: B-4A

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 01/23/2009
Date Submitted 01/20/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102 GDR I-580 Site ID : RW219#2@9.5'.
Thank you for your business.

* For future reference to this analysis please use SUN # 55022-110553.

EVALUATION FOR SOIL CORROSION

Soil pH	7.74	
Minimum Resistivity	1.42 ohm-cm (x1000)	
Chloride	28.7 ppm	00.00287 %
Sulfate	32.8 ppm	00.00328 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

PLATE NO.: B-4B

APPENDIX C

LIQUEFACTION ANALYSES

LIQUEFACTION POTENTIAL ANALYSIS

PROJECT NAME ***I-580 - N. Livermore Br.***
PROJECT NO. ***208102.LIV***
BORING NO. ***A-08-LIV-01***

BOREHOLE DIA (in)= 6
GW DEPTH (ft)= 36

SOIL GROUPS
1. GRAVELS, SANDS AND NONPLASTIC SILTS
2. CLAYS AND PLASTIC SILTS

HAMMER ENERGY = 60% *(Pithcer Freste Rig-auto hammer = 75%) (Pithcer Failing Rig-auto hammer = 68%) (Pithcer Failing Rig-rope & pulley = 60%)*

(Lower-Level Design Basis EQ)

FAULT INFO
CSRB
a_{max} *(g)=* 0.5
FAULT M_w = 7.25

MSF = 1.09

F.S.=$(CRR_{7.5}/CSR)*MSF*K\sigma*K\alpha$

					CYCLIC STRESS RATIO (CSR)				*LIQUEFACTION RESISTANCE* ($CRR_{7.5}$)												
Sample No	Depth (ft)	Soil Type	Blow Count	Sampler Type	σ_v (psf)	σ_v' (psf)	γ_d	CSR	SPT-N_{eq}	C_E	C_R	C_S	C_B	N_{60}	C_N	$(N_1)_{60}$	F.C.	$(N_1)_{60,CS}$	$CRR_{7.5}$	Kσ	Kα	F.S.
1	2	2	16	MC	250	250	1.00		10	1.0	0.75	1.0	1.05	8.2	1.66	13.6				1.00	1	
2	5	1	40	MC	625	625	0.99	0.32	26	1.0	0.75	1.0	1.05	20.5	1.45	29.8	25%	37.5		1.00	1	
3	10	2	11	MC	1250	1250	0.98		7	1.0	0.80	1.0	1.05	6.0	1.21	7.2				1.00	1	
4	15	2	13	MC	1875	1875	0.97		8	1.0	0.85	1.0	1.05	7.5	1.03	7.8				1.00	1	
5	20	1	55	SPT	2500	2500	0.96	0.31	55	1.0	0.95	1.2	1.05	65.8	0.90	59.1	25%	70.2		0.91	1	
6	25	1	29	MC	3125	3125	0.94	0.31	19	1.0	0.95	1.0	1.05	18.8	0.80	15.0	25%	21.0	0.23	0.85	1	
7	30	1	69	MC	3750	3750	0.92	0.30	45	1.0	1.00	1.0	1.05	47.1	0.72	33.7	25%	41.9		0.78	1	
8	35	1	27	MC	4375	4375	0.89	0.29	18	1.0	1.00	1.0	1.05	18.4	0.65	12.0	25%	17.6	0.19	0.78	1	
9	40	1	55	MC	5000	4750	0.85	0.29	36	1.0	1.00	1.0	1.05	37.5	0.62	23.1	11%	24.9	0.29	0.71	1	0.77
10	45	1	33	MC	5625	5063	0.80	0.29	21	1.0	1.00	1.0	1.05	22.5	0.59	13.3	47%	20.9	0.23	0.73	1	0.63
11	50	1	65	SPT	6250	5375	0.75	0.28	65	1.0	1.00	1.2	1.05	81.9	0.57	46.3	20%	53.6		0.67	1	
12	55	1	32	SPT	6875	5688	0.70	0.28	32	1.0	1.00	1.2	1.05	40.3	0.54	21.9	35%	31.3		0.67	1	
13	60	1	50	SPT	7500	6000	0.66	0.27	50	1.0	1.00	1.2	1.05	63.0	0.52	33.0	45%	44.6		0.64	1	
14	65	1	65	SPT	8125	6313	0.62	0.26	65	1.0	1.00	1.2	1.05	81.9	0.51	41.4	45%	54.6		0.63	1	
15	70	2	25	SPT	8750	6625	0.59		25	1.0	1.00	1.2	1.05	31.5	0.49	15.4						
16	75	2	59	SPT	9375	6938	0.57		59	1.0	1.00	1.2	1.05	74.3	0.47	35.0						

1. The correction factors C_E (Energy Ratio), C_B (Borehole Diameter), C_R (Rod Length) and C_S (Sampling Method-liner) are per Youd et al. (2001).
2. For correction of overburden, $C_N = 2.2/(1.2 + \sigma_v'/P_a)$ with a maximum value of 1.7 per Kayen et al. (1992) as cited in Youd et al. (2001).
3. The influence of Fines Contents are expressed by the following correction: $(N_1)_{60cs} = \alpha + \beta\ (N_1)_{60}$

where α and β = coefficients determined from the following relationships

for FC $\leq$ 5%	$\alpha = 0$,	$\beta = 1.0$
for 5% < FC < 35%	$\alpha = \exp(1.76-(190/FC^2))$,	$\beta = (0.99+(FC^{1.5}/1000))$
for FC $\geq$ 35%	$\alpha = 5.0$,	$\beta = 1.2$

Reference: Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER Workshops on Evaluation of Liquefaction Resistance of Soils, Youd, et al., ASCE Journal of Geotechnical and Geoenvironmental Engineering, October 2001, Vol. 127 No. 10

APILE Runs
North Livermore Avenue Undercrossing - Left & Right Bridges
(Bridge No. 33-0153)
Job No. 208102.LIV
Pile capacities computed using APILE program – Output follows
(Note: All Pile Capacities are based FHWA Method)
December 14, 2009

Abutment 1 (Based on Boring A-08-LIV-01)
Steel H-Pile – 53x12

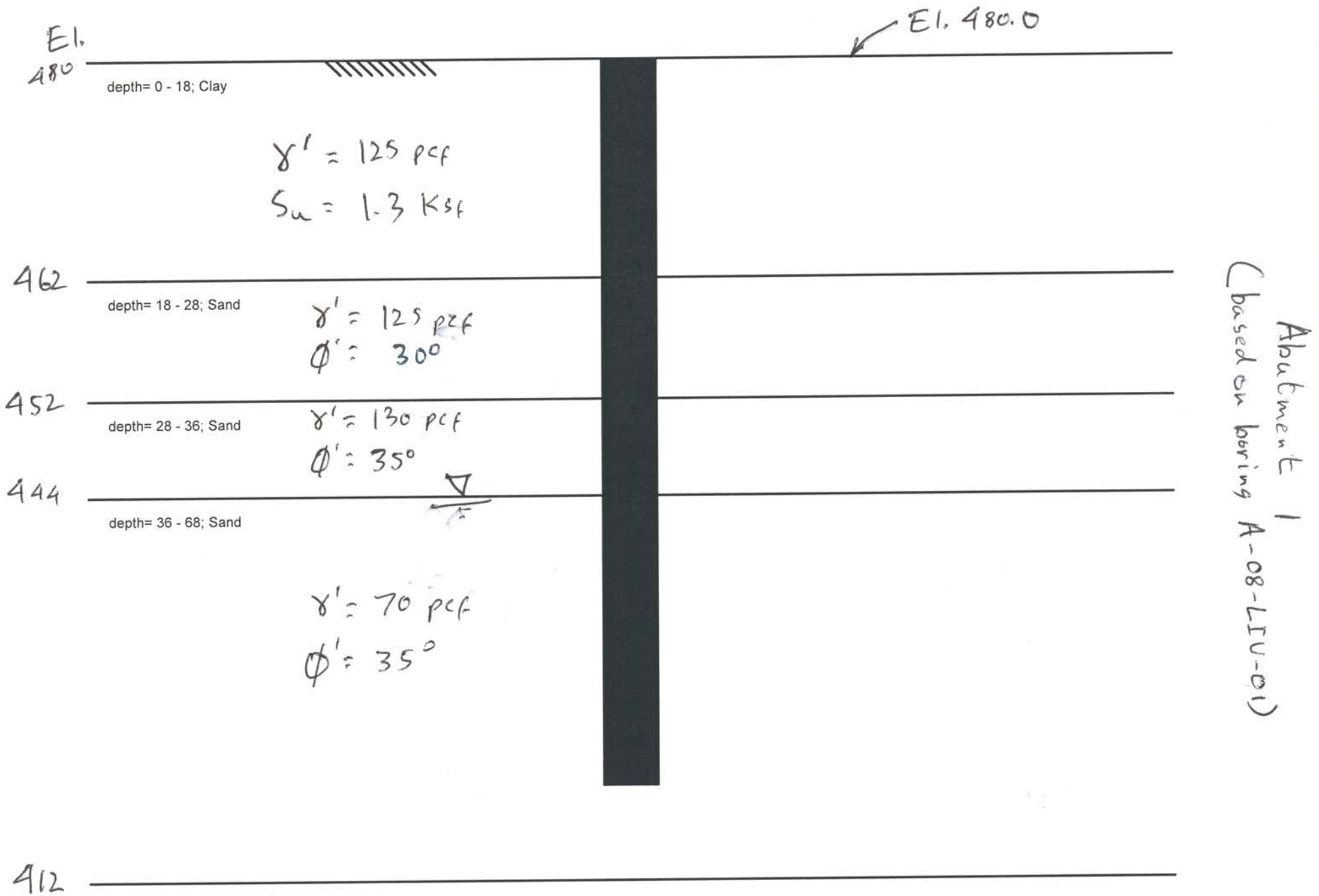
Ground Surface Elevation = 480.0
Top of Pile = 472.0
No Predrill
Nominal Compression Load = 170 kips
Reqd. Penetration per APILE output = 32.0 ft
Recommended Penetration = 32.0ft
Reqd. Tip Elevation = 480.0 – 32.0 = 448.0

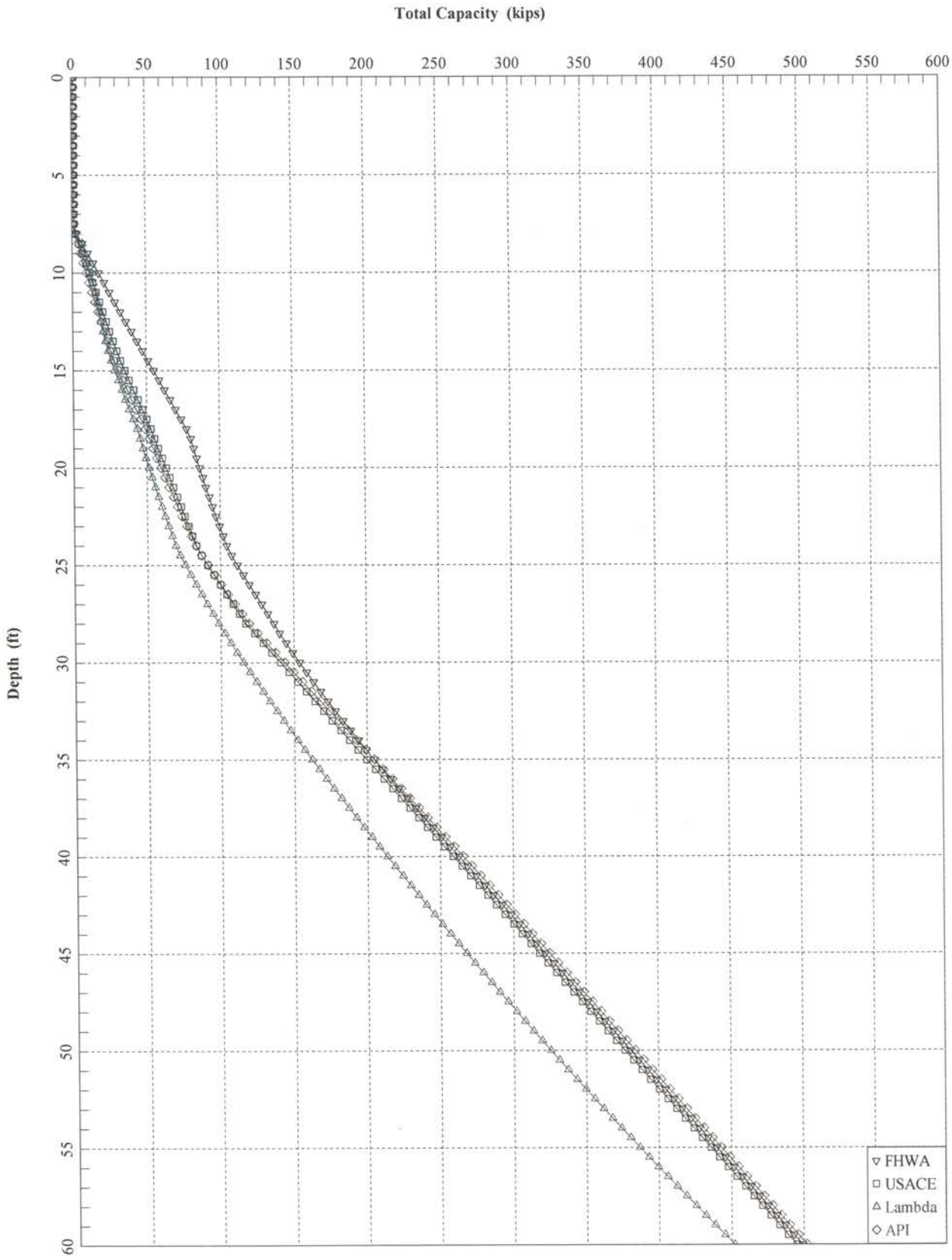
Abutment 4 (Based on Borings A-09-219 & A-08-LIV-01)
Steel H-Pile – 53x12

Ground Surface Elevation = 481.0
Top of Pile = 473.0
No Predrill
Nominal Compression Load = 170 kips
Reqd. Penetration per APILE output = 34.0 ft
Recommended Penetration = 34.0ft
Reqd. Tip Elevation = 481.0– 34.0 = 447.0

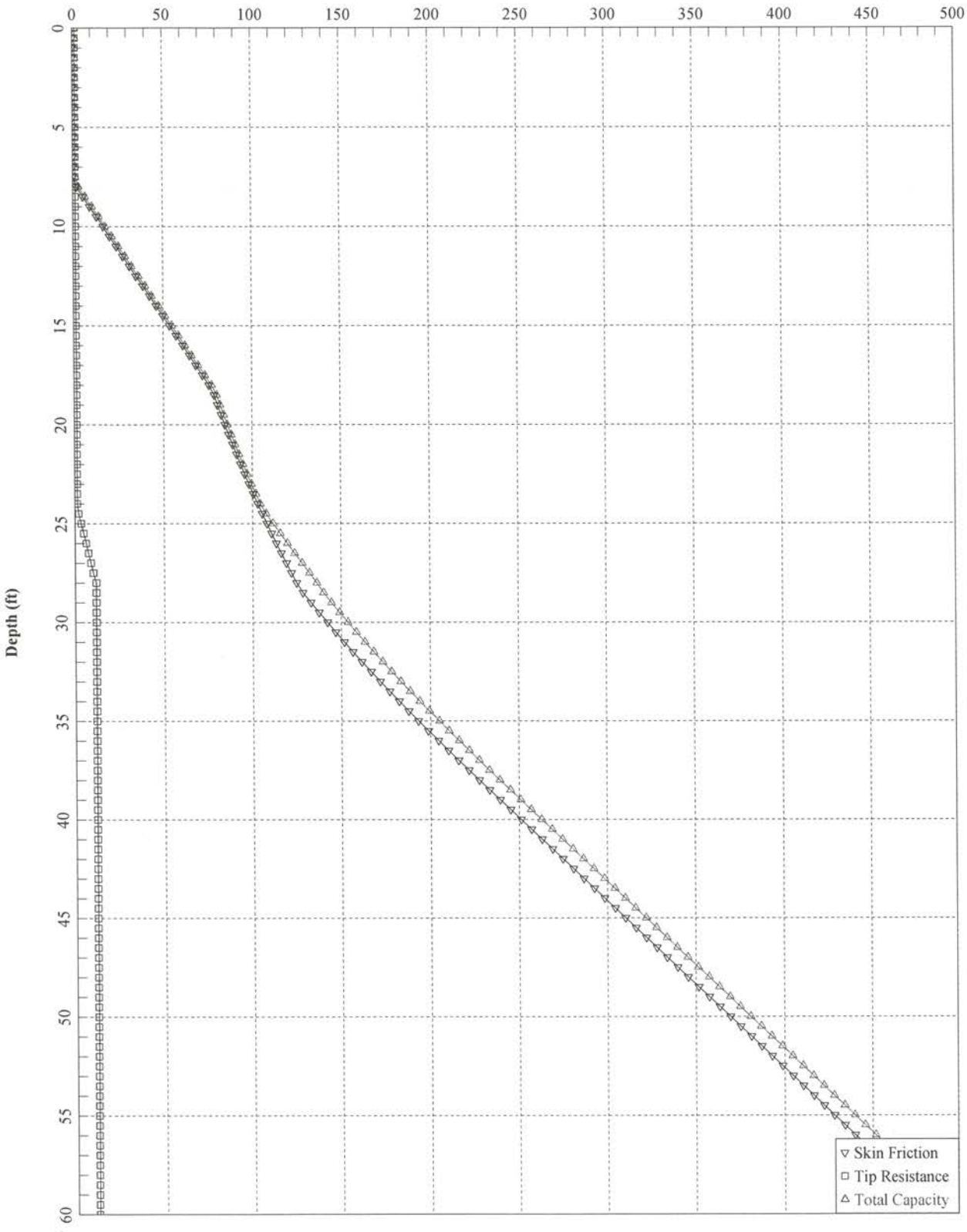
AXIAL PILE CAPACITY

(APILE Runs)


El. 480
El. 480.0
depth= 0 - 18; Clay
γ' = 125 pcf
Su = 1.3 ksf
462
depth= 18 - 28; Sand
γ' = 125 pcf
φ' = 30°
452
depth= 28 - 36; Sand
γ' = 130 pcf
φ' = 35°
444
depth= 36 - 68; Sand
γ' = 70 pcf
φ' = 35°
412
Abutment 1
(based on boring A-08-LIU-01)



I-580 - N. LIvermore Ave. Undercrossing - Abutment 1 - HP 12x53



I-580 - N. LIvermore Ave. Undercrossing - Abutment 1 - HP 12x53 - FHWA

AXIALLY LOADING PILE ANALYSIS PROGRAM - APILEplus
VERSION 4.0 - (C) COPYRIGHT ENSOFT,INC.,1987-2004.

N Livermore -Abutment 1 - HP 53x12

DESIGNER :

DATE :

PILE PROPERTIES :

PERIMETER OF PILE WITH NONCIRCULAR SECTION=	70.87	IN.
TIP AREA OF PILE WITH NONCIRCULAR SECTION =	0.11	SQF
OUTSIDE DIAMETER OF CIRCULAR PILE =	0.00	IN.
INTERNAL DIAMETER OF CIRCULAR PILE =	0.00	IN.
PILE LENGTH =	60.00	FT.
MODULUS OF ELASTICITY =	0.290E+08	PSI

LENGTH OF SURFACE SECTION WITH ZERO SKIN FRICTION = 8.00 FT.
INCREMENT OF PILE LENGTH USED IN COMPUTATION = 0.50 FT.

SOIL INFORMATIONS :

DEPTH FT.	SOIL TYPE	LATERAL EARTH PRESSURE	EFFECTIVE UNIT WEIGHT LB/CF	FRICTION ANGLE DEGREES	BEARING CAPACITY FACTOR
0.00	CLAY	0.00	125.00	0.00	0.00
18.00	CLAY	0.00	125.00	0.00	0.00
18.00	SAND	0.75	125.00	30.00	20.00
28.00	SAND	0.75	125.00	30.00	20.00
28.00	SAND	1.15	130.00	35.00	40.00
36.00	SAND	1.15	130.00	35.00	40.00
36.00	SAND	1.15	70.00	35.00	40.00
68.00	SAND	1.15	70.00	35.00	40.00

MAXIMUM UNIT FRICTION KSF	MAXIMUM UNIT BEARING KSF	UNDISTURB SHEAR STRENGTH KSF	REMOLDED SHEAR STRENGTH KSF	BLOW COUNT	UNIT SKIN FRICTION KSF	UNIT END BEARING KSF
1.30	11.70	1.30	0.65	0.00	0.00	0.00
1.30	11.70	1.30	0.65	0.00	0.00	0.00
1.70	100.00	0.00	0.00	0.00	0.00	0.00
1.70	100.00	0.00	0.00	0.00	0.00	0.00
2.00	200.00	0.00	0.00	0.00	0.00	0.00
2.00	200.00	0.00	0.00	0.00	0.00	0.00
2.00	200.00	0.00	0.00	0.00	0.00	0.00
2.00	200.00	0.00	0.00	0.00	0.00	0.00

COMPUTATION RESULT

PILE PENETRATION FT.	FED. HWY. METHOD TOTAL SKIN FRIC KIP	FED. HWY. METHOD END BEARING KIP	FED. HWY. METHOD ULTIM CAPACITY KIP	ARMY CORPS METHOD TOTAL SKIN FRIC KIP	ARMY CORPS METHOD END BEARING KIP	ARMY CORPS METHOD ULTIM CAPACITY KIP	LAMBDA 2 METHOD TOTAL SKIN FRIC KIP	LAMBDA 2 METHOD END BEARING KIP	LAMBDA 2 METHOD ULTIM CAPACITY KIP
0.0	0.0	1.3	1.3	0.0	1.3	1.3	0.0	1.3	1.3
0.5	0.0	1.3	1.3	0.0	1.3	1.3	0.0	1.3	1.3
1.0	0.0	1.3	1.3	0.0	1.3	1.3	0.0	1.3	1.3
1.5	0.0	1.3	1.3	0.0	1.3	1.3	0.0	1.3	1.3
2.0	0.0	1.3	1.3	0.0	1.3	1.3	0.0	1.3	1.3
2.5	0.0	1.3	1.3	0.0	1.3	1.3	0.0	1.3	1.3
3.0	0.0	1.3	1.3	0.0	1.3	1.3	0.0	1.3	1.3
3.5	0.0	1.3	1.3	0.0	1.3	1.3	0.0	1.3	1.3
4.0	0.0	1.3	1.3	0.0	1.3	1.3	0.0	1.3	1.3
4.5	0.0	1.3	1.3	0.0	1.3	1.3	0.0	1.3	1.3
5.0	0.0	1.3	1.3	0.0	1.3	1.3	0.0	1.3	1.3
5.5	0.0	1.3	1.3	0.0	1.3	1.3	0.0	1.3	1.3
6.0	0.0	1.3	1.3	0.0	1.3	1.3	0.0	1.3	1.3
6.5	0.0	1.3	1.3	0.0	1.3	1.3	0.0	1.3	1.3
7.0	0.0	1.3	1.3	0.0	1.3	1.3	0.0	1.3	1.3
7.5	0.0	1.3	1.3	0.0	1.3	1.3	0.0	1.3	1.3
8.0	1.9	1.3	3.1	1.2	1.3	2.4	0.0	1.3	1.3
8.5	5.6	1.3	6.8	3.5	1.3	4.7	6.0	1.3	7.2
9.0	9.3	1.3	10.5	5.8	1.3	7.0	7.3	1.3	8.6
9.5	13.0	1.3	14.2	8.1	1.3	9.3	8.7	1.3	10.0
10.0	16.7	1.3	17.9	10.4	1.3	11.6	11.8	1.3	13.1
10.5	20.4	1.3	21.6	12.7	1.3	13.9	13.2	1.3	14.4
11.0	24.1	1.3	25.3	15.0	1.3	16.2	14.4	1.3	15.7
11.5	27.8	1.3	29.0	17.3	1.3	18.5	15.7	1.3	16.9
12.0	31.5	1.3	32.7	19.6	1.3	20.8	16.9	1.3	18.1
12.5	35.2	1.3	36.4	21.9	1.3	23.1	18.0	1.3	19.3
13.0	38.9	1.3	40.1	24.2	1.3	25.4	19.5	1.3	20.7
13.5	42.6	1.3	43.8	26.5	1.3	27.7	21.2	1.3	22.5
14.0	46.3	1.3	47.5	28.8	1.3	30.1	23.0	1.3	24.3
14.5	50.0	1.3	51.2	31.1	1.6	32.7	24.8	1.5	26.3
15.0	53.7	1.3	55.0	33.4	2.2	35.5	26.7	2.0	28.7
15.5	57.4	1.3	58.7	35.7	2.7	38.4	28.5	2.5	31.1
16.0	61.1	1.3	62.4	38.0	3.3	41.3	30.4	3.0	33.5
16.5	64.8	1.4	66.1	40.3	3.9	44.2	32.3	3.6	35.9
17.0	68.5	1.4	69.9	42.6	4.5	47.1	34.3	4.2	38.4
17.5	72.2	1.4	73.6	44.9	5.1	50.0	36.2	4.7	41.0
18.0	75.9	1.4	77.3	47.2	5.7	52.9	38.2	5.3	43.6
18.5	78.7	1.4	80.1	49.6	5.7	55.4	40.0	5.5	45.5
19.0	80.6	1.4	82.1	52.2	5.7	57.9	41.8	5.6	47.4
19.5	82.7	1.4	84.1	54.8	5.7	60.5	43.7	5.8	49.4
20.0	84.7	1.4	86.1	57.3	5.7	63.1	45.6	5.9	51.5
20.5	86.8	1.4	88.3	59.9	5.7	65.6	47.5	6.0	53.5
21.0	89.0	1.4	90.4	62.5	5.7	68.2	49.5	6.2	55.7
21.5	91.2	1.4	92.7	65.0	5.7	70.8	51.6	6.3	57.9
22.0	93.5	1.4	94.9	67.6	5.7	73.3	53.7	6.4	60.1
22.5	95.8	1.4	97.2	70.2	5.7	75.9	55.8	6.6	62.4
23.0	98.2	1.4	99.6	72.7	5.7	78.5	58.0	6.7	64.7

23.5	100.6	1.4	102.1	75.3	5.7	81.0	60.2	6.8	67.1
24.0	103.1	1.4	104.5	77.9	5.7	83.6	62.5	7.0	69.5
24.5	105.6	2.1	107.8	80.4	6.6	87.1	64.9	7.6	72.5
25.0	108.2	3.5	111.7	83.0	8.4	91.4	67.3	8.8	76.0
25.5	110.9	4.8	115.7	85.6	10.1	95.7	69.7	10.0	79.7
26.0	113.5	6.2	119.7	88.1	11.8	100.0	72.2	11.1	83.3
26.5	116.3	7.5	123.8	90.7	13.6	104.3	74.7	12.4	87.1
27.0	119.1	8.9	128.0	93.3	15.3	108.6	77.3	13.6	90.9
27.5	121.9	10.2	132.2	95.8	17.0	112.9	79.9	14.8	94.8
28.0	124.8	11.6	136.4	98.4	18.8	117.2	82.6	16.1	98.7
28.5	128.5	11.6	140.1	104.3	18.8	123.1	86.4	16.4	102.8
29.0	133.0	11.6	144.6	110.2	18.8	129.0	90.3	16.7	107.0
29.5	137.6	11.6	149.2	116.1	18.8	134.9	94.2	17.0	111.2
30.0	142.3	11.6	153.9	122.0	18.8	140.8	98.3	17.2	115.5
30.5	147.0	11.6	158.6	127.9	18.8	146.7	102.4	17.5	119.9
31.0	151.8	11.6	163.4	133.8	18.8	152.6	106.5	17.8	124.3
31.5	156.7	11.6	168.3	139.7	18.8	158.5	110.8	18.1	128.8
32.0	161.7	11.6	173.3	145.6	18.8	164.4	115.1	18.4	133.4
32.5	166.8	11.6	178.4	151.5	18.8	170.3	119.4	18.6	138.1
33.0	172.0	11.6	183.5	157.5	18.8	176.2	123.9	18.9	142.8
33.5	177.2	11.6	188.8	163.4	18.8	182.1	128.4	19.1	147.5
34.0	182.5	11.6	194.1	169.3	18.8	188.0	133.0	19.4	152.3
34.5	187.9	11.6	199.5	175.2	18.8	193.9	137.6	19.6	157.2
35.0	193.4	11.6	205.0	181.1	18.8	199.9	142.4	19.8	162.1
35.5	198.9	11.6	210.5	187.0	18.8	205.8	147.1	20.0	167.1
36.0	204.6	11.6	216.2	192.9	18.8	211.7	152.0	20.1	172.1
36.5	210.3	11.6	221.9	198.8	18.8	217.6	156.9	20.3	177.2
37.0	216.0	11.6	227.6	204.7	18.8	223.5	161.9	20.4	182.3
37.5	221.8	11.6	233.4	210.6	18.8	229.4	166.9	20.6	187.4
38.0	227.6	11.6	239.2	216.5	18.8	235.3	171.9	20.7	192.6
38.5	233.5	11.6	245.1	222.4	18.8	241.2	177.0	20.9	197.8
39.0	239.4	11.6	251.0	228.3	18.8	247.1	182.1	21.0	203.1
39.5	245.3	11.6	256.9	234.2	18.8	253.0	187.2	21.1	208.4
40.0	251.2	11.6	262.8	240.1	18.8	258.9	192.4	21.3	213.7
40.5	257.1	11.6	268.7	246.0	18.8	264.8	197.6	21.4	219.0
41.0	263.1	11.6	274.6	251.9	18.8	270.7	202.9	21.4	224.3
41.5	269.0	11.6	280.5	257.9	18.8	276.6	208.2	21.5	229.7
42.0	274.9	11.6	286.4	263.8	18.8	282.5	213.5	21.5	235.0
42.5	280.8	11.6	292.4	269.7	18.8	288.4	218.9	21.5	240.4
43.0	286.7	11.6	298.3	275.6	18.8	294.3	224.3	21.5	245.8
43.5	292.6	11.6	304.2	281.5	18.8	300.3	229.8	21.5	251.3
44.0	298.5	11.6	310.1	287.4	18.8	306.2	235.2	21.5	256.8
44.5	304.4	11.6	316.0	293.3	18.8	312.1	240.8	21.5	262.3
45.0	310.3	11.6	321.9	299.2	18.8	318.0	246.3	21.5	267.8
45.5	316.2	11.6	327.8	305.1	18.8	323.9	251.9	21.5	273.4
46.0	322.1	11.6	333.7	311.0	18.8	329.8	257.6	21.5	279.1
46.5	328.0	11.6	339.6	316.9	18.8	335.7	263.2	21.5	284.8
47.0	333.9	11.6	345.5	322.8	18.8	341.6	268.9	21.5	290.5
47.5	339.8	11.6	351.4	328.7	18.8	347.5	274.7	21.5	296.2
48.0	345.7	11.6	357.3	334.6	18.8	353.4	280.5	21.5	302.0
48.5	351.6	11.6	363.2	340.5	18.8	359.3	286.3	21.5	307.8
49.0	357.5	11.6	369.1	346.4	18.8	365.2	292.2	21.5	313.7
49.5	363.5	11.6	375.0	352.3	18.8	371.1	298.1	21.5	319.6
50.0	369.4	11.6	380.9	358.2	18.8	377.0	304.0	21.5	325.5
50.5	375.3	11.6	386.8	364.2	18.8	382.9	310.0	21.5	331.5
51.0	381.2	11.6	392.8	370.1	18.8	388.8	316.0	21.5	337.5
51.5	387.1	11.6	398.7	376.0	18.8	394.7	322.0	21.5	343.6
52.0	393.0	11.6	404.6	381.9	18.8	400.7	328.1	21.5	349.7
52.5	398.9	11.6	410.5	387.8	18.8	406.6	334.3	21.5	355.8
53.0	404.8	11.6	416.4	393.7	18.8	412.5	340.4	21.5	362.0
53.5	410.7	11.6	422.3	399.6	18.8	418.4	346.6	21.5	368.2
54.0	416.6	11.6	428.2	405.5	18.8	424.3	352.9	21.5	374.4
54.5	422.5	11.6	434.1	411.4	18.8	430.2	359.1	21.5	380.7
55.0	428.4	11.6	440.0	417.3	18.8	436.1	365.5	21.5	387.0

55.5	434.3	11.6	445.9	423.2	18.8	442.0	371.8	21.5	393.3
56.0	440.2	11.6	451.8	429.1	18.8	447.9	378.2	21.5	399.7
56.5	446.1	11.6	457.7	435.0	18.8	453.8	384.6	21.5	406.2
57.0	452.0	11.6	463.6	440.9	18.8	459.7	391.1	21.5	412.6
57.5	457.9	11.6	469.5	446.8	18.8	465.6	397.6	21.5	419.1
58.0	463.9	11.6	475.4	452.7	18.8	471.5	404.2	21.5	425.7
58.5	469.8	11.6	481.3	458.6	18.8	477.4	410.7	21.5	432.3
59.0	475.7	11.6	487.2	464.6	18.8	483.3	417.4	21.5	438.9
59.5	481.6	11.6	493.2	470.5	18.8	489.2	424.0	21.5	445.5
60.0	487.5	11.6	499.1	476.4	18.8	495.1	430.7	21.5	452.2

API RP-2A (1994)

PILE PENETRATION FT.	TOTAL SKIN FRICTION KIP	END BEARING KIP	ULTIMATE CAPACITY KIP
0.00	0.0	1.3	1.3
0.50	0.0	1.3	1.3
1.00	0.0	1.3	1.3
1.50	0.0	1.3	1.3
2.00	0.0	1.3	1.3
2.50	0.0	1.3	1.3
3.00	0.0	1.3	1.3
3.50	0.0	1.3	1.3
4.00	0.0	1.3	1.3
4.50	0.0	1.3	1.3
5.00	0.0	1.3	1.3
5.50	0.0	1.3	1.3
6.00	0.0	1.3	1.3
6.50	0.0	1.3	1.3
7.00	0.0	1.3	1.3
7.50	0.0	1.3	1.3
8.00	0.9	1.3	2.2
8.50	2.7	1.3	4.0
9.00	4.5	1.3	5.8
9.50	6.4	1.3	7.7
10.00	8.3	1.3	9.6
10.50	10.2	1.3	11.5
11.00	12.2	1.3	13.4
11.50	14.2	1.3	15.4
12.00	16.2	1.3	17.5
12.50	18.3	1.3	19.5
13.00	20.4	1.3	21.7
13.50	22.6	1.3	23.8
14.00	24.8	1.3	26.0
14.50	27.0	1.5	28.5
15.00	29.3	2.0	31.3
15.50	31.6	2.5	34.2
16.00	34.0	3.0	37.1
16.50	36.4	3.6	40.0
17.00	38.8	4.2	43.0
17.50	41.3	4.7	46.1
18.00	43.8	5.3	49.2
18.50	46.3	5.5	51.8
19.00	48.7	5.6	54.3
19.50	51.2	5.8	56.9
20.00	53.7	5.9	59.6
20.50	56.3	6.0	62.4
21.00	59.0	6.2	65.2
21.50	61.8	6.3	68.1

22.00	64.6	6.4	71.0
22.50	67.4	6.6	74.0
23.00	70.4	6.7	77.1
23.50	73.4	6.8	80.2
24.00	76.4	7.0	83.4
24.50	79.6	7.6	87.2
25.00	82.8	8.8	91.6
25.50	86.0	10.0	96.0
26.00	89.4	11.1	100.5
26.50	92.7	12.4	105.1
27.00	96.2	13.6	109.8
27.50	99.7	14.8	114.6
28.00	103.3	16.1	119.4
28.50	108.6	16.4	125.0
29.00	114.5	16.7	131.2
29.50	120.4	17.0	137.4
30.00	126.3	17.2	143.6
30.50	132.2	17.5	149.7
31.00	138.1	17.8	155.9
31.50	144.0	18.1	162.1
32.00	149.9	18.4	168.3
32.50	155.8	18.6	174.5
33.00	161.8	18.9	180.7
33.50	167.7	19.1	186.8
34.00	173.6	19.4	192.9
34.50	179.5	19.6	199.1
35.00	185.4	19.8	205.2
35.50	191.3	20.0	211.2
36.00	197.2	20.1	217.3
36.50	203.1	20.3	223.4
37.00	209.0	20.4	229.4
37.50	214.9	20.6	235.5
38.00	220.8	20.7	241.5
38.50	226.7	20.9	247.6
39.00	232.6	21.0	253.6
39.50	238.5	21.1	259.7
40.00	244.4	21.3	265.7
40.50	250.3	21.4	271.7
41.00	256.2	21.4	277.7
41.50	262.2	21.5	283.6
42.00	268.1	21.5	289.6
42.50	274.0	21.5	295.5
43.00	279.9	21.5	301.4
43.50	285.8	21.5	307.3
44.00	291.7	21.5	313.2
44.50	297.6	21.5	319.1
45.00	303.5	21.5	325.0
45.50	309.4	21.5	330.9
46.00	315.3	21.5	336.8
46.50	321.2	21.5	342.7
47.00	327.1	21.5	348.6
47.50	333.0	21.5	354.6
48.00	338.9	21.5	360.5
48.50	344.8	21.5	366.4
49.00	350.7	21.5	372.3
49.50	356.6	21.5	378.2
50.00	362.6	21.5	384.1
50.50	368.5	21.5	390.0
51.00	374.4	21.5	395.9
51.50	380.3	21.5	401.8
52.00	386.2	21.5	407.7
52.50	392.1	21.5	413.6
53.00	398.0	21.5	419.5
53.50	403.9	21.5	425.4

54.00	409.8	21.5	431.3
54.50	415.7	21.5	437.2
55.00	421.6	21.5	443.1
55.50	427.5	21.5	449.0
56.00	433.4	21.5	454.9
56.50	439.3	21.5	460.9
57.00	445.2	21.5	466.8
57.50	451.1	21.5	472.7
58.00	457.0	21.5	478.6
58.50	463.0	21.5	484.5
59.00	468.9	21.5	490.4
59.50	474.8	21.5	496.3
60.00	480.7	21.5	502.2

AN ASTERISK WILL BE PLACED IN THE END-BEARING COLUMN
IF THE TIP RESISTANCE IS CONTROLLED BY THE FRICTION
OF SOIL PLUG INSIDE AN OPEN-ENDED PIPE PILE.

****
* COMPUTE LOAD-DISTRIBUTION AND LOAD-SETTLEMENT *
* CURVES FOR AXIAL LOADING *
****

T-Z CURVE NO.	NO. OF POINTS	DEPTH TO CURVE FT.	LOAD TRANSFER PSI	PILE MOVEMENT IN.
1	10	0.0000E+00		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.3609E-01
			0.0000E+00	0.6993E-01
			0.0000E+00	0.1286E+00
			0.0000E+00	0.1805E+00
			0.0000E+00	0.2256E+00
			0.0000E+00	0.4512E+00
			0.0000E+00	0.6768E+00
			0.0000E+00	0.1128E+01
			0.0000E+00	0.4512E+01
2	10	0.9025E+01		
			0.0000E+00	0.0000E+00
			0.2611E+01	0.3609E-01
			0.4352E+01	0.6993E-01
			0.6527E+01	0.1286E+00
			0.7833E+01	0.1805E+00
			0.8703E+01	0.2256E+00
			0.7833E+01	0.4512E+00
			0.7833E+01	0.6768E+00
			0.7833E+01	0.1128E+01
			0.7833E+01	0.4512E+01
3	10	0.1796E+02		
			0.0000E+00	0.0000E+00
			0.2611E+01	0.3609E-01
			0.4352E+01	0.6993E-01
			0.6527E+01	0.1286E+00
			0.7833E+01	0.1805E+00
			0.8703E+01	0.2256E+00
			0.7833E+01	0.4512E+00
			0.7833E+01	0.6768E+00
			0.7833E+01	0.1128E+01
			0.7833E+01	0.4512E+01
4	10	0.1800E+02		

			0.0000E+00	0.0000E+00
			0.6624E+00	0.1000E-01
			0.1325E+01	0.2000E-01
			0.2650E+01	0.4000E-01
			0.3974E+01	0.6000E-01
			0.5299E+01	0.8000E-01
			0.5962E+01	0.9000E-01
			0.6624E+01	0.1000E+00
			0.6624E+01	0.5000E+00
			0.6624E+01	0.2000E+01
5	10	0.2302E+02		
			0.0000E+00	0.0000E+00
			0.5712E+00	0.1000E-01
			0.1142E+01	0.2000E-01
			0.2285E+01	0.4000E-01
			0.3427E+01	0.6000E-01
			0.4570E+01	0.8000E-01
			0.5141E+01	0.9000E-01
			0.5712E+01	0.1000E+00
			0.5712E+01	0.5000E+00
			0.5712E+01	0.2000E+01
6	10	0.2796E+02		
			0.0000E+00	0.0000E+00
			0.6818E+00	0.1000E-01
			0.1364E+01	0.2000E-01
			0.2727E+01	0.4000E-01
			0.4091E+01	0.6000E-01
			0.5454E+01	0.8000E-01
			0.6136E+01	0.9000E-01
			0.6818E+01	0.1000E+00
			0.6818E+01	0.5000E+00
			0.6818E+01	0.2000E+01
7	10	0.2800E+02		
			0.0000E+00	0.0000E+00
			0.8684E+00	0.1000E-01
			0.1737E+01	0.2000E-01
			0.3474E+01	0.4000E-01
			0.5210E+01	0.6000E-01
			0.6947E+01	0.8000E-01
			0.7816E+01	0.9000E-01
			0.8684E+01	0.1000E+00
			0.8684E+01	0.5000E+00
			0.8684E+01	0.2000E+01
8	10	0.3202E+02		
			0.0000E+00	0.0000E+00
			0.1192E+01	0.1000E-01
			0.2385E+01	0.2000E-01
			0.4769E+01	0.4000E-01
			0.7154E+01	0.6000E-01
			0.9539E+01	0.8000E-01
			0.1073E+02	0.9000E-01
			0.1192E+02	0.1000E+00
			0.1192E+02	0.5000E+00
			0.1192E+02	0.2000E+01
9	10	0.3596E+02		
			0.0000E+00	0.0000E+00
			0.1326E+01	0.1000E-01
			0.2652E+01	0.2000E-01
			0.5305E+01	0.4000E-01
			0.7957E+01	0.6000E-01
			0.1061E+02	0.8000E-01
			0.1194E+02	0.9000E-01
			0.1326E+02	0.1000E+00
			0.1326E+02	0.5000E+00

			0.1326E+02	0.2000E+01
10	10	0.3600E+02		
			0.0000E+00	0.0000E+00
			0.1341E+01	0.1000E-01
			0.2682E+01	0.2000E-01
			0.5364E+01	0.4000E-01
			0.8046E+01	0.6000E-01
			0.1073E+02	0.8000E-01
			0.1207E+02	0.9000E-01
			0.1341E+02	0.1000E+00
			0.1341E+02	0.5000E+00
			0.1341E+02	0.2000E+01
11	10	0.5202E+02		
			0.0000E+00	0.0000E+00
			0.1389E+01	0.1000E-01
			0.2778E+01	0.2000E-01
			0.5556E+01	0.4000E-01
			0.8333E+01	0.6000E-01
			0.1111E+02	0.8000E-01
			0.1250E+02	0.9000E-01
			0.1389E+02	0.1000E+00
			0.1389E+02	0.5000E+00
			0.1389E+02	0.2000E+01
12	10	0.6796E+02		
			0.0000E+00	0.0000E+00
			0.1389E+01	0.1000E-01
			0.2778E+01	0.2000E-01
			0.5556E+01	0.4000E-01
			0.8333E+01	0.6000E-01
			0.1111E+02	0.8000E-01
			0.1250E+02	0.9000E-01
			0.1389E+02	0.1000E+00
			0.1389E+02	0.5000E+00
			0.1389E+02	0.2000E+01

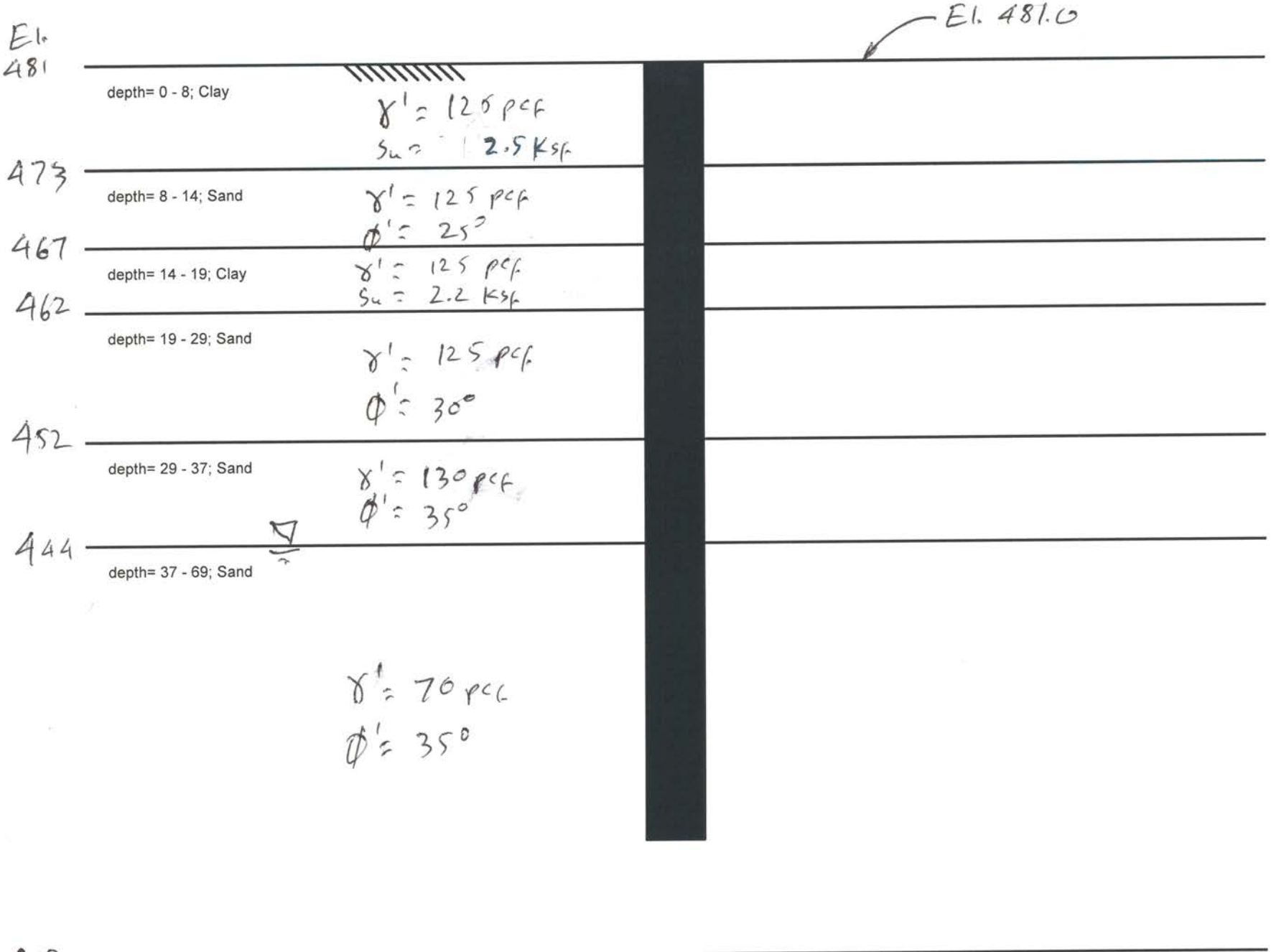
TIP LOAD KIP	TIP MOVEMENT IN.
0.0000E+00	0.0000E+00
0.7239E+00	0.1128E-01
0.1448E+01	0.2256E-01
0.2895E+01	0.4512E-01
0.5791E+01	0.2933E+00
0.8686E+01	0.9475E+00
0.1042E+02	0.1647E+01
0.1158E+02	0.2256E+01
0.1158E+02	0.3384E+01
0.1158E+02	0.4512E+01

LOAD VERSUS SETTLEMENT CURVE
****

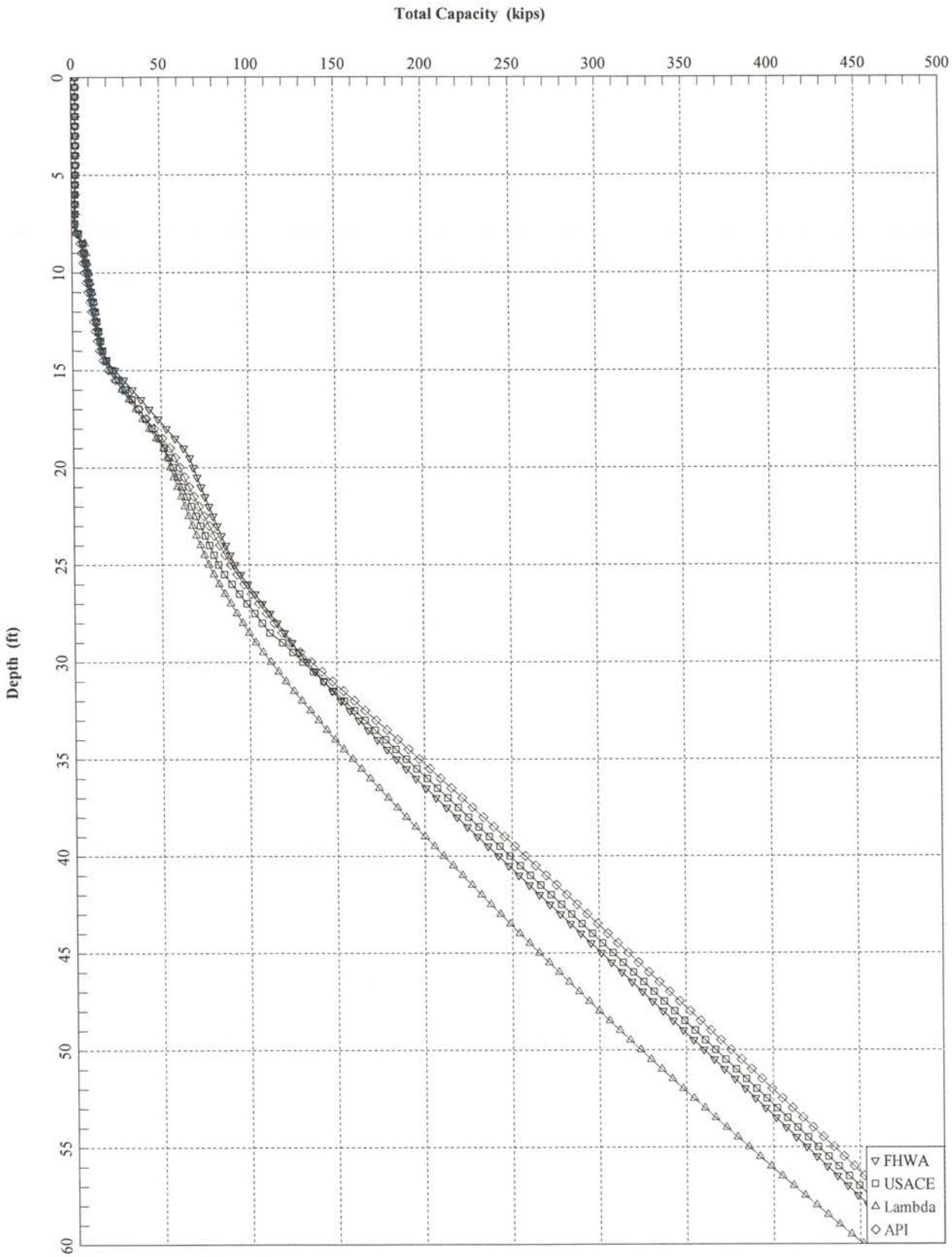
TOP LOAD KIP	TOP MOVEMENT IN.	TIP LOAD KIP	TIP MOVEMENT IN.
0.1334E+01	0.1019E-02	0.6418E-02	0.1000E-03
0.1334E+02	0.1019E-01	0.6418E-01	0.1000E-02
0.6708E+02	0.5125E-01	0.3209E+00	0.5000E-02
0.1270E+03	0.1009E+00	0.6418E+00	0.1000E-01

Abutment 1 HP 53x12.apo

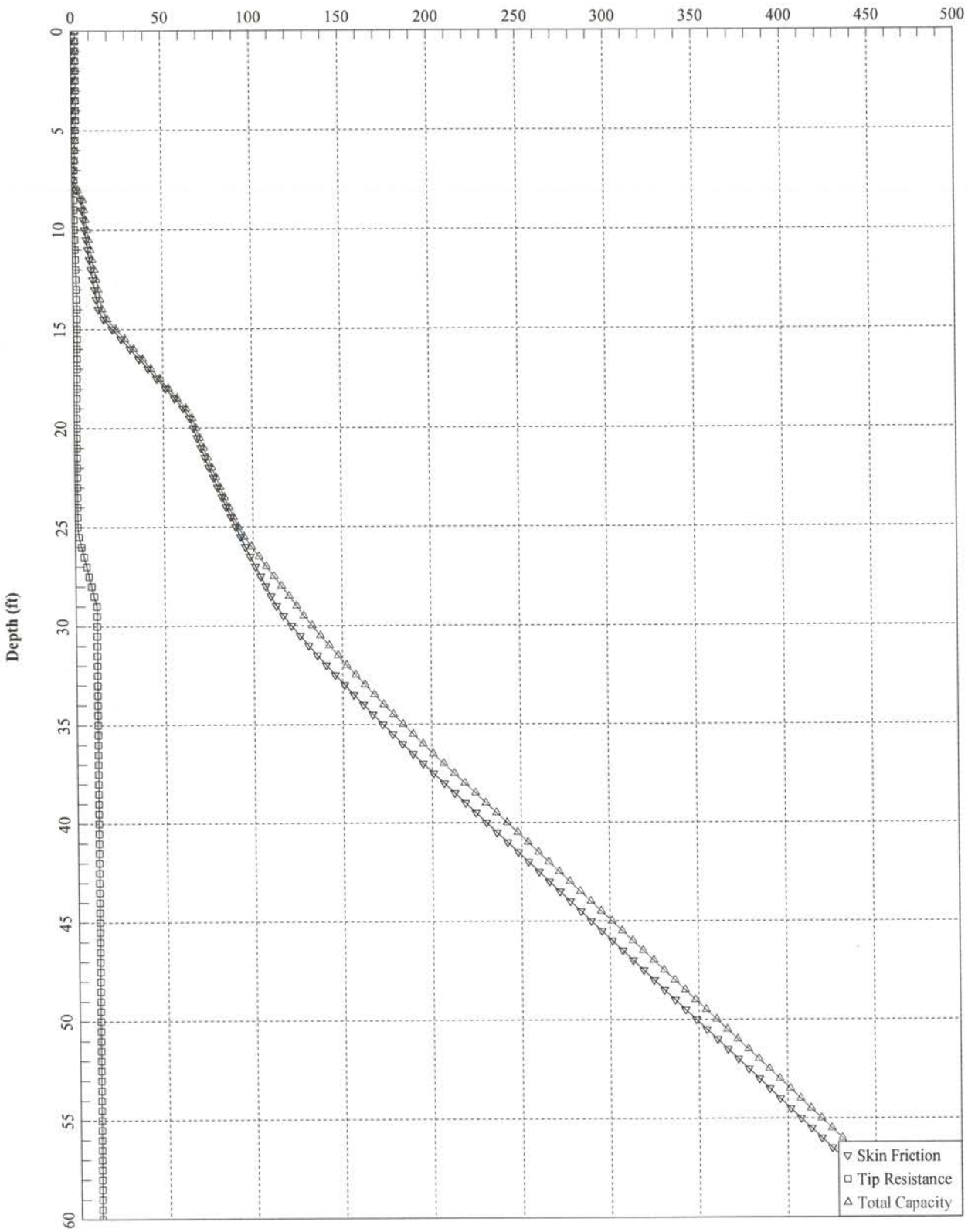
0.4190E+03	0.4173E+00	0.2952E+01	0.5000E-01
0.5055E+03	0.5919E+00	0.3536E+01	0.1000E+00
0.5077E+03	0.9965E+00	0.6706E+01	0.5000E+00
0.5098E+03	0.1500E+01	0.8817E+01	0.1000E+01
0.5121E+03	0.2504E+01	0.1110E+02	0.2000E+01



Abutment 4
(based on borings A-09-219 and A-08-LIV-01)



I-580 - N. LIvermore Ave. Undercrossing - Abutment 4 - HP 12x53



I-580 - > Livermore Ave. Undercrossing - Abutment 4 - HP 12x53 - FHWA

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AXIALLY LOADING PILE ANALYSIS PROGRAM - APILEplus
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N Livermore -Abutment 4 - HP 53x12

DESIGNER :

DATE :

PILE PROPERTIES :

PERIMETER OF PILE WITH NONCIRCULAR SECTION	=	70.87 IN.
TIP AREA OF PILE WITH NONCIRCULAR SECTION	=	0.11 SQF
OUTSIDE DIAMETER OF CIRCULAR PILE	=	0.00 IN.
INTERNAL DIAMETER OF CIRCULAR PILE	=	0.00 IN.
PILE LENGTH	=	60.00 FT.
MODULUS OF ELASTICITY	=	0.290E+08 PSI

LENGTH OF SURFACE SECTION WITH ZERO SKIN FRICTION = 8.00 FT.
INCREMENT OF PILE LENGTH USED IN COMPUTATION = 0.50 FT.

SOIL INFORMATIONS :

DEPTH FT.	SOIL TYPE	LATERAL EARTH PRESSURE	EFFECTIVE UNIT WEIGHT LB/CF	FRICTION ANGLE DEGREES	BEARING CAPACITY FACTOR
0.00	CLAY	0.00	125.00	0.00	0.00
8.00	CLAY	0.00	125.00	0.00	0.00
8.00	SAND	0.60	125.00	25.00	12.00
14.00	SAND	0.60	125.00	25.00	12.00
14.00	CLAY	0.00	125.00	0.00	0.00
19.00	CLAY	0.00	125.00	0.00	0.00
19.00	SAND	0.75	125.00	30.00	40.00
29.00	SAND	0.75	125.00	30.00	40.00
29.00	SAND	1.15	130.00	35.00	40.00
37.00	SAND	1.15	130.00	35.00	40.00
37.00	SAND	1.15	70.00	35.00	40.00
69.00	SAND	1.15	70.00	35.00	40.00

MAXIMUM UNIT FRICTION KSF	MAXIMUM UNIT BEARING KSF	UNDISTURB SHEAR STRENGTH KSF	REMOLDED SHEAR STRENGTH KSF	BLOW COUNT	UNIT SKIN FRICTION KSF	UNIT END BEARING KSF
2.50	22.50	2.50	1.25	0.00	0.00	0.00
2.50	22.50	2.50	1.25	0.00	0.00	0.00
1.40	60.00	0.00	0.00	0.00	0.00	0.00
1.40	60.00	0.00	0.00	0.00	0.00	0.00
2.20	19.80	2.20	1.10	0.00	0.00	0.00

2.20	19.80	2.20	1.10	0.00	0.00	0.00
1.70	100.00	0.00	0.00	0.00	0.00	0.00
1.70	100.00	0.00	0.00	0.00	0.00	0.00
2.00	200.00	0.00	0.00	0.00	0.00	0.00
2.00	200.00	0.00	0.00	0.00	0.00	0.00
2.00	200.00	0.00	0.00	0.00	0.00	0.00
2.00	200.00	0.00	0.00	0.00	0.00	0.00

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* COMPUTATION RESULT *

PILE PENETRATION FT.	* FED. HWY. METHOD * TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPACITY KIP	* ARMY CORPS METHOD * TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPACITY KIP	* LAMBDA 2 METHOD * TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPACITY KIP
0.0	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
0.5	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
1.0	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
1.5	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
2.0	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
2.5	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
3.0	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
3.5	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
4.0	0.0	2.4	2.4	0.0	2.4	2.4	0.0	2.4	2.4
4.5	0.0	2.3	2.3	0.0	2.4	2.4	0.0	2.3	2.3
5.0	0.0	2.1	2.1	0.0	2.3	2.3	0.0	2.2	2.2
5.5	0.0	1.9	1.9	0.0	2.2	2.2	0.0	2.1	2.1
6.0	0.0	1.7	1.7	0.0	2.1	2.1	0.0	2.0	2.0
6.5	0.0	1.5	1.5	0.0	2.1	2.1	0.0	1.9	1.9
7.0	0.0	1.3	1.3	0.0	2.1	2.1	0.0	1.8	1.8
7.5	0.0	1.1	1.1	0.0	2.0	2.0	0.0	1.7	1.7
8.0	2.3	0.9	3.3	1.8	2.0	3.9	0.0	1.6	1.6
8.5	5.0	1.0	6.0	4.1	2.1	6.2	5.6	1.7	7.3
9.0	5.6	1.0	6.7	4.8	2.2	7.1	6.2	1.8	8.0
9.5	6.3	1.1	7.4	5.7	2.3	8.0	6.9	1.8	8.7
10.0	7.0	1.1	8.2	6.5	2.4	9.0	7.6	1.9	9.6
10.5	7.8	1.2	9.0	7.4	2.5	9.9	8.4	2.0	10.4
11.0	8.6	1.4	10.0	8.4	2.5	10.9	9.2	2.0	11.3
11.5	9.4	1.5	10.9	9.4	2.4	11.9	10.1	2.1	12.1
12.0	10.3	1.7	12.0	10.4	2.4	12.9	10.9	2.1	13.0
12.5	11.2	1.8	13.0	11.5	2.4	13.9	11.8	2.1	13.9
13.0	12.2	1.9	14.1	12.7	2.3	15.0	12.7	2.1	14.8
13.5	13.1	2.0	15.2	13.8	2.2	16.1	13.6	2.1	15.8
14.0	14.2	2.1	16.3	15.1	2.1	17.2	14.6	2.1	16.7
14.5	17.1	2.1	19.2	17.3	2.1	19.5	16.5	2.1	18.6
15.0	21.9	2.1	24.0	20.6	2.1	22.7	19.1	2.1	21.2
15.5	26.8	2.1	28.9	23.8	2.4	26.2	21.7	2.7	24.4
16.0	31.8	2.0	33.8	27.1	2.9	29.9	24.3	3.8	28.1
16.5	36.7	1.9	38.6	30.3	3.4	33.7	27.0	5.0	31.9
17.0	41.6	1.8	43.4	33.6	3.9	37.4	29.7	6.1	35.8
17.5	46.5	1.7	48.3	36.8	4.3	41.2	32.4	7.2	39.6
18.0	51.5	1.6	53.1	40.1	4.8	44.9	35.1	8.4	43.5
18.5	56.4	1.5	57.9	43.3	5.3	48.6	37.9	9.5	47.4
19.0	61.3	1.4	62.8	45.9	5.8	51.7	40.7	10.7	51.4

19.5	64.8	1.4	66.2	48.4	5.8	54.3	42.5	10.7	53.3
20.0	66.9	1.4	68.3	51.0	5.8	56.8	44.4	10.8	55.2
20.5	69.0	1.4	70.4	53.6	5.8	59.4	46.4	10.8	57.1
21.0	71.1	1.4	72.6	56.1	5.8	62.0	48.4	10.8	59.1
21.5	73.4	1.4	74.8	58.7	5.8	64.5	50.4	10.8	61.2
22.0	75.6	1.4	77.1	61.3	5.8	67.1	52.5	10.8	63.3
22.5	78.0	1.4	79.4	63.8	5.8	69.7	54.7	10.8	65.4
23.0	80.3	1.4	81.8	66.4	5.8	72.2	56.9	10.8	67.6
23.5	82.8	1.4	84.2	69.0	5.8	74.8	59.1	10.8	69.9
24.0	85.2	1.4	86.7	71.5	5.8	77.4	61.4	10.8	72.2
24.5	87.8	1.4	89.2	74.1	5.8	79.9	63.7	10.8	74.5
25.0	90.4	1.4	91.8	76.7	5.8	82.5	66.1	10.8	76.9
25.5	93.0	2.1	95.1	79.2	6.7	85.9	68.6	11.1	79.7
26.0	95.7	3.5	99.2	81.8	8.4	90.2	71.0	11.8	82.8
26.5	98.4	4.8	103.3	84.4	10.2	94.5	73.6	12.5	86.1
27.0	101.2	6.2	107.4	86.9	11.9	98.8	76.1	13.3	89.4
27.5	104.1	7.5	111.6	89.5	13.6	103.1	78.8	14.1	92.8
28.0	107.0	8.9	115.9	92.1	15.3	107.4	81.5	14.9	96.3
28.5	109.9	10.2	120.2	94.6	17.1	111.7	84.2	15.8	99.9
29.0	112.9	11.6	124.5	100.1	18.8	118.9	86.9	16.7	103.6
29.5	116.8	11.6	128.3	106.0	18.8	124.8	90.9	16.9	107.8
30.0	121.4	11.6	133.0	111.9	18.8	130.7	94.9	17.2	112.1
30.5	126.2	11.6	137.7	117.8	18.8	136.6	99.0	17.5	116.5
31.0	131.0	11.6	142.6	123.7	18.8	142.5	103.2	17.8	120.9
31.5	135.9	11.6	147.5	129.6	18.8	148.4	107.4	18.1	125.4
32.0	140.9	11.6	152.4	135.5	18.8	154.3	111.7	18.3	130.0
32.5	145.9	11.6	157.5	141.4	18.8	160.2	116.1	18.6	134.7
33.0	151.1	11.6	162.6	147.3	18.8	166.1	120.5	18.9	139.4
33.5	156.3	11.6	167.9	153.2	18.8	172.0	125.0	19.2	144.2
34.0	161.6	11.6	173.2	159.2	18.8	177.9	129.6	19.4	149.0
34.5	167.0	11.6	178.6	165.1	18.8	183.8	134.2	19.7	153.9
35.0	172.5	11.6	184.0	171.0	18.8	189.7	138.9	19.9	158.9
35.5	178.0	11.6	189.6	176.9	18.8	195.7	143.7	20.1	163.9
36.0	183.6	11.6	195.2	182.8	18.8	201.6	148.6	20.3	168.9
36.5	189.4	11.6	200.9	188.7	18.8	207.5	153.5	20.5	174.0
37.0	195.2	11.6	206.7	194.6	18.8	213.4	158.5	20.7	179.2
37.5	201.0	11.6	212.6	200.5	18.8	219.3	163.6	20.8	184.4
38.0	206.9	11.6	218.5	206.4	18.8	225.2	168.7	21.0	189.6
38.5	212.8	11.6	224.4	212.3	18.8	231.1	173.8	21.1	194.9
39.0	218.7	11.6	230.3	218.2	18.8	237.0	179.0	21.2	200.2
39.5	224.6	11.6	236.2	224.1	18.8	242.9	184.2	21.3	205.5
40.0	230.5	11.6	242.1	230.0	18.8	248.8	189.4	21.4	210.8
40.5	236.4	11.6	248.0	235.9	18.8	254.7	194.7	21.5	216.1
41.0	242.3	11.6	253.9	241.8	18.8	260.6	200.0	21.5	221.5
41.5	248.3	11.6	259.8	247.7	18.8	266.5	205.4	21.5	226.9
42.0	254.2	11.6	265.7	253.6	18.8	272.4	210.8	21.5	232.3
42.5	260.1	11.6	271.6	259.6	18.8	278.3	216.2	21.5	237.7
43.0	266.0	11.6	277.6	265.5	18.8	284.2	221.7	21.5	243.2
43.5	271.9	11.6	283.5	271.4	18.8	290.1	227.2	21.5	248.7
44.0	277.8	11.6	289.4	277.3	18.8	296.1	232.7	21.5	254.2
44.5	283.7	11.6	295.3	283.2	18.8	302.0	238.3	21.5	259.8
45.0	289.6	11.6	301.2	289.1	18.8	307.9	243.9	21.5	265.4
45.5	295.5	11.6	307.1	295.0	18.8	313.8	249.6	21.5	271.1
46.0	301.4	11.6	313.0	300.9	18.8	319.7	255.3	21.5	276.8
46.5	307.3	11.6	318.9	306.8	18.8	325.6	261.0	21.5	282.5
47.0	313.2	11.6	324.8	312.7	18.8	331.5	266.8	21.5	288.3
47.5	319.1	11.6	330.7	318.6	18.8	337.4	272.6	21.5	294.1
48.0	325.0	11.6	336.6	324.5	18.8	343.3	278.4	21.5	299.9
48.5	330.9	11.6	342.5	330.4	18.8	349.2	284.3	21.5	305.8
49.0	336.8	11.6	348.4	336.3	18.8	355.1	290.2	21.5	311.8
49.5	342.7	11.6	354.3	342.2	18.8	361.0	296.2	21.5	317.7
50.0	348.7	11.6	360.2	348.1	18.8	366.9	302.2	21.5	323.7
50.5	354.6	11.6	366.1	354.0	18.8	372.8	308.2	21.5	329.7
51.0	360.5	11.6	372.0	360.0	18.8	378.7	314.3	21.5	335.8

51.5	366.4	11.6	378.0	365.9	18.8	384.6	320.4	21.5	341.9
52.0	372.3	11.6	383.9	371.8	18.8	390.5	326.5	21.5	348.1
52.5	378.2	11.6	389.8	377.7	18.8	396.4	332.7	21.5	354.3
53.0	384.1	11.6	395.7	383.6	18.8	402.4	339.0	21.5	360.5
53.5	390.0	11.6	401.6	389.5	18.8	408.3	345.2	21.5	366.7
54.0	395.9	11.6	407.5	395.4	18.8	414.2	351.5	21.5	373.0
54.5	401.8	11.6	413.4	401.3	18.8	420.1	357.9	21.5	379.4
55.0	407.7	11.6	419.3	407.2	18.8	426.0	364.2	21.5	385.8
55.5	413.6	11.6	425.2	413.1	18.8	431.9	370.6	21.5	392.2
56.0	419.5	11.6	431.1	419.0	18.8	437.8	377.1	21.5	398.6
56.5	425.4	11.6	437.0	424.9	18.8	443.7	383.6	21.5	405.1
57.0	431.3	11.6	442.9	430.8	18.8	449.6	390.1	21.5	411.6
57.5	437.2	11.6	448.8	436.7	18.8	455.5	396.7	21.5	418.2
58.0	443.1	11.6	454.7	442.6	18.8	461.4	403.3	21.5	424.8
58.5	449.1	11.6	460.6	448.5	18.8	467.3	409.9	21.5	431.4
59.0	455.0	11.6	466.5	454.4	18.8	473.2	416.6	21.5	438.1
59.5	460.9	11.6	472.4	460.4	18.8	479.1	423.3	21.5	444.8
60.0	466.8	11.6	478.4	466.3	18.8	485.0	430.1	21.5	451.6

* API RP-2A (1994) *

PILE PENETRATION FT.	TOTAL SKIN FRICTION KIP	END BEARING KIP	ULTIMATE CAPACITY KIP
0.00	0.0	2.4	2.4
0.50	0.0	2.4	2.4
1.00	0.0	2.4	2.4
1.50	0.0	2.4	2.4
2.00	0.0	2.4	2.4
2.50	0.0	2.4	2.4
3.00	0.0	2.4	2.4
3.50	0.0	2.4	2.4
4.00	0.0	2.4	2.4
4.50	0.0	2.3	2.3
5.00	0.0	2.2	2.2
5.50	0.0	2.1	2.1
6.00	0.0	2.0	2.0
6.50	0.0	1.9	1.9
7.00	0.0	1.8	1.8
7.50	0.0	1.7	1.7
8.00	1.5	1.6	3.1
8.50	3.3	1.7	5.0
9.00	4.0	1.8	5.7
9.50	4.7	1.8	6.6
10.00	5.5	1.9	7.4
10.50	6.3	2.0	8.3
11.00	7.2	2.0	9.2
11.50	8.1	2.1	10.2
12.00	9.1	2.1	11.2
12.50	10.0	2.1	12.2
13.00	11.1	2.1	13.2
13.50	12.1	2.1	14.3
14.00	13.3	2.1	15.4
14.50	15.4	2.1	17.5
15.00	18.5	2.1	20.6
15.50	21.6	2.7	24.3
16.00	24.8	3.8	28.6
16.50	27.9	5.0	32.9
17.00	31.2	6.1	37.3
17.50	34.4	7.2	41.6

18.00	37.7	8.4	46.1
18.50	41.0	9.5	50.5
19.00	44.3	10.7	55.0
19.50	47.3	10.7	58.0
20.00	49.8	10.8	60.6
20.50	52.4	10.8	63.2
21.00	55.1	10.8	65.9
21.50	57.8	10.8	68.6
22.00	60.7	10.8	71.4
22.50	63.5	10.8	74.3
23.00	66.5	10.8	77.2
23.50	69.5	10.8	80.2
24.00	72.5	10.8	83.3
24.50	75.7	10.8	86.4
25.00	78.9	10.8	89.6
25.50	82.1	11.1	93.2
26.00	85.4	11.8	97.2
26.50	88.8	12.5	101.3
27.00	92.3	13.3	105.5
27.50	95.8	14.1	109.9
28.00	99.4	14.9	114.3
28.50	103.0	15.8	118.8
29.00	106.7	16.7	123.4
29.50	112.2	16.9	129.2
30.00	118.1	17.2	135.4
30.50	124.0	17.5	141.5
31.00	129.9	17.8	147.7
31.50	135.9	18.1	153.9
32.00	141.8	18.3	160.1
32.50	147.7	18.6	166.3
33.00	153.6	18.9	172.5
33.50	159.5	19.2	178.7
34.00	165.4	19.4	184.8
34.50	171.3	19.7	191.0
35.00	177.2	19.9	197.1
35.50	183.1	20.1	203.2
36.00	189.0	20.3	209.3
36.50	194.9	20.5	215.4
37.00	200.8	20.7	221.5
37.50	206.7	20.8	227.5
38.00	212.6	21.0	233.6
38.50	218.5	21.1	239.6
39.00	224.4	21.2	245.7
39.50	230.3	21.3	251.7
40.00	236.2	21.4	257.6
40.50	242.2	21.5	263.6
41.00	248.1	21.5	269.6
41.50	254.0	21.5	275.5
42.00	259.9	21.5	281.4
42.50	265.8	21.5	287.3
43.00	271.7	21.5	293.2
43.50	277.6	21.5	299.1
44.00	283.5	21.5	305.0
44.50	289.4	21.5	310.9
45.00	295.3	21.5	316.8
45.50	301.2	21.5	322.7
46.00	307.1	21.5	328.6
46.50	313.0	21.5	334.6
47.00	318.9	21.5	340.5
47.50	324.8	21.5	346.4
48.00	330.7	21.5	352.3
48.50	336.6	21.5	358.2
49.00	342.6	21.5	364.1
49.50	348.5	21.5	370.0

50.00	354.4	21.5	375.9
50.50	360.3	21.5	381.8
51.00	366.2	21.5	387.7
51.50	372.1	21.5	393.6
52.00	378.0	21.5	399.5
52.50	383.9	21.5	405.4
53.00	389.8	21.5	411.3
53.50	395.7	21.5	417.2
54.00	401.6	21.5	423.1
54.50	407.5	21.5	429.0
55.00	413.4	21.5	435.0
55.50	419.3	21.5	440.9
56.00	425.2	21.5	446.8
56.50	431.1	21.5	452.7
57.00	437.0	21.5	458.6
57.50	443.0	21.5	464.5
58.00	448.9	21.5	470.4
58.50	454.8	21.5	476.3
59.00	460.7	21.5	482.2
59.50	466.6	21.5	488.1
60.00	472.5	21.5	494.0

AN ASTERISK WILL BE PLACED IN THE END-BEARING COLUMN
IF THE TIP RESISTANCE IS CONTROLLED BY THE FRICTION
OF SOIL PLUG INSIDE AN OPEN-ENDED PIPE PILE.

```
**********************************************
* COMPUTE LOAD-DISTRIBUTION AND LOAD-SETTLEMENT *
* CURVES FOR AXIAL LOADING                      *
**********************************************
```

T-Z CURVE NO.	NO. OF POINTS	DEPTH TO CURVE FT.	LOAD TRANSFER PSI	PILE MOVEMENT IN.
1	10	0.0000E+00		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.3609E-01
			0.0000E+00	0.6993E-01
			0.0000E+00	0.1286E+00
			0.0000E+00	0.1805E+00
			0.0000E+00	0.2256E+00
			0.0000E+00	0.4512E+00
			0.0000E+00	0.6768E+00
			0.0000E+00	0.1128E+01
			0.0000E+00	0.4512E+01
2	10	0.4025E+01		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.3609E-01
			0.0000E+00	0.6993E-01
			0.0000E+00	0.1286E+00
			0.0000E+00	0.1805E+00
			0.0000E+00	0.2256E+00
			0.0000E+00	0.4512E+00
			0.0000E+00	0.6768E+00
			0.0000E+00	0.1128E+01
			0.0000E+00	0.4512E+01
3	10	0.7958E+01		
			0.0000E+00	0.0000E+00
			0.1644E+01	0.3609E-01
			0.2741E+01	0.6993E-01

			0.4111E+01	0.1286E+00
			0.4933E+01	0.1805E+00
			0.5482E+01	0.2256E+00
			0.4933E+01	0.4512E+00
			0.4933E+01	0.6768E+00
			0.4933E+01	0.1128E+01
			0.4933E+01	0.4512E+01
4	10	0.8000E+01		
			0.0000E+00	0.0000E+00
			0.6223E+00	0.1000E-01
			0.1245E+01	0.2000E-01
			0.2489E+01	0.4000E-01
			0.3734E+01	0.6000E-01
			0.4978E+01	0.8000E-01
			0.5601E+01	0.9000E-01
			0.6223E+01	0.1000E+00
			0.6223E+01	0.5000E+00
			0.6223E+01	0.2000E+01
5	10	0.1103E+02		
			0.0000E+00	0.0000E+00
			0.1962E+00	0.1000E-01
			0.3925E+00	0.2000E-01
			0.7849E+00	0.4000E-01
			0.1177E+01	0.6000E-01
			0.1570E+01	0.8000E-01
			0.1766E+01	0.9000E-01
			0.1962E+01	0.1000E+00
			0.1962E+01	0.5000E+00
			0.1962E+01	0.2000E+01
6	10	0.1396E+02		
			0.0000E+00	0.0000E+00
			0.2398E+00	0.1000E-01
			0.4797E+00	0.2000E-01
			0.9594E+00	0.4000E-01
			0.1439E+01	0.6000E-01
			0.1919E+01	0.8000E-01
			0.2159E+01	0.9000E-01
			0.2398E+01	0.1000E+00
			0.2398E+01	0.5000E+00
			0.2398E+01	0.2000E+01
7	10	0.1400E+02		
			0.0000E+00	0.0000E+00
			0.2049E+01	0.3609E-01
			0.3414E+01	0.6993E-01
			0.5122E+01	0.1286E+00
			0.6146E+01	0.1805E+00
			0.6829E+01	0.2256E+00
			0.6146E+01	0.4512E+00
			0.6146E+01	0.6768E+00
			0.6146E+01	0.1128E+01
			0.6146E+01	0.4512E+01
8	10	0.1652E+02		
			0.0000E+00	0.0000E+00
			0.3476E+01	0.3609E-01
			0.5793E+01	0.6993E-01
			0.8689E+01	0.1286E+00
			0.1043E+02	0.1805E+00
			0.1159E+02	0.2256E+00
			0.1043E+02	0.4512E+00
			0.1043E+02	0.6768E+00
			0.1043E+02	0.1128E+01
			0.1043E+02	0.4512E+01
9	10	0.1896E+02		
			0.0000E+00	0.0000E+00

			0.3476E+01	0.3609E-01
			0.5793E+01	0.6993E-01
			0.8689E+01	0.1286E+00
			0.1043E+02	0.1805E+00
			0.1159E+02	0.2256E+00
			0.1043E+02	0.4512E+00
			0.1043E+02	0.6768E+00
			0.1043E+02	0.1128E+01
			0.1043E+02	0.4512E+01
10	10	0.1900E+02		
			0.0000E+00	0.0000E+00
			0.8188E+00	0.1000E-01
			0.1638E+01	0.2000E-01
			0.3275E+01	0.4000E-01
			0.4913E+01	0.6000E-01
			0.6550E+01	0.8000E-01
			0.7369E+01	0.9000E-01
			0.8188E+01	0.1000E+00
			0.8188E+01	0.5000E+00
			0.8188E+01	0.2000E+01
11	10	0.2402E+02		
			0.0000E+00	0.0000E+00
			0.5958E+00	0.1000E-01
			0.1192E+01	0.2000E-01
			0.2383E+01	0.4000E-01
			0.3575E+01	0.6000E-01
			0.4766E+01	0.8000E-01
			0.5362E+01	0.9000E-01
			0.5958E+01	0.1000E+00
			0.5958E+01	0.5000E+00
			0.5958E+01	0.2000E+01
12	10	0.2896E+02		
			0.0000E+00	0.0000E+00
			0.7063E+00	0.1000E-01
			0.1413E+01	0.2000E-01
			0.2825E+01	0.4000E-01
			0.4238E+01	0.6000E-01
			0.5651E+01	0.8000E-01
			0.6357E+01	0.9000E-01
			0.7063E+01	0.1000E+00
			0.7063E+01	0.5000E+00
			0.7063E+01	0.2000E+01
13	10	0.2900E+02		
			0.0000E+00	0.0000E+00
			0.8991E+00	0.1000E-01
			0.1798E+01	0.2000E-01
			0.3596E+01	0.4000E-01
			0.5394E+01	0.6000E-01
			0.7193E+01	0.8000E-01
			0.8092E+01	0.9000E-01
			0.8991E+01	0.1000E+00
			0.8991E+01	0.5000E+00
			0.8991E+01	0.2000E+01
14	10	0.3302E+02		
			0.0000E+00	0.0000E+00
			0.1229E+01	0.1000E-01
			0.2458E+01	0.2000E-01
			0.4917E+01	0.4000E-01
			0.7375E+01	0.6000E-01
			0.9833E+01	0.8000E-01
			0.1106E+02	0.9000E-01
			0.1229E+02	0.1000E+00
			0.1229E+02	0.5000E+00
			0.1229E+02	0.2000E+01

15	10	0.3696E+02		
			0.0000E+00	0.0000E+00
			0.1363E+01	0.1000E-01
			0.2726E+01	0.2000E-01
			0.5452E+01	0.4000E-01
			0.8178E+01	0.6000E-01
			0.1090E+02	0.8000E-01
			0.1227E+02	0.9000E-01
			0.1363E+02	0.1000E+00
			0.1363E+02	0.5000E+00
			0.1363E+02	0.2000E+01
16	10	0.3700E+02		
			0.0000E+00	0.0000E+00
			0.1378E+01	0.1000E-01
			0.2755E+01	0.2000E-01
			0.5511E+01	0.4000E-01
			0.8266E+01	0.6000E-01
			0.1102E+02	0.8000E-01
			0.1240E+02	0.9000E-01
			0.1378E+02	0.1000E+00
			0.1378E+02	0.5000E+00
			0.1378E+02	0.2000E+01
17	10	0.5302E+02		
			0.0000E+00	0.0000E+00
			0.1389E+01	0.1000E-01
			0.2778E+01	0.2000E-01
			0.5556E+01	0.4000E-01
			0.8333E+01	0.6000E-01
			0.1111E+02	0.8000E-01
			0.1250E+02	0.9000E-01
			0.1389E+02	0.1000E+00
			0.1389E+02	0.5000E+00
			0.1389E+02	0.2000E+01
18	10	0.6896E+02		
			0.0000E+00	0.0000E+00
			0.1389E+01	0.1000E-01
			0.2778E+01	0.2000E-01
			0.5556E+01	0.4000E-01
			0.8333E+01	0.6000E-01
			0.1111E+02	0.8000E-01
			0.1250E+02	0.9000E-01
			0.1389E+02	0.1000E+00
			0.1389E+02	0.5000E+00
			0.1389E+02	0.2000E+01

TIP LOAD KIP	TIP MOVEMENT IN.
0.0000E+00	0.0000E+00
0.7239E+00	0.1128E-01
0.1448E+01	0.2256E-01
0.2895E+01	0.4512E-01
0.5791E+01	0.2933E+00
0.8686E+01	0.9475E+00
0.1042E+02	0.1647E+01
0.1158E+02	0.2256E+01
0.1158E+02	0.3384E+01
0.1158E+02	0.4512E+01

LOAD VERSUS SETTLEMENT CURVE

Abutment 4 HP 53x12.apo
****

TOP LOAD KIP	TOP MOVEMENT IN.	TIP LOAD KIP	TIP MOVEMENT IN.
0.1135E+01	0.9895E-03	0.6418E-02	0.1000E-03
0.1135E+02	0.9895E-02	0.6418E-01	0.1000E-02
0.5724E+02	0.4980E-01	0.3209E+00	0.5000E-02
0.1121E+03	0.9894E-01	0.6418E+00	0.1000E-01
0.3891E+03	0.4137E+00	0.2952E+01	0.5000E-01
0.4785E+03	0.5892E+00	0.3536E+01	0.1000E+00
0.4804E+03	0.9937E+00	0.6706E+01	0.5000E+00
0.4825E+03	0.1497E+01	0.8817E+01	0.1000E+01
0.4848E+03	0.2501E+01	0.1110E+02	0.2000E+01

BEARING CAPACITY OF BENT FOOTINGS

Footing Size = 7' X 14', Depth 2'

Bottom of Footing Elevation = 453.9 ft.

Footing will be founded on Dense Sand

Assume $\phi = 37°$, $\gamma = 130$ pcf

$q_u = \frac{1}{2} B s_\gamma N_\gamma \gamma$

$s_\gamma = 1 - 0.4 B/L = 1 - 0.4\left(\frac{7}{14}\right) = 0.8$

$N_\gamma = 85$

$\therefore q_u = \frac{1}{2} \times 7 \times 0.8 \times 85 \times 0.130 = 30.94 \approx 31.0$ Ksf

Factored Gross Nominal = 31.0 Ksf (Extreme Event)

$(\Phi_b)_{strength} = 0.45$

$\therefore$ Factored Gross Nominal = $31.0 \times 0.45 = 13.95 \approx 14$ Ksf (Strength)

Service (1" settlement)

Assume N = 30 Poisson's Ratio = 0.3

$q_c/N = 3.5$ (assume)

$\therefore q_c = 3.5N = 105$ tsf = 210 Ksf

$E = 3.0 q_c = 630$ Ksf (Between Axysymmetric & Plane Strain)

$\frac{B}{H} = \infty$; $L/B = 2$; $D/B = \frac{2}{7} = 0.29$

$I_1 = 1.0$ $I_0 = 0.95$

Pressure for 1" settlement: $\frac{630 \times .083}{1.0 \times 0.95 \times 7 \times (1-(0.3)^2)} = 8.64$ Ksf

Support Location	Footing Size (ft)		Bottom of Footing Elevation (ft)	Minimum Footing Embedment Depth (ft)	WSD (LRFD Service-I Limit State Load Combination)		LRFD		
	B	L			Permissible Gross Contact Stress (ksf)	Allowable Gross Bearing Capacity (ksf)	Service	Strength O_b=0.45	Extreme Event O_b=1.00
							Permissible Net Contact Stress (ksf)	Factored Gross Nominal Bearing Resistance (ksf)	Factored Gross Nominal Bearing Resistance (ksf)
Abut 1							N/A	N/A	N/A
Bent 2	7	14	453.9	2	N/A	N/A	8.6	14.0	31.0
Bent 3	7	14	453.9	2	N/A	N/A	8.6	14.0	31.0
Abut 4							N/A	N/A	N/A

Notes:
1. Recommendations are based on the foundation geometry and the loads and settlements provided by Structure Design and Foundation Design Data Sheet. The footing contact area is taken as equal to the effective footing area, wherever applicable. [Settlement under Service Load = 1.0 inch]
2. See MTD 4-1 for definitions and applications of the recommended design parameters.

TABLE 4.1 BEARING CAPACITY FACTORS[a].

ϕ	N_q	N_c	N_γ	N_q/N_c	tan ϕ
0	1.000	5.142	0.000	0.194	0.000
2	1.197	5.632	0.156	0.212	0.035
4	1.432	6.185	0.350	0.232	0.070
6	1.716	6.813	0.595	0.252	0.105
8	2.058	7.527	0.909	0.273	0.141
10	2.471	8.345	1.313	0.296	0.176
12	2.973	9.285	1.837	0.320	0.213
14	3.586	10.370	2.522	0.346	0.249
16	4.335	11.631	3.422	0.373	0.287
18	5.258	13.104	4.612	0.401	0.325
20	6.399	14.835	6.196	0.431	0.364
22	7.821	16.883	8.316	0.463	0.404
24	9.603	19.323	11.173	0.497	0.445
26	11.854	22.254	15.049	0.533	0.488
28	14.720	25.803	20.351	0.570	0.532
30	18.401	30.139	27.665	0.611	0.577
32	23.177	35.490	37.849	0.653	0.625
34	29.440	42.163	52.182	0.698	0.675
36	37.752	50.585	72.594	0.746	0.727
38	48.933	61.351	102.050	0.798	0.781
40	64.195	75.312	145.191	0.852	0.839
42	85.373	93.706	209.435	0.911	0.900
44	115.307	118.368	306.920	0.974	0.966
46	158.500	152.096	458.018	1.042	1.036
48	222.297	199.257	697.926	1.116	1.111
50	319.053	266.878	1089.456	1.195	1.192

[a] Chen (1975).

TABLE 5.6 CORRELATION BETWEEN CPT RESISTANCE q_c AND SPT RESISTANCE N[a].

Soil Type	q_c/N[b]
Silts, sandy silts, slightly cohesive silt–sand mixtures	2–4
Clean, fine to medium sands and slightly silty sands	3–5
Coarse sands and sands with little gravel	4–5
Sandy gravel and gravel	6–8

[a] After Schmertmann (1970, 1978).
[b] Units of q_c are kgf/cm^2 or tons/ft^2. Units of N are blows/ft or blows/30 cm.

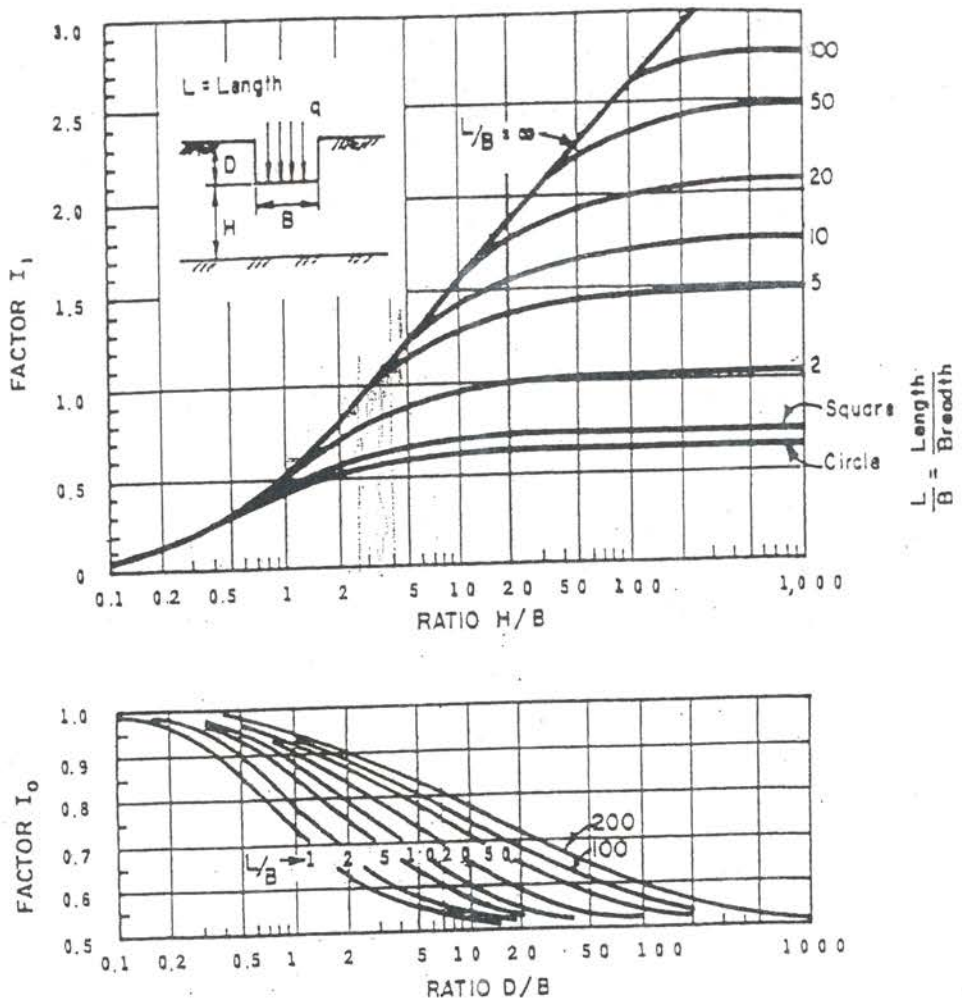
Schmertmann (1978) and Schmertmann et al. (1978) recommend that for axisymmetric conditions,

$$E_s = 2.5q_c \tag{5.10}$$

and for plane strain conditions,

$$E_s = 3.5q_c \tag{5.11}$$

All tables and equations from Winterkorn & Fang (1975)



$$\rho_i = I_o I_1 \frac{qB}{E} (1 - \nu^2)$$

ρ_i = IMMEDIATE SETTLEMENT (AVERAGE VALUE)

q = AVERAGE BEARING PRESSURE

B = FOUNDATION WIDTH

E = YOUNG'S MODULUS OF FOUNDATION SOIL

ν = POISSON'S RATIO OF FOUNDATION SOIL

I_o & I_1 = FACTORS FROM CHART ABOVE

Fig. 4 CHART FOR ESTIMATING IMMEDIATE SETTLEMENTS OF FOUNDATIONS ON CLAY (FROM JANBU, BJERRUM AND KJAERNSLI, 1956)

PASSIVE RESISTANCE AT BENT FOOTINGS

N. Livermore UC

Passive Pressure at Bents

The bent footings are: 14'-0" long; 6'0" wide and 2'-9" deep.

The bottom of footing is at approximately 452 ft elevation.

From the LOTB sheets, the soils at the footing levels are medium dense to dense clayey and silty sands with gravel

Using $\gamma = 130$ pcf and $\phi = 35°$,

From BDS, Figure 5.5.5.4-2,

$K_p = 10.0$ (w/o correction factor

Correction Factor (for $\delta/\phi = 0.5$) = 0.674

$\therefore K_p = 10.0 \times 0.674 = 6.7$

$\therefore$ Equivalent Fluid Pressure (EFP) $= K_p = 6.7 \times 130 \approx 870$ pcf

Using 50% of it, EFP = 435 pcf

Using $\phi = 30°$,

$K_p = 6.3$

Correction Factor (for $\delta/\phi = 0.5$) = 0.746

$\therefore K_p = 6.3 \times 0.746 = 4.7$

EFP = $4.7 \times 130 = 610$ pcf

Using 50% = $0.5 \times 610 = 305$ pcf

Use 400 pcf

APPENDIX D

OSFP Review Comment & Response Form

General Project Information	Review Phase	Reviewer Information
Dist: 04 EA: 290861 Project Name: N.LIVERMORE AVENUE UNDERCROSSING WESTBOUND (WIDENING) OSFP Liaison: Overcomer Hor Phone: 916-227-8419 e-mail: overcomer_Hor@dot.ca.gov	☐ PSR/PDS (Review No. _) ☐ APS/PSR (Review No. _) ☐ APS/PR (Review No. _) ☐ Type Selection ☐ 65% PS&E Unchecked Details ☐ PS&E (Review No. _) ☐ Construction Support ☒ Other: Foundation Report **Structure Information** (Use when necessary to document comments by individual structure) Structure Name: N. Livermore UC Br No: 33-0153	Reviewer Name: E. Ortega/R. Nashed/Hossain Salimi Functional Unit: GS-GDW Phone Number: (510)286-4821 e-mail: eduardo_ortega@dot.ca.gov Date of Review: 07/12/2010

Consultant Information (to be filled in by Consultant)

Consultant Structure Lead (First and Last Name)	Structure Consultant Firm	Phone Number	e-mail	Response Date

#	Doc. (See Note 1)	Page, Section, or SSP	Review Comments	Consultant Responses	
1	FR	N/A	FR prepared by Parikh Consultant, Inc., dated March, 2010.		
2	FR	Subsurface Conditions Page 4	Our comment dated April 26, 2010 has been adequately addressed.		
3			This bridge was type selected before the new Caltrans Seismic Design Criteria (SDC) was implemented. Parikh used the 1996 Caltrans Seismic Hazard map, and the attenuation relationship by Sadigh et al. (1997) to produce the response spectrum for the structure. The seismic related findings in reports are proper and consistent with the old 2001 SDC and I have no further comments/questions.		

Note 1: Abbreviations for Typical Documents (if Abbr. is not below, type in the document type)					
P=Structure Plans	SP=Special Provisions	FR=Foundation Rpt	DC=Design Calcs	TS=Type Sel. Report	QCC=Quant. Check Calcs
RP=Road Plans	E=Estimate	H=Hydraulics Rpt	CC=Check Calcs	QC=Quant. Calcs	

✓= Comment Resolved
(for Reviewer's use)

Office of Special Funded Projects
Comment & Response Form

General Project Information	Review Phase	Reviewer Information
Dist: 04 EA: 297601 Project Name: N. Livermore Ave UC WB (Widening) OSFP Liaison: Overcommer Hor Phone: 916-227-8419 e-mail: Overcomer_Hor@dot.ca.gov	☐ PSR/PDS (Review No. _) ☐ APS/PSR (Review No. _) ☐ APS/PR (Review No. _) ☐ Type Selection ☐ 65% PS&E Unchecked Details ☒ PS&E (Review No. _) ☐ Construction Support ☒ Other: Final Foundation Report **Structure Information** (Use when necessary to document comments by individual structure) Structure Name: N. Livermore UC Br No: 33-0153	Reviewer Name: Eduardo Ortega/Rifaat Nashed Functional Unit: Geotechnical Cost Center: 327 Phone Number: 510-286-4821 e-mail: Eduardo_Ortega@dot.ca.gov Date of Review: 04/26/10

Consultant Information (to be filled in by Consultant)				
Consultant Structure Lead (First and Last Name)	Structure Consultant Firm	Phone Number	e-mail	Response Date

#	Doc. (See Note 1)	Page, Section, or SSP	Review Comments	Consultant Responses	✓
1	FR	N/A	FR Prepared by Parikh Consultant, Inc., dated March, 2010		
2	FR	Subsurface Condtions Page 4	1.- In As-Built borings, Borehole No. B-5 shows the presence of Silstone at elev. 425. This should be mentioned as bedrock in subsurface conditions section.	Agreed. Text will be revised.	
3					
4					
5					
6					
7					
8					
9					
10					
11					

Note 1: Abbreviations for Typical Documents (if Abbr. is not below, type in the document type)					
P=Structure Plans	SP=Special Provisions	FR=Foundation Rpt	DC=Design Calcs	TS=Type Sel. Report	QCC=Quant. Check Calcs
RP=Road Plans	E=Estimate	H=Hydraulics Rpt	CC=Check Calcs	QC=Quant. Calcs	

✓ = Comment Resolved
(for Reviewer's use)

FINAL FOUNDATION REPORT
ARROYO LAS POSITAS BRIDGE - WESTBOUND
AT INTERSTATE 580 (WIDENING)
(BRIDGE NO. 33-0085)
LIVERMORE, ALAMEDA COUNTY CALIFORNIA
EA 290861, POST MILE 11.72

For

BKF Engineers
4670 Willow Road, Suite 250
Pleasanton, CA 94588

PARIKH CONSULTANTS, INC.
2360 Qume Drive, Suite A
San Jose, California
(408) 452-9000

March, 2010

Job No. 208102.AL1

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FINAL FOUNDATION REPORT
ARROYO LAS POSITAS BRIDGE – WESTBOUND
AT INTERSTATE 580 (WIDENING)
(BRIDGE NO. 33-0085)
LIVERMORE, ALAMEDA COUNTY, CALIFORNIA
EA 290861, POST MILE 11.72

INTRODUCTION

This report presents the results of our geotechnical engineering investigation for the proposed widening of the westbound Arroyo Las Positas Bridge (Bridge No. 33-0085) on Interstate 580 (I-580) in Livermore, Alameda County, California. Our work was performed generally in accordance with the scope of work as per our agreement. The eastbound structure submittal has been separated from the westbound project. The general location of the site and its vicinity are shown on the Project Location Map, Plate 1.

The geotechnical recommendations presented in this report are intended for design input and are not intended to use as specifications. These recommendations should not be used for direct bidding purposes.

PROPOSED CONSTRUCTION

The proposed project will consist of widening the existing three-span four-lane eastbound Arroyo Las Positas Bridge (Bridge No. 33-0085) to accommodate an HOV lane. The project is part of the Route 580 Westbound HOV Lane Widening Project. A companion project (Eastbound Auxiliary Lane Project) is in progress: the adjacent eastbound Arroyo Las Positas Bridge will be widened as part of that project.

A 25.4-ft widening on the outer (northern) side is proposed. The widened section will be supported on two two-column bents. Rectangular concrete columns, 2.5' x 3', will be constructed, matching the existing adjacent structure. The columns will be supported on individual pile caps on driven steel H-piles (HP12x53). Diaphragm type concrete abutments will be constructed, also matching the existing adjacent structure. The abutments will also be supported on driven steel H-piles (HP12x53).

PURPOSE AND SCOPE

The purpose of this investigation was to evaluate the general soil conditions at the project site, to evaluate their engineering properties, and to provide recommendations for foundation support of the proposed project.

The scope of work performed for this investigation included a review of the readily available soils and geologic literature, obtaining representative soil samples and logging soil materials encountered in one drilled boring, laboratory testing of the collected samples, engineering analysis of the field and laboratory data, and preparation of this report. The basis for this investigation is the preliminary plans provided to us by BKF Engineers. We have presented the descriptive log of the borehole in Appendix A.

Due to limitations inherent in geotechnical investigations, it is neither uncommon to encounter unforeseen variations in the soil conditions during construction nor is it practical to determine all such variations during an acceptable program of drilling and sampling for a project of this scope. Such variations, when encountered, generally require additional engineering services to attain a properly constructed project. We, therefore, recommend that a contingency fund be provided to accommodate any additional charges resulting from technical services that may be required during construction.

Our recommendations in this report are based on the above information. Any major deviation should be reported to this office for consideration.

SITE CONDITIONS

The project is located along Interstate 580 (I-580) in Livermore, Alameda County, approximately 4300 feet east of North Livermore Avenue and 1100 feet west of Los Colinas Road. Per the As-Built drawings, the existing westbound Arroyo Las Positas Bridge (Bridge No. 33-0085) is a three-span reinforced concrete bridge, 131-ft long, 154-ft wide constructed in 1970. The bridge accommodates 4 lanes of traffic in each direction – east and west. The east and west bridges are separated by a longitudinal expansion joint and behave independently of each other. The bents rest

on four 2.5' x 3' rectangular concrete columns. The bridge abutments and the columns at the two bents are supported on 45-ton steel H-Piles (10BP42). The deck of the bridge is roughly at the same elevation as the adjacent grade.

The deck elevation of the existing bridge is approximately 490 feet at the western end and at approximately 491.5 feet at the eastern end. The Las Positas Creek passes below the bridge. At the bridge location, the creek is approximately 100 feet wide and the bottom elevations of the creek are approximately at Elev. 475 feet. The terrain at the location adjacent to the bridge, outside of the creek is relatively flat, sloping gently towards the north.

FIELD EXPLORATION

It was our understanding that the existing Log of Test Borings (LOTB) will be used for the project. In addition, per the Type Selection Report, additional exploration was planned at some locations to supplement data for liquefaction study as applicable. Based on the plans, discussions with design engineer, available as-built borings for the existing bridge and other readily available data of the proposed project, one (1) exploratory boring (Boring A-08-AL3-01) was drilled. Another boring (Boring A-09-260), drilled as part of retaining wall investigations for the project is in close proximity to Abutment 1 of the eastbound bridge. The two boring locations are shown on the plan portion of the Log of Test Borings in Appendix A. LOTB sheet for as-built borings for the existing bridge, drilled in 1964, are also presented in Appendix A.

Soil Borings

Boring A-08-AL3-01 was drilled on December 22, 2008, from the top of the road embankment on adjacent to Abutment 1 (east abutment) of the subject bridge. It was advanced with a truck-mounted drill rig, using hollow stem auger drilling method. The boring was drilled to a depth of 65 feet below the existing ground surface.

Selected samples were obtained at various depths from 3.0-inch O.D. & 2.5 inches I.D. (Modified California) samplers. The samplers were driven in subsurface soils under the impact of a 140-lb hammer having a free fall of 30 inches. The blow counts are presented on the "Log of Test Borings". When correlating standard penetration data in similar soils, the blow counts for the

Modified California Sampler can be taken as roughly 1.6 times that for the Standard Penetration Test in similar soils (Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California). The samples were sealed and transported to our laboratory for further evaluation and testing. The field investigation was conducted under the supervision of our field engineer who logged the test borings and prepared the samples for subsequent laboratory testing and evaluation.

Laboratory Testing

Laboratory tests were performed on selected samples obtained during field exploration to determine the physical and engineering properties of the subsoils. Laboratory data of moisture contents, total density, grain size distribution, Atterberg Limits, and unconfined compression strengths are presented on the Log of Test Borings. A detailed description of laboratory tests, including Plasticity Charts for Atterberg Limits, and grain size distribution curves are presented in Appendix B.

Boring Logs

The bore logs presented in Appendix A were prepared from the field logs which were edited after visual re-examination of the soil samples in the laboratory and results of classification tests on selected soil samples as indicated on the logs. The abrupt stratum changes shown on these logs may be gradual and relatively minor changes in soil types within a stratum may not be noted on the logs due to field limitations.

SUBSURFACE CONDITIONS

The subsurface conditions indicates stiff to very stiff lean clays and sandy clays to a depths ranging from 10 to 15 feet below ground surface, underlain by 5 to 10 feet of medium dense to very dense sand, underlain in turn by hard lean clays and sandy clays to the maximum depths explored. Top of hard clays occurred approximately at Elev. 472 feet on the western side of the creek and approximately at Elev. 462 to 465 feet on the eastern side of the creek. A 5-ft thick layer of stiff organic clay was encountered approximately 7 feet below ground surface in boring A-09-260 near Abutment 1 of the bridge.

During field explorations in December 2008 and January 2009, the water levels in the borings were approximately at Elev. 463 feet on the northern side and Elev. 470 feet on the southern side. Groundwater is reported at approximate Elev. 470 feet in the as-built borings drilled in 1964. However, the groundwater may vary with the passage of time due to seasonal groundwater fluctuation, surface and subsurface flows in the creek, ground surface run-off and other factors that may not be present at the time of investigation.

A groundwater elevation of 472.0 was used in design.

GEOLOGY

General geologic features pertaining to the site were evaluated with reference to the "Geologic Map of Quaternary Geology of Alameda County and Surrounding Areas, CA: Derived from Digital Database open-file 97-98" by E.J. Helley and R.W. Graymer 1997; Scale 1:100000. Based on the map, the site is located in an area covered by Pleistocene alluvial deposits (Qpaf). A geologic map of the general project area is shown on Plate 2. Description of the main geologic units is as follows:

> *Qpaf (Alluvial Fans and Fluvial Deposits (Pleistocene)) – Brown dense gravely and clayey sand or clayey gravel that fines upward to sandy clay. These deposits display various sorting and are located in most stream channels in the county. All Qpaf deposits can be related to modern stream courses. They are distinguished from younger alluvial fans and fluvial deposits by higher topographic position, greater degree of dissection, and stronger soil profile development. They are less permeable than Holocene deposits, and locally contain fresh water mollusks and extinct late Pleistocene vertebrate fossils. They are overlain by Holocene deposits on lower parts of the alluvial plain, and incised by channels that are partly filled with Holocene alluvium on higher parts of the alluvial plain. Maximum thickness is unknown but at least 50m (150 feet).*

EARTHQUAKE CONSIDERATIONS

The Type Selection Meeting for the North Livermore Avenue Undercrossing (Bridge No. 33-0153) was held prior to the cut-off date of September 30, 2009. Therefore, for the present project

earthquake considerations are not based on the recently published 2009 Caltrans Deterministic PGA Map and ARS Online Report.

Seismic Sources

The project is located in a seismically active part of Northern California. Many faults exist in the area, which are capable of producing earthquakes which may cause strong ground shaking at the site.

Maximum credible earthquake magnitudes for some of the major faults in the area determined by Mualchin (1996) are summarized below. These maximum credible earthquake magnitudes represent the largest earthquakes that could occur on the given fault based on the current understanding of the regional tectonic structure. A fault map is shown on Plate 3.

SEISMIC SOURCES

Fault	Fault Type	Distance from Site (miles)	Maximum Credible Earthquake Magnitude
Greenville Fault	Strike-Slip	5.9	7.25
Verona-Williams Fault	Not known	6.3	6.00
Calavares-Pacines-San Benito Fault	Strike-Slip	7.8	7.50
Coast Ranges-Sierran Block Boundary Zone	Reverse	8.8	7.00

Based on the seismic hazard map prepared by Mualchin (1996) and the attenuation relationship by Sadigh et al. (1997), the governing fault is the Greenville Fault (Mw = 7.25)g.

Seismic Design Criteria

Based on the seismic hazard map prepared by Mualchin (1996), the Peak Bedrock Acceleration (PBA) at the project site falls between 0.4g and 0.5g. According to Caltrans Guidelines for Structures Foundation Report (March 2006), the value of PBA (for a specific project site) from the seismic hazard map should be verified with that calculated using the attenuation relation by Sadigh et al. (1997). Based on Sadigh attenuation relation, the maximum PBA computed for the project site is 0.51g. A design PBA of 0.5g is recommended.

Based on the available boring information in the vicinity of the project site, the subsurface soil

conditions at the project site generally matches the criteria for Soil Type D, as per Caltrans Seismic Design Criteria (Version 1.4, June 2006). Based on Caltrans Seismic Design Criteria and the above information, the seismic design criteria are as follows:

1. Closest Distance to Fault = 3.5miles (5.6 km)
2. PBA = 0.5 g
3. Design ARS Curve = Caltrans Seismic Design Criteria June 2006 Version 1.4 Figure B.8 (Soil Profile Type D).

4. Design ARS Curve (see Plate 4): Curve based on Caltrans SDC (v. 1.4, 6/2006) for different structural periods. The curve is based on (Governing Fault – Greenville Fault; Mw =7.25) Figure B.8, PBA = 0.5g.

The Design ARS Curve is presented in Plate No. 4 of this report.

Seismic Hazards/Liquefaction Impact

Potential seismic hazards may arise from three sources: surface fault rupture, ground shaking and liquefaction. Since no active faults pass through the site, the potential for fault rupture is relatively low. Based on available geological and seismic information, the possibility of the site experiencing strong ground shaking may be considered significant.

Liquefaction is a phenomenon in which saturated soils are subject to a temporary but essentially total loss of shear strength under the reversing, cyclic shear stresses associated with earthquake shaking. Submerged, cohesionless sands and silts of low relative density are the type of soils which usually are susceptible to liquefaction - the susceptibility increases with decreasing relative density (reflected by the number of blows (blow counts) to drive a sampler), and decreasing fines content. Accepted procedures for the assessment for liquefaction potential for cohesionless soils have evolved over the years through research and field observations (Youd et al, 2001). Recent research and field observations have shown that clays of low plasticity are also potentially liquefiable, based on the moisture content and plasticity characteristics of the clay. Procedures for the assessment of liquefaction potential for clay soils have also been established and have received general acceptance. (Bray et. al., 2004).

There were no loose or medium dense sand layers encountered below groundwater table. Therefore, potential for occurrence of liquefaction due to an earthquake is considered low.

FINDINGS AND RECOMMENDATIONS

General

This report was prepared specifically for the proposed widening of the bridge structure according to the plans provided to us. Normal construction procedures were assumed throughout our analysis and represent one of the bases of recommendations presented herein. Our design criteria have been based upon the materials encountered at the site. Therefore, we should be notified in the event that these conditions are changed, so as to modify or amend our recommendations.

Scour

Per the Bridge Hydraulics Report and Floodplain Analysis Report for the project (Ref. 11), "The channel through the project reach is rock lined. There is a potential for about 6 feet of scour during a 100-year storm event."

Corrosion

The corrosion investigations performed are in general accordance with the provisions of California Test Method 643. A summary of the corrosion test data is presented below.

Boring	Depth (ft)	pH	Resistivity (ohms-cm)	Sulfate (ppm)	Chloride (ppm)
AL3-01	9.5	7.98	670	136.9	87.7
AL3-01	29.5	8.14	910	34.6	81.2

Per Caltrans Corrosion Guidelines, a site is considered corrosive if tests on representative soil or water samples indicate a minimum resistivity of 1000 ohm-cm, and in addition, (a) chloride concentration is 500 ppm or greater; (b) sulfate content is 2000 ppm or greater; or the pH is 5.5 or less. Based on the data, the site subsoil is non-corrosive per Caltrans corrosion design guidelines,

and standard Type II modified or Type I-P (MS) modified cement may be used for the concrete substructures. The minimum cement factor and cover thickness should be per Caltrans Bridge Design Specifications (Section 8.22).

Foundations

Driven steel H piles (HP 12x53) are recommended for foundation support for both the abutments and the columns at the two bents in the new (widening) structure. H piles were chosen because of their ability to penetrate through the dense sands and hard clays present at the site. Steel H piles have also been used for the existing bridge.

Pile Design

Pertinent foundation design information was provided by Biggs Cardosa Associates (Structural Engineers for the project), which are presented in the following tables (Foundation Design Data and Foundation Design Loads).

FOUNDATION DESIGN DATA

Support No	Design Method	Pile Type	Finish Grade Elev. (ft)	Bottom of Footing Elev. (ft)	Pile Cap Size (ft)		Permissible Settlement (inch)	No. of Piles per Support
					B	L		
Abutment 1	WSD	Steel H Pile HP 12 x 53	487.5	482.5	2.5	27.1	1.0	4
Bent 2	LRFD	Steel H Pile HP 12 x 53	478.5	466.4	6	6	1.0	4
Bent 3	LRFD	Steel H Pile HP 12 x 53	476.0	466.4	6	6	1.0	4
Abutment 4	WSD	Steel H Pile HP 12 x 53	485.0	481.5	2.5	25.8	1.0	4

FOUNDATION LOADS

Support No.	Service-I Limit State (kips)			Strength Limit State (Controlling Group, (kips)				Extreme Limit State (Controlling Group, kips)			
	Total Load		Permanent Loads	Compression		Tension		Compression		Tension	
	Per Supp.	Per Pile	Per Support	Per Supp.	Max. Per Pile.	Per Supp.	Max. Per Pile.	Per Supp.	Max. Per Pile.	Per Supp.	Max. Per Pile.
Abutment 1	305	80	175	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bent 2(2)	335	N/A	240	645	170	0	0	493	165	-38	-51
Bent 3(2)	335	N/A	240	645	170	0	0	493	165	-38	-51
Abutment 4	305	80	175	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes: (1) Total Load for Service I – Limit State = DL + LL
(2) Per support loads are per foundation. Bents with multiple columns have each column as a support and loads are given only per one footing under the column. If information is not repeated, then it is assumed that other column in the bent have same loads.

Consistent with the current Caltrans requirements, the abutment foundations were evaluated for the foundation design data and loading conditions using Caltrans November 2003 Bridge Design Specifications for foundations, using Working Stress Design (WSD) methods. The bent foundations were evaluated for the foundation design data and loading conditions using AASHTO LRFD Bridge Design Specifications – 3rd Edition, with Interims Through 2006 and current Caltrans Amendments (v3.06.01). The actual load demands on the piles, based upon WSD and LRFD are presented in the table below for the proposed widened section of the bridge.

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LOAD DEMANDS

Support No.	Design Method	Service Loads (kips)		Required Nominal Resistance (kips)				Required Nominal Resistance (kips)(1)	
				Strength Limit		Extreme Limit			
		Comp.	Tens.	Comp. (ϕ=0.7)	Tens. (ϕ=0.7)	Comp. (ϕ=1.0)	Tens. (ϕ=1.0)	Comp.	Tens.
Abutment 1	WSD	80	0	N/A	N/A	N/A	N/A	160	0
Bent 2(1)	LRFD	N/A	N/A	243	0	165	-51	243	-51
Bent 3(1)	LRFD	N/A	N/A	243	0	165	-51	243	-51
Abutment 4	WSD	80	0	N/A	N/A	N/A	N/A	160	0

(1) Information pertains to each individual (identical) pile cap in the bent

Estimation of the pile capacities was made for each support location using the site-specific subsurface conditions. The top of pile (bottom of footing) elevations were based on the information provided by the designer. The computer program APILE developed by Ensoft, Inc. was used for the computations. The program computes pile capacities for driven piles using four different methods: FHWA Method; US Corps of Engineers Method; Lambda Method; and API-RP2A Method from the American Petroleum Institute. The API-RP2A Method was chosen as the basis for the recommended pile tip elevations, since this method was judged to be the most appropriate for clay soils. Pile capacity computations (APILE output) are presented in Appendix C.

The recommended specified pile tip elevations are shown in the pile data table below.

PILE DATA TABLE

Location	Pile Type	Nominal Resistance (kips)		Finish Grade (ft)	Bottom of Footing Elev. (ft)	Design Tip Elev. (ft)[1]	Specified Tip Elev. (ft)	Nominal Driving Resistance (kips)
		Compression	Tension					
Abutment 1	Steel H Pile HP 12 x 53	160	0	487.5	482.5	460.5 (a) 461.5 (c)	460.5	160
Bent 2[2]	Steel H Pile HP 12 x 53	250	50	478.5	466.4	442.0 (a) 455.0 (b) 446.4 (c)	442.0	250
Bent 3[2]	Steel H Pile HP 12 x 53	250	50	476.0	466.4	442.0 (a) 455.5 (b) 449.4 (c)	442.0	250
Abutment 4	Steel H Pile HP 12 x 53	160	0	485.0	481.5	460.0 (a) 462.5 (c)	460.0	160

Notes:
1. Design Tip Elevation is controlled by the following demands: (a) Compression; (b) Tension; (c) Lateral
2. Information pertains to each individual (identical) pile cap in the bent

Pile Installation

Hard driving is anticipated through hard clays and dense sands at the site. An adequate hammer should be chosen for the pile driving. Also, it is highly recommended that prior to start of production pile driving, a pile drivability analysis be performed to assess the adequacy of the hammer and to establish a field pile driving criterion. In the event the piles do not attain the required bearing value at the end of driving, the piles should be allowed to stand for a "set period"

of at least 24 hours without driving. After the required "set period", at least two piles in the footing should be redriven to determine if the bearing value has been attained. If it is determined that the bearing value has been attained, then the remaining piles should be considered satisfactory. In the event unanticipated driving conditions are encountered, the Contractor should consult the Geotechnical Engineer for further course of action.

Lateral Pile Capacity

Analyses for lateral load behavior of the piles may be performed using the LPILE computer program. Geotechnical parameters for the development of p-y curves for the LPILE program are presented in the tables below. The parameters are based on field borings, and lab testing data. The elevation information is based on the topographic data provided to us. It is recommended to use a p-multiplier of 0.6 (60% effective) and a y-multiplier of 1.0 to consider group effect for piles spaced at minimum 3 times the maximum dimension.

Geotechnical Parameters For LPILE Analysis

Abutment 1 & Bent 2

Elevation (ft.)	Generalized Soil Profile	LPILE Soil Type	Probable Soil Strength	K (pci)	e_{50} (in/in)	Effect Unit Weight (pci)
488 to 472	Very Stiff Lean Clay	3, STIFF CLAY w/o water	Su = 12.50	500	.005	.0723
472 t0 467	Medium Dense Silty Gravel with Sand	8, SAND (API)	$\varphi = 35°$	90	--	.0405
467 to 463	Very Dense Silty Sand	8, SAND (API)	$\varphi = 40°$	225	--	.0405
463 to 440	Hard Lean Clay	3, STIFF CLAY w/o water	Su = 31.25	2000	--	.0376
Ground Surface @ El +488		Groundwater Table @ El +472				

Abutment 4 & Bent 3

Elevation (ft.)	Generalized Soil Profile	LPILE Soil Type	Probable Soil Strength	K (pci)	e_{50} (in/in)	Effect Unit Weight (pci)
Above 477	Stiff Lean Clay	3, STIFF CLAY w/o water	Su = 10.42	---	0.007	0.0723
477 to 472	Medium Dense Sand and Gravel	8, SAND (API)	$\varphi = 35°$	90	--	0.0752
Below 472	Hard Lean Clay/Sandy Clay	3, STIFF CLAY w/o water	Su = 31.25	---	0.004	0.0376
Ground Surface @ El +488		Groundwater Table @ El +472				

The parameters reported above are based on standard pile sizes. For piles larger than 2 feet in diameter, the K values should be scaled up and the e_{50} values should be scaled down by a factor of $(\text{pile size}/2')^{0.5}$.

Lateral Earth Pressures

Abutment retaining walls and wing walls should be designed to resist the following Applied Lateral Earth Pressures and live load. These values assume no hydrostatic pore pressure buildup behind the wall and are based on well-drained backfill behind the walls supported in native soil.

Applied Lateral Earth Pressure

Active Condition	36 pcf Equivalent Fluid Pressure (EFP) for engineered fill
At-Rest Condition	55 pcf Equivalent Fluid Pressure (EFP) for engineered fill
Passive Resistance	310 pcf EFP with a maximum value of 3100 psf. 5 ksf (ultimate) for seismic design of the abutment backwall (5.5 feet high or greater); for activated height less than 5.5 feet modify proportionally, i.e. 5 x (H/5.5) ksf. A minimum lateral wall movement of 2% of wall height to mobilize the full ultimate passive pressure is required.

Cantilever walls which are free to rotate at least 0.004 radians may be assumed flexible for the active condition. Walls that are not capable of this movement should be assumed rigid and designed for the at-rest condition. The effect of any surcharge (dead, live, or traffic load) should

be added to the preceding lateral earth pressures. A coefficient of 0.3 may be used to determine the additional earth pressure resulting from the surcharge.

Grading

All grading operations should be performed in accordance with the project specifications and Caltrans Standard Specifications for Earthwork (Section 19).

Slopes. Appropriate slope protection should be placed on the slopes of Arroyo Las Positas passing under the bridge. Details of the slope protection are discussed in the Road Plans.

Plan Review

We recommend that final plans for foundations be reviewed by this office prior to construction so that the intent of our recommendations is included in the project plans and specifications and to further see that no misunderstandings or misinterpretations have occurred.

Construction Observation

To a degree, the performance of any structure is dependent upon construction procedures and quality. Hence, observation of foundation excavations, and pile installations should be carried out by the regulating agencies. If the subsurface conditions different from those forming the basis of our recommendations is encountered this office should be informed in order to assess the need for design changes. Therefore, the recommendations presented in this report are contingent upon good quality control and these geotechnical observations during construction.

INVESTIGATION LIMITATIONS

Our services consist of professional opinions and recommendations made in accordance with generally accepted geotechnical engineering principles and practices and are based on our site reconnaissance and the assumption that the subsurface conditions do not deviate from observed conditions. All work done is in accordance with generally accepted geotechnical engineering principles and practices. No warranty, expressed or implied, of merchantability or fitness, is made or intended in connection with our work or by the furnishing of oral or written reports or findings. The scope of our services did not include any environmental assessment or investigation for the

presence or absence of hazardous or toxic materials in structures, soil, surface water, groundwater or air, below or around this site. Unanticipated soil conditions are commonly encountered and cannot be fully determined by taking soil samples and excavating test borings; different soil conditions may require that additional expenditures be made during construction to attain a properly constructed project. Some contingency fund is thus recommended to accommodate these possible extra costs.

This report has been prepared for the proposed project as described earlier, to assist the engineer in the design of this project. In the event any changes in the design or location of the facilities are planned, or if any variations or undesirable conditions are encountered during construction, our conclusions and recommendations shall not be considered valid unless the changes or variations are reviewed and our recommendations modified or approved by us in writing.

This report is issued with the understanding that it is the designer's responsibility to ensure that the information and recommendations contained herein are incorporated into the project and that necessary steps are also taken to see that the recommendations are carried out in the field.

The findings in this report are valid as of the present date. However, changes in the subsurface conditions can occur with the passage of time, whether they be due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards occur, whether they result from legislation or from the broadening of knowledge. Accordingly, the findings in this report might be invalidated, wholly or partially, by changes outside of our control.

Respectfully submitted,
PARIKH CONSULTANTS, INC.

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Senior Engineer

Gary Parikh, G.E. 666
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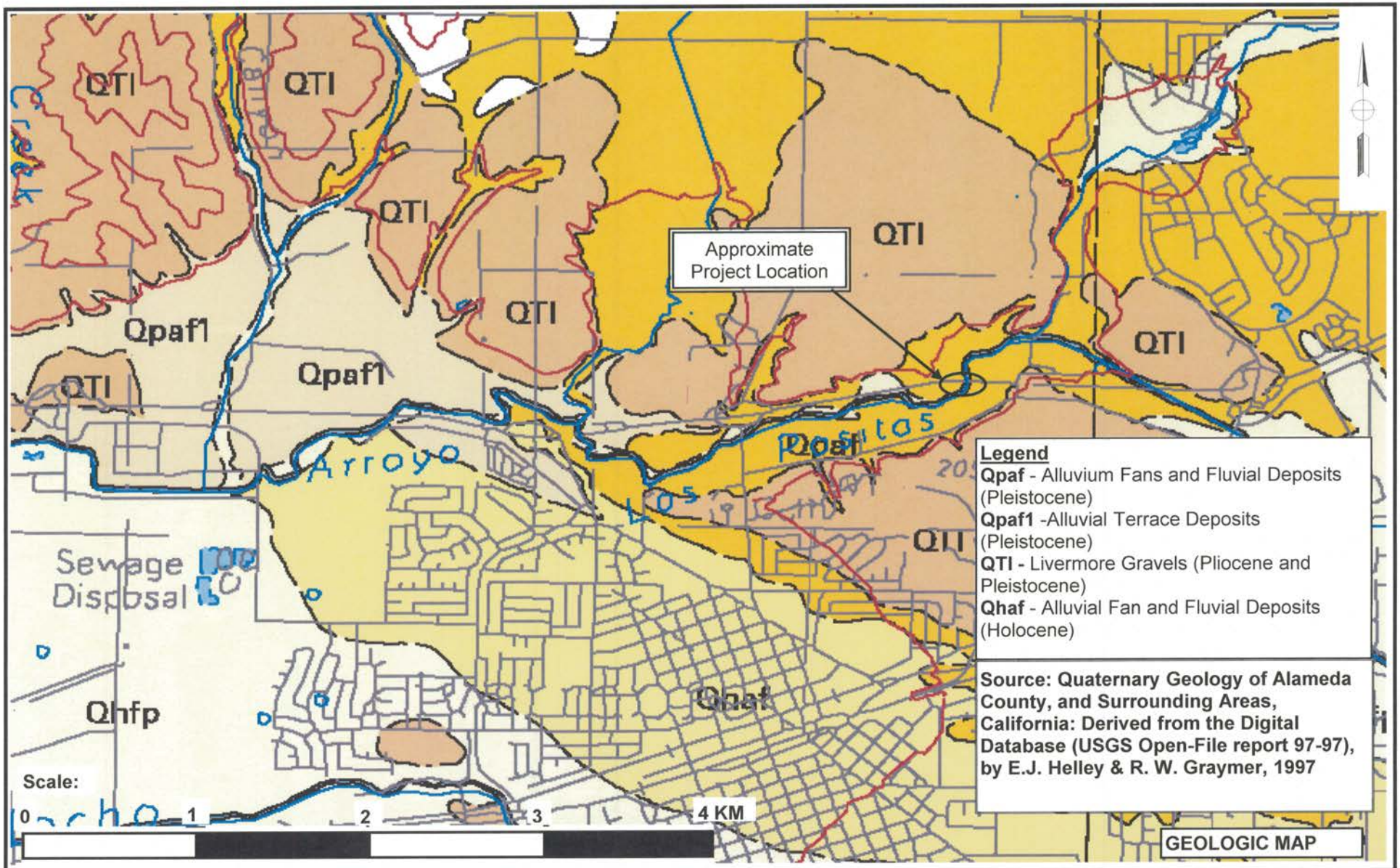
PROJECT LOCATION MAP

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

ARROYO LAS POSITAS BRIDGE - WESTBOUND (WIDENING)
(BR. NO. 33-0085)
LIVERMORE, ALAMEDA COUNTY, CALIFORNIA

JOB NO.: 208102.AL1 | PLATE NO.: 1

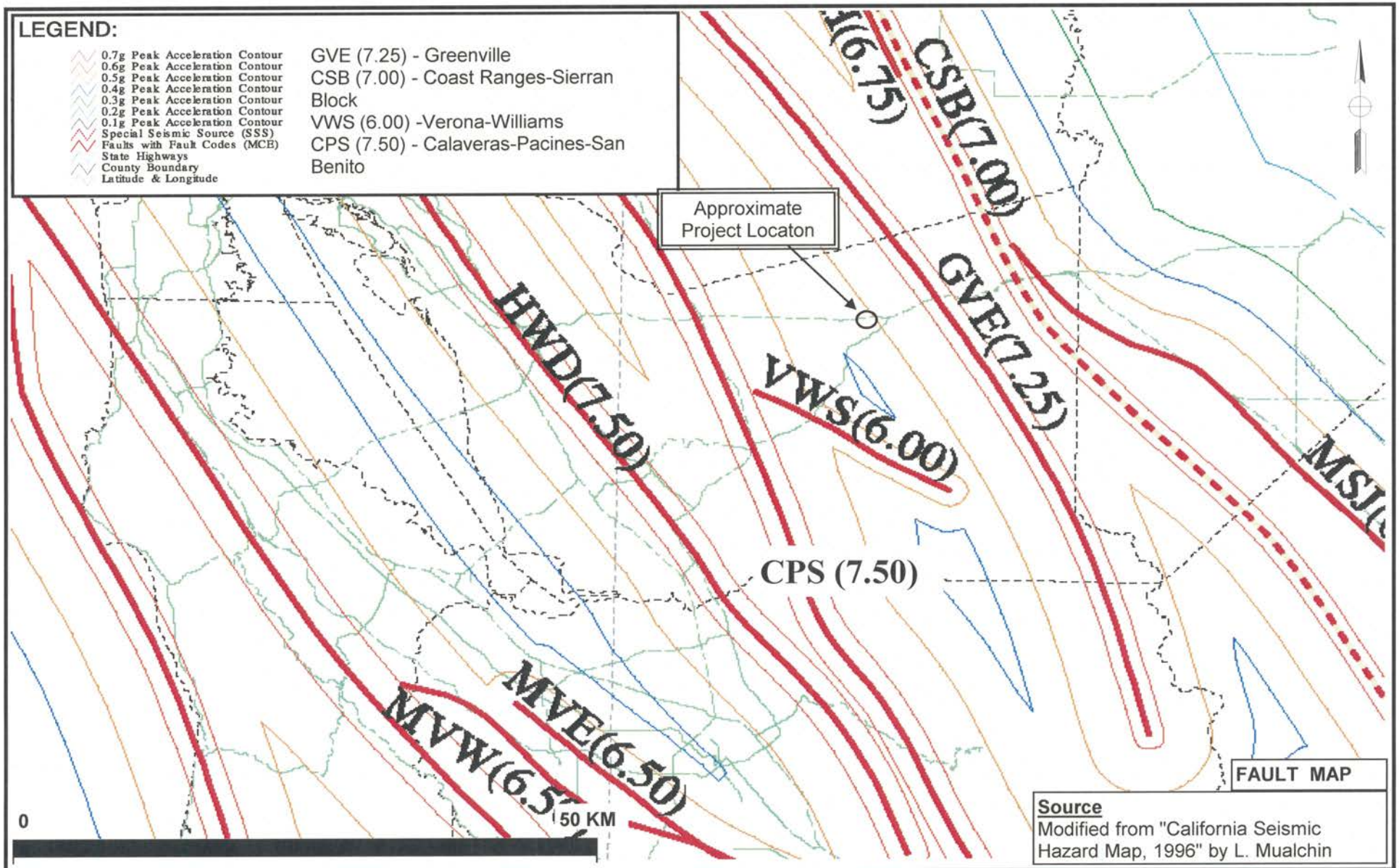


PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

ARROYO LAS POSITAS BRIDGE - WESTBOUND (WIDENING)
(BR. NO. 33-0085)
LIVERMORE, ALAMEDA COUNTY, CALIFORNIA

JOB NO.: 208102.AL1

PLATE NO.:2



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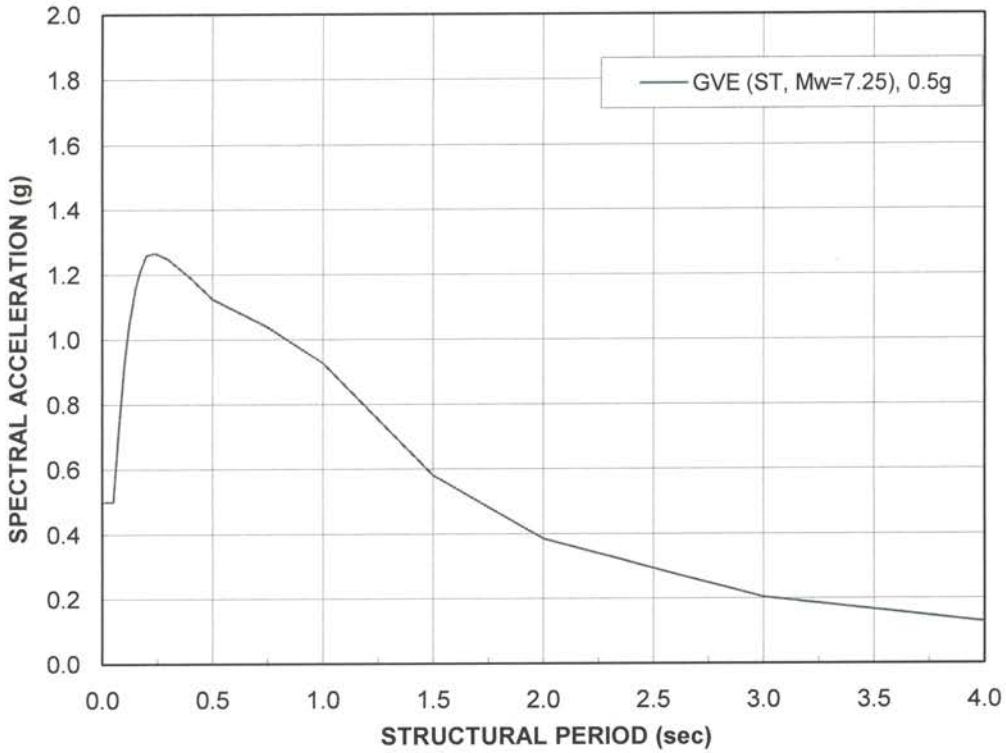
MATERIALS TESTING

ARROYO LAS POSITAS BRIDGE - WESTBOUND (WIDENING)
(BR. NO. 33-0085)
LIVERMORE, ALAMEDA COUNTY, CALIFORNIA

JOB NO.: 208102.AL1

PLATE NO.: 3

ARS DESIGN CURVE



Spectral Data

Period (sec)	Spectral Accel. (g)
0.010	0.500
0.020	0.500
0.030	0.500
0.050	0.500
0.075	0.719
0.100	0.919
0.120	1.037
0.150	1.156
0.170	1.209
0.200	1.259
0.240	1.266
0.300	1.247
0.400	1.190
0.500	1.125
0.750	1.038
1.000	0.927
1.500	0.581
2.000	0.386
3.000	0.204
4.000	0.128

Caltrans SDC (v 1.4, June 2006), Figure B.8,
Governing Fault: Greenville Fault
(Mw = 7.25, Soil Profile Type D, PBA = 0.5 g)
with the following modifications:
(1) No change of Sa for structural periods < 0.5 sec
(2) 20% increase of Sa for structural periods ≥ 1 sec
(3) Linear interpolation for structural periods between 0.5 and 1 sec

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GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

ARROYO LAS POSITAS BRIDGE-WESTBOUND (WIDENING)
(BR. NO. 33-0085)
LIVERMORE, ALAMEDA COUNTY, CALIFORNIA

JOB NO.: 208102.AL1

PLATE NO.: 4

APPENDIX A

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (2010)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO	TOTAL SHEETS
04	Ala	580			

GEOTECHNICAL PROFESSIONAL — DATE 11/8/11

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/11 GEOTECHNICAL — STATE OF CALIFORNIA

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ALAMEDA CTC
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OAKLAND, CA 94612

PARIKH CONSULTANTS, INC.
2360 QUME DRIVE, SUITE A
SAN JOSE, CA 95131

CEMENTATION

Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

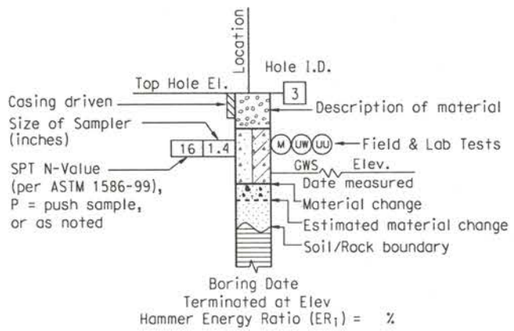
BOREHOLE IDENTIFICATION

Symbol	Hole Type	Description
Size	A	Auger Boring (hollow or solid stem bucket)
Size	R	Rotary drilled boring (conventional)
Size	RW	Rotary drilled with self-casing wire-line
Size	RC	Rotary core with continuously-sampled, self-casing wire-line
Size	P	Rotary percussion boring (air)
Size	R	Rotary drilled diamond core
Size	HD	Hand driven (1-inch soil tube)
Size	HA	Hand Auger
●	D	Dynamic Cone Penetration Boring
▲	CPT	Cone Penetration Test (ASTM D 5778)
⬚	O	Other (note on LOTB)

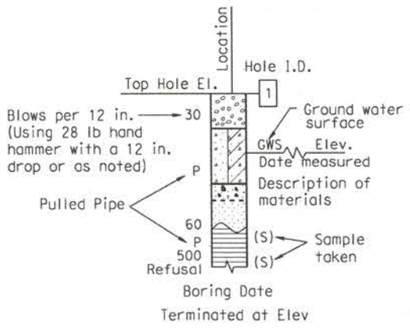
Note: Size in inches.

CONSISTENCY OF COHESIVE SOILS

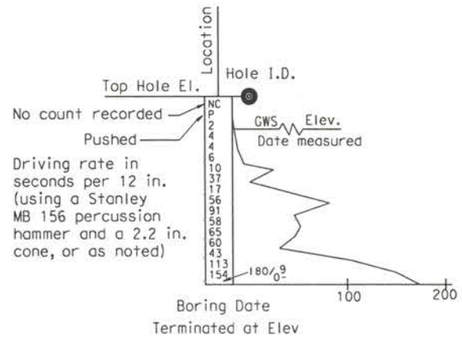
Description	Shear Strength (tsf)	Pocket Penetrometer Measurement, PP, (tsf)	Torvane Measurement, TV, (tsf)	Vane Shear Measurement, VS, (tsf)
Very Soft	Less than 0.12	Less than 0.25	Less than 0.12	Less than 0.12
Soft	0.12 - 0.25	0.25 - 0.5	0.12 - 0.25	0.12 - 0.25
Medium Stiff	0.25 - 0.5	0.5 - 1	0.25 - 0.5	0.25 - 0.5
	0.5 - 1	1 - 2	0.5 - 1	0.5 - 1
Very Stiff	1 - 2	2 - 4	1 - 2	1 - 2
Hard	Greater than 2	Greater than 4	Greater than 2	Greater than 2



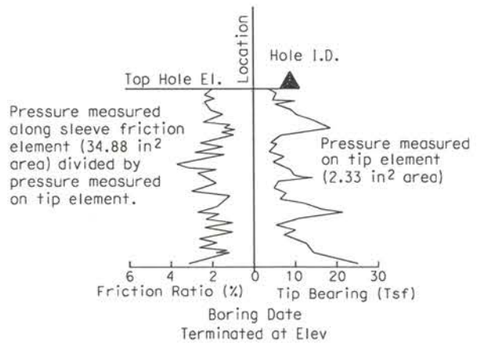
ROTARY BORING



HAND BORING



DYNAMIC CONE PENETRATION BORING



CONE PENETRATION TEST (CPT) BORING

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S.DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO. 33-0085	ARROYO LAS POSITAS BRIDGE (WIDEN)	
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008- JANUARY 2009		PROJECT ENGINEER	POST MILES 11.72	LOG OF TEST BORINGS 1 OF 4	

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
12/23/09	06/30/10	11/8/11		12	15

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REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (JUNE 2007)

GROUP SYMBOLS AND NAMES

Graphic/Symbol	Group Names	Graphic/Symbol	Group Names
GW	Well-graded GRAVEL Well-graded GRAVEL with SAND	CL	Lean CLAY Lean CLAY with SAND Lean CLAY with GRAVEL SANDY lean CLAY SANDY lean CLAY with GRAVEL GRAVELLY lean CLAY GRAVELLY lean CLAY with SAND
GP	Poorly graded GRAVEL Poorly graded GRAVEL with SAND		
GW-GM	Well-graded GRAVEL with SILT Well-graded GRAVEL with SILT and SAND	CL-ML	SILTY CLAY SILTY CLAY with SAND SILTY CLAY with GRAVEL SANDY SILTY CLAY SANDY SILTY CLAY with GRAVEL GRAVELLY SILTY CLAY GRAVELLY SILTY CLAY with SAND
GW-GC	Well-graded GRAVEL with CLAY (or SILTY CLAY) Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GP-GM	Poorly graded GRAVEL with SILT Poorly graded GRAVEL with SILT and SAND	ML	SILT SILT with SAND SILT with GRAVEL SANDY SILT SANDY SILT with GRAVEL GRAVELLY SILT GRAVELLY SILT with SAND
GP-GC	Poorly graded GRAVEL with CLAY (or SILTY CLAY) Poorly graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GM	SILTY GRAVEL SILTY GRAVEL with SAND	OL	ORGANIC lean CLAY ORGANIC lean CLAY with SAND ORGANIC lean CLAY with GRAVEL SANDY ORGANIC lean CLAY SANDY ORGANIC lean CLAY with GRAVEL GRAVELLY ORGANIC lean CLAY GRAVELLY ORGANIC lean CLAY with SAND
GC	CLAYEY GRAVEL CLAYEY GRAVEL with SAND		
GC-GM	SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL with SAND	OL	ORGANIC SILT ORGANIC SILT with SAND ORGANIC SILT with GRAVEL SANDY ORGANIC SILT SANDY ORGANIC SILT with GRAVEL GRAVELLY ORGANIC SILT GRAVELLY ORGANIC SILT with SAND
SW	Well-graded SAND Well-graded SAND with GRAVEL		
SP	Poorly graded SAND Poorly graded SAND with GRAVEL	CH	Fat CLAY Fat CLAY with SAND Fat CLAY with GRAVEL SANDY fat CLAY SANDY fat CLAY with GRAVEL GRAVELLY fat CLAY GRAVELLY fat CLAY with SAND
SW-SM	Well-graded SAND with SILT Well-graded SAND with SILT and GRAVEL		
SW-SC	Well-graded SAND with CLAY (or SILTY CLAY) Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	MH	Elastic SILT Elastic SILT with SAND Elastic SILT with GRAVEL SANDY elastic SILT SANDY elastic SILT with GRAVEL GRAVELLY elastic SILT GRAVELLY elastic SILT with SAND
SP-SM	Poorly graded SAND with SILT Poorly graded SAND with SILT and GRAVEL		
SP-SC	Poorly graded SAND with CLAY (or SILTY CLAY) Poorly graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	OH	ORGANIC fat CLAY ORGANIC fat CLAY with SAND ORGANIC fat CLAY with GRAVEL SANDY ORGANIC fat CLAY SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
SM	SILTY SAND SILTY SAND with GRAVEL		
SC	CLAYEY SAND CLAYEY SAND with GRAVEL	OH	ORGANIC elastic SILT ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY ORGANIC elastic SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
SC-SM	SILTY, CLAYEY SAND SILTY, CLAYEY SAND with GRAVEL		
PT	PEAT	OL/OH	ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	COBBLES COBBLES and BOULDERS BOULDERS		

FIELD AND LABORATORY TESTING

- (C) Consolidation (ASTM D 2435)
- (CL) Collapse Potential (ASTM D 5333)
- (CP) Compaction Curve (CTM 216)
- (CR) Corrosivity Testing (CTM 643, CTM 422, CTM 417)
- (CU) Consolidated Undrained Triaxial (ASTM D 4767)
- (DS) Direct Shear (ASTM D 3080)
- (EI) Expansion Index (ASTM D 4829)
- (M) Moisture Content (ASTM D 2216)
- (OC) Organic Content-% (ASTM D 2974)
- (P) Permeability (CTM 220)
- (PA) Particle Size Analysis (ASTM D 422)
- (PI) Plasticity Index (AASHTO T 90) Liquid Limit (AASHTO T 89)
- (PL) Point Load Index (ASTM D 5731)
- (PM) Pressure Meter
- (PP) Pocket Penetrometer
- (R) R-Value (CTM 301)
- (SE) Sand Equivalent (CTM 217)
- (SG) Specific Gravity (AASHTO T 100)
- (SL) Shrinkage Limit (ASTM D 427)
- (SW) Swell Potential (ASTM D 4546)
- (TV) Pocket Torvane
- (UC) Unconfined Compression-Soil (ASTM D 2166) Unconfined Compression-Rock (ASTM D 2938)
- (UU) Unconsolidated Undrained Triaxial (ASTM D 2850)
- (UW) Unit Weight (ASTM D 4767)
- (VS) Vane Shear (AASHTO T 223)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO	TOTAL SHEETS
04	Ala	580			

GEOTECHNICAL PROFESSIONAL — 11/8/11 DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/11 GEOTECHNICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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ALAMEDA CTC
1333 BROADWAY, SUITE 220
OAKLAND, CA 94612

PARIKH CONSULTANTS, INC.
2360 OUME DRIVE, SUITE A
SAN JOSE, CA 95131

APPARENT DENSITY OF COHESIONLESS SOILS

Description	SPT N_{60} (Blows / 12 inches)
Very loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	> 50

MOISTURE

Description	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

PERCENT OR PROPORTION OF SOILS

Description	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

PARTICLE SIZE

Description		Size
Boulder		> 12"
Cobble		3" to 12"
Gravel	Coarse	3/4" to 3"
	Fine	No. 4 to 3/4"
Sand	Coarse	No. 10 to No. 4
	Medium	No. 40 to No. 10
	Fine	No. 200 to No. 40

DESIGN OVERSIGHT

SIGN OFF DATE

DRAWN BY: O. GOUTHIER

CHECKED BY: P. SIRCAR

S.DUDDU
FIELD INVESTIGATION BY:
DATE: DECEMBER 2008- JANUARY 2009

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

P. SIRCAR
PROJECT ENGINEER

BRIDGE NO. 33-0085
POST MILES 11.72

ARROYO LAS POSITAS BRIDGE (WIDEN)

LOG OF TEST BORINGS 2 OF 4

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES: 12/23/09 | 06/30/10 | 11/8/11

SHEET 13 OF 15

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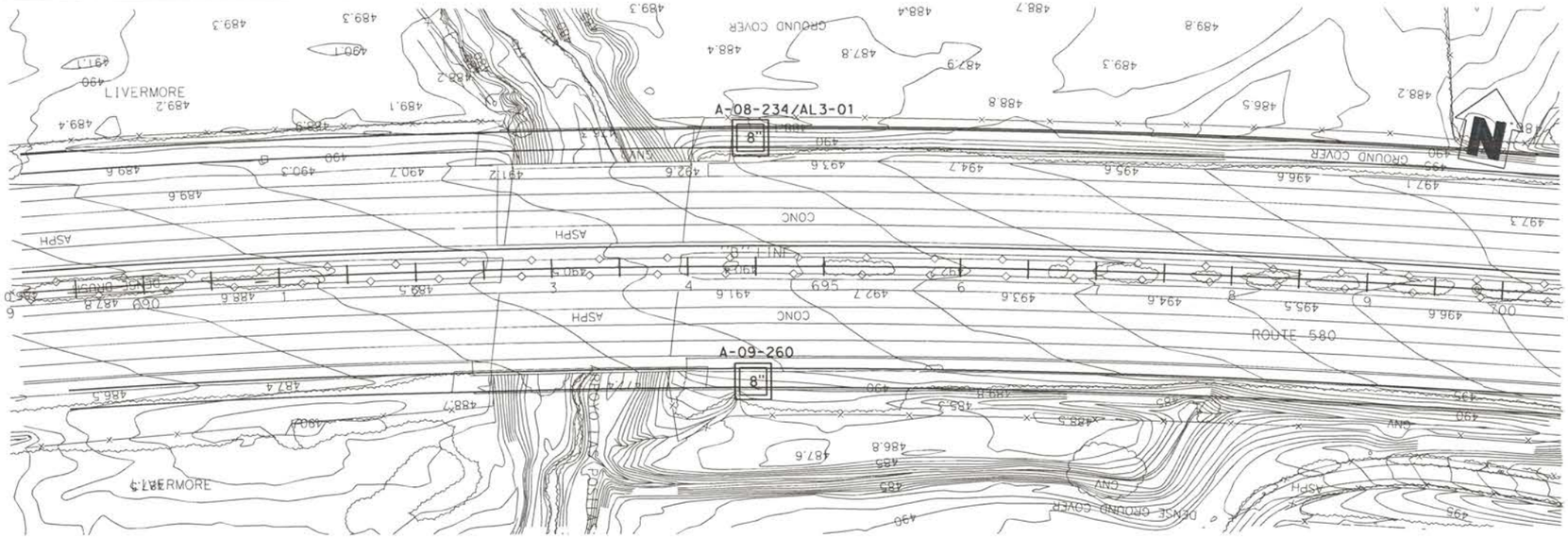

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580			

GEOTECHNICAL PROFESSIONAL — 11/8/11 DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/11 GEOTECHNICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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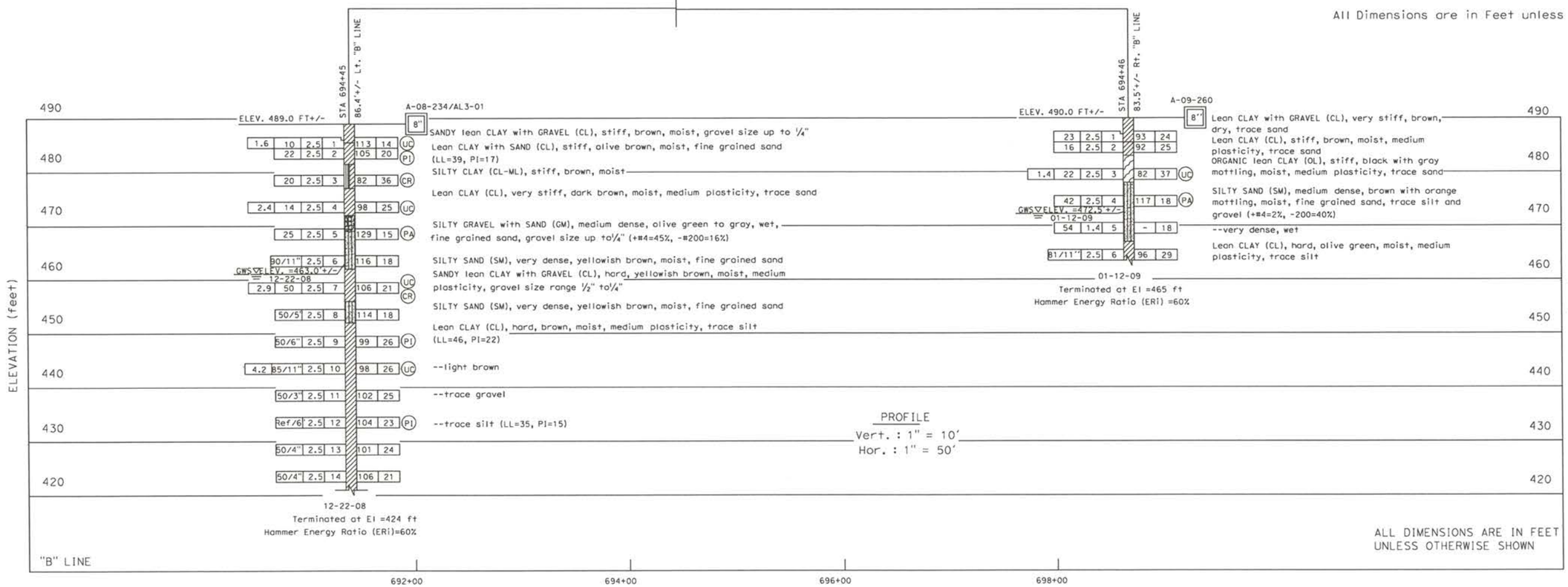
OAKLAND, CA 94612

PARIKH CONSULTANTS, INC.
2360 OUME DRIVE, SUITE A
SAN JOSE, CA 95131

BENCHMARK:
The Vertical Datum shown hereon is based on North American Vertical Datum of 1988 (NAVD). The 1988 Elevations for this project were Established ising Digital Levelling & GPS Survey Measurements and a Least Squares Adjustment Holdings NGS Benchmarks GPS control point 35 - PID DE8495, L 1259 - PID HS4075, CHABOT A - PID AI7653, & OLD RM 3 = TIDAL 5 - PID HS3429 fixed to their published values.

All Dimensions are in Feet unless otherwise shown.



DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S.DUDDU		PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO. 33-0085
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008- JANUARY 2009			PROJECT ENGINEER	POST MILES 11.72

ARROYO LAS POSITAS BRIDGE (WIDEN)

LOG OF TEST BORINGS 3 OF 4

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES: 12/23/08 | 06/17/10 | 11/8/11

SHEET 14 OF 15

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DIVISION OF ENGINEERING SERVICES – GEOTECHNICAL SERVICES

As-Built Log of Test Borings sheet is considered an informational document only. As such, the State of California registration seal with signature, license number and registration certificate expiration date confirm that this is a true and accurate copy of the original document. This drawing is available and presented only for the convenience of any bidder, contractor or other interested party.

DIST.	COUNTY	ROUTE	POST MILES–TOTAL PROJECT	Sheet No.	Total Sheets
04	Ala	580			

REGISTERED CIVIL ENGINEER — DATE 11/8/11

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

ARROYO LAS POSITAS BRIDGE (WIDEN)

LOG OF TEST BORINGS 4 OF 4

NOTE: A COPY OF THIS LOG OF TEST BORINGS IS AVAILABLE AT OFFICE OF STRUCTURE MAINTENANCE AND INVESTIGATIONS, SACRAMENTO, CALIFORNIA

UNIT: 0735
PROJECT NUMBER & PHASE: 0400021248I

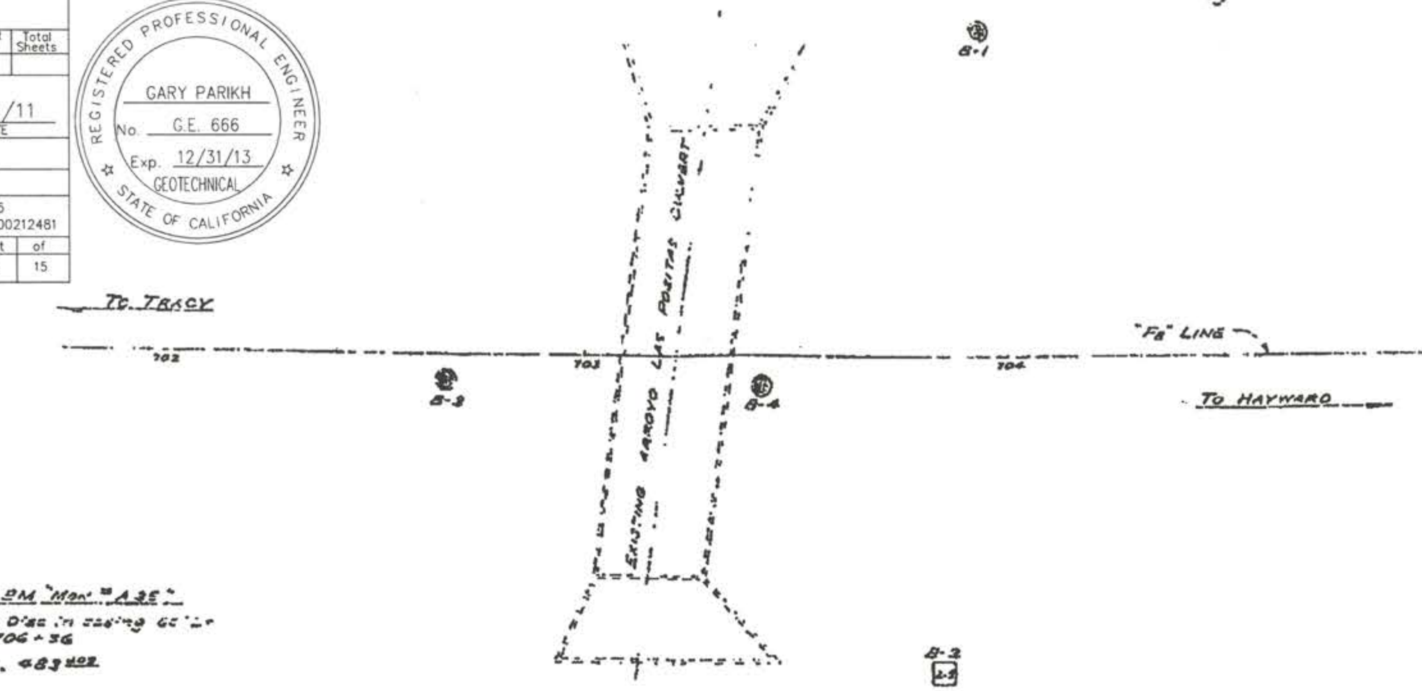
BRIDGE No.	Sheet	of
33-0085	15	15

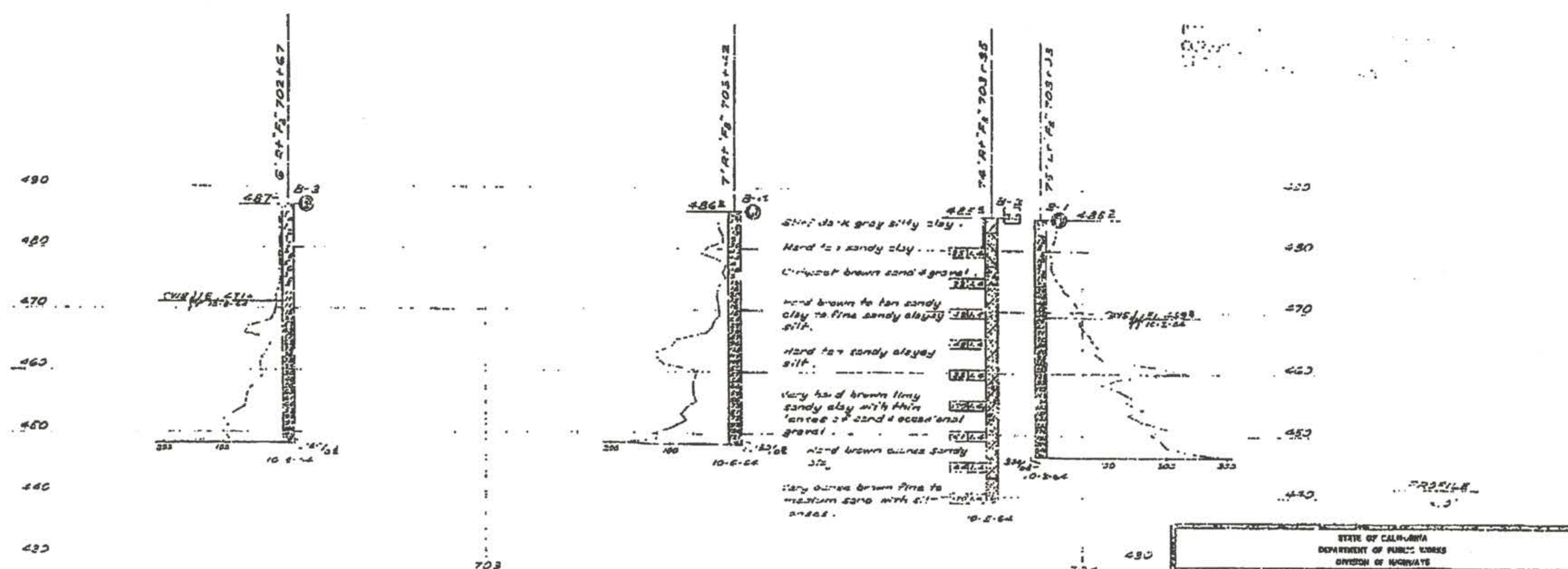
April 27 1970

"F8" Line corresponds to the "B" line.
Revisions made to this Log of Test Borings from the original 1965 Log of Test Borings are the addition of the following table and notes:

Boring	Station	Offset from 'B LINE'
B-1	692+58	75 feet Rt.
B-3	692+56	74 feet Lt.
B-4	693+09	7 feet Lt.
B-3	693+84	6 feet Lt.

1. See the General Plan and/or Foundation Plan for the Stationing.
2. The data are the locations for the As-Built Test Borings referenced to the proposed new structure location. This table is presented on the As-Built Log of Test Boring sheet for the convenience of any bidder, contractor or other interested party.





NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

AS BUILT PLANS
Contract No. 04-136444
Date Completed 9-25-72
Document No. 62229

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

ARROYO LAS POSITAS BRIDGE

LOG OF TEST BORINGS

32

APPENDIX B

APPENDIX B

LABORATORY TESTS

Classification Tests
The field classifications of the samples were visually verified in the laboratory according to the Unified Soil Classification System. The results are presented in "Log of Test Borings", Appendix A.

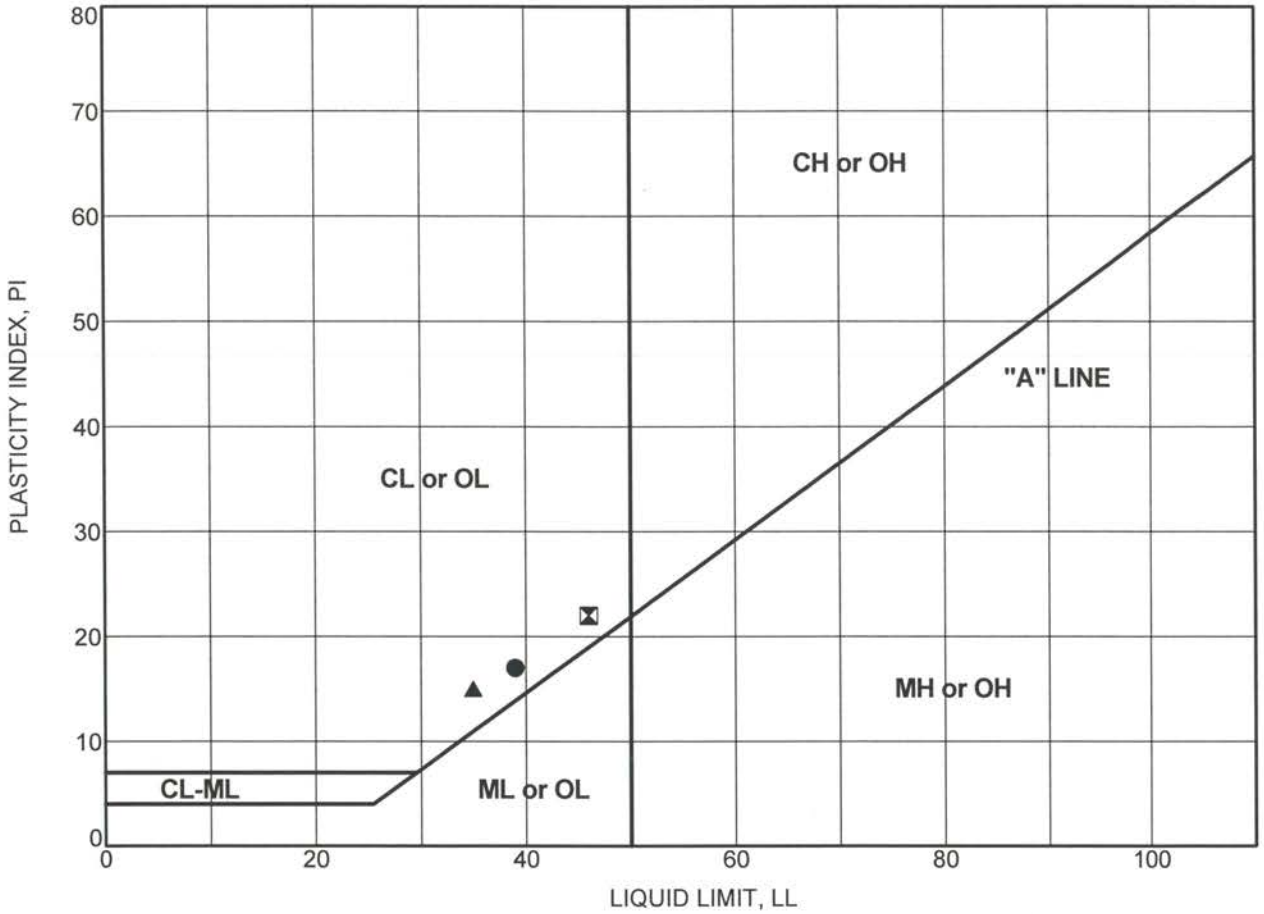
Moisture-Density
The natural moisture contents and dry unit weights were determined for selected undisturbed samples of the soils in general accordance with ASTM Test Method D 2216-92. This information was used to classify and correlate the soils. The results are presented at the appropriate depths In "Log of Test Borings", Appendix A.

Atterberg Limits
The Atterberg Limits were determined for selected samples of the fine-grained materials. These results were used to classify the soils, as well as to obtain an indication of the effective strength characteristics and expansion potential with variations in moisture content. The Atterberg Limits were determined in general accordance with ASTM Test Method D 4318-93. The results of these tests are presented on" Plasticity Chart", Plate No. B-2, Appendix B.

Grain Size Classification
Grain size classification tests (ASTM Test Method D422-63) were performed on selected samples of granular soil to aid in the classification. The results are presented on "Grain Size Distribution Curves", Plate B-3, Appendix B.

Unconfined Compression Tests
Strength tests were performed on selected undisturbed samples using unconfined compression machine. Unconfined compression tests were performed in general accordance with ASTM Test Method D 2166-91. The results are presented in "Log of Test Borings", Appendix A.

Corrosion Tests
Corrosion tests were performed on selected samples to determine the corrosion potential of the soils. The pH and minimum resistively tests were performed according to California Test Method 643. The tests were performed by Sunland Analytical. The test results are presented on Plate B-4A & Plate B-4B, Appendix B.



PLASTICITY CHART

Boring Number	Sample Number	Depth (feet)	Test Symbol	Moisture Content (%)	LL	PL	PI	Description
A-08-234	MC-2	4.5	●	20	39	22	17	LEAN CLAY (CL)
A-08-234	MC-9	39.5	⊠	26	46	24	22	LEAN CLAY (CL)
A-08-234	MC-12	54.5	▲	23	35	20	15	LEAN CLAY (CL)

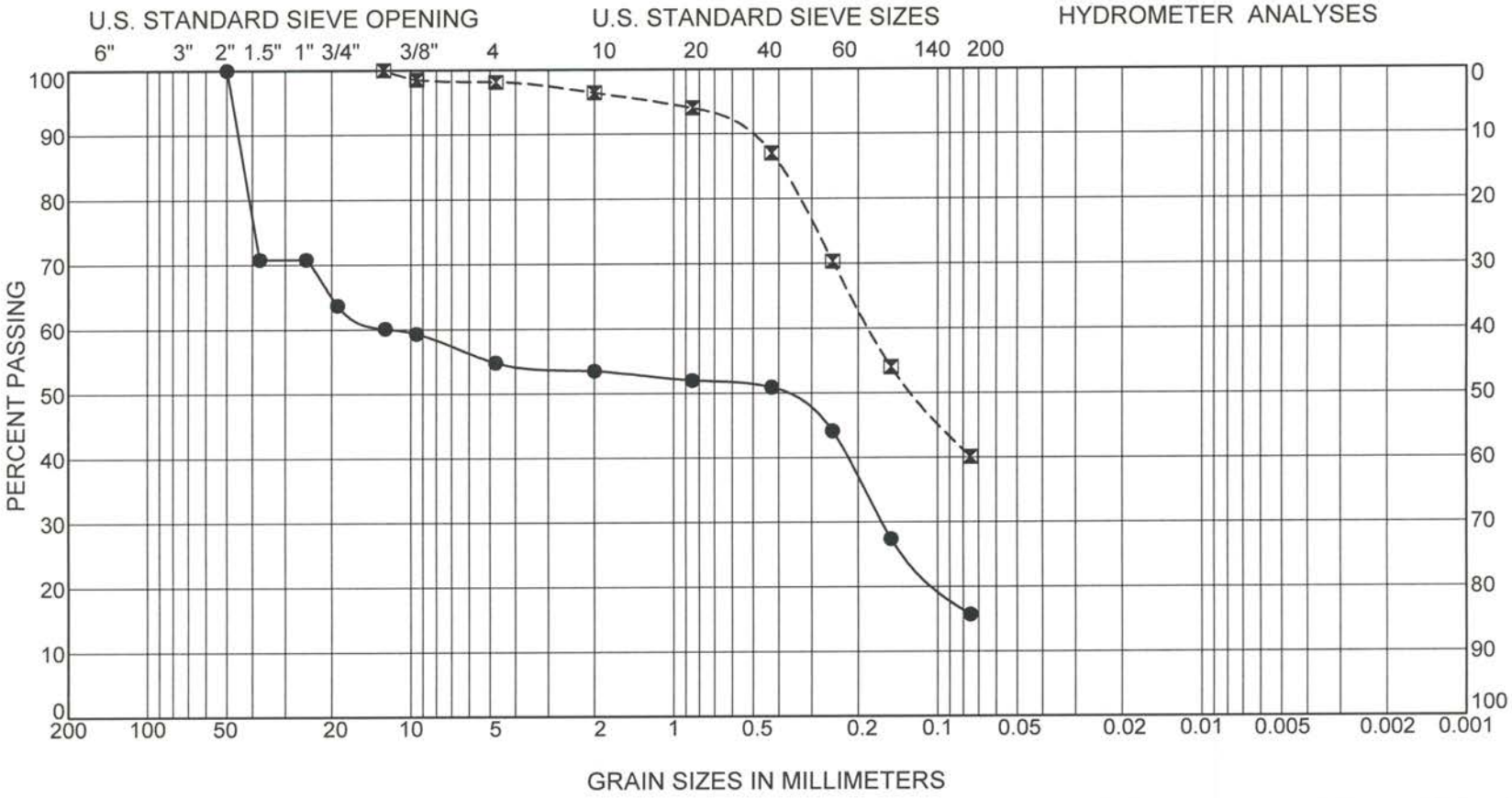
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS ENGINEERING

ARROYO LAS POSITAS BRIDGE -WB (WIDENING) (BR. NO.33-0085)
LIVERMORE, ALAMEDA COUNTY, CALIFORNIA

JOB NO: 208102.AL1 | PLATE NO: B-2

GRAIN SIZE DISTRIBUTION CURVES

COBBLES	GRAVEL		SAND			SILT AND CLAY
	coarse	fine	coarse	medium	fine	



Boring Number	Sample Number	Depth (feet)	Symbol	LL	PI	Description
A-08-234	MC-5	19.5	●			SILTY GRAVEL WITH SAND (GM)
A-09-260	MC-4	14.5	⊠			SILTY SAND (SM)

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS ENGINEERING

ARROYO LAS POSITAS BRIDGE -WB (WIDENING) (BR. NO.33-0085)
LIVERMORE, ALAMEDA COUNTY, CALIFORNIA

JOB NO: 208102.AL1

PLATE NO: B-3

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 05/13/2009
Date Submitted 05/06/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.GDR I-580 Site ID : A-09-234 # 3 @ 9.5'
Thank you for your business.

* For future reference to this analysis please use SUN # 55639-112106.

EVALUATION FOR SOIL CORROSION

Soil pH	7.98		
Minimum Resistivity	0.67 ohm-cm (x1000)		
Chloride	87.7 ppm	00.00877	%
Sulfate	136.9 ppm	00.01369	%

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

PLATE NO.: B-4A

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 05/13/2009
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San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.GDR I-580 Site ID : A-09-234 # 7 @ 29.5'
Thank you for your business.

* For future reference to this analysis please use SUN # 55639-112107.

EVALUATION FOR SOIL CORROSION

Soil pH	8.14	
Minimum Resistivity	0.91 ohm-cm (x1000)	
Chloride	81.2 ppm	00.00812 %
Sulfate	34.6 ppm	00.00346 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

PLATE NO.: B-4B

APPENDIX C

APILE Runs – HP 12 x 53 Pile – 70 ton
Arroyo Las Positas Bridge (Bridge No. 33-0085)
Job No. 208102.AL1
Pile capacities computed using APILE program – Output follows
(Note: All Pile Capacities are based on API RP2A Method)
March 23, 2010

Abutment 1 Westbound (A-08-AL3-01)

Ground Surface Elevation = 487.5
Bottom of Footing = 482.5
No Predrill
Nominal Compression Load = 160 kips
Reqd. Penetration per APILE output = 27.0 ft
Recommended Penetration = 27.0
Reqd. Tip Elevation = 487.5 – 27.0 = 460.5
Nominal Tension = 0

Abutment 4 Westbound (based on As-Built borings in 1965)

Ground Surface Elevation = 485.0
Bottom of Footing = 481.5
No Predrill
Nominal Compression Load = 160 kips
Reqd. Penetration per APILE output = 24.5 ft
Recommended Penetration = 25.0 ft
Reqd. Tip Elevation = 485.0 – 25.0 = 460.0
Nominal Tension = 0

Bent 2 Westbound (A-08-AL3-01)

Ground Surface Elevation = 478.5
Bottom of Footing = 466.4
No Predrill

Nominal Compression Load = 250 kips
Reqd. Penetration per APILE output = 36.5 ft
Recommended Penetration =36.5 ft
Reqd. Tip Elevation = 478.5 – 36.5 = 442.0 -- Compression

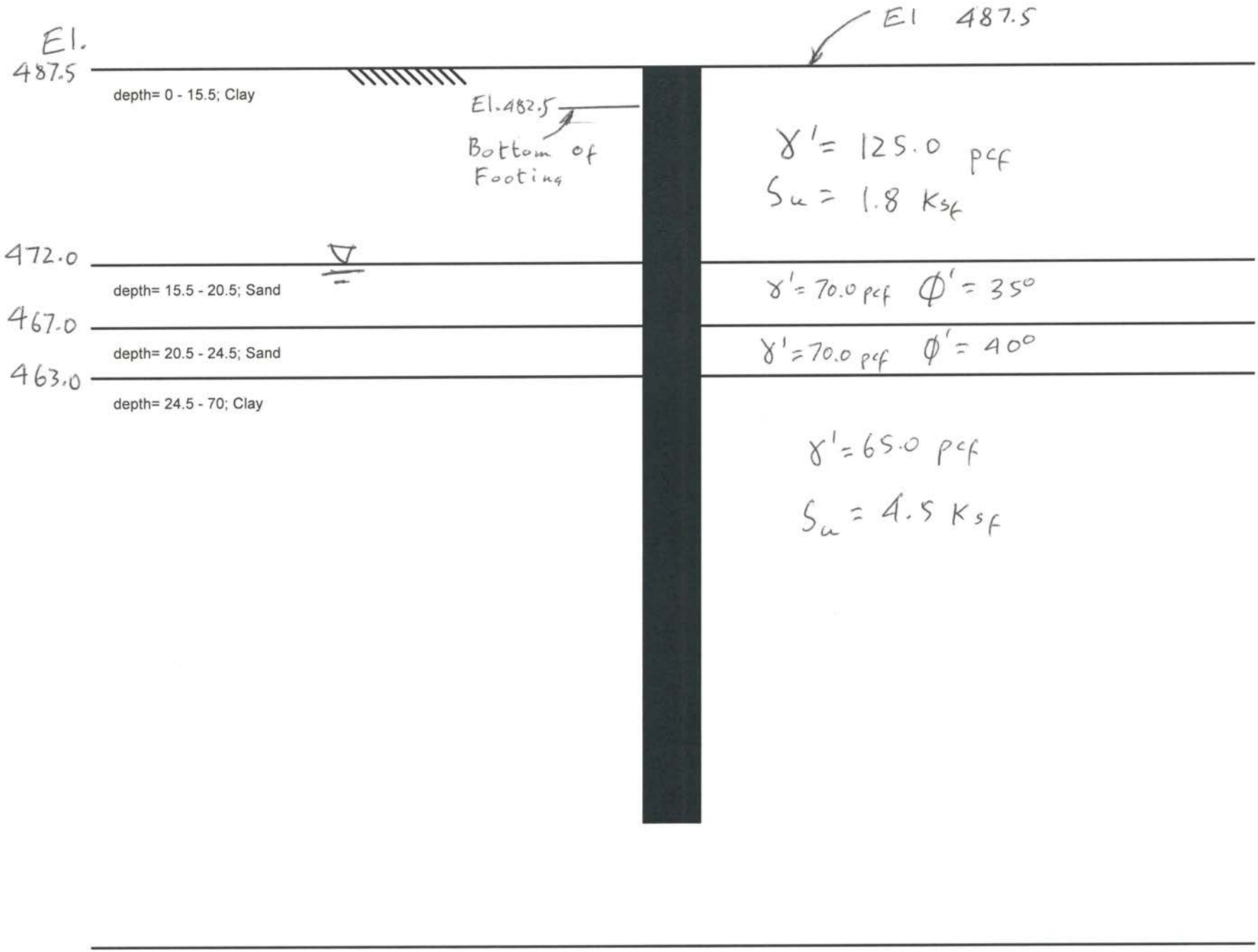
Nominal Tension Load = 50 kips
Equivalent Ultimate Skin Friction = 50/0.5 = 100 kips (using factor of o.5)
Reqd. Penetration per APILE output = 23.5 ft
Recommended Penetration = 23.5 ft
Reqd. Tip Elevation = 478.5 – 23.5 = 455.0-- Tension

Bent 3 Westbound (based on As-Built borings in 1965)

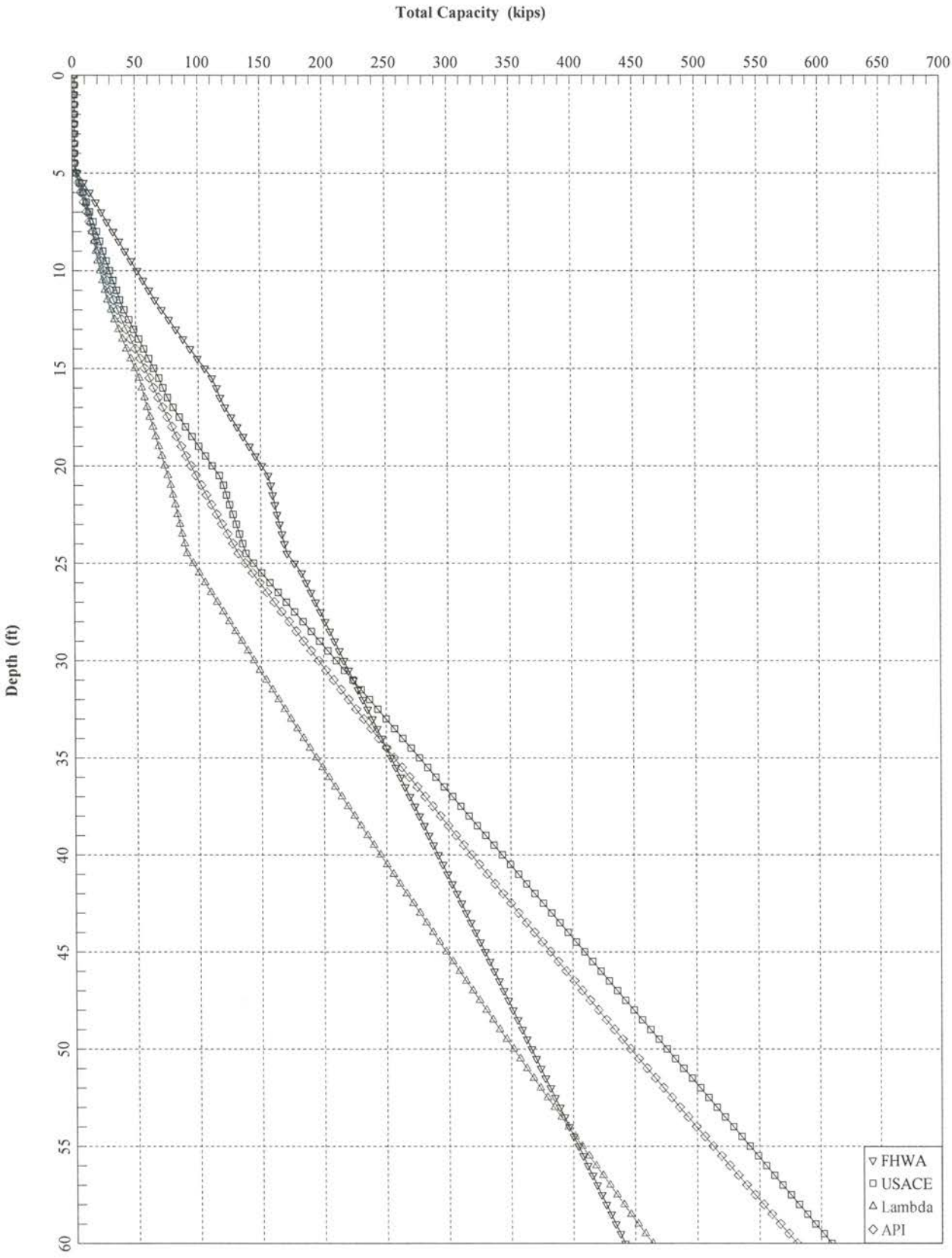
Ground Surface Elevation = 476.0
Bottom of Footing = 466.4
No Predrill

Nominal Compression Load = 250 kips
Reqd. Penetration per APILE output = 34.0 ft
Recommended Penetration = 34.0ft
Reqd. Tip Elevation = 476.0 – 34.0 = 442.0 --- Compression

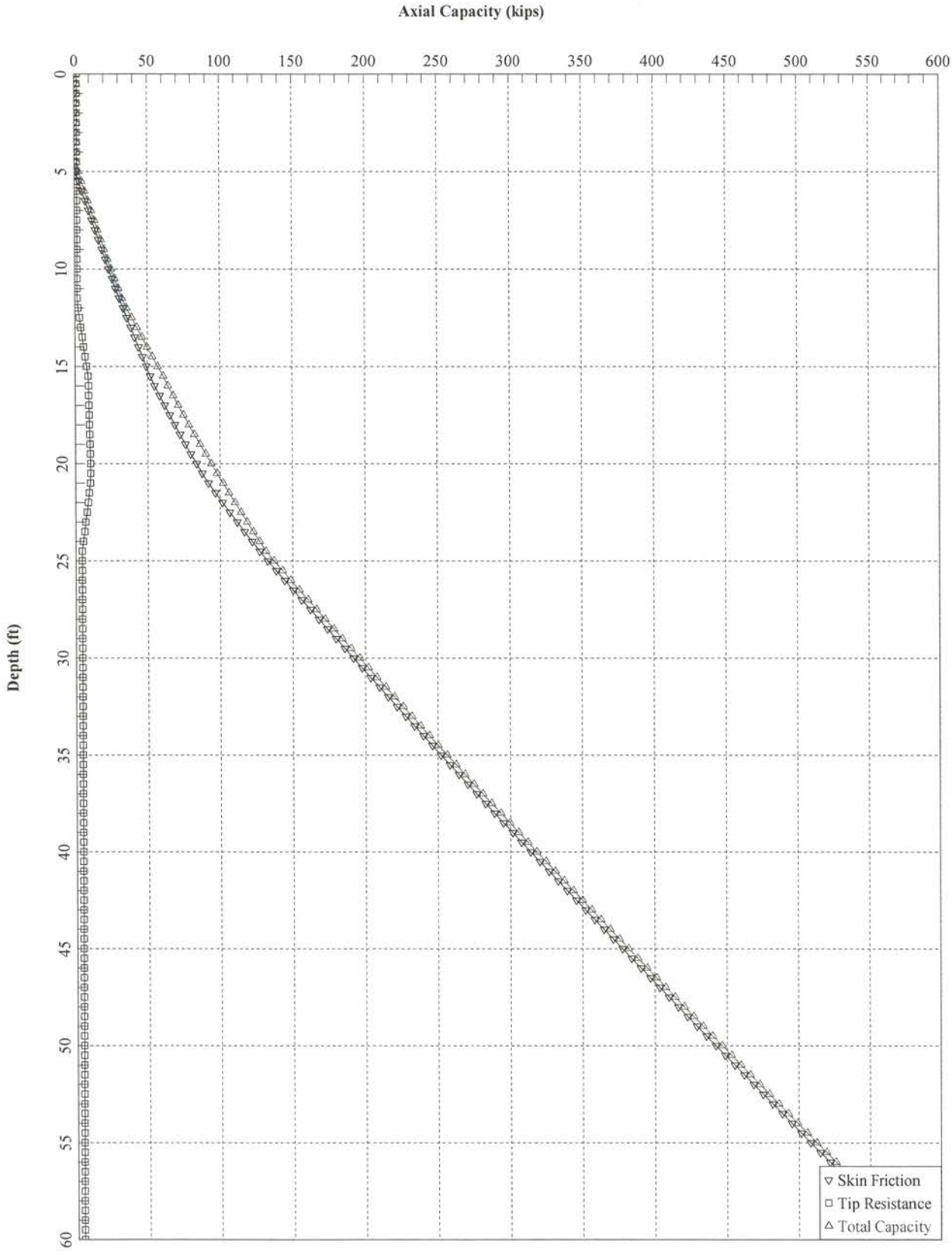
Nominal Tension Load = 50 kips
Equivalent Ultimate Skin Friction = 50/0.5 = 100 kips (using factor of o.5)
Reqd. Penetration per APILE output = 20.5 ft
Recommended Penetration = 20.5 ft
Reqd. Tip Elevation = 476.0 – 20.5 = 455.5 -- Tension



Abutment 1 – Westbound
(based on Boring CA-08-AL3-01)



I-580 - Arroyo Las Positas - Bridge No. 33-0085 - Abutment 1 - Westbound - H Pile HP 12x53



I-580 - Arroyo Las Positas - Bridge No. 33-0085 - Abutment 1 - Westbound H Pile HP 12x53 - API-RP2A Method

AXIALLY LOADING PILE ANALYSIS PROGRAM - APILEplus
VERSION 4.0 - (C) COPYRIGHT ENSOFT,INC.,1987-2004.

Arroyo Las Positas 33-0085-Abutment 1 Westbound - HP 53x12 - Ground @

DESIGNER : Partha Sircar

DATE : DEcember 16, 2009

PILE PROPERTIES :

PERIMETER OF PILE WITH NONCIRCULAR SECTION	=	70.87 IN.
TIP AREA OF PILE WITH NONCIRCULAR SECTION	=	0.11 SQF
OUTSIDE DIAMETER OF CIRCULAR PILE	=	0.00 IN.
INTERNAL DIAMETER OF CIRCULAR PILE	=	0.00 IN.
PILE LENGTH	=	60.00 FT.
MODULUS OF ELASTICITY	=	0.290E+08 PSI

LENGTH OF SURFACE SECTION WITH ZERO SKIN FRICTION = 5.00 FT.
INCREMENT OF PILE LENGTH USED IN COMPUTATION = 0.50 FT.

SOIL INFORMATIONS :

DEPTH FT.	SOIL TYPE	LATERAL EARTH PRESSURE	EFFECTIVE UNIT WEIGHT LB/CF	FRICTION ANGLE DEGREES	BEARING CAPACITY FACTOR
0.00	CLAY	0.00	125.00	0.00	0.00
15.50	CLAY	0.00	125.00	0.00	0.00
15.50	SAND	1.00	70.00	35.00	40.00
20.50	SAND	1.00	70.00	35.00	40.00
20.50	SAND	1.00	70.00	40.00	40.00
24.50	SAND	1.00	70.00	40.00	40.00
24.50	CLAY	0.00	65.00	0.00	0.00
70.00	CLAY	0.00	65.00	0.00	0.00

MAXIMUM UNIT FRICTION KSF	MAXIMUM UNIT BEARING KSF	UNDISTURB SHEAR STRENGTH KSF	REMOLDED SHEAR STRENGTH KSF	BLOW COUNT	UNIT SKIN FRICTION KSF	UNIT END BEARING KSF
1.80	16.20	1.80	0.90	0.00	0.00	0.00
1.80	16.20	1.80	0.90	0.00	0.00	0.00
2.00	200.00	0.00	0.00	0.00	0.00	0.00
2.00	200.00	0.00	0.00	0.00	0.00	0.00
2.40	250.00	0.00	0.00	0.00	0.00	0.00
2.40	250.00	0.00	0.00	0.00	0.00	0.00
4.50	40.50	4.50	2.25	0.00	0.00	0.00
4.50	40.50	4.50	2.25	0.00	0.00	0.00

****
* COMPUTATION RESULT *
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PILE PENETRATION FT.	FED. HWY. METHOD TOTAL SKIN FRIC KIP	FED. HWY. METHOD END BEARING KIP	FED. HWY. METHOD ULTIM CAPACITY KIP	ARMY CORPS METHOD TOTAL SKIN FRIC KIP	ARMY CORPS METHOD END BEARING KIP	ARMY CORPS METHOD ULTIM CAPACITY KIP	LAMBDA 2 METHOD TOTAL SKIN FRIC KIP	LAMBDA 2 METHOD END BEARING KIP	LAMBDA 2 METHOD ULTIM CAPACITY KIP
0.0	0.0	1.7	1.7	0.0	1.7	1.7	0.0	1.7	1.7
0.5	0.0	1.7	1.7	0.0	1.7	1.7	0.0	1.7	1.7
1.0	0.0	1.7	1.7	0.0	1.7	1.7	0.0	1.7	1.7
1.5	0.0	1.7	1.7	0.0	1.7	1.7	0.0	1.7	1.7
2.0	0.0	1.7	1.7	0.0	1.7	1.7	0.0	1.7	1.7
2.5	0.0	1.7	1.7	0.0	1.7	1.7	0.0	1.7	1.7
3.0	0.0	1.7	1.7	0.0	1.7	1.7	0.0	1.7	1.7
3.5	0.0	1.7	1.7	0.0	1.7	1.7	0.0	1.7	1.7
4.0	0.0	1.7	1.7	0.0	1.7	1.7	0.0	1.7	1.7
4.5	0.0	1.7	1.7	0.0	1.7	1.7	0.0	1.7	1.7
5.0	2.4	1.7	4.1	1.3	1.7	3.1	0.0	1.7	1.7
5.5	7.1	1.7	8.8	4.0	1.7	5.7	5.0	1.7	6.7
6.0	11.8	1.7	13.5	6.6	1.7	8.4	7.0	1.7	8.8
6.5	16.5	1.7	18.3	9.3	1.7	11.0	8.9	1.7	10.7
7.0	21.2	1.7	23.0	12.0	1.7	13.7	10.7	1.7	12.4
7.5	25.9	1.7	27.7	14.6	1.7	16.4	12.3	1.7	14.1
8.0	30.7	1.7	32.4	17.3	1.7	19.0	13.9	1.7	15.6
8.5	35.4	1.7	37.1	19.9	1.7	21.7	15.4	1.7	17.1
9.0	40.1	1.7	41.8	22.6	1.7	24.3	16.8	1.7	18.5
9.5	44.8	1.7	46.5	25.2	1.7	27.0	18.1	1.7	19.9
10.0	49.5	1.7	51.3	27.9	1.7	29.6	20.1	1.7	21.8
10.5	54.2	1.7	56.0	30.6	1.7	32.3	22.1	1.7	23.8
11.0	59.0	1.7	60.7	33.2	1.7	35.0	24.1	1.7	25.9
11.5	63.7	1.7	65.4	35.9	1.7	37.6	26.2	1.7	27.9
12.0	68.4	2.3	70.6	38.5	2.3	40.9	28.3	2.2	30.5
12.5	73.1	3.3	76.4	41.2	3.5	44.7	30.4	3.1	33.5
13.0	77.8	4.3	82.1	43.9	4.7	48.5	32.5	4.0	36.6
13.5	82.5	5.3	87.8	46.5	5.9	52.4	34.7	5.0	39.7
14.0	87.2	6.4	93.6	49.2	7.2	56.3	36.9	5.9	42.8
14.5	92.0	7.5	99.4	51.8	8.4	60.2	39.1	6.9	46.0
15.0	96.7	8.6	105.2	54.5	9.7	64.2	41.4	7.9	49.3
15.5	101.4	9.7	111.1	57.1	11.0	68.2	43.7	8.9	52.6
16.0	105.0	9.9	114.8	60.2	11.2	71.4	45.6	9.1	54.7
16.5	107.5	10.0	117.5	63.7	11.4	75.1	47.6	9.2	56.8
17.0	110.0	11.3	121.3	67.2	12.2	79.5	49.6	9.4	59.0
17.5	112.6	13.6	126.2	70.8	13.7	84.5	51.6	9.5	61.1
18.0	115.2	15.9	131.1	74.5	15.2	89.7	53.7	9.7	63.4
18.5	117.9	18.1	136.0	78.2	16.7	94.9	55.8	9.8	65.6
19.0	120.6	20.4	140.9	82.0	18.2	100.2	58.0	10.0	67.9
19.5	123.3	22.6	145.9	85.8	19.8	105.6	60.2	10.1	70.3
20.0	126.1	24.7	150.9	89.7	21.3	111.1	62.4	10.3	72.6
20.5	129.0	26.9	155.9	93.7	22.9	116.6	64.6	10.4	75.0
21.0	132.7	25.4	158.1	98.1	21.9	120.0	67.2	10.1	77.3
21.5	137.4	22.4	159.7	102.9	19.5	122.4	69.8	9.3	79.1
22.0	142.1	19.4	161.4	107.9	17.1	124.9	72.4	8.6	81.0
22.5	146.9	16.4	163.2	112.8	14.6	127.5	75.1	7.8	82.8
23.0	151.7	13.4	165.1	117.9	12.1	130.0	77.8	6.9	84.7

23.5	156.6	10.4	167.0	123.0	9.6	132.6	80.5	6.1	86.6
24.0	161.6	7.4	169.0	128.2	7.0	135.2	83.3	5.2	88.6
24.5	166.7	4.4	171.1	133.5	4.4	137.8	86.1	4.4	90.5
25.0	172.8	4.4	177.2	139.5	4.4	143.8	90.9	4.4	95.3
25.5	178.3	4.4	182.7	146.1	4.4	150.5	95.7	4.4	100.1
26.0	182.1	4.4	186.4	152.8	4.4	157.1	100.5	4.4	104.9
26.5	185.8	4.4	190.2	159.4	4.4	163.8	105.4	4.4	109.7
27.0	189.6	4.4	193.9	166.0	4.4	170.4	110.2	4.4	114.6
27.5	193.3	4.4	197.7	172.7	4.4	177.0	115.1	4.4	119.4
28.0	197.1	4.4	201.4	179.3	4.4	183.7	119.9	4.4	124.3
28.5	200.8	4.4	205.2	186.0	4.4	190.3	124.8	4.4	129.2
29.0	204.6	4.4	209.0	192.6	4.4	197.0	129.7	4.4	134.1
29.5	208.4	4.4	212.7	199.3	4.4	203.6	134.6	4.4	139.0
30.0	212.1	4.4	216.5	205.9	4.4	210.3	139.5	4.4	143.9
30.5	215.9	4.4	220.2	212.6	4.4	216.9	144.5	4.4	148.8
31.0	219.6	4.4	224.0	219.2	4.4	223.6	149.4	4.4	153.8
31.5	223.4	4.4	227.7	225.8	4.4	230.2	154.4	4.4	158.8
32.0	227.1	4.4	231.5	232.5	4.4	236.8	159.4	4.4	163.7
32.5	230.9	4.4	235.2	239.1	4.4	243.5	164.4	4.4	168.7
33.0	234.6	4.4	239.0	245.8	4.4	250.1	169.4	4.4	173.7
33.5	238.4	4.4	242.8	252.4	4.4	256.8	174.4	4.4	178.7
34.0	242.1	4.4	246.5	259.1	4.4	263.4	179.4	4.4	183.8
34.5	245.9	4.4	250.3	265.7	4.4	270.1	184.5	4.4	188.8
35.0	249.7	4.4	254.0	272.3	4.4	276.7	189.5	4.4	193.9
35.5	253.4	4.4	257.8	279.0	4.4	283.4	194.6	4.4	199.0
36.0	257.2	4.4	261.5	285.6	4.4	290.0	199.7	4.4	204.0
36.5	260.9	4.4	265.3	292.3	4.4	296.6	204.8	4.4	209.1
37.0	264.7	4.4	269.0	298.9	4.4	303.3	209.9	4.4	214.2
37.5	268.4	4.4	272.8	305.6	4.4	309.9	215.0	4.4	219.4
38.0	272.2	4.4	276.5	312.2	4.4	316.6	220.1	4.4	224.5
38.5	275.9	4.4	280.3	318.9	4.4	323.2	225.3	4.4	229.7
39.0	279.7	4.4	284.1	325.5	4.4	329.9	230.5	4.4	234.8
39.5	283.4	4.4	287.8	332.1	4.4	336.5	235.6	4.4	240.0
40.0	287.2	4.4	291.6	338.8	4.4	343.1	240.8	4.4	245.2
40.5	291.0	4.4	295.3	345.4	4.4	349.8	246.0	4.4	250.4
41.0	294.7	4.4	299.1	352.1	4.4	356.4	251.3	4.4	255.6
41.5	298.5	4.4	302.8	358.7	4.4	363.1	256.5	4.4	260.8
42.0	302.2	4.4	306.6	365.4	4.4	369.7	261.7	4.4	266.1
42.5	306.0	4.4	310.3	372.0	4.4	376.4	267.0	4.4	271.4
43.0	309.7	4.4	314.1	378.7	4.4	383.0	272.3	4.4	276.6
43.5	313.5	4.4	317.8	385.3	4.4	389.7	277.6	4.4	281.9
44.0	317.2	4.4	321.6	391.9	4.4	396.3	282.9	4.4	287.2
44.5	321.0	4.4	325.4	398.6	4.4	402.9	288.2	4.4	292.5
45.0	324.8	4.4	329.1	405.2	4.4	409.6	293.5	4.4	297.9
45.5	328.5	4.4	332.9	411.9	4.4	416.2	298.8	4.4	303.2
46.0	332.3	4.4	336.6	418.5	4.4	422.9	304.2	4.4	308.5
46.5	336.0	4.4	340.4	425.2	4.4	429.5	309.6	4.4	313.9
47.0	339.8	4.4	344.1	431.8	4.4	436.2	314.9	4.4	319.3
47.5	343.5	4.4	347.9	438.4	4.4	442.8	320.3	4.4	324.7
48.0	347.3	4.4	351.6	445.1	4.4	449.5	325.7	4.4	330.1
48.5	351.0	4.4	355.4	451.7	4.4	456.1	331.2	4.4	335.5
49.0	354.8	4.4	359.1	458.4	4.4	462.7	336.6	4.4	340.9
49.5	358.5	4.4	362.9	465.0	4.4	469.4	342.0	4.4	346.4
50.0	362.3	4.4	366.7	471.7	4.4	476.0	347.5	4.4	351.9
50.5	366.1	4.4	370.4	478.3	4.4	482.7	353.0	4.4	357.3
51.0	369.8	4.4	374.2	485.0	4.4	489.3	358.5	4.4	362.8
51.5	373.6	4.4	377.9	491.6	4.4	496.0	364.0	4.4	368.3
52.0	377.3	4.4	381.7	498.2	4.4	502.6	369.5	4.4	373.8
52.5	381.1	4.4	385.4	504.9	4.4	509.2	375.0	4.4	379.4
53.0	384.8	4.4	389.2	511.5	4.4	515.9	380.5	4.4	384.9
53.5	388.6	4.4	392.9	518.2	4.4	522.5	386.1	4.4	390.5
54.0	392.3	4.4	396.7	524.8	4.4	529.2	391.7	4.4	396.0
54.5	396.1	4.4	400.4	531.5	4.4	535.8	397.2	4.4	401.6
55.0	399.8	4.4	404.2	538.1	4.4	542.5	402.8	4.4	407.2

55.5	403.6	4.4	408.0	544.8	4.4	549.1	408.4	4.4	412.8
56.0	407.4	4.4	411.7	551.4	4.4	555.8	414.1	4.4	418.4
56.5	411.1	4.4	415.5	558.0	4.4	562.4	419.7	4.4	424.1
57.0	414.9	4.4	419.2	564.7	4.4	569.0	425.4	4.4	429.7
57.5	418.6	4.4	423.0	571.3	4.4	575.7	431.0	4.4	435.4
58.0	422.4	4.4	426.7	578.0	4.4	582.3	436.7	4.4	441.0
58.5	426.1	4.4	430.5	584.6	4.4	589.0	442.4	4.4	446.7
59.0	429.9	4.4	434.2	591.3	4.4	595.6	448.1	4.4	452.4
59.5	433.6	4.4	438.0	597.9	4.4	602.3	453.8	4.4	458.2
60.0	437.4	4.4	441.8	604.5	4.4	608.9	459.5	4.4	463.9

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* API RP-2A (1994) *
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PILE PENETRATION FT.	TOTAL SKIN FRICTION KIP	END BEARING KIP	ULTIMATE CAPACITY KIP
0.00	0.0	1.7	1.7
0.50	0.0	1.7	1.7
1.00	0.0	1.7	1.7
1.50	0.0	1.7	1.7
2.00	0.0	1.7	1.7
2.50	0.0	1.7	1.7
3.00	0.0	1.7	1.7
3.50	0.0	1.7	1.7
4.00	0.0	1.7	1.7
4.50	0.0	1.7	1.7
5.00	1.0	1.7	2.8
5.50	3.1	1.7	4.8
6.00	5.2	1.7	6.9
6.50	7.4	1.7	9.1
7.00	9.6	1.7	11.3
7.50	11.8	1.7	13.5
8.00	14.1	1.7	15.8
8.50	16.4	1.7	18.1
9.00	18.7	1.7	20.5
9.50	21.1	1.7	22.8
10.00	23.5	1.7	25.3
10.50	26.0	1.7	27.7
11.00	28.4	1.7	30.2
11.50	30.9	1.7	32.7
12.00	33.5	2.2	35.7
12.50	36.0	3.1	39.1
13.00	38.6	4.0	42.6
13.50	41.2	5.0	46.1
14.00	43.8	5.9	49.7
14.50	46.5	6.9	53.4
15.00	49.2	7.9	57.0
15.50	51.9	8.9	60.8
16.00	54.9	9.1	64.0
16.50	58.3	9.2	67.6
17.00	61.8	9.4	71.2
17.50	65.3	9.5	74.8
18.00	68.9	9.7	78.5
18.50	72.5	9.8	82.3
19.00	76.2	10.0	86.2
19.50	79.9	10.1	90.1
20.00	83.8	10.3	94.0
20.50	87.6	10.4	98.0
21.00	92.0	10.1	102.1
21.50	96.8	9.3	106.2

22.00	101.7	8.6	110.3
22.50	106.7	7.8	114.5
23.00	111.8	6.9	118.7
23.50	116.9	6.1	123.0
24.00	122.1	5.2	127.3
24.50	127.4	4.4	131.7
25.00	132.9	4.4	137.3
25.50	138.7	4.4	143.1
26.00	144.5	4.4	148.9
26.50	150.4	4.4	154.7
27.00	156.2	4.4	160.6
27.50	162.1	4.4	166.5
28.00	168.0	4.4	172.4
28.50	173.9	4.4	178.3
29.00	179.8	4.4	184.2
29.50	185.8	4.4	190.1
30.00	191.7	4.4	196.1
30.50	197.7	4.4	202.1
31.00	203.7	4.4	208.0
31.50	209.7	4.4	214.1
32.00	215.7	4.4	220.1
32.50	221.8	4.4	226.1
33.00	227.8	4.4	232.2
33.50	233.9	4.4	238.2
34.00	240.0	4.4	244.3
34.50	246.1	4.4	250.4
35.00	252.2	4.4	256.5
35.50	258.3	4.4	262.7
36.00	264.5	4.4	268.8
36.50	270.6	4.4	275.0
37.00	276.8	4.4	281.2
37.50	283.0	4.4	287.4
38.00	289.2	4.4	293.6
38.50	295.4	4.4	299.8
39.00	301.7	4.4	306.0
39.50	307.9	4.4	312.3
40.00	314.2	4.4	318.5
40.50	320.5	4.4	324.8
41.00	326.8	4.4	331.1
41.50	333.1	4.4	337.4
42.00	339.4	4.4	343.7
42.50	345.7	4.4	350.1
43.00	352.1	4.4	356.4
43.50	358.4	4.4	362.8
44.00	364.8	4.4	369.2
44.50	371.2	4.4	375.6
45.00	377.6	4.4	382.0
45.50	384.0	4.4	388.4
46.00	390.5	4.4	394.8
46.50	396.9	4.4	401.3
47.00	403.4	4.4	407.7
47.50	409.8	4.4	414.2
48.00	416.3	4.4	420.7
48.50	422.8	4.4	427.2
49.00	429.3	4.4	433.7
49.50	435.8	4.4	440.2
50.00	442.4	4.4	446.7
50.50	448.9	4.4	453.3
51.00	455.5	4.4	459.8
51.50	462.0	4.4	466.4
52.00	468.6	4.4	473.0
52.50	475.2	4.4	479.6
53.00	481.8	4.4	486.2
53.50	488.5	4.4	492.8

54.00	495.1	4.4	499.4
54.50	501.7	4.4	506.1
55.00	508.4	4.4	512.8
55.50	515.1	4.4	519.5
56.00	521.8	4.4	526.2
56.50	528.5	4.4	532.9
57.00	535.3	4.4	539.7
57.50	542.1	4.4	546.5
58.00	548.9	4.4	553.3
58.50	555.7	4.4	560.1
59.00	562.6	4.4	567.0
59.50	569.5	4.4	573.8
60.00	576.4	4.4	580.7

AN ASTERISK WILL BE PLACED IN THE END-BEARING COLUMN
IF THE TIP RESISTANCE IS CONTROLLED BY THE FRICTION
OF SOIL PLUG INSIDE AN OPEN-ENDED PIPE PILE.

****
* COMPUTE LOAD-DISTRIBUTION AND LOAD-SETTLEMENT *
* CURVES FOR AXIAL LOADING *
****

T-Z CURVE NO.	NO. OF POINTS	DEPTH TO CURVE FT.	LOAD TRANSFER PSI	PILE MOVEMENT IN.
1	10	0.0000E+00		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.3609E-01
			0.0000E+00	0.6993E-01
			0.0000E+00	0.1286E+00
			0.0000E+00	0.1805E+00
			0.0000E+00	0.2256E+00
			0.0000E+00	0.4512E+00
			0.0000E+00	0.6768E+00
			0.0000E+00	0.1128E+01
			0.0000E+00	0.4512E+01
2	10	0.7775E+01		
			0.0000E+00	0.0000E+00
			0.1606E+01	0.3609E-01
			0.2676E+01	0.6993E-01
			0.4015E+01	0.1286E+00
			0.4817E+01	0.1805E+00
			0.5353E+01	0.2256E+00
			0.4817E+01	0.4512E+00
			0.4817E+01	0.6768E+00
			0.4817E+01	0.1128E+01
			0.4817E+01	0.4512E+01
3	10	0.1546E+02		
			0.0000E+00	0.0000E+00
			0.1929E+01	0.3609E-01
			0.3216E+01	0.6993E-01
			0.4824E+01	0.1286E+00
			0.5788E+01	0.1805E+00
			0.6432E+01	0.2256E+00
			0.5788E+01	0.4512E+00
			0.5788E+01	0.6768E+00
			0.5788E+01	0.1128E+01
			0.5788E+01	0.4512E+01
4	10	0.1550E+02		

			0.0000E+00	0.0000E+00
			0.7196E+00	0.1000E-01
			0.1439E+01	0.2000E-01
			0.2879E+01	0.4000E-01
			0.4318E+01	0.6000E-01
			0.5757E+01	0.8000E-01
			0.6477E+01	0.9000E-01
			0.7196E+01	0.1000E+00
			0.7196E+01	0.5000E+00
			0.7196E+01	0.2000E+01
5	10	0.1802E+02		
			0.0000E+00	0.0000E+00
			0.8540E+00	0.1000E-01
			0.1708E+01	0.2000E-01
			0.3416E+01	0.4000E-01
			0.5124E+01	0.6000E-01
			0.6832E+01	0.8000E-01
			0.7686E+01	0.9000E-01
			0.8540E+01	0.1000E+00
			0.8540E+01	0.5000E+00
			0.8540E+01	0.2000E+01
6	10	0.2046E+02		
			0.0000E+00	0.0000E+00
			0.9101E+00	0.1000E-01
			0.1820E+01	0.2000E-01
			0.3640E+01	0.4000E-01
			0.5461E+01	0.6000E-01
			0.7281E+01	0.8000E-01
			0.8191E+01	0.9000E-01
			0.9101E+01	0.1000E+00
			0.9101E+01	0.5000E+00
			0.9101E+01	0.2000E+01
7	10	0.2050E+02		
			0.0000E+00	0.0000E+00
			0.1023E+01	0.1000E-01
			0.2046E+01	0.2000E-01
			0.4093E+01	0.4000E-01
			0.6139E+01	0.6000E-01
			0.8186E+01	0.8000E-01
			0.9209E+01	0.9000E-01
			0.1023E+02	0.1000E+00
			0.1023E+02	0.5000E+00
			0.1023E+02	0.2000E+01
8	10	0.2252E+02		
			0.0000E+00	0.0000E+00
			0.1189E+01	0.1000E-01
			0.2378E+01	0.2000E-01
			0.4756E+01	0.4000E-01
			0.7133E+01	0.6000E-01
			0.9511E+01	0.8000E-01
			0.1070E+02	0.9000E-01
			0.1189E+02	0.1000E+00
			0.1189E+02	0.5000E+00
			0.1189E+02	0.2000E+01
9	10	0.2446E+02		
			0.0000E+00	0.0000E+00
			0.1240E+01	0.1000E-01
			0.2480E+01	0.2000E-01
			0.4960E+01	0.4000E-01
			0.7440E+01	0.6000E-01
			0.9920E+01	0.8000E-01
			0.1116E+02	0.9000E-01
			0.1240E+02	0.1000E+00
			0.1240E+02	0.5000E+00

			0.1240E+02	0.2000E+01
10	10	0.2450E+02		
			0.0000E+00	0.0000E+00
			0.3916E+01	0.3609E-01
			0.6527E+01	0.6993E-01
			0.9790E+01	0.1286E+00
			0.1175E+02	0.1805E+00
			0.1305E+02	0.2256E+00
			0.1175E+02	0.4512E+00
			0.1175E+02	0.6768E+00
			0.1175E+02	0.1128E+01
			0.1175E+02	0.4512E+01
11	10	0.4727E+02		
			0.0000E+00	0.0000E+00
			0.4565E+01	0.3609E-01
			0.7608E+01	0.6993E-01
			0.1141E+02	0.1286E+00
			0.1369E+02	0.1805E+00
			0.1522E+02	0.2256E+00
			0.1369E+02	0.4512E+00
			0.1369E+02	0.6768E+00
			0.1369E+02	0.1128E+01
			0.1369E+02	0.4512E+01
12	10	0.6996E+02		
			0.0000E+00	0.0000E+00
			0.4871E+01	0.3609E-01
			0.8118E+01	0.6993E-01
			0.1218E+02	0.1286E+00
			0.1461E+02	0.1805E+00
			0.1624E+02	0.2256E+00
			0.1461E+02	0.4512E+00
			0.1461E+02	0.6768E+00
			0.1461E+02	0.1128E+01
			0.1461E+02	0.4512E+01

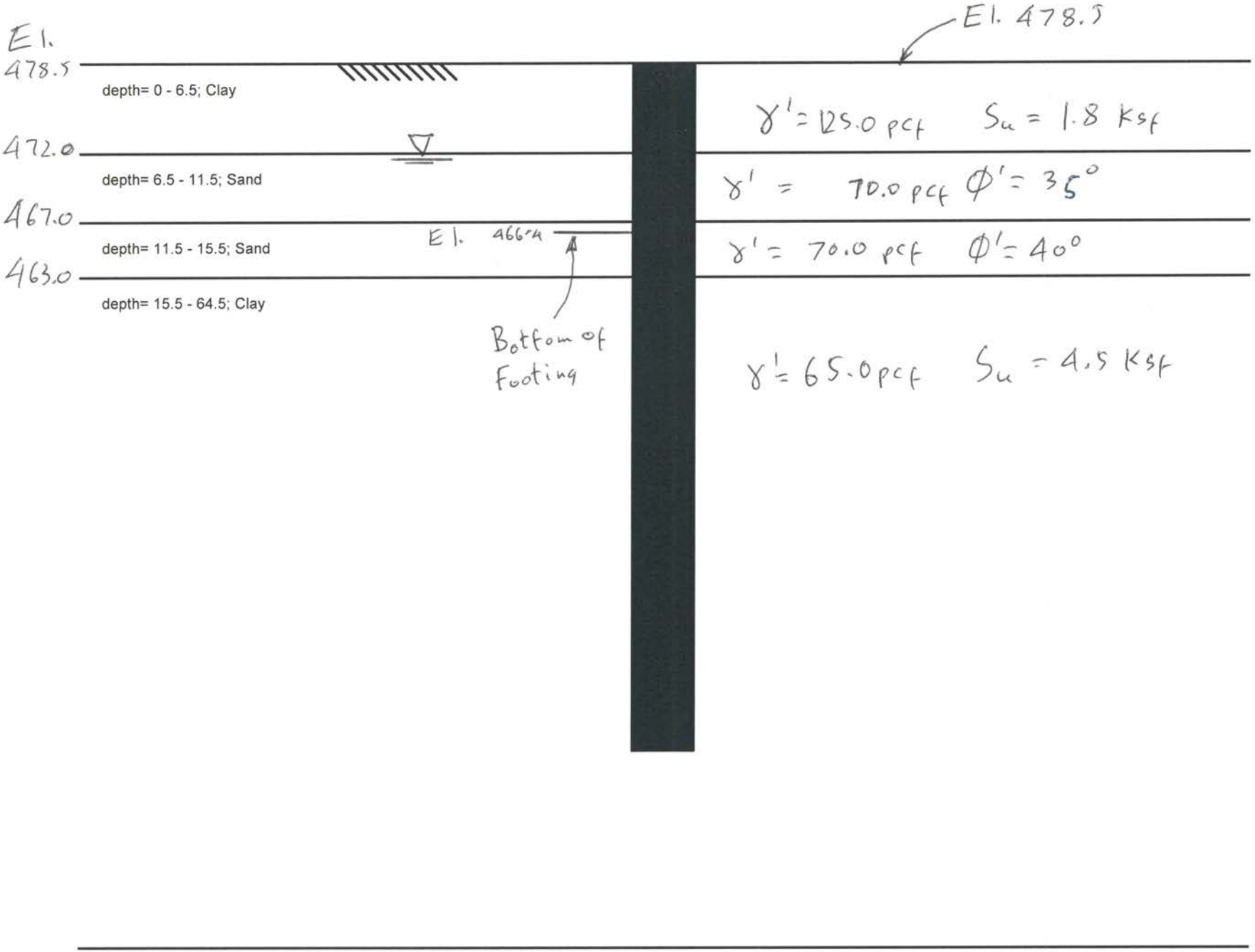
TIP LOAD KIP	TIP MOVEMENT IN.
0.0000E+00	0.0000E+00
0.2725E+00	0.1128E-01
0.5449E+00	0.2256E-01
0.1090E+01	0.4512E-01
0.2180E+01	0.2933E+00
0.3270E+01	0.9475E+00
0.3923E+01	0.1647E+01
0.4359E+01	0.2256E+01
0.4359E+01	0.3384E+01
0.4359E+01	0.4512E+01

LOAD VERSUS SETTLEMENT CURVE
****

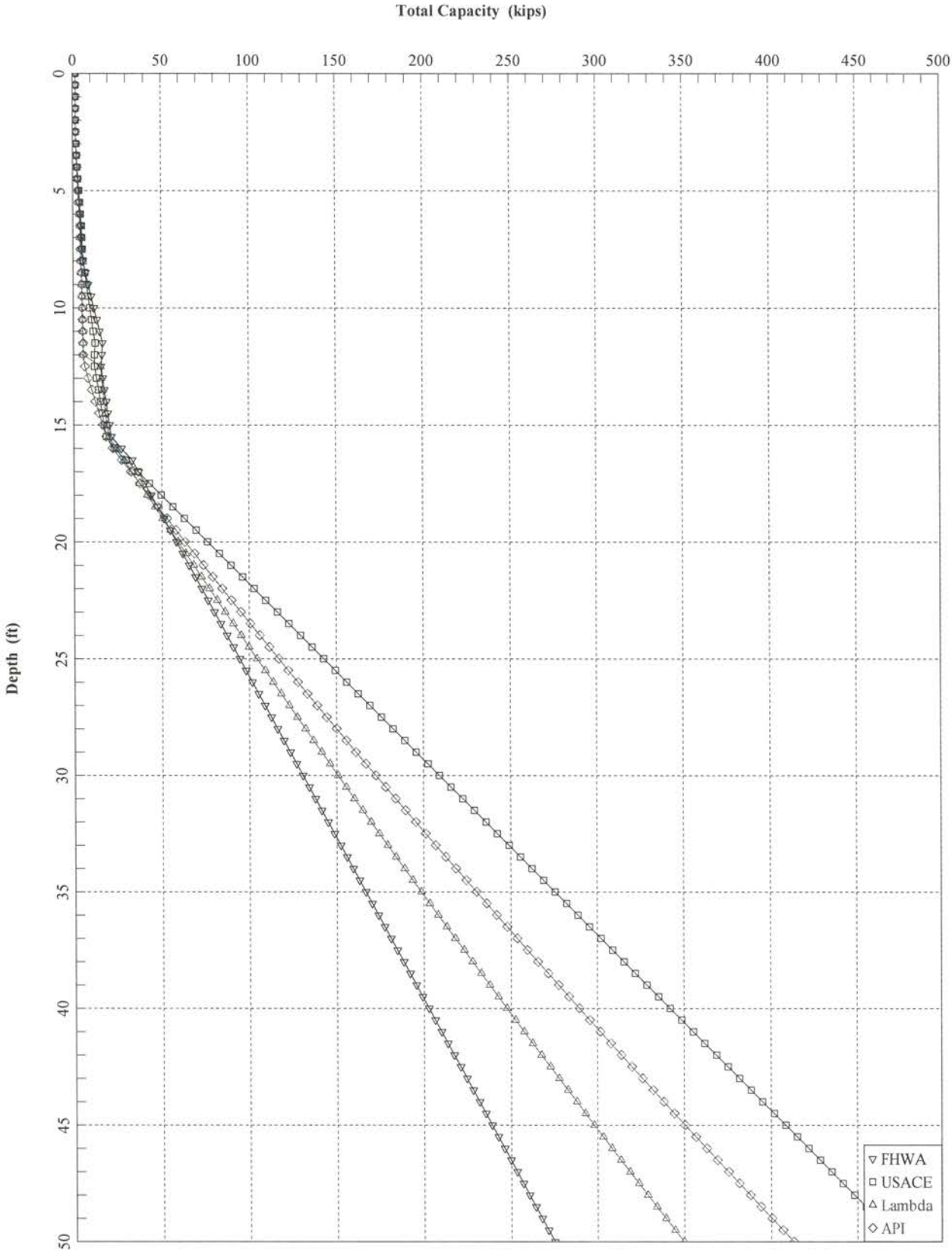
TOP LOAD KIP	TOP MOVEMENT IN.	TIP LOAD KIP	TIP MOVEMENT IN.
0.1248E+01	0.9888E-03	0.2416E-02	0.1000E-03
0.1248E+02	0.9888E-02	0.2416E-01	0.1000E-02
0.6285E+02	0.4976E-01	0.1208E+00	0.5000E-02
0.1216E+03	0.9878E-01	0.2416E+00	0.1000E-01

Abutment 1 Westbound HP 53x12.apo

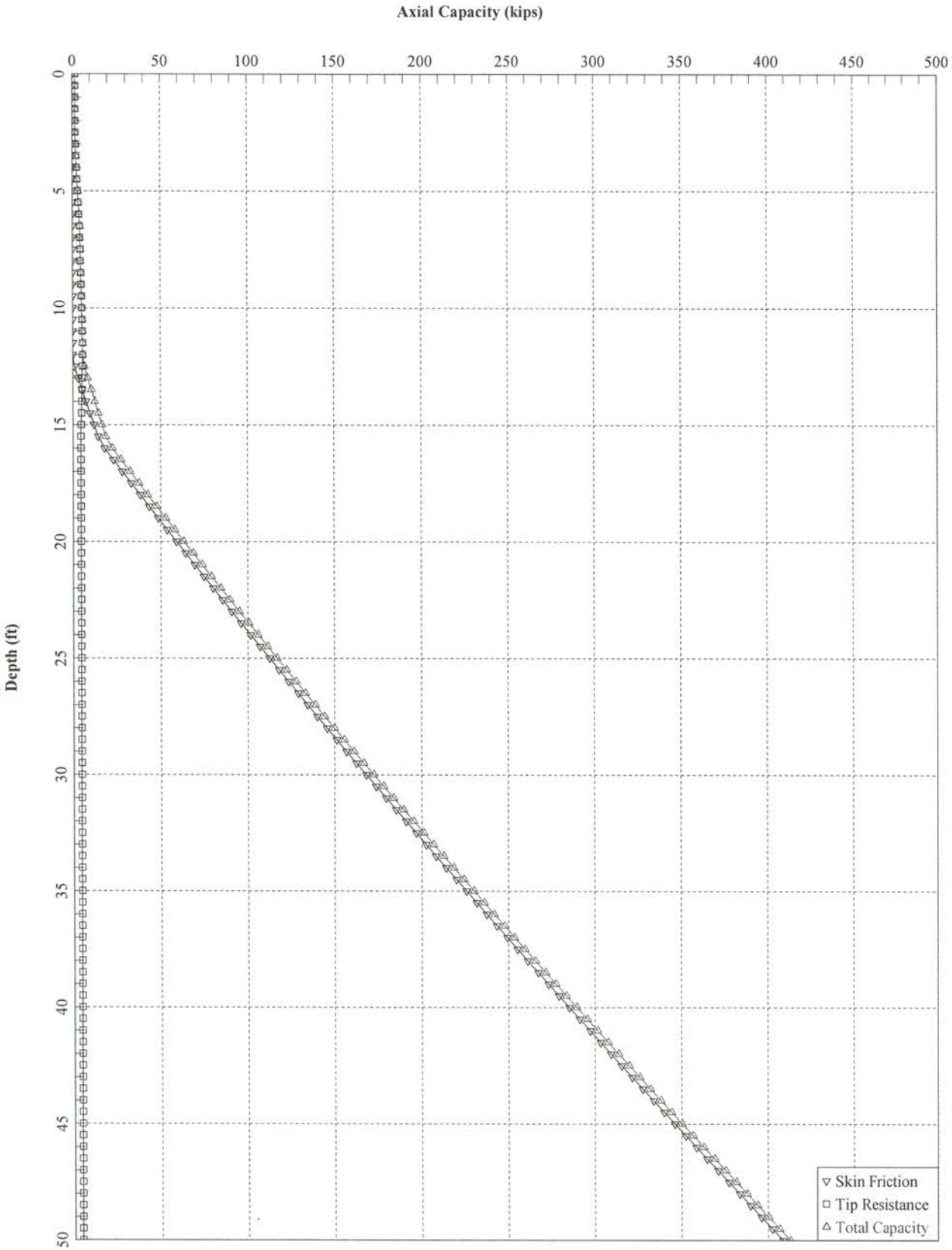
0.3663E+03	0.3603E+00	0.1111E+01	0.5000E-01
0.4748E+03	0.5377E+00	0.1331E+01	0.1000E+00
0.5258E+03	0.1012E+01	0.2524E+01	0.5000E+00
0.5266E+03	0.1514E+01	0.3319E+01	0.1000E+01
0.5275E+03	0.2515E+01	0.4176E+01	0.2000E+01



Bent 2 - Westbound
(based on Boring A-08-AL3-01



I-580 - Arroyo Las Positas - Bridge No. 33-0085 - Bent 2 - Westbound - H Pile HP 12x53



I-580 - Arroyo Las Positas -- Bridge No. 33-0085 - Bent 2 - Westbound - H PIle HP 12x53 - API-RP2A Method

AXIALLY LOADING PILE ANALYSIS PROGRAM - APILEplus
VERSION 4.0 - (C) COPYRIGHT ENSOFT,INC.,1987-2004.

Arroyo Las Positas 33-0085-Bent 2 Westbound - HP 53x12

DESIGNER : Partha Sircar

DATE : DEcember 16, 2009

PILE PROPERTIES :

PERIMETER OF PILE WITH NONCIRCULAR SECTION= 70.87 IN.
TIP AREA OF PILE WITH NONCIRCULAR SECTION = 0.11 SQF
OUTSIDE DIAMETER OF CIRCULAR PILE = 0.00 IN.
INTERNAL DIAMETER OF CIRCULAR PILE = 0.00 IN.
PILE LENGTH = 50.00 FT.
MODULUS OF ELASTICITY = 0.290E+08 PSI

LENGTH OF SURFACE SECTION WITH ZERO SKIN FRICTION = 12.10 FT.
INCREMENT OF PILE LENGTH USED IN COMPUTATION = 0.50 FT.

SOIL INFORMATIONS :

DEPTH FT.	SOIL TYPE	LATERAL EARTH PRESSURE	EFFECTIVE UNIT WEIGHT LB/CF	FRICTION ANGLE DEGREES	BEARING CAPACITY FACTOR
0.00	CLAY	0.00	125.00	0.00	0.00
6.50	CLAY	0.00	125.00	0.00	0.00
6.50	SAND	1.00	70.00	35.00	40.00
11.50	SAND	1.00	70.00	35.00	40.00
11.50	SAND	1.00	70.00	40.00	40.00
15.50	SAND	1.00	70.00	40.00	40.00
15.50	CLAY	0.00	65.00	0.00	0.00
64.50	CLAY	0.00	65.00	0.00	0.00

MAXIMUM UNIT FRICTION KSF	MAXIMUM UNIT BEARING KSF	UNDISTURB SHEAR STRENGTH KSF	REMOLDED SHEAR STRENGTH KSF	BLOW COUNT	UNIT SKIN FRICTION KSF	UNIT END BEARING KSF
1.80	16.20	1.80	0.90	0.00	0.00	0.00
1.80	16.20	1.80	0.90	0.00	0.00	0.00
2.00	200.00	0.00	0.00	0.00	0.00	0.00
2.00	200.00	0.00	0.00	0.00	0.00	0.00
2.40	250.00	0.00	0.00	0.00	0.00	0.00
2.40	250.00	0.00	0.00	0.00	0.00	0.00
4.50	40.50	4.50	2.25	0.00	0.00	0.00
4.50	40.50	4.50	2.25	0.00	0.00	0.00

****
* COMPUTATION RESULT *
****

PILE PENETRATION FT.	FED. HWY. METHOD TOTAL SKIN FRIC KIP	FED. HWY. METHOD END BEARING KIP	FED. HWY. METHOD ULTIM CAPACITY KIP	ARMY CORPS METHOD TOTAL SKIN FRIC KIP	ARMY CORPS METHOD END BEARING KIP	ARMY CORPS METHOD ULTIM CAPACITY KIP	LAMBDA 2 METHOD TOTAL SKIN FRIC KIP	LAMBDA 2 METHOD END BEARING KIP	LAMBDA 2 METHOD ULTIM CAPACITY KIP
0.0	0.0	1.7	1.7	0.0	1.7	1.7	0.0	1.7	1.7
0.5	0.0	1.7	1.7	0.0	1.7	1.7	0.0	1.7	1.7
1.0	0.0	1.7	1.7	0.0	1.7	1.7	0.0	1.7	1.7
1.5	0.0	1.7	1.7	0.0	1.7	1.7	0.0	1.7	1.7
2.0	0.0	1.7	1.7	0.0	1.7	1.7	0.0	1.7	1.7
2.5	0.0	1.7	1.7	0.0	1.7	1.7	0.0	1.7	1.7
3.0	0.0	1.9	1.9	0.0	1.9	1.9	0.0	1.9	1.9
3.5	0.0	2.2	2.2	0.0	2.3	2.3	0.0	2.1	2.1
4.0	0.0	2.5	2.5	0.0	2.7	2.7	0.0	2.4	2.4
4.5	0.0	2.8	2.8	0.0	3.1	3.1	0.0	2.7	2.7
5.0	0.0	3.2	3.2	0.0	3.6	3.6	0.0	3.0	3.0
5.5	0.0	3.6	3.6	0.0	4.0	4.0	0.0	3.3	3.3
6.0	0.0	4.0	4.0	0.0	4.5	4.5	0.0	3.7	3.7
6.5	0.0	4.4	4.4	0.0	5.0	5.0	0.0	4.1	4.1
7.0	0.0	4.6	4.6	0.0	5.2	5.2	0.0	4.2	4.2
7.5	0.0	4.8	4.8	0.0	5.4	5.4	0.0	4.4	4.4
8.0	0.0	5.6	5.6	0.0	5.9	5.9	0.0	4.5	4.5
8.5	0.0	7.1	7.1	0.0	6.8	6.8	0.0	4.7	4.7
9.0	0.0	8.6	8.6	0.0	7.6	7.6	0.0	4.8	4.8
9.5	0.0	10.1	10.1	0.0	8.5	8.5	0.0	5.0	5.0
10.0	0.0	11.7	11.7	0.0	9.4	9.4	0.0	5.1	5.1
10.5	0.0	13.3	13.3	0.0	10.4	10.4	0.0	5.3	5.3
11.0	0.0	15.0	15.0	0.0	11.3	11.3	0.0	5.4	5.4
11.5	0.0	16.7	16.7	0.0	12.3	12.3	0.0	5.6	5.6
12.0	0.0	16.2	16.2	0.0	11.9	11.9	0.0	5.6	5.6
12.5	1.2	14.7	15.9	1.3	11.0	12.3	10.0	5.5	15.4
13.0	3.7	13.1	16.8	3.9	10.0	13.9	10.8	5.3	16.2
13.5	6.3	11.5	17.7	6.5	9.0	15.5	11.9	5.2	17.1
14.0	8.9	9.8	18.7	9.2	7.9	17.1	13.0	5.0	18.0
14.5	11.6	8.0	19.6	12.0	6.7	18.8	14.2	4.8	19.0
15.0	14.3	6.2	20.6	14.9	5.6	20.5	15.4	4.6	20.0
15.5	17.2	4.4	21.5	17.9	4.4	22.2	17.0	4.4	21.3
16.0	22.8	4.4	27.2	22.7	4.4	27.0	21.3	4.4	25.7
16.5	28.8	4.4	33.2	29.3	4.4	33.7	25.6	4.4	30.0
17.0	32.4	4.4	36.8	36.0	4.4	40.3	30.0	4.4	34.4
17.5	36.0	4.4	40.4	42.6	4.4	47.0	34.4	4.4	38.7
18.0	39.7	4.4	44.0	49.3	4.4	53.6	38.7	4.4	43.1
18.5	43.3	4.4	47.6	55.9	4.4	60.3	43.1	4.4	47.5
19.0	46.9	4.4	51.2	62.5	4.4	66.9	47.5	4.4	51.9
19.5	50.5	4.4	54.9	69.2	4.4	73.5	51.9	4.4	56.3
20.0	54.1	4.4	58.5	75.8	4.4	80.2	56.4	4.4	60.7
20.5	57.7	4.4	62.1	82.5	4.4	86.8	60.8	4.4	65.2
21.0	61.3	4.4	65.7	89.1	4.4	93.5	65.3	4.4	69.6
21.5	64.9	4.4	69.3	95.8	4.4	100.1	69.8	4.4	74.1
22.0	68.5	4.4	72.9	102.4	4.4	106.8	74.2	4.4	78.6
22.5	72.2	4.4	76.5	109.1	4.4	113.4	78.7	4.4	83.1
23.0	75.8	4.4	80.1	115.7	4.4	120.1	83.3	4.4	87.6

23.5	79.4	4.4	83.7	122.3	4.4	126.7	87.8	4.4	92.1
24.0	83.0	4.4	87.4	129.0	4.4	133.3	92.3	4.4	96.7
24.5	86.6	4.4	91.0	135.6	4.4	140.0	96.9	4.4	101.2
25.0	90.2	4.4	94.6	142.3	4.4	146.6	101.4	4.4	105.8
25.5	93.8	4.4	98.2	148.9	4.4	153.3	106.0	4.4	110.4
26.0	97.4	4.4	101.8	155.6	4.4	159.9	110.6	4.4	115.0
26.5	101.0	4.4	105.4	162.2	4.4	166.6	115.2	4.4	119.6
27.0	104.7	4.4	109.0	168.8	4.4	173.2	119.8	4.4	124.2
27.5	108.3	4.4	112.6	175.5	4.4	179.9	124.5	4.4	128.8
28.0	111.9	4.4	116.2	182.1	4.4	186.5	129.1	4.4	133.5
28.5	115.5	4.4	119.9	188.8	4.4	193.1	133.8	4.4	138.1
29.0	119.1	4.4	123.5	195.4	4.4	199.8	138.4	4.4	142.8
29.5	122.7	4.4	127.1	202.1	4.4	206.4	143.1	4.4	147.5
30.0	126.3	4.4	130.7	208.7	4.4	213.1	147.8	4.4	152.2
30.5	129.9	4.4	134.3	215.4	4.4	219.7	152.5	4.4	156.9
31.0	133.5	4.4	137.9	222.0	4.4	226.4	157.3	4.4	161.6
31.5	137.2	4.4	141.5	228.6	4.4	233.0	162.0	4.4	166.4
32.0	140.8	4.4	145.1	235.3	4.4	239.6	166.8	4.4	171.1
32.5	144.4	4.4	148.7	241.9	4.4	246.3	171.5	4.4	175.9
33.0	148.0	4.4	152.4	248.6	4.4	252.9	176.3	4.4	180.7
33.5	151.6	4.4	156.0	255.2	4.4	259.6	181.1	4.4	185.5
34.0	155.2	4.4	159.6	261.9	4.4	266.2	185.9	4.4	190.3
34.5	158.8	4.4	163.2	268.5	4.4	272.9	190.7	4.4	195.1
35.0	162.4	4.4	166.8	275.2	4.4	279.5	195.6	4.4	199.9
35.5	166.0	4.4	170.4	281.8	4.4	286.2	200.4	4.4	204.8
36.0	169.7	4.4	174.0	288.4	4.4	292.8	205.3	4.4	209.6
36.5	173.3	4.4	177.6	295.1	4.4	299.4	210.1	4.4	214.5
37.0	176.9	4.4	181.2	301.7	4.4	306.1	215.0	4.4	219.4
37.5	180.5	4.4	184.8	308.4	4.4	312.7	219.9	4.4	224.3
38.0	184.1	4.4	188.5	315.0	4.4	319.4	224.9	4.4	229.2
38.5	187.7	4.4	192.1	321.7	4.4	326.0	229.8	4.4	234.1
39.0	191.3	4.4	195.7	328.3	4.4	332.7	234.7	4.4	239.1
39.5	194.9	4.4	199.3	335.0	4.4	339.3	239.7	4.4	244.0
40.0	198.5	4.4	202.9	341.6	4.4	346.0	244.6	4.4	249.0
40.5	202.2	4.4	206.5	348.2	4.4	352.6	249.6	4.4	254.0
41.0	205.8	4.4	210.1	354.9	4.4	359.2	254.6	4.4	259.0
41.5	209.4	4.4	213.7	361.5	4.4	365.9	259.6	4.4	264.0
42.0	213.0	4.4	217.3	368.2	4.4	372.5	264.7	4.4	269.0
42.5	216.6	4.4	221.0	374.8	4.4	379.2	269.7	4.4	274.1
43.0	220.2	4.4	224.6	381.5	4.4	385.8	274.7	4.4	279.1
43.5	223.8	4.4	228.2	388.1	4.4	392.5	279.8	4.4	284.2
44.0	227.4	4.4	231.8	394.7	4.4	399.1	284.9	4.4	289.2
44.5	231.0	4.4	235.4	401.4	4.4	405.8	290.0	4.4	294.3
45.0	234.7	4.4	239.0	408.0	4.4	412.4	295.1	4.4	299.4
45.5	238.3	4.4	242.6	414.7	4.4	419.0	300.2	4.4	304.5
46.0	241.9	4.4	246.2	421.3	4.4	425.7	305.3	4.4	309.7
46.5	245.5	4.4	249.8	428.0	4.4	432.3	310.5	4.4	314.8
47.0	249.1	4.4	253.5	434.6	4.4	439.0	315.6	4.4	320.0
47.5	252.7	4.4	257.1	441.3	4.4	445.6	320.8	4.4	325.1
48.0	256.3	4.4	260.7	447.9	4.4	452.3	326.0	4.4	330.3
48.5	259.9	4.4	264.3	454.5	4.4	458.9	331.2	4.4	335.5
49.0	263.5	4.4	267.9	461.2	4.4	465.5	336.4	4.4	340.7
49.5	267.2	4.4	271.5	467.8	4.4	472.2	341.6	4.4	346.0
50.0	270.8	4.4	275.1	474.5	4.4	478.8	346.8	4.4	351.2

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* API RP-2A (1994) *
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PILE PENETRATION FT.	TOTAL SKIN FRICTION KIP	END BEARING KIP	ULTIMATE CAPACITY KIP
0.00	0.0	1.7	1.7
0.50	0.0	1.7	1.7
1.00	0.0	1.7	1.7
1.50	0.0	1.7	1.7
2.00	0.0	1.7	1.7
2.50	0.0	1.7	1.7
3.00	0.0	1.9	1.9
3.50	0.0	2.1	2.1
4.00	0.0	2.4	2.4
4.50	0.0	2.7	2.7
5.00	0.0	3.0	3.0
5.50	0.0	3.3	3.3
6.00	0.0	3.7	3.7
6.50	0.0	4.1	4.1
7.00	0.0	4.2	4.2
7.50	0.0	4.4	4.4
8.00	0.0	4.5	4.5
8.50	0.0	4.7	4.7
9.00	0.0	4.8	4.8
9.50	0.0	5.0	5.0
10.00	0.0	5.1	5.1
10.50	0.0	5.3	5.3
11.00	0.0	5.4	5.4
11.50	0.0	5.6	5.6
12.00	0.0	5.6	5.6
12.50	1.3	5.5	6.8
13.00	3.9	5.3	9.2
13.50	6.5	5.2	11.7
14.00	9.2	5.0	14.3
14.50	12.0	4.8	16.9
15.00	14.9	4.6	19.5
15.50	17.9	4.4	22.2
16.00	21.9	4.4	26.2
16.50	26.9	4.4	31.3
17.00	32.0	4.4	36.3
17.50	37.1	4.4	41.4
18.00	42.2	4.4	46.6
18.50	47.3	4.4	51.7
19.00	52.5	4.4	56.9
19.50	57.7	4.4	62.1
20.00	62.9	4.4	67.3
20.50	68.2	4.4	72.5
21.00	73.5	4.4	77.8
21.50	78.8	4.4	83.1
22.00	84.1	4.4	88.4
22.50	89.4	4.4	93.8
23.00	94.8	4.4	99.1
23.50	100.2	4.4	104.5
24.00	105.6	4.4	109.9
24.50	111.0	4.4	115.4
25.00	116.5	4.4	120.8
25.50	121.9	4.4	126.3
26.00	127.4	4.4	131.8
26.50	133.0	4.4	137.3
27.00	138.5	4.4	142.9
27.50	144.1	4.4	148.4
28.00	149.6	4.4	154.0
28.50	155.2	4.4	159.6
29.00	160.9	4.4	165.2
29.50	166.5	4.4	170.9
30.00	172.2	4.4	176.5
30.50	177.8	4.4	182.2
31.00	183.5	4.4	187.9
31.50	189.2	4.4	193.6

32.00	195.0	4.4	199.3
32.50	200.7	4.4	205.1
33.00	206.5	4.4	210.9
33.50	212.3	4.4	216.7
34.00	218.1	4.4	222.5
34.50	223.9	4.4	228.3
35.00	229.8	4.4	234.1
35.50	235.6	4.4	240.0
36.00	241.5	4.4	245.9
36.50	247.4	4.4	251.8
37.00	253.3	4.4	257.7
37.50	259.3	4.4	263.6
38.00	265.2	4.4	269.6
38.50	271.2	4.4	275.5
39.00	277.2	4.4	281.5
39.50	283.1	4.4	287.5
40.00	289.2	4.4	293.5
40.50	295.2	4.4	299.5
41.00	301.2	4.4	305.6
41.50	307.3	4.4	311.7
42.00	313.4	4.4	317.7
42.50	319.5	4.4	323.8
43.00	325.6	4.4	329.9
43.50	331.7	4.4	336.1
44.00	337.8	4.4	342.2
44.50	344.0	4.4	348.3
45.00	350.2	4.4	354.5
45.50	356.3	4.4	360.7
46.00	362.5	4.4	366.9
46.50	368.8	4.4	373.1
47.00	375.0	4.4	379.3
47.50	381.2	4.4	385.6
48.00	387.5	4.4	391.8
48.50	393.7	4.4	398.1
49.00	400.0	4.4	404.4
49.50	406.3	4.4	410.7
50.00	412.6	4.4	417.0

AN ASTERISK WILL BE PLACED IN THE END-BEARING COLUMN
IF THE TIP RESISTANCE IS CONTROLLED BY THE FRICTION
OF SOIL PLUG INSIDE AN OPEN-ENDED PIPE PILE.

****
* COMPUTE LOAD-DISTRIBUTION AND LOAD-SETTLEMENT *
* CURVES FOR AXIAL LOADING *
****

T-Z CURVE NO.	NO. OF POINTS	DEPTH TO CURVE FT.	LOAD TRANSFER PSI	PILE MOVEMENT IN.
1	10	0.0000E+00		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.3609E-01
			0.0000E+00	0.6993E-01
			0.0000E+00	0.1286E+00
			0.0000E+00	0.1805E+00
			0.0000E+00	0.2256E+00
			0.0000E+00	0.4512E+00
			0.0000E+00	0.6768E+00
			0.0000E+00	0.1128E+01

			0.0000E+00	0.4512E+01
2	10	0.3275E+01		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.3609E-01
			0.0000E+00	0.6993E-01
			0.0000E+00	0.1286E+00
			0.0000E+00	0.1805E+00
			0.0000E+00	0.2256E+00
			0.0000E+00	0.4512E+00
			0.0000E+00	0.6768E+00
			0.0000E+00	0.1128E+01
			0.0000E+00	0.4512E+01
3	10	0.6458E+01		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.3609E-01
			0.0000E+00	0.6993E-01
			0.0000E+00	0.1286E+00
			0.0000E+00	0.1805E+00
			0.0000E+00	0.2256E+00
			0.0000E+00	0.4512E+00
			0.0000E+00	0.6768E+00
			0.0000E+00	0.1128E+01
			0.0000E+00	0.4512E+01
4	10	0.6500E+01		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.1000E-01
			0.0000E+00	0.2000E-01
			0.0000E+00	0.4000E-01
			0.0000E+00	0.6000E-01
			0.0000E+00	0.8000E-01
			0.0000E+00	0.9000E-01
			0.0000E+00	0.1000E+00
			0.0000E+00	0.5000E+00
			0.0000E+00	0.2000E+01
5	10	0.9025E+01		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.1000E-01
			0.0000E+00	0.2000E-01
			0.0000E+00	0.4000E-01
			0.0000E+00	0.6000E-01
			0.0000E+00	0.8000E-01
			0.0000E+00	0.9000E-01
			0.0000E+00	0.1000E+00
			0.0000E+00	0.5000E+00
			0.0000E+00	0.2000E+01
6	10	0.1146E+02		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.1000E-01
			0.0000E+00	0.2000E-01
			0.0000E+00	0.4000E-01
			0.0000E+00	0.6000E-01
			0.0000E+00	0.8000E-01
			0.0000E+00	0.9000E-01
			0.0000E+00	0.1000E+00
			0.0000E+00	0.5000E+00
			0.0000E+00	0.2000E+01
7	10	0.1150E+02		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.1000E-01
			0.0000E+00	0.2000E-01
			0.0000E+00	0.4000E-01
			0.0000E+00	0.6000E-01
			0.0000E+00	0.8000E-01
			0.0000E+00	0.9000E-01

			0.0000E+00	0.1000E+00
			0.0000E+00	0.5000E+00
			0.0000E+00	0.2000E+01
8	10	0.1353E+02		
			0.0000E+00	0.0000E+00
			0.6419E+00	0.1000E-01
			0.1284E+01	0.2000E-01
			0.2567E+01	0.4000E-01
			0.3851E+01	0.6000E-01
			0.5135E+01	0.8000E-01
			0.5777E+01	0.9000E-01
			0.6419E+01	0.1000E+00
			0.6419E+01	0.5000E+00
			0.6419E+01	0.2000E+01
9	10	0.1546E+02		
			0.0000E+00	0.0000E+00
			0.6929E+00	0.1000E-01
			0.1386E+01	0.2000E-01
			0.2772E+01	0.4000E-01
			0.4157E+01	0.6000E-01
			0.5543E+01	0.8000E-01
			0.6236E+01	0.9000E-01
			0.6929E+01	0.1000E+00
			0.6929E+01	0.5000E+00
			0.6929E+01	0.2000E+01
10	10	0.1550E+02		
			0.0000E+00	0.0000E+00
			0.2826E+01	0.3609E-01
			0.4709E+01	0.6993E-01
			0.7064E+01	0.1286E+00
			0.8477E+01	0.1805E+00
			0.9418E+01	0.2256E+00
			0.8477E+01	0.4512E+00
			0.8477E+01	0.6768E+00
			0.8477E+01	0.1128E+01
			0.8477E+01	0.4512E+01
11	10	0.4002E+02		
			0.0000E+00	0.0000E+00
			0.4254E+01	0.3609E-01
			0.7089E+01	0.6993E-01
			0.1063E+02	0.1286E+00
			0.1276E+02	0.1805E+00
			0.1418E+02	0.2256E+00
			0.1276E+02	0.4512E+00
			0.1276E+02	0.6768E+00
			0.1276E+02	0.1128E+01
			0.1276E+02	0.4512E+01
12	10	0.6446E+02		
			0.0000E+00	0.0000E+00
			0.4454E+01	0.3609E-01
			0.7424E+01	0.6993E-01
			0.1114E+02	0.1286E+00
			0.1336E+02	0.1805E+00
			0.1485E+02	0.2256E+00
			0.1336E+02	0.4512E+00
			0.1336E+02	0.6768E+00
			0.1336E+02	0.1128E+01
			0.1336E+02	0.4512E+01

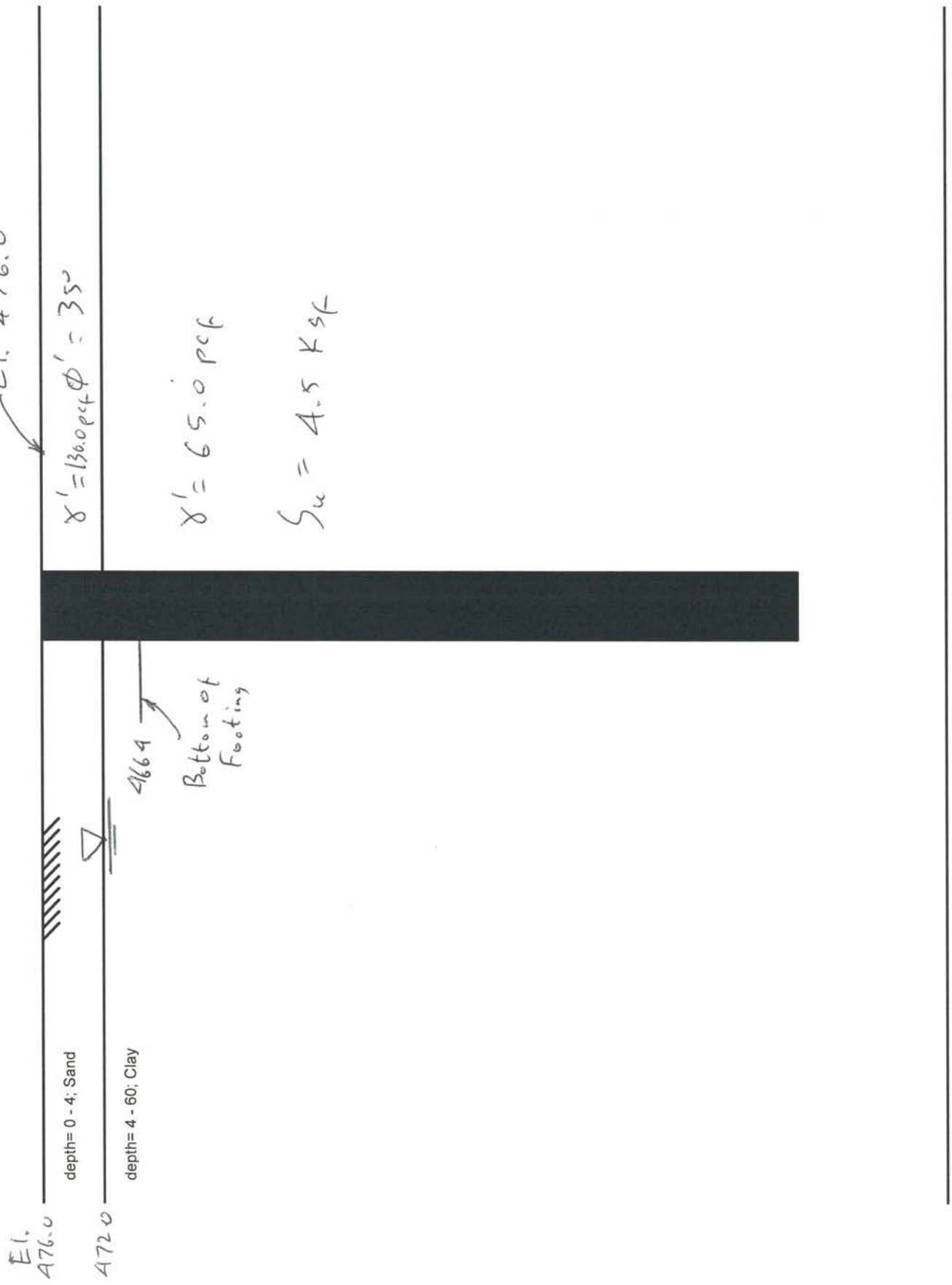
TIP LOAD KIP	TIP MOVEMENT IN.

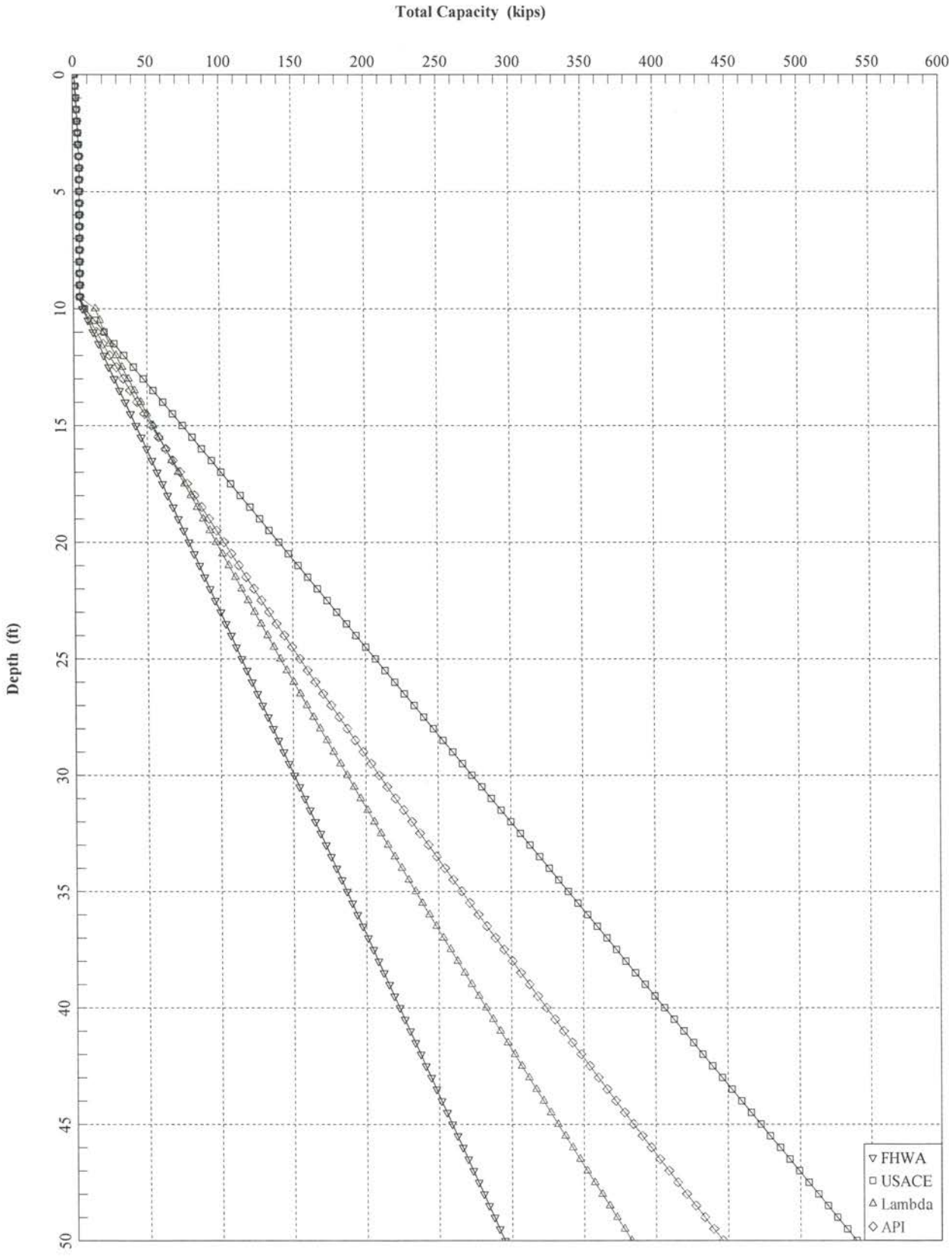
0.0000E+00	0.0000E+00
0.2725E+00	0.1128E-01
0.5449E+00	0.2256E-01
0.1090E+01	0.4512E-01
0.2180E+01	0.2933E+00
0.3270E+01	0.9475E+00
0.3923E+01	0.1647E+01
0.4359E+01	0.2256E+01
0.4359E+01	0.3384E+01
0.4359E+01	0.4512E+01

LOAD VERSUS SETTLEMENT CURVE
****

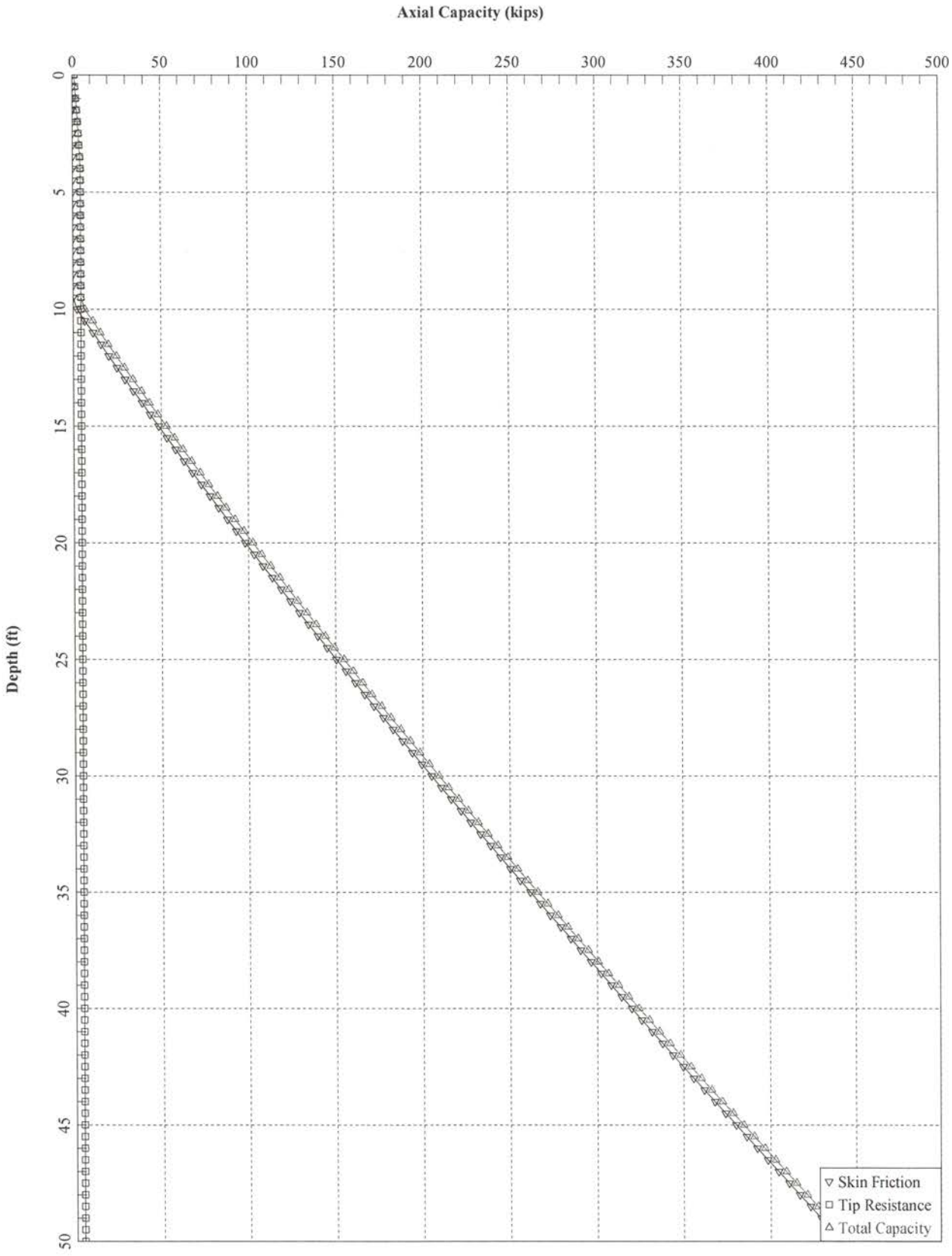
TOP LOAD KIP	TOP MOVEMENT IN.	TIP LOAD KIP	TIP MOVEMENT IN.
0.5205E+00	0.5055E-03	0.2416E-02	0.1000E-03
0.5205E+01	0.5055E-02	0.2416E-01	0.1000E-02
0.2614E+02	0.2533E-01	0.1208E+00	0.5000E-02
0.5248E+02	0.5080E-01	0.2416E+00	0.1000E-01
0.2031E+03	0.2156E+00	0.1111E+01	0.5000E-01
0.2977E+03	0.3511E+00	0.1331E+01	0.1000E+00
0.3503E+03	0.8101E+00	0.2524E+01	0.5000E+00
0.3510E+03	0.1311E+01	0.3319E+01	0.1000E+01
0.3519E+03	0.2312E+01	0.4176E+01	0.2000E+01

Abutment 3 – Westbound
(based on As-Built Borings in 1965)





I-580 - Arroyo Las Positas - Bridge No. 33-0085 - Bent 3 - Westbound - H Pile HP 12x53



I-580 - Arroyo Las Positas -- Bridge No. 33-0085 - Bent 3 - Westbound - H PIle HP 12x53 - API-RP2A Method

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AXIALLY LOADING PILE ANALYSIS PROGRAM - APILEplus
VERSION 4.0 - (C) COPYRIGHT ENSOFT,INC.,1987-2004.

Arroyo Las Positas 33-0085 - Bent 3 Westbound - HP 53x12

DESIGNER : Partha Sircar

DATE : DEcember 16, 2009

PILE PROPERTIES :

PERIMETER OF PILE WITH NONCIRCULAR SECTION	=	70.87 IN.
TIP AREA OF PILE WITH NONCIRCULAR SECTION	=	0.11 SQF
OUTSIDE DIAMETER OF CIRCULAR PILE	=	0.00 IN.
INTERNAL DIAMETER OF CIRCULAR PILE	=	0.00 IN.
PILE LENGTH	=	50.00 FT.
MODULUS OF ELASTICITY	=	0.290E+08 PSI

LENGTH OF SURFACE SECTION WITH ZERO SKIN FRICTION = 9.60 FT.
INCREMENT OF PILE LENGTH USED IN COMPUTATION = 0.50 FT.

SOIL INFORMATIONS :

DEPTH FT.	SOIL TYPE	LATERAL EARTH PRESSURE	EFFECTIVE UNIT WEIGHT LB/CF	FRICTION ANGLE DEGREES	BEARING CAPACITY FACTOR
0.00	SAND	1.00	130.00	35.00	40.00
4.00	SAND	1.00	130.00	35.00	40.00
4.00	CLAY	0.00	65.00	0.00	0.00
60.00	CLAY	0.00	65.00	0.00	0.00

MAXIMUM UNIT FRICTION KSF	MAXIMUM UNIT BEARING KSF	UNDISTURB SHEAR STRENGTH KSF	REMOLDED SHEAR STRENGTH KSF	BLOW COUNT	UNIT SKIN FRICTION KSF	UNIT END BEARING KSF
2.00	200.00	0.00	0.00	0.00	0.00	0.00
2.00	200.00	0.00	0.00	0.00	0.00	0.00
4.50	40.50	4.50	2.25	0.00	0.00	0.00
4.50	40.50	4.50	2.25	0.00	0.00	0.00

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* COMPUTATION RESULT *
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PILE PENETRATION FT.	TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPACITY KIP	TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPACITY KIP	TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPACITY KIP
	********** FED. HWY. METHOD **********			********** ARMY CORPS METHOD **********			********** LAMBDA 2 METHOD **********		
0.0	0.0	1.1	1.1	0.0	1.3	1.3	0.0	1.1	1.1
0.5	0.0	1.6	1.6	0.0	1.8	1.8	0.0	1.5	1.5
1.0	0.0	2.1	2.1	0.0	2.3	2.3	0.0	2.0	2.0
1.5	0.0	2.6	2.6	0.0	2.7	2.7	0.0	2.5	2.5
2.0	0.0	3.0	3.0	0.0	3.1	3.1	0.0	2.9	2.9
2.5	0.0	3.4	3.4	0.0	3.5	3.5	0.0	3.3	3.3
3.0	0.0	3.8	3.8	0.0	3.8	3.8	0.0	3.7	3.7
3.5	0.0	4.1	4.1	0.0	4.1	4.1	0.0	4.1	4.1
4.0	0.0	4.4	4.4	0.0	4.4	4.4	0.0	4.4	4.4
4.5	0.0	4.4	4.4	0.0	4.4	4.4	0.0	4.4	4.4
5.0	0.0	4.4	4.4	0.0	4.4	4.4	0.0	4.4	4.4
5.5	0.0	4.4	4.4	0.0	4.4	4.4	0.0	4.4	4.4
6.0	0.0	4.4	4.4	0.0	4.4	4.4	0.0	4.4	4.4
6.5	0.0	4.4	4.4	0.0	4.4	4.4	0.0	4.4	4.4
7.0	0.0	4.4	4.4	0.0	4.4	4.4	0.0	4.4	4.4
7.5	0.0	4.4	4.4	0.0	4.4	4.4	0.0	4.4	4.4
8.0	0.0	4.4	4.4	0.0	4.4	4.4	0.0	4.4	4.4
8.5	0.0	4.4	4.4	0.0	4.4	4.4	0.0	4.4	4.4
9.0	0.0	4.4	4.4	0.0	4.4	4.4	0.0	4.4	4.4
9.5	0.0	4.4	4.4	0.0	4.4	4.4	0.0	4.4	4.4
10.0	1.8	4.4	6.2	3.3	4.4	7.7	10.4	4.4	14.8
10.5	5.4	4.4	9.8	10.0	4.4	14.3	13.6	4.4	18.0
11.0	9.0	4.4	13.4	16.6	4.4	21.0	16.5	4.4	20.9
11.5	12.6	4.4	17.0	23.3	4.4	27.6	20.5	4.4	24.8
12.0	16.2	4.4	20.6	29.9	4.4	34.3	24.6	4.4	29.0
12.5	19.9	4.4	24.2	36.5	4.4	40.9	28.8	4.4	33.1
13.0	23.5	4.4	27.8	43.2	4.4	47.5	33.0	4.4	37.3
13.5	27.1	4.4	31.4	49.8	4.4	54.2	37.1	4.4	41.5
14.0	30.7	4.4	35.1	56.5	4.4	60.8	41.3	4.4	45.7
14.5	34.3	4.4	38.7	63.1	4.4	67.5	45.5	4.4	49.9
15.0	37.9	4.4	42.3	69.8	4.4	74.1	49.8	4.4	54.1
15.5	41.5	4.4	45.9	76.4	4.4	80.8	54.0	4.4	58.4
16.0	45.1	4.4	49.5	83.1	4.4	87.4	58.3	4.4	62.6
16.5	48.7	4.4	53.1	89.7	4.4	94.1	62.5	4.4	66.9
17.0	52.4	4.4	56.7	96.3	4.4	100.7	66.8	4.4	71.2
17.5	56.0	4.4	60.3	103.0	4.4	107.3	71.1	4.4	75.5
18.0	59.6	4.4	63.9	109.6	4.4	114.0	75.4	4.4	79.8
18.5	63.2	4.4	67.6	116.3	4.4	120.6	79.7	4.4	84.1
19.0	66.8	4.4	71.2	122.9	4.4	127.3	84.0	4.4	88.4
19.5	70.4	4.4	74.8	129.6	4.4	133.9	88.4	4.4	92.8
20.0	74.0	4.4	78.4	136.2	4.4	140.6	92.8	4.4	97.1
20.5	77.6	4.4	82.0	142.8	4.4	147.2	97.1	4.4	101.5
21.0	81.2	4.4	85.6	149.5	4.4	153.9	101.5	4.4	105.9
21.5	84.9	4.4	89.2	156.1	4.4	160.5	105.9	4.4	110.3
22.0	88.5	4.4	92.8	162.8	4.4	167.1	110.3	4.4	114.7
22.5	92.1	4.4	96.4	169.4	4.4	173.8	114.7	4.4	119.1
23.0	95.7	4.4	100.1	176.1	4.4	180.4	119.2	4.4	123.5
23.5	99.3	4.4	103.7	182.7	4.4	187.1	123.6	4.4	128.0
24.0	102.9	4.4	107.3	189.4	4.4	193.7	128.1	4.4	132.5
24.5	106.5	4.4	110.9	196.0	4.4	200.4	132.6	4.4	136.9
25.0	110.1	4.4	114.5	202.6	4.4	207.0	137.1	4.4	141.4
25.5	113.7	4.4	118.1	209.3	4.4	213.6	141.6	4.4	145.9
26.0	117.4	4.4	121.7	215.9	4.4	220.3	146.1	4.4	150.5
26.5	121.0	4.4	125.3	222.6	4.4	226.9	150.6	4.4	155.0
27.0	124.6	4.4	128.9	229.2	4.4	233.6	155.2	4.4	159.5

27.5	128.2	4.4	132.6	235.9	4.4	240.2	159.7	4.4	164.1
28.0	131.8	4.4	136.2	242.5	4.4	246.9	164.3	4.4	168.7
28.5	135.4	4.4	139.8	249.2	4.4	253.5	168.9	4.4	173.3
29.0	139.0	4.4	143.4	255.8	4.4	260.2	173.5	4.4	177.9
29.5	142.6	4.4	147.0	262.4	4.4	266.8	178.1	4.4	182.5
30.0	146.2	4.4	150.6	269.1	4.4	273.4	182.8	4.4	187.1
30.5	149.9	4.4	154.2	275.7	4.4	280.1	187.4	4.4	191.8
31.0	153.5	4.4	157.8	282.4	4.4	286.7	192.0	4.4	196.4
31.5	157.1	4.4	161.4	289.0	4.4	293.4	196.7	4.4	201.1
32.0	160.7	4.4	165.0	295.7	4.4	300.0	201.4	4.4	205.8
32.5	164.3	4.4	168.7	302.3	4.4	306.7	206.1	4.4	210.4
33.0	167.9	4.4	172.3	308.9	4.4	313.3	210.8	4.4	215.2
33.5	171.5	4.4	175.9	315.6	4.4	320.0	215.5	4.4	219.9
34.0	175.1	4.4	179.5	322.2	4.4	326.6	220.3	4.4	224.6
34.5	178.7	4.4	183.1	328.9	4.4	333.2	225.0	4.4	229.4
35.0	182.4	4.4	186.7	335.5	4.4	339.9	229.8	4.4	234.1
35.5	186.0	4.4	190.3	342.2	4.4	346.5	234.5	4.4	238.9
36.0	189.6	4.4	193.9	348.8	4.4	353.2	239.3	4.4	243.7
36.5	193.2	4.4	197.5	355.5	4.4	359.8	244.1	4.4	248.5
37.0	196.8	4.4	201.2	362.1	4.4	366.5	248.9	4.4	253.3
37.5	200.4	4.4	204.8	368.7	4.4	373.1	253.8	4.4	258.1
38.0	204.0	4.4	208.4	375.4	4.4	379.7	258.6	4.4	263.0
38.5	207.6	4.4	212.0	382.0	4.4	386.4	263.5	4.4	267.8
39.0	211.2	4.4	215.6	388.7	4.4	393.0	268.3	4.4	272.7
39.5	214.9	4.4	219.2	395.3	4.4	399.7	273.2	4.4	277.6
40.0	218.5	4.4	222.8	402.0	4.4	406.3	278.1	4.4	282.5
40.5	222.1	4.4	226.4	408.6	4.4	413.0	283.0	4.4	287.4
41.0	225.7	4.4	230.0	415.3	4.4	419.6	288.0	4.4	292.3
41.5	229.3	4.4	233.7	421.9	4.4	426.3	292.9	4.4	297.3
42.0	232.9	4.4	237.3	428.5	4.4	432.9	297.8	4.4	302.2
42.5	236.5	4.4	240.9	435.2	4.4	439.5	302.8	4.4	307.2
43.0	240.1	4.4	244.5	441.8	4.4	446.2	307.8	4.4	312.1
43.5	243.7	4.4	248.1	448.5	4.4	452.8	312.8	4.4	317.1
44.0	247.4	4.4	251.7	455.1	4.4	459.5	317.8	4.4	322.1
44.5	251.0	4.4	255.3	461.8	4.4	466.1	322.8	4.4	327.2
45.0	254.6	4.4	258.9	468.4	4.4	472.8	327.8	4.4	332.2
45.5	258.2	4.4	262.5	475.0	4.4	479.4	332.9	4.4	337.2
46.0	261.8	4.4	266.2	481.7	4.4	486.1	337.9	4.4	342.3
46.5	265.4	4.4	269.8	488.3	4.4	492.7	343.0	4.4	347.4
47.0	269.0	4.4	273.4	495.0	4.4	499.3	348.1	4.4	352.4
47.5	272.6	4.4	277.0	501.6	4.4	506.0	353.2	4.4	357.5
48.0	276.2	4.4	280.6	508.3	4.4	512.6	358.3	4.4	362.7
48.5	279.9	4.4	284.2	514.9	4.4	519.3	363.4	4.4	367.8
49.0	283.5	4.4	287.8	521.6	4.4	525.9	368.6	4.4	372.9
49.5	287.1	4.4	291.4	528.2	4.4	532.6	373.7	4.4	378.1
50.0	290.7	4.4	295.0	534.8	4.4	539.2	378.9	4.4	383.2

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* API RP-2A (1994) *
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PILE PENETRATION FT.	TOTAL SKIN FRICTION KIP	END BEARING KIP	ULTIMATE CAPACITY KIP
0.00	0.0	1.1	1.1
0.50	0.0	1.5	1.5
1.00	0.0	2.0	2.0
1.50	0.0	2.5	2.5
2.00	0.0	2.9	2.9
2.50	0.0	3.3	3.3
3.00	0.0	3.7	3.7
3.50	0.0	4.1	4.1

4.00	0.0	4.4	4.4
4.50	0.0	4.4	4.4
5.00	0.0	4.4	4.4
5.50	0.0	4.4	4.4
6.00	0.0	4.4	4.4
6.50	0.0	4.4	4.4
7.00	0.0	4.4	4.4
7.50	0.0	4.4	4.4
8.00	0.0	4.4	4.4
8.50	0.0	4.4	4.4
9.00	0.0	4.4	4.4
9.50	0.0	4.4	4.4
10.00	2.2	4.4	6.6
10.50	6.7	4.4	11.1
11.00	11.2	4.4	15.6
11.50	15.8	4.4	20.1
12.00	20.4	4.4	24.7
12.50	25.0	4.4	29.3
13.00	29.6	4.4	34.0
13.50	34.3	4.4	38.7
14.00	39.1	4.4	43.4
14.50	43.8	4.4	48.2
15.00	48.6	4.4	53.0
15.50	53.4	4.4	57.8
16.00	58.3	4.4	62.7
16.50	63.2	4.4	67.5
17.00	68.1	4.4	72.5
17.50	73.0	4.4	77.4
18.00	78.0	4.4	82.4
18.50	83.0	4.4	87.4
19.00	88.1	4.4	92.4
19.50	93.1	4.4	97.5
20.00	98.2	4.4	102.6
20.50	103.3	4.4	107.7
21.00	108.4	4.4	112.8
21.50	113.6	4.4	118.0
22.00	118.8	4.4	123.2
22.50	124.0	4.4	128.4
23.00	129.2	4.4	133.6
23.50	134.5	4.4	138.9
24.00	139.8	4.4	144.2
24.50	145.1	4.4	149.5
25.00	150.4	4.4	154.8
25.50	155.8	4.4	160.2
26.00	161.2	4.4	165.5
26.50	166.6	4.4	170.9
27.00	172.0	4.4	176.4
27.50	177.4	4.4	181.8
28.00	182.9	4.4	187.3
28.50	188.4	4.4	192.8
29.00	193.9	4.4	198.3
29.50	199.4	4.4	203.8
30.00	205.0	4.4	209.4
30.50	210.6	4.4	214.9
31.00	216.2	4.4	220.5
31.50	221.8	4.4	226.1
32.00	227.4	4.4	231.8
32.50	233.1	4.4	237.4
33.00	238.7	4.4	243.1
33.50	244.4	4.4	248.8
34.00	250.1	4.4	254.5
34.50	255.9	4.4	260.2
35.00	261.6	4.4	266.0
35.50	267.4	4.4	271.7

36.00	273.1	4.4	277.5
36.50	279.0	4.4	283.3
37.00	284.8	4.4	289.1
37.50	290.6	4.4	295.0
38.00	296.5	4.4	300.8
38.50	302.3	4.4	306.7
39.00	308.2	4.4	312.6
39.50	314.1	4.4	318.5
40.00	320.1	4.4	324.4
40.50	326.0	4.4	330.4
41.00	332.0	4.4	336.3
41.50	337.9	4.4	342.3
42.00	343.9	4.4	348.3
42.50	349.9	4.4	354.3
43.00	355.9	4.4	360.3
43.50	362.0	4.4	366.3
44.00	368.0	4.4	372.4
44.50	374.1	4.4	378.5
45.00	380.2	4.4	384.6
45.50	386.3	4.4	390.7
46.00	392.4	4.4	396.8
46.50	398.5	4.4	402.9
47.00	404.7	4.4	409.1
47.50	410.9	4.4	415.2
48.00	417.0	4.4	421.4
48.50	423.2	4.4	427.6
49.00	429.4	4.4	433.8
49.50	435.7	4.4	440.0
50.00	441.9	4.4	446.3

AN ASTERISK WILL BE PLACED IN THE END-BEARING COLUMN
IF THE TIP RESISTANCE IS CONTROLLED BY THE FRICTION
OF SOIL PLUG INSIDE AN OPEN-ENDED PIPE PILE.

****
* COMPUTE LOAD-DISTRIBUTION AND LOAD-SETTLEMENT *
* CURVES FOR AXIAL LOADING *
****

T-Z CURVE NO.	NO. OF POINTS	DEPTH TO CURVE FT.	LOAD TRANSFER PSI	PILE MOVEMENT IN.
1	10	0.0000E+00		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.1000E-01
			0.0000E+00	0.2000E-01
			0.0000E+00	0.4000E-01
			0.0000E+00	0.6000E-01
			0.0000E+00	0.8000E-01
			0.0000E+00	0.9000E-01
			0.0000E+00	0.1000E+00
			0.0000E+00	0.5000E+00
			0.0000E+00	0.2000E+01
2	10	0.2025E+01		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.1000E-01
			0.0000E+00	0.2000E-01
			0.0000E+00	0.4000E-01
			0.0000E+00	0.6000E-01
			0.0000E+00	0.8000E-01

			0.0000E+00 0.9000E-01
			0.0000E+00 0.1000E+00
			0.0000E+00 0.5000E+00
			0.0000E+00 0.2000E+01
3	10	0.3958E+01	
			0.0000E+00 0.0000E+00
			0.0000E+00 0.1000E-01
			0.0000E+00 0.2000E-01
			0.0000E+00 0.4000E-01
			0.0000E+00 0.6000E-01
			0.0000E+00 0.8000E-01
			0.0000E+00 0.9000E-01
			0.0000E+00 0.1000E+00
			0.0000E+00 0.5000E+00
			0.0000E+00 0.2000E+01
4	10	0.4000E+01	
			0.0000E+00 0.0000E+00
			0.0000E+00 0.3609E-01
			0.0000E+00 0.6993E-01
			0.0000E+00 0.1286E+00
			0.0000E+00 0.1805E+00
			0.0000E+00 0.2256E+00
			0.0000E+00 0.4512E+00
			0.0000E+00 0.6768E+00
			0.0000E+00 0.1128E+01
			0.0000E+00 0.4512E+01
5	10	0.3202E+02	
			0.0000E+00 0.0000E+00
			0.3987E+01 0.3609E-01
			0.6646E+01 0.6993E-01
			0.9969E+01 0.1286E+00
			0.1196E+02 0.1805E+00
			0.1329E+02 0.2256E+00
			0.1196E+02 0.4512E+00
			0.1196E+02 0.6768E+00
			0.1196E+02 0.1128E+01
			0.1196E+02 0.4512E+01
6	10	0.5996E+02	
			0.0000E+00 0.0000E+00
			0.4400E+01 0.3609E-01
			0.7333E+01 0.6993E-01
			0.1100E+02 0.1286E+00
			0.1320E+02 0.1805E+00
			0.1467E+02 0.2256E+00
			0.1320E+02 0.4512E+00
			0.1320E+02 0.6768E+00
			0.1320E+02 0.1128E+01
			0.1320E+02 0.4512E+01

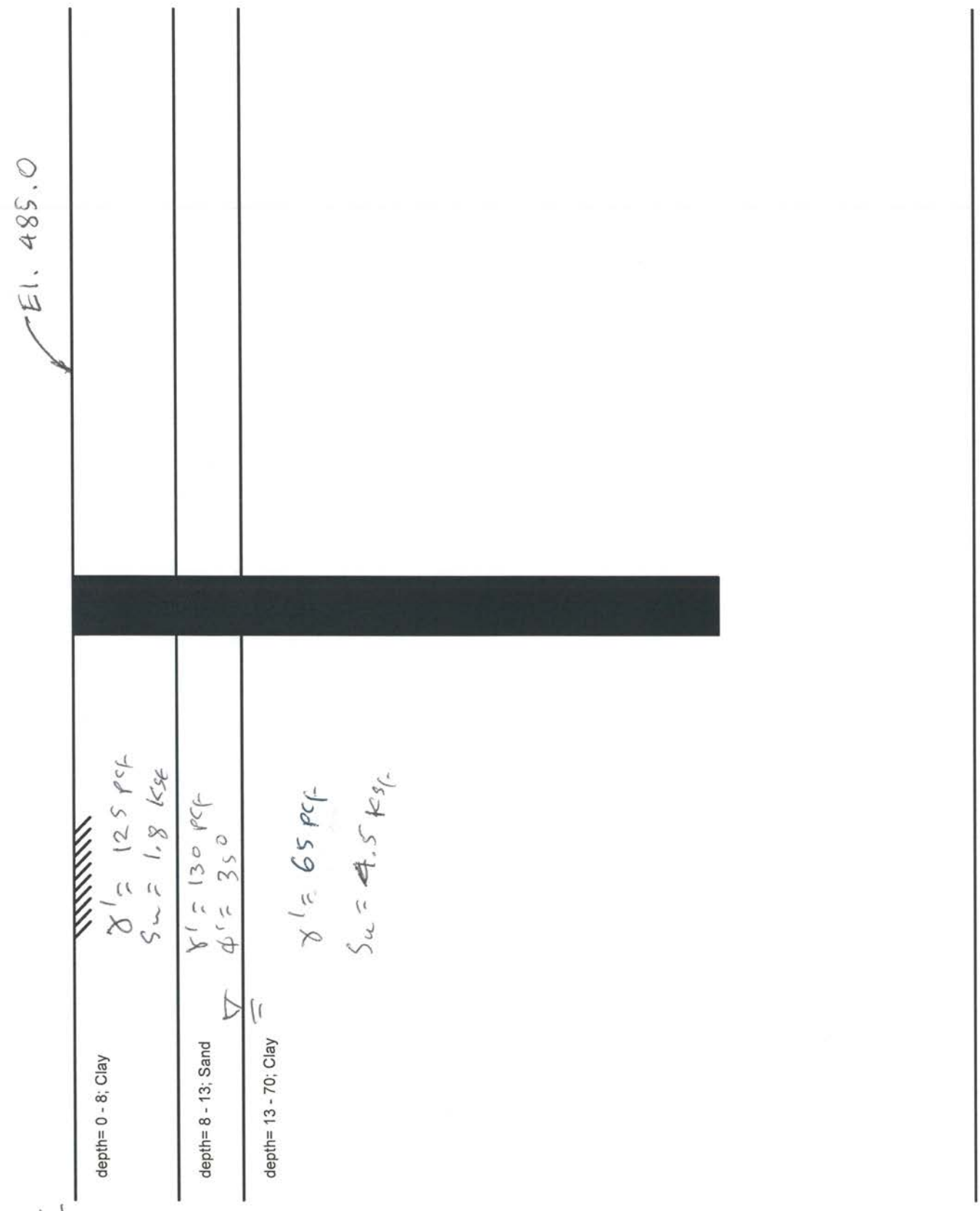
TIP LOAD KIP	TIP MOVEMENT IN.
0.0000E+00	0.0000E+00
0.2725E+00	0.1128E-01
0.5449E+00	0.2256E-01
0.1090E+01	0.4512E-01
0.2180E+01	0.2933E+00
0.3270E+01	0.9475E+00
0.3923E+01	0.1647E+01
0.4359E+01	0.2256E+01
0.4359E+01	0.3384E+01
0.4359E+01	0.4512E+01

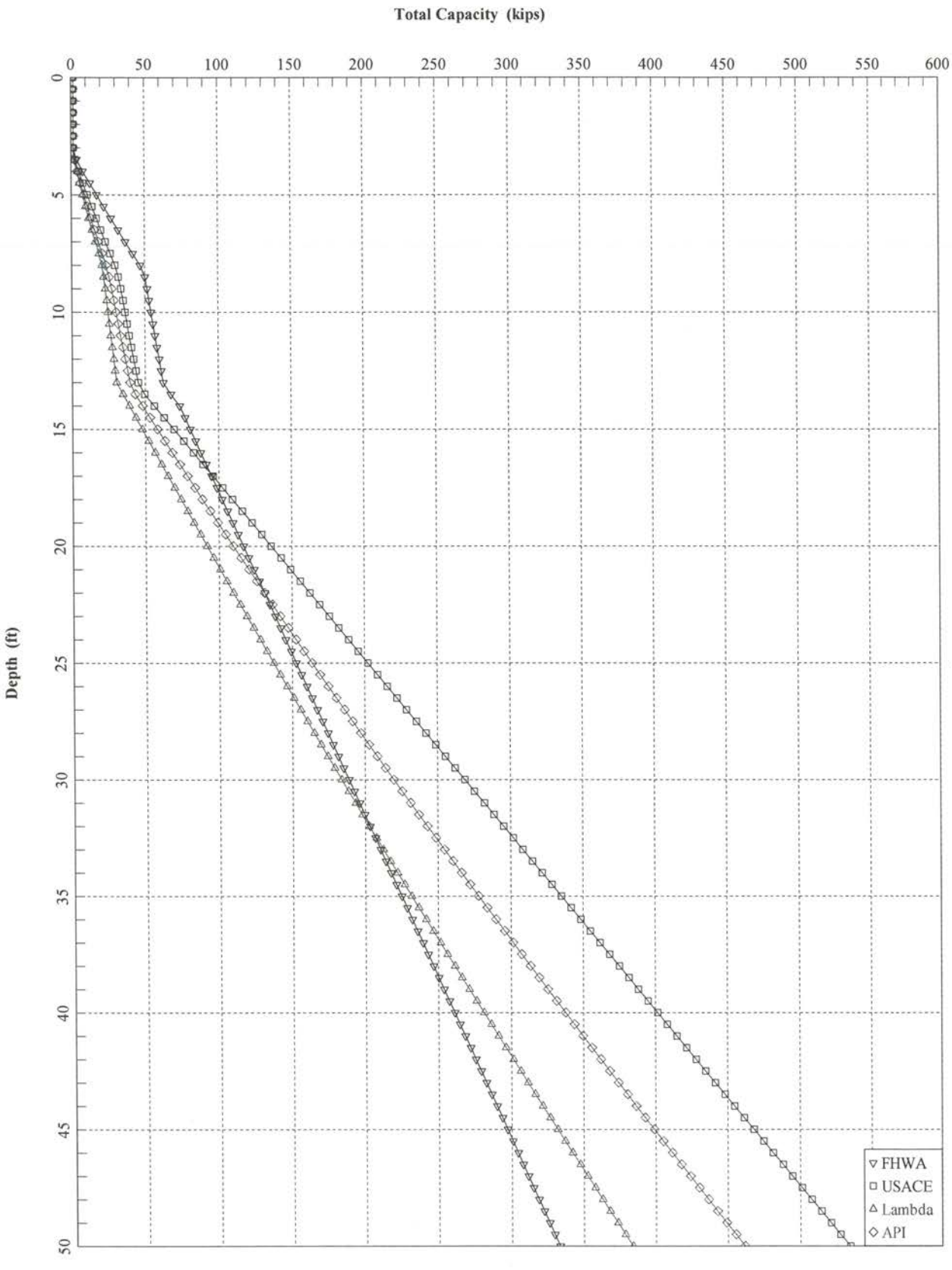
LOAD VERSUS SETTLEMENT CURVE
****

TOP LOAD KIP	TOP MOVEMENT IN.	TIP LOAD KIP	TIP MOVEMENT IN.
0.4892E+00	0.4790E-03	0.2416E-02	0.1000E-03
0.4892E+01	0.4790E-02	0.2416E-01	0.1000E-02
0.2456E+02	0.2400E-01	0.1208E+00	0.5000E-02
0.4926E+02	0.4811E-01	0.2416E+00	0.1000E-01
0.1903E+03	0.2059E+00	0.1111E+01	0.5000E-01
0.2829E+03	0.3388E+00	0.1331E+01	0.1000E+00
0.3340E+03	0.7971E+00	0.2524E+01	0.5000E+00
0.3348E+03	0.1298E+01	0.3319E+01	0.1000E+01
0.3357E+03	0.2299E+01	0.4176E+01	0.2000E+01

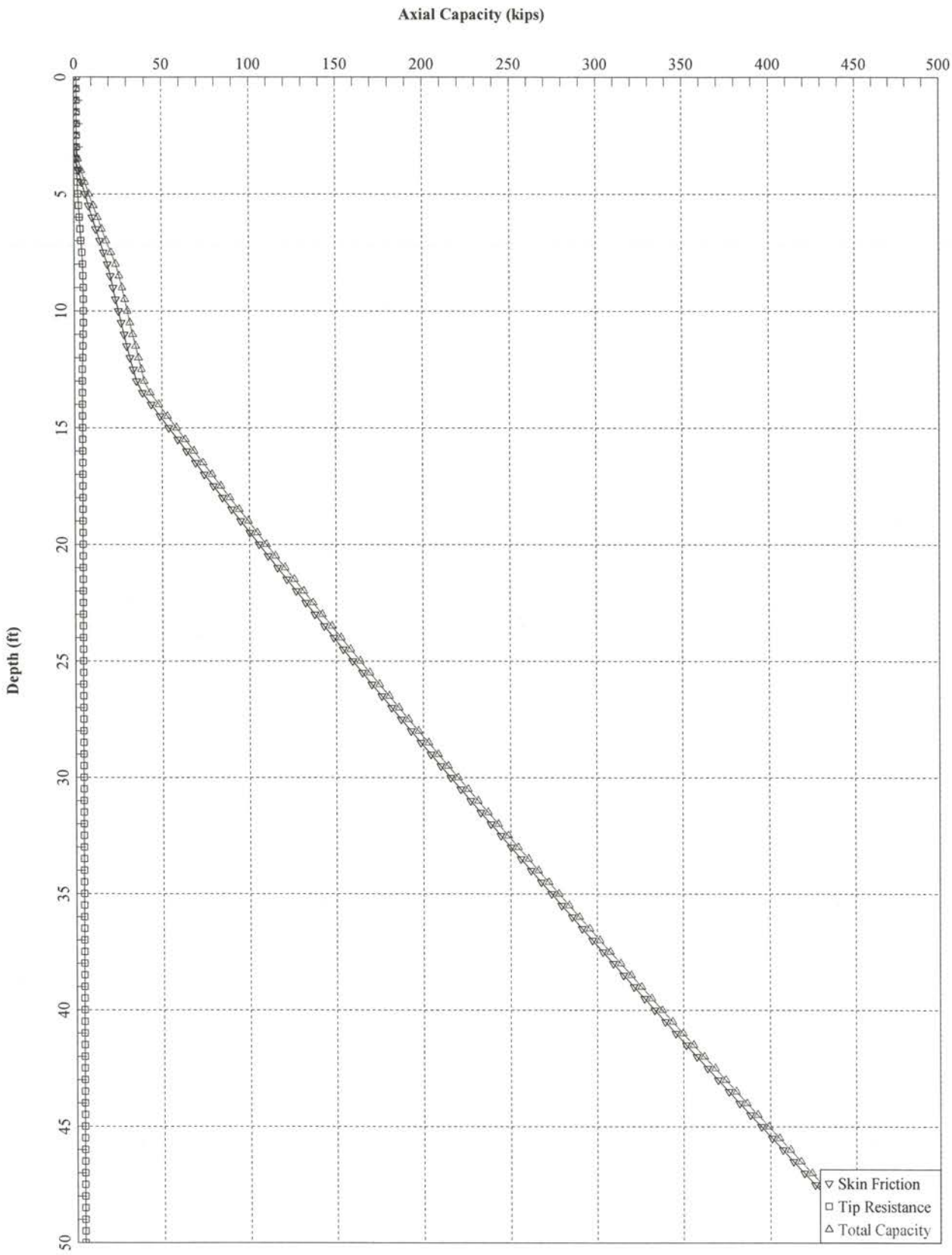
Abutment 4

(based on As-Built Borings in 1965





I-580 - Arroyo Las Positas - Bridge N0. 33-0085 - Abutment 4 - H PIle HP 12x53



I-580 - Arroyo Las Positas - Bridge No. 33-0085 - Abutment 4 - H Plle HP 12x53 - API Method

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AXIALLY LOADING PILE ANALYSIS PROGRAM - APILEplus
VERSION 4.0 - (C) COPYRIGHT ENSOFT,INC.,1987-2004.

Arroyo Las POsitas 33-0085 - Abutment 4 Westbound - HP 53x12 - 483.0

DESIGNER : Partha Sircar

DATE : DEcember 16, 2009

PILE PROPERTIES :

PERIMETER OF PILE WITH NONCIRCULAR SECTION=	70.87	IN.
TIP AREA OF PILE WITH NONCIRCULAR SECTION =	0.11	SQF
OUTSIDE DIAMETER OF CIRCULAR PILE =	0.00	IN.
INTERNAL DIAMETER OF CIRCULAR PILE =	0.00	IN.
PILE LENGTH =	50.00	FT.
MODULUS OF ELASTICITY =	0.290E+07	PSI

LENGTH OF SURFACE SECTION WITH ZERO SKIN FRICTION = 3.50 FT.
INCREMENT OF PILE LENGTH USED IN COMPUTATION = 0.50 FT.

SOIL INFORMATIONS :

DEPTH FT.	SOIL TYPE	LATERAL EARTH PRESSURE	EFFECTIVE UNIT WEIGHT LB/CF	FRICTION ANGLE DEGREES	BEARING CAPACITY FACTOR
0.00	CLAY	0.00	125.00	0.00	0.00
8.00	CLAY	0.00	125.00	0.00	0.00
8.00	SAND	0.80	130.00	35.00	40.00
13.00	SAND	0.80	130.00	35.00	40.00
13.00	CLAY	0.00	65.00	0.00	0.00
70.00	CLAY	0.00	65.00	0.00	0.00

MAXIMUM UNIT FRICTION KSF	MAXIMUM UNIT BEARING KSF	UNDISTURB SHEAR STRENGTH KSF	REMOLDED SHEAR STRENGTH KSF	BLOW COUNT	UNIT SKIN FRICTION KSF	UNIT END BEARING KSF
1.50	13.50	1.50	0.75	0.00	0.00	0.00
1.50	13.50	1.80	0.75	0.00	0.00	0.00
2.00	200.00	0.00	0.00	0.00	0.00	0.00
2.00	200.00	0.00	0.00	0.00	0.00	0.00
4.50	40.50	4.50	2.25	0.00	0.00	0.00
4.50	40.50	4.50	2.25	0.00	0.00	0.00

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* COMPUTATION RESULT *
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	* FED. HWY. METHOD *			* ARMY CORPS METHOD *			* LAMBDA 2 METHOD *		
PILE PENETRATION FT.	TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPACITY KIP	TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPACITY KIP	TOTAL SKIN FRIC KIP	END BEARING KIP	ULTIM CAPACITY KIP
0.0	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5
0.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5
1.0	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5
1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5
2.0	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5
2.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5
3.0	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5
3.5	2.1	1.5	3.6	1.2	1.5	2.7	0.0	1.5	1.5
4.0	6.4	1.5	7.9	3.6	1.5	5.1	2.6	1.5	4.1
4.5	10.8	1.9	12.7	6.0	1.9	8.0	3.8	1.9	5.7
5.0	15.1	2.3	17.5	8.5	2.5	11.0	5.4	2.3	7.7
5.5	19.5	2.8	22.3	11.0	3.1	14.1	7.1	2.7	9.8
6.0	23.9	3.4	27.3	13.5	3.7	17.2	8.8	3.2	12.0
6.5	28.3	3.9	32.3	16.1	4.4	20.4	10.6	3.7	14.2
7.0	32.8	4.5	37.3	18.6	5.1	23.7	12.4	4.2	16.5
7.5	37.2	5.2	42.4	21.2	5.8	27.1	14.2	4.8	18.9
8.0	41.7	5.8	47.5	23.9	6.6	30.5	16.1	5.4	21.4
8.5	44.6	6.1	50.8	25.9	7.0	32.9	17.0	5.6	22.6
9.0	46.0	6.4	52.4	27.5	7.3	34.8	17.9	5.9	23.9
9.5	47.5	6.5	54.0	29.1	7.4	36.5	19.0	6.0	25.0
10.0	49.0	6.3	55.3	30.8	7.1	37.9	20.0	5.9	25.9
10.5	50.6	6.1	56.7	32.6	6.7	39.4	21.2	5.7	26.9
11.0	52.3	5.8	58.1	34.5	6.3	40.9	22.4	5.5	27.9
11.5	54.1	5.5	59.6	36.5	5.9	42.4	23.6	5.3	28.9
12.0	56.0	5.2	61.1	38.6	5.4	44.0	24.9	5.0	29.9
12.5	57.9	4.8	62.7	40.8	4.9	45.7	26.3	4.7	31.0
13.0	59.9	4.4	64.3	43.0	4.4	47.4	27.7	4.4	32.0
13.5	65.2	4.4	69.5	47.5	4.4	51.9	32.1	4.4	36.5
14.0	71.2	4.4	75.5	54.1	4.4	58.5	36.5	4.4	40.9
14.5	74.8	4.4	79.2	60.8	4.4	65.1	41.0	4.4	45.3
15.0	78.4	4.4	82.8	67.4	4.4	71.8	45.4	4.4	49.8
15.5	82.0	4.4	86.4	74.1	4.4	78.4	49.9	4.4	54.2
16.0	85.6	4.4	90.0	80.7	4.4	85.1	54.3	4.4	58.7
16.5	89.2	4.4	93.6	87.4	4.4	91.7	58.8	4.4	63.2
17.0	92.9	4.4	97.2	94.0	4.4	98.4	63.3	4.4	67.7
17.5	96.5	4.4	100.8	100.7	4.4	105.0	67.9	4.4	72.2
18.0	100.1	4.4	104.4	107.3	4.4	111.7	72.4	4.4	76.7
18.5	103.7	4.4	108.0	113.9	4.4	118.3	76.9	4.4	81.3
19.0	107.3	4.4	111.7	120.6	4.4	124.9	81.5	4.4	85.8
19.5	110.9	4.4	115.3	127.2	4.4	131.6	86.1	4.4	90.4
20.0	114.5	4.4	118.9	133.9	4.4	138.2	90.6	4.4	95.0
20.5	118.1	4.4	122.5	140.5	4.4	144.9	95.2	4.4	99.6
21.0	121.7	4.4	126.1	147.2	4.4	151.5	99.9	4.4	104.2
21.5	125.4	4.4	129.7	153.8	4.4	158.2	104.5	4.4	108.8
22.0	129.0	4.4	133.3	160.4	4.4	164.8	109.1	4.4	113.5
22.5	132.6	4.4	136.9	167.1	4.4	171.5	113.8	4.4	118.1
23.0	136.2	4.4	140.5	173.7	4.4	178.1	118.4	4.4	122.8
23.5	139.8	4.4	144.2	180.4	4.4	184.7	123.1	4.4	127.5
24.0	143.4	4.4	147.8	187.0	4.4	191.4	127.8	4.4	132.2
24.5	147.0	4.4	151.4	193.7	4.4	198.0	132.5	4.4	136.9
25.0	150.6	4.4	155.0	200.3	4.4	204.7	137.2	4.4	141.6

25.5	154.2	4.4	158.6	207.0	4.4	211.3	142.0	4.4	146.3
26.0	157.9	4.4	162.2	213.6	4.4	218.0	146.7	4.4	151.1
26.5	161.5	4.4	165.8	220.2	4.4	224.6	151.5	4.4	155.8
27.0	165.1	4.4	169.4	226.9	4.4	231.2	156.2	4.4	160.6
27.5	168.7	4.4	173.0	233.5	4.4	237.9	161.0	4.4	165.4
28.0	172.3	4.4	176.7	240.2	4.4	244.5	165.8	4.4	170.2
28.5	175.9	4.4	180.3	246.8	4.4	251.2	170.6	4.4	175.0
29.0	179.5	4.4	183.9	253.5	4.4	257.8	175.5	4.4	179.8
29.5	183.1	4.4	187.5	260.1	4.4	264.5	180.3	4.4	184.7
30.0	186.7	4.4	191.1	266.8	4.4	271.1	185.1	4.4	189.5
30.5	190.4	4.4	194.7	273.4	4.4	277.8	190.0	4.4	194.4
31.0	194.0	4.4	198.3	280.0	4.4	284.4	194.9	4.4	199.3
31.5	197.6	4.4	201.9	286.7	4.4	291.0	199.8	4.4	204.1
32.0	201.2	4.4	205.5	293.3	4.4	297.7	204.7	4.4	209.1
32.5	204.8	4.4	209.2	300.0	4.4	304.3	209.6	4.4	214.0
33.0	208.4	4.4	212.8	306.6	4.4	311.0	214.5	4.4	218.9
33.5	212.0	4.4	216.4	313.3	4.4	317.6	219.5	4.4	223.9
34.0	215.6	4.4	220.0	319.9	4.4	324.3	224.5	4.4	228.8
34.5	219.2	4.4	223.6	326.5	4.4	330.9	229.4	4.4	233.8
35.0	222.9	4.4	227.2	333.2	4.4	337.6	234.4	4.4	238.8
35.5	226.5	4.4	230.8	339.8	4.4	344.2	239.4	4.4	243.8
36.0	230.1	4.4	234.4	346.5	4.4	350.8	244.4	4.4	248.8
36.5	233.7	4.4	238.0	353.1	4.4	357.5	249.5	4.4	253.8
37.0	237.3	4.4	241.7	359.8	4.4	364.1	254.5	4.4	258.9
37.5	240.9	4.4	245.3	366.4	4.4	370.8	259.6	4.4	263.9
38.0	244.5	4.4	248.9	373.1	4.4	377.4	264.6	4.4	269.0
38.5	248.1	4.4	252.5	379.7	4.4	384.1	269.7	4.4	274.1
39.0	251.7	4.4	256.1	386.3	4.4	390.7	274.8	4.4	279.2
39.5	255.4	4.4	259.7	393.0	4.4	397.3	279.9	4.4	284.3
40.0	259.0	4.4	263.3	399.6	4.4	404.0	285.0	4.4	289.4
40.5	262.6	4.4	266.9	406.3	4.4	410.6	290.2	4.4	294.5
41.0	266.2	4.4	270.5	412.9	4.4	417.3	295.3	4.4	299.7
41.5	269.8	4.4	274.2	419.6	4.4	423.9	300.5	4.4	304.8
42.0	273.4	4.4	277.8	426.2	4.4	430.6	305.6	4.4	310.0
42.5	277.0	4.4	281.4	432.9	4.4	437.2	310.8	4.4	315.2
43.0	280.6	4.4	285.0	439.5	4.4	443.9	316.0	4.4	320.4
43.5	284.2	4.4	288.6	446.1	4.4	450.5	321.3	4.4	325.6
44.0	287.8	4.4	292.2	452.8	4.4	457.1	326.5	4.4	330.8
44.5	291.5	4.4	295.8	459.4	4.4	463.8	331.7	4.4	336.1
45.0	295.1	4.4	299.4	466.1	4.4	470.4	337.0	4.4	341.3
45.5	298.7	4.4	303.0	472.7	4.4	477.1	342.3	4.4	346.6
46.0	302.3	4.4	306.7	479.4	4.4	483.7	347.5	4.4	351.9
46.5	305.9	4.4	310.3	486.0	4.4	490.4	352.8	4.4	357.2
47.0	309.5	4.4	313.9	492.6	4.4	497.0	358.1	4.4	362.5
47.5	313.1	4.4	317.5	499.3	4.4	503.7	363.5	4.4	367.8
48.0	316.7	4.4	321.1	505.9	4.4	510.3	368.8	4.4	373.2
48.5	320.3	4.4	324.7	512.6	4.4	516.9	374.2	4.4	378.5
49.0	324.0	4.4	328.3	519.2	4.4	523.6	379.5	4.4	383.9
49.5	327.6	4.4	331.9	525.9	4.4	530.2	384.9	4.4	389.3
50.0	331.2	4.4	335.5	532.5	4.4	536.9	390.3	4.4	394.6

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* API RP-2A (1994) *
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PILE PENETRATION FT.	TOTAL SKIN FRICTION KIP	END BEARING KIP	ULTIMATE CAPACITY KIP
0.00	0.0	1.5	1.5
0.50	0.0	1.5	1.5
1.00	0.0	1.5	1.5
1.50	0.0	1.5	1.5

2.00	0.0	1.5	1.5
2.50	0.0	1.5	1.5
3.00	0.0	1.5	1.5
3.50	0.9	1.5	2.3
4.00	2.6	1.5	4.1
4.50	4.5	1.9	6.3
5.00	6.4	2.3	8.6
5.50	8.3	2.7	11.0
6.00	10.4	3.2	13.5
6.50	12.4	3.7	16.1
7.00	14.6	4.2	18.8
7.50	16.8	4.8	21.6
8.00	19.1	5.4	24.4
8.50	20.9	5.6	26.6
9.00	22.4	5.9	28.3
9.50	24.0	6.0	30.0
10.00	25.7	5.9	31.6
10.50	27.4	5.7	33.2
11.00	29.3	5.5	34.8
11.50	31.2	5.3	36.5
12.00	33.3	5.0	38.3
12.50	35.4	4.7	40.1
13.00	37.6	4.4	41.9
13.50	41.3	4.4	45.7
14.00	46.5	4.4	50.9
14.50	51.8	4.4	56.1
15.00	57.0	4.4	61.4
15.50	62.3	4.4	66.7
16.00	67.6	4.4	72.0
16.50	72.9	4.4	77.3
17.00	78.3	4.4	82.6
17.50	83.6	4.4	88.0
18.00	89.0	4.4	93.4
18.50	94.5	4.4	98.8
19.00	99.9	4.4	104.3
19.50	105.4	4.4	109.7
20.00	110.9	4.4	115.2
20.50	116.4	4.4	120.7
21.00	121.9	4.4	126.2
21.50	127.4	4.4	131.8
22.00	133.0	4.4	137.4
22.50	138.6	4.4	142.9
23.00	144.2	4.4	148.6
23.50	149.8	4.4	154.2
24.00	155.5	4.4	159.8
24.50	161.1	4.4	165.5
25.00	166.8	4.4	171.2
25.50	172.5	4.4	176.9
26.00	178.2	4.4	182.6
26.50	184.0	4.4	188.4
27.00	189.8	4.4	194.1
27.50	195.5	4.4	199.9
28.00	201.3	4.4	205.7
28.50	207.1	4.4	211.5
29.00	213.0	4.4	217.3
29.50	218.8	4.4	223.2
30.00	224.7	4.4	229.1
30.50	230.6	4.4	234.9
31.00	236.5	4.4	240.8
31.50	242.4	4.4	246.8
32.00	248.3	4.4	252.7
32.50	254.3	4.4	258.7
33.00	260.3	4.4	264.6
33.50	266.3	4.4	270.6

34.00	272.3	4.4	276.6
34.50	278.3	4.4	282.6
35.00	284.3	4.4	288.7
35.50	290.4	4.4	294.7
36.00	296.4	4.4	300.8
36.50	302.5	4.4	306.9
37.00	308.6	4.4	313.0
37.50	314.7	4.4	319.1
38.00	320.9	4.4	325.2
38.50	327.0	4.4	331.4
39.00	333.2	4.4	337.5
39.50	339.3	4.4	343.7
40.00	345.5	4.4	349.9
40.50	351.7	4.4	356.1
41.00	357.9	4.4	362.3
41.50	364.2	4.4	368.5
42.00	370.4	4.4	374.8
42.50	376.7	4.4	381.0
43.00	383.0	4.4	387.3
43.50	389.3	4.4	393.6
44.00	395.6	4.4	399.9
44.50	401.9	4.4	406.2
45.00	408.2	4.4	412.6
45.50	414.6	4.4	418.9
46.00	420.9	4.4	425.3
46.50	427.3	4.4	431.6
47.00	433.7	4.4	438.0
47.50	440.1	4.4	444.4
48.00	446.5	4.4	450.8
48.50	452.9	4.4	457.3
49.00	459.4	4.4	463.7
49.50	465.8	4.4	470.2
50.00	472.3	4.4	476.6

AN ASTERISK WILL BE PLACED IN THE END-BEARING COLUMN
IF THE TIP RESISTANCE IS CONTROLLED BY THE FRICTION
OF SOIL PLUG INSIDE AN OPEN-ENDED PIPE PILE.

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************************************************
* COMPUTE LOAD-DISTRIBUTION AND LOAD-SETTLEMENT *
* CURVES FOR AXIAL LOADING                      *
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T-Z CURVE NO.	NO. OF POINTS	DEPTH TO CURVE FT.	LOAD TRANSFER PSI	PILE MOVEMENT IN.
1	10	0.0000E+00		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.3609E-01
			0.0000E+00	0.6993E-01
			0.0000E+00	0.1286E+00
			0.0000E+00	0.1805E+00
			0.0000E+00	0.2256E+00
			0.0000E+00	0.4512E+00
			0.0000E+00	0.6768E+00
			0.0000E+00	0.1128E+01
			0.0000E+00	0.4512E+01
2	10	0.4025E+01		
			0.0000E+00	0.0000E+00
			0.1294E+01	0.3609E-01

			0.2157E+01	0.6993E-01
			0.3236E+01	0.1286E+00
			0.3883E+01	0.1805E+00
			0.4314E+01	0.2256E+00
			0.3883E+01	0.4512E+00
			0.3883E+01	0.6768E+00
			0.3883E+01	0.1128E+01
			0.3883E+01	0.4512E+01
3	10	0.7958E+01		
			0.0000E+00	0.0000E+00
			0.1593E+01	0.3609E-01
			0.2655E+01	0.6993E-01
			0.3983E+01	0.1286E+00
			0.4780E+01	0.1805E+00
			0.5311E+01	0.2256E+00
			0.4780E+01	0.4512E+00
			0.4780E+01	0.6768E+00
			0.4780E+01	0.1128E+01
			0.4780E+01	0.4512E+01
4	10	0.8000E+01		
			0.0000E+00	0.0000E+00
			0.4395E+00	0.1000E-01
			0.8791E+00	0.2000E-01
			0.1758E+01	0.4000E-01
			0.2637E+01	0.6000E-01
			0.3516E+01	0.8000E-01
			0.3956E+01	0.9000E-01
			0.4395E+01	0.1000E+00
			0.4395E+01	0.5000E+00
			0.4395E+01	0.2000E+01
5	10	0.1053E+02		
			0.0000E+00	0.0000E+00
			0.4354E+00	0.1000E-01
			0.8708E+00	0.2000E-01
			0.1742E+01	0.4000E-01
			0.2613E+01	0.6000E-01
			0.3483E+01	0.8000E-01
			0.3919E+01	0.9000E-01
			0.4354E+01	0.1000E+00
			0.4354E+01	0.5000E+00
			0.4354E+01	0.2000E+01
6	10	0.1296E+02		
			0.0000E+00	0.0000E+00
			0.5188E+00	0.1000E-01
			0.1038E+01	0.2000E-01
			0.2075E+01	0.4000E-01
			0.3113E+01	0.6000E-01
			0.4150E+01	0.8000E-01
			0.4669E+01	0.9000E-01
			0.5188E+01	0.1000E+00
			0.5188E+01	0.5000E+00
			0.5188E+01	0.2000E+01
7	10	0.1300E+02		
			0.0000E+00	0.0000E+00
			0.2627E+01	0.3609E-01
			0.4378E+01	0.6993E-01
			0.6566E+01	0.1286E+00
			0.7880E+01	0.1805E+00
			0.8755E+01	0.2256E+00
			0.7880E+01	0.4512E+00
			0.7880E+01	0.6768E+00
			0.7880E+01	0.1128E+01
			0.7880E+01	0.4512E+01
8	10	0.4152E+02		

			0.0000E+00	0.0000E+00
			0.4408E+01	0.3609E-01
			0.7347E+01	0.6993E-01
			0.1102E+02	0.1286E+00
			0.1322E+02	0.1805E+00
			0.1469E+02	0.2256E+00
			0.1322E+02	0.4512E+00
			0.1322E+02	0.6768E+00
			0.1322E+02	0.1128E+01
			0.1322E+02	0.4512E+01
9	10	0.6996E+02		
			0.0000E+00	0.0000E+00
			0.4562E+01	0.3609E-01
			0.7604E+01	0.6993E-01
			0.1141E+02	0.1286E+00
			0.1369E+02	0.1805E+00
			0.1521E+02	0.2256E+00
			0.1369E+02	0.4512E+00
			0.1369E+02	0.6768E+00
			0.1369E+02	0.1128E+01
			0.1369E+02	0.4512E+01

TIP LOAD KIP	TIP MOVEMENT IN.
0.0000E+00	0.0000E+00
0.2725E+00	0.1128E-01
0.5449E+00	0.2256E-01
0.1090E+01	0.4512E-01
0.2180E+01	0.2933E+00
0.3270E+01	0.9475E+00
0.3923E+01	0.1647E+01
0.4359E+01	0.2256E+01
0.4359E+01	0.3384E+01
0.4359E+01	0.4512E+01

LOAD VERSUS SETTLEMENT CURVE
****

TOP LOAD KIP	TOP MOVEMENT IN.	TIP LOAD KIP	TIP MOVEMENT IN.
0.1936E+02	0.6301E-01	0.2416E-02	0.1000E-03
0.1090E+03	0.4680E+00	0.2416E-01	0.1000E-02
0.2060E+03	0.1179E+01	0.1208E+00	0.5000E-02
0.2493E+03	0.1585E+01	0.2416E+00	0.1000E-01
0.3473E+03	0.2685E+01	0.1111E+01	0.5000E-01
0.3816E+03	0.3148E+01	0.1331E+01	0.1000E+00
0.3953E+03	0.3734E+01	0.2524E+01	0.5000E+00
0.3961E+03	0.4245E+01	0.3319E+01	0.1000E+01
0.3970E+03	0.5256E+01	0.4176E+01	0.2000E+01

GEOTECHNICAL DESIGN & MATERIALS REPORT
(FINAL)
ROUTE 580 WB HOV LANE WIDENING
EAST SEGMENT
ALAMEDA COUNTY, CALIFORNIA
04-ALA-580-R8.4/R14.6 EA 290861
Project Number and Phase 04000214281

For

BKF Engineers
4670 Willow Road, Suite 250
Pleasanton, CA 94588

PARIKH CONSULTANTS, INC.
2360 Qume Drive, San Jose
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(408) 452-9000

May 4, 2012 Job No. 208102.GDR-East

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Materials Testing ■
Construction Inspection ■

BKF Engineers
4670 Willow Road, Suite 250
Pleasanton, CA 94588

Job No.: 208102.GDR
May 4, 2012

Attn: Ms. Natalina Bernardi

Sub: GEOTECHNICAL DESIGN & MATERIALS REPORT (FINAL)
Route 580 WB HOV Lane Widening – East Segment
Alameda County, California
04ALA-580-R8.4/R14.6
Project Number and Phase 04000214281

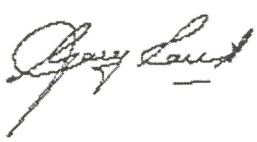
Dear Ms. Bernardi:

Transmitted herewith is the Geotechnical Design & Materials Report for the subject project. The report was prepared in accordance with the scope of work outlined in our proposal. The report is for submittal to Caltrans for their review and approval.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning our findings or conclusions, please feel free to contact this office at (408) 452-9000.

Very truly yours,
PARIKH CONSULTANTS, INC.

Gary Parikh, P.E., G.E., 666
Project Manager



Attachment: Final Geotechnical Design & Materials Report (3 copies bound)

"Approved as to impact on State facilities and conformance with applicable State standards and practices, and the technical oversight were performed as described in the California Department of Transportation A&E Consultant Services Manual."

Caltrans_____

Title_____

Date_____

Caltrans_____

Title_____

Date_____

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Caltrans Comments and Responses – GDMR 95% Submittal
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GEOTECHNICAL DESIGN & MATERIALS REPORT
(FINAL)
ROUTE 580 WB HOV LANE WIDENING – EAST SEGMENT
ALAMEDA COUNTY, CALIFORNIA
04-ALA-580-R8.4/R14.6 EA 290861
Project Number and Phase 04000214281

1. INTRODUCTION

This report presents the results of our geotechnical engineering investigation for the proposed "Westbound Route 580 HOV Lane Widening Project – East Segment" in the cities of Pleasanton and Livermore in Alameda County, California, hereinafter referred to as "PROJECT". The work was performed in general accordance with the scope of work outlined in our proposal to BKF Engineers (Designer). The general location of the project site and its vicinity are shown in the Project Location Map, Plate 1.

This report addresses geotechnical design recommendations for embankment, retaining walls, corrosion recommendations for the culvert design, overhead sign structures, and structural pavement sections. Separate foundation investigation reports have been prepared for the proposed improvements to the three bridge structures within the corridor. The investigation included review of readily available soils and geologic literature pertaining to the site including as-built information and "Log of Test Borings" (LOTB), site reconnaissance, drilling exploratory soil borings, obtaining representative soil samples and logging soil materials encountered in exploratory borings, laboratory testing of the representative soil samples, performing engineering analyses, and preparation of this report.

The purpose of this report is to document subsurface geotechnical conditions, provide analyses of anticipated site conditions as they pertain to the project described herein, and to recommend design and construction criteria for the roadway portions of the project. This report also establishes a geotechnical baseline to be used in assessing the existence and scope of changed site conditions, if any.

The report is intended for use by the project roadway design engineer, construction personnel, bidders and contractors for information and reference purposes only and should not be construed as project specifications.

2. EXISTING FACILITIES AND PROPOSED IMPROVEMENTS

The Alameda County Congestion Management Authority (ACCMA), in cooperation with the California Department of Transportation (Caltrans), and the Federal Highway Administration (FHWA) proposes to widen westbound Interstate 580 (I-580) to provide a westbound High Occupancy Vehicle (HOV) lane. The overall project is divided into two segments, each segment being treated as a separate project:

- East Segment (east of Sta. 540+00) – this report
- West Segment (west of Sta. 540+00)

The East Segment is the subject of this report.

The East Segment project also provides auxiliary and bypass lanes on the eastbound and westbound on-ramps at Greenville Road, Vasco Road, First Street, Isabel Avenue, North Livermore Avenue and Truck Scales. All proposed improvements would be within the existing right-of-way. The I-580 Westbound HOV Lane Project is the second phase of a multi-phase Tri-Valley Implementation Plan for I-580, Route 84, and I-680 Corridors. The first phase (Eastbound HOV Lane Project) is already underway.

The following bridge structures exist within the project limits:

Arroyo Las Positas Bridge (Bridge No. 33-0085)
Arroyo Las Positas Bridge (Bridge No. 33-0203)
North Livermore Avenue Undercrossing (Bridge No. 33-0153)
Arroyo Seco Creek Box Culvert (Bridge No. 33-0066)

The three bridge structures and one box culvert carry eastbound and westbound traffic along Route 580. The two Arroyo Las Positas bridges and the North Livermore Avenue Undercrossing were built in 1972. The Arroyo Las Positas Bridge (Bridge No. 33-0085) structure is a three span cast-in-place reinforced concrete T-beam structure, approximately 132 feet long and 154 feet wide. The abutments and the two bents are founded on 45-ton steel H-piles. The Arroyo Las Positas Bridge (Bridge No. 33-0203) structure is also a three span cast- in-place reinforced concrete T-beam structure. It is

approximately 176.5 feet long and 154 feet wide. The abutments and the two bents are founded on 45-ton Class I and Class II concrete piles. The North Livermore Avenue Undercrossing (Bridge No. 33-0153) is a three span cast–in-place concrete box with prestressed concrete I-Girder. It is 159 feet long and 154 feet wide. The abutments are supported on 45-ton H-piles and the bents are supported on spread footings. The Arroyo Seco Creek Box Culvert is a concrete box culvert, approximately 39 feet wide, built in 1970.

The major focus of the project is widening of the westbound Interstate 580 (I-580) to provide a westbound HOV lane for the limits of the project (Sta. 540+00 to Sta. 870+88.37).

In addition, the project includes the following:

- Construction of auxiliary lanes and bypass lanes at:
    - Greenville Road (eastbound and westbound on-ramps)
    - Vasco Road (eastbound and westbound on- and off-ramps)
    - First Street (eastbound and westbound on-ramps)
    - North Livermore Avenue (eastbound and westbound on-ramps and westbound off-ramp)
    - Isabel Avenue (westbound on- and off-ramps
    - Truck Scale (westbound on- and off-ramps)
- Widening or reconstruction of the following structures:
    - Arroyo Las Positas Bridge (Bridge No. 33-0085)
    - Arroyo Las Positas Bridge (Bridge No. 33-0203)
    - North Livermore Avenue Undercrossing (Bridge No. 33-0153)
- Extension of the Arroyo Seco Creek Box Culvert

The widening of the bridge structures and the extension of the Arroyo Seco Creek Box Culvert are covered in separate foundation reports. Other structures associated with the project are presented below.

Retaining Walls

Retaining Wall No. 1	North side of WB Route 580 traveled way, east of Las Positas Bridge No. 33-0012
Retaining Wall No. 2	North side of WB Route 580 traveled way, east of Retaining Wall No. 1
Retaining Wall No. 3	North side of WB Route 580 traveled way, starting immediately east of Retaining Wall No. 2 and ending on north side of on-ramp from North Livermore Avenue to westbound I-580
Retaining Wall No. 4	North side of WB Route 580 traveled way, east of North Livermore Avenue.
Retaining Wall No. 5	North side of WB Route 580 traveled way, immediately east of Retaining Wall No. 4
Retaining Wall No. 6	North side of WB Route 580 traveled way, immediately east of Retaining Wall No. 5
Retaining Wall No. 7	North side of WB Route 580 traveled way, east of Retaining Wall No. 6
Retaining Wall No. 8	North side of WB Route 580 traveled way, east of Retaining Wall No. 7
Retaining Wall No. 9	North side of WB Route 580 traveled way, immediately east of Retaining Wall No. 8
Retaining Wall No. 10	North side of WB Route 580 traveled way, immediately east of Retaining Wall No. 9
Retaining Wall No. 11	North side of WB Route 580 traveled way, immediately east of Retaining Wall No. 10
Retaining Wall No. 12	North side of WB Route 580 traveled way, east of Retaining Wall No. 11
Retaining Wall No. 13	North side of WB Route 580 traveled way, immediately east of Retaining Wall No. 12
Retaining Wall No. 14	North side of WB Route 580 traveled way, starting east of Retaining Wall No. 13 and ending on north side of On-Ramp from First Street to WB Route 580
Retaining Wall No. 15	North side of On-Ramp from First Street to WB Route 580, between Wall No. 14 and First Street
Retaining Wall No. 16	South side of EB Route 580, immediately west of North Livermore Avenue Undercrossing
Retaining Wall No. 17	South side of EB Route 580, immediately east of North Livermore Avenue Undercrossing
Retaining Wall No. 18	South side of On-Ramp from North Livermore Avenue to EB Route 580
Retaining Wall No. 19	South side of On-Ramp from Greenville Road to EB Route 580

Overhead Sign Structures

- Nine single post overhead sign structures

Soundwalls

- One soundwall on north side of westbound on-ramp from Vasco Road (per the Designer, the wall will be designed by the Contractor)

Project plans indicate the finish grade for the widened HOV lane will be matched with the adjacent travel lanes. Cuts and fills will be required for widening as appropriate. Significant portions of the cuts and fills will be supported by retaining walls. When not retained by retaining walls, the proposed side slopes will have a gradient of 4(H): 1(V) or flatter for fill slopes and 2(H): 1(V) or flatter for cut slopes.

Our recommendations presented in this report are based on the above information. Any major deviation should be reported to our office for consideration.

3. PERTINENT REPORTS AND INVESTIGATIONS

The following pertinent as-built information was made available to us by BKF Engineers

- As-built LOTB (Caltrans, 1970) (Br. No 33-0085) – Arroyo Las Positas Bridge
- As-Built Plans (Caltrans, 1970) (Br. No 33-0085) – Arroyo Las Positas Bridge
- As-built LOTB (Caltrans, 1970) (Br. No 33-0203) – Arroyo Las Positas Bridge
- As-Built Plans (Caltrans, 1970) (Br. No 33-0203) – Arroyo Las Positas Bridge
- As-Built LOTB (Caltrans, 1970) (Br. No 33-0153) –N. Livermore Avenue Undercrossing
- As-Built Plans (Caltrans, 1970) (Br. No 33-0153) – N. Livermore Avenue Undercrossing
- As-Built Pavement Sections for I-580 and on- and off-ramps associated with North Livermore Avenue, Truck Scale, First Street, Isabel Avenue, Vasco Road and Greenville Road

In addition to the as-built information obtained from the designer, BKF Engineers the following investigation reports were also reviewed to supplement the subsurface information obtained for the project during this study.

- PARIKH Consultants, Inc., February, 2008, "Geotechnical Design and Material Report, Route 580 HOV Lane Widening Project, 04-ALA-580-KP 21.18/23.24", prepared for Mark Thomas & Company, Inc.
- PARIKH Consultants, Inc., November, 2007, "Geotechnical Design and Material Report, Route 580 HOV Lane Widening Project, 04-ALA-580-KP R12.6/30.7", prepared for T. Y. Lin International.
- PARIKH Consultants, Inc., February, 2008, "Geotechnical Design and Material Report, Isabel Avenue 580 Interchange", prepared for Mark Thomas & Company, Inc.
- PARIKH Consultants, Inc., August 2000, "Geotechnical Design and Material Report, Route 580/Fallon Road Interchange, 04-ALA-580-KP 26.4/28.0", prepared for CCS Planning and Engineering.

4. PHYSICAL SETTING

4.1 Climate

The project area is characterized with moderate climatic conditions. This consists of mild winters, warmer summers, small daily and seasonal temperature ranges and mild humidity. Based on the statistical data from Western Regional Climate Center of NOAA, extremes of temperatures range from 13.6°C to 2.4°C in January-February and 31.9°C to 12.4°C in July-August.

Annual rainfall precipitation is about 14.5 inches in Livermore area and is principally during the months of November through April. January usually has the most precipitation accumulation.

4.2 Topography

The topography along the alignment is relatively flat and increases from west to east. Some grade differences are noted due to roadway crossing and bridge embankment along the alignment. I-580 was mostly built at-grade or on fill with approximate elevation of 420 feet near Airway Boulevard on the west increasing to 600 feet in the vicinity of Greenville Bridge at the east limit of the project. In general, hills or valleys do not influence the site except on the east end where the Altamont grade begins.

4.3 Surface Drainage

The project alignment goes over Arroyo Las Positas Creek and Arroyo Seco Creek. Arroyo Las Positas Creek crosses the alignment twice and is considered the main drainage element. The Arroyo Seco Creek flows through a box culvert, while the Arroyo Las Positas Creek is crossed by bridges.

4.4 Man-Made and Natural Features of Engineering and Construction Significance

There are several bridge crossings and interchanges along the proposed project corridor.

4.5 Regional Geology and Seismicity

The project alignment is in the eastern portion of the San Francisco Bay Area in the Coast Range geomorphic province of California. The project area is located in Alameda County, which is located in the northern end of Diablo Range. It is bounded on the north by south flank of Mount Diablo. San Francisco Bay forms the western boundary; San Joaquin Valley borders it on the east. The Alameda County consists of a folded and faulted portion of the Diablo Range. Livermore Valley is one of the chief valleys present within the Diablo Range (Alameda County Planning Department, 1975).

The project area lies near the northwest corner of the east-west trending Livermore Valley. The regional structure of the area is similar to other portions of the Northern California Coast Ranges, consisting of a complex series of northwest-trending synclines and anticlines with a number of northwest-trending faults. Major streams in the Valley include Arroyo Del Valle, Arroyo Las Positas, Arroyo Mocho, Alamo Creek, Tassajara Creek, and San Ramon Creek.

The Livermore Valley is underlain by water-bearing unconsolidated alluvial, stream channel, and basin sediments, which were deposited beginning in the late Pleistocene era. Early in the period of alluvial deposition, large streams draining the Livermore Valley from east to west converged in the northwest corner of the valley and flowed northward through the San Ramon Valley to current Suisun Bay area. When the northwest outlet of the valley was open and the stream gradient steepened, sheets of clean gravel gradually accumulated over much of the valley floor. When the northwest outlet of the valley was blocked, swamps and lakes formed in the area, particularly in the west, and continuous sheets of silt and clay were deposited on top of the previously deposited gravel layers. At least four thick clay layers separated by extensive gravel beds are known to be present in the western portion of the valley. In the vicinity of the site, surface deposits to a depth of 50 feet consist primarily of Quaternary alluvial silty clays, with lesser amounts of sandy clay and silt.

Significant earthquakes, which have occurred in this area, are generally associated with crustal movements along well-defined active fault zones. Faults in the vicinity of the site with a moderate to high potential for surface rupture include the Calaveras Pacines San Benito fault, the Verona Williams fault, the Greenville fault, Coast Ranges Sierran Block Boundary Zone, and the Hayward fault.

5. EXPLORATION

5.1 Drilling, Sampling and Cone Penetrometer Testing

Based on the Geometric Approval Drawings, discussions with the designer, and readily available geotechnical data in the area, a total of one hundred and seventeen (117) borings were drilled for the PROJECT. Most of the borings were drilled between December, 2008 and February, 2009. Six additional borings were drilled in May-June, 2011.

Forty-eight borings were drilled to the depths of approximately 5 feet to collect bulk samples for the pavement design. The locations, stations and other pertinent information for these borings are summarized in Table 1A.

Fifty-seven borings were drilled for the design of new retaining walls, and embankments and overhead sign structures. The boring depths ranged from 15 to 60 feet (one boring had to be terminated at 5 feet). The locations, stations and other pertinent information for these borings are summarized in Table 1B.

Nine borings were drilled for overhead sign structures. The boring depths ranged from 30 to 36 feet. The locations, stations and other pertinent information for these borings are summarized in Table 1C.

Three “deep” borings were drilled, one near an abutment for each of the three bridges to supplement the available information. The boring depths ranged from 65 to 80 feet below the existing ground surface. In addition to the borings, two CPTs were performed. The locations, stations and other pertinent information for these borings and CPTs are summarized in Table 1D.

Approximate locations of these borings are shown on the attached Site Plans (Plates 2A through 2G). The as-built LOTB of the existing bridges: Arroyo Las Positas Bridge (Bridge No. 33-0085); Arroyo Las Positas Bridge (Bridge No. 33-0203) and North Livermore Avenue Undercrossing (Bridge No. 33-0153) are also included in the report.

Shallow (5-ft deep) borings, generally for pavement design were drilled with a jeep mounted rig, using a 6-in solid stem auger. Most of the other borings were drilled with truck-mounted drill rig using 8-inch-diameter hollow stem auger. A few borings, where the boring locations presented access difficulties, were drilled using a portable drill rig using a 3.5-inch-diameter solid stem auger. The borings were drilled under the technical supervision of our engineer, who classified and continuously logged the soils encountered during drilling and supervised the collection of soil samples at various depths for visual examination and laboratory testing. The soil samples were obtained during drilling by driving a 2.5-inch Inside Diameter (I.D.) Modified California sampler or a 1.4-inch I.D. Standard Penetration Test sampler. The sampler was driven into the subsurface soils under the impact of a 140-lb hammer falling through 30 inches. The blow counts required to drive the sampler for the last 12 inches are presented on the LOTB in Appendix A. After visual examination, the collected samples were sealed and transported to our laboratory for further evaluation and testing. The boring locations, stations, and relevant information are summarized in Tables 1A through 1D below.

The descriptions of the soil materials encountered in the exploratory borings and relevant boring information are presented in the LOTB presented in Appendix A. The laboratory test methods and results are presented in Appendix B. The logs presented in Appendix A were prepared from the field logs which were edited after visual re-examination of the soil samples in the laboratory and results of classification tests on selected soil samples as indicated on the LOTB.

In addition to the borings, two cone penetrometer tests (CPT) were performed on December 19, 2008. The CPT locations are presented in Table 1D. CPT work was performed by Gregg Drilling and In Situ, Inc. using a truck mounted CPT rig. The

CPTs were conducted using a 60-degree cone attached to a 1.7-inch diameter rod pushed into the subsurface. The soil resistance exerted to the tip and side of the cone were recorded and correlated to the soil type, classification and strength characteristics. Groundwater level was estimated from pore pressure dissipation measurements during CPT operation. Detailed information from the CPT investigation is also presented in Appendix A.

Due to limitations inherent in geotechnical investigations, it is neither uncommon to encounter unforeseen variations in the subsurface soil conditions during construction nor is it practical to determine all such variations during an acceptable program of drilling and sampling for a project of this scope. Such variations, when encountered, generally require additional engineering services to attain a properly constructed project. We, therefore, recommend that a contingency fund be provided to accommodate any additional charges resulting from technical services that may be required during construction.

TABLE 1A: SUMMARY OF BORINGS (PAVEMENT DESIGN AND ROADWAY)

Boring No.	Station (ft.)	Offset (ft)	Boring Depth (ft)	Approx. Ground Elev.(ft)	Approx. Groundwater Elev. (ft)	Date Drilled	Soil Description
A-09-189	542+13	0' LT "B" Line	5	425.4	-	02/13/09	Poorly Graded Gravel with Sand & Clay
A-09-190	552+41	83.5' LT "B" Line	5	417.9	-	02/13/09	Lean Clay
A-09-191	557+50	0' LT "B" Line	5	421.1	-	02/13/09	Lean Clay with Gravel
A-09-192	562+00	0' LT "B" Line	5	420.0	-	02/13/09	Lean Clay
A-09-193	572+00	0' LT "B" Line	5	417.0	-	02/13/09	Lean Clay
A-09-196	595+00	0' LT "B" Line	5	431.4	-	02/13/09	Lean Clay
A-09-197	600+16	88.5' LT "B" Line	5	435.0	-	01/06/09	Lean Clay with Sand & Gravel
A-09-198	605+00	0' LT "B" Line	5	439.0	-	02/13/09	Lean Clay
A-09-199	615+16	96.8' LT "B" Line	5	438.9	-	02/20/09	Lean Clay with Gravel & Sand
A-09-210	616+23	0' LT "B" Line	5	443.0	-	02/20/09	Lean Clay with Gravel & Sand
A-09-211	625+00	0' LT "B" Line	5	456.0	-	02/20/09	Poorly Graded Sand with Gravel
A-09-212	635+00	0' LT "B" Line	5	472.0	-	02/20/09	Lean Clay with Gravel
A-09-217	645+00	0' LT "B" Line	5	485.0	-	02/19/09	Clayey Sand
A-09-221	648+89	81.1' LT "B" Line	5	480.0	-	01/06/09	Lean Clay with Sand
A-09-222	657+59	97.4' LT "B" Line	5	476.5	-	01/06/09	Lean Clay
A-09-255	655+00	0' LT "B" Line	5	480.0	-	02/19/09	Lean Clay with Sand
A-09-256	665+00	0' LT "B" Line	5	474.3	-	02/19/09	Lean Clay with Sand
A-09-257	675+00	0' LT "B" Line	5	477.8	-	02/19/09	Lean Clay with Gravel
A-09-258	685+00	0' LT "B" Line	5	485.0	-	02/19/09	Lean Clay
A-09-259	695+00	0' LT "B" Line	5	491.0	-	02/19/09	Lean Clay
A-09-263	705+00	0' LT "B" Line	5	501.0	-	02/19/09	Lean Clay
A-09-264	715+00	0' LT "B" Line	5	509.9	-	02/19/09	Lean Clay
A-09-265	725+00	0' LT "B" Line	5	515.0	-	02/19/09	Lean Clay
A-09-266	735+00	0' LT "B" Line	5	523.0	-	02/18/09	Lean Clay
A-09-267	745+3	72.1' LT "B" Line	5	530.0	-	01/06/09	Lean Clay
A-09-268	748+15	437.1' LT "B" Line	5	537.8	-	01/06/09	Silty Clay
A-09-269	754+60	87.1' LT "B" Line	5	524.0	-	01/06/09	Lean Clay
A-09-270	747+89	391.6' RT "B" Line	5	544.0	-	02/13/09	Lean Clay with Gravel
A-09-271	752+25	192.0' RT "B" Line	5	531.0	-	02/13/09	Lean Clay with Gravel
A-09-272	759+23	90.5' LT "B" Line	5	523.7	-	01/05/09	Lean Clay
A-09-273	769+37	86.9' LT "B" Line	5	525.0	-	01/05/09	Silty Lean Clay
A-09-278	775+00	0' LT "B" Line	5	527.9	-	02/18/09	Lean Clay
A-09-279	785+00	110.9' LT "B" Line	5	529.0	-	01/05/09	Lean Clay with Gravel
A-09-280	793+83	89.0' LT "B" Line	5	523.5	-	01/05/09	Lean Clay
A-09-281	795+5	96.3' LT "B" Line	5	533.2	-	01/05/09	Lean Clay
A-09-285	800+00	0' LT "B" Line	5	535.4	-	02/18/09	Lean Clay
A-09-286	805+00	94.9' LT "B" Line	5	536.0	-	01/05/09	Lean Clay

Boring No.	Station (ft.)	Offset (ft)	Boring Depth (ft)	Approx. Ground Elev.(ft)	Approx. Groundwater Elev. (ft)	Date Drilled	Soil Description
A-09-287	800+91	591.1' LT "B" Line	5	536.1	-	02/20/09	Lean Clay
A-09-290	813+77	93.1' LT "B" Line	5	538.7	-	02/19/08	Lean Clay
A-09-291	820+00	0' LT "B" Line	5	540.6	-	02/18/09	Lean Clay
A-09-292	825+12	96.3' LT "B" Line	5	540.0	-	02/19/08	Lean Clay
A-09-293	834+62	83.5' LT "B" Line	5	548.4	-	02/18/09	Lean Clay
A-09-294	845+00	0' LT "B" Line	5	555.8	-	02/18/09	Silty Clay with Gravel
A-08-295	849+94	103.4' LT "B" Line	5	557.8	-	12/30/08	Lean Clay
A-09-296	859+64	115.0' LT "B" Line	5	565.4	-	01/05/09	Lean Clay
A-09-297	864+20	209.6' LT "B" Line	5	568.8	-	01/05/09	Lean Clay
A-09-298	865+00	0' LT "B" Line	5	570.0	-	02/20/09	Lean Clay
A-09-299	860+53	305.6' RT "B" Line	5	568.6	-	01/05/09	Lean Clay

TABLE 1B: SUMMARY OF BORINGS (WALL STRUCTURES AND OTHER CUTS AND FILLS)

Boring No.	Station (ft)	Offset (ft)	Boring Depth (ft)	Approx. Ground Elev. (ft)	Approx. Groundwater Elev. (ft)	Approx. Finish Grade Elev. (ft)	Date Drilled
A-09-194	588+36	92.7' LT "B" Line	5	422.0	-		01/26/09
A-09-195	592+30	89.3' LT "B" Line	20	430.5	-		02/04/09
A-09-200	619+19	81.5' LT "B" Line	35	426.0	-		01/14/09
A-09–201	622+94	120.0' LT "B" Line	30	459.5	-		01/23/09
A-09–202	625+55	96.0' LT "B" Line	40	468.0	-		01/22/09
A-09–203	628+42	101.0' LT "B" Line	45	475.0	-		01/22/09
A-09–204	631+51	99.0' LT "B" Line	12.5	477.0	-		01/13/09
A-09–205	634+59	85.8' LT "B" Line	30	475.0	-		01/13/09
A-09–206	637+88	79.6' LT "B" Line	20	476.0	-		01/02/09
A-09–207	642+50	117.0' LT "B" Line	25	490.0	-		01/02/09
A-08–208	646+90	157.7' LT "B" Line	25	487.0	-		12/31/09
A-08–209	648+74	196.0' LT "B" Line	15	469.0	-		12/31/09
A-0 –213	628+20	83.7' RT "B" Line	20	462.0	-		02/18/09
A-08–214	631+08	82.6' RT "B" Line	25	463.0	-		12/17/08
A-08–215	633+98	80.4' RT "B" Line	25	467.0	-		12/17/08
A-08-216	636+90	76.9' RT "B" Line	25	473.5	-		12/16/08
A-08-218	645+41	83.3' RT "B" Line	15	485.0	-		12/16/08
A-08-219	648+98	79.0' RT "B" Line	15	481.0	-		12/16/08
A-09-223	661+00	108.0' LT "B" Line	40	485.0	-		02/02/09
A-09-224	664+07	93.7' LT "B" Line	30	476.0	449.0	476	01/23/09
A-08-225	667+05	81.6' LT "B" Line	20	479.0	459.0	476.5	12/23/08

A-09-226	669+89	88.4' LT "B" Line	45	490.0	452.0	477	02/20/09
A-08 -227	673+00	86.4' LT "B" Line	30	474.0	453.0	478	12/23/08
A-08-228	676+00	91.0' LT "E" Line	15	475.0	-		12/23/08
A-08-229	678+97	86.6' LT "B" Line	25	479.0	-		12/23/08
A-08–230	682+31	91.7' LT "B" Line	20	480.0	-		12/23/08
A-08–231	685+10	94.0' LT "B" Line	20	487.0	-		12/23/08
A-09–232	686+87	82.0' LT "B" Line	40	499.0	-		02/04/09
A-08–235	697+61	109.4' LT "B" Line	30	487.0	464.0	495.5	12/22/08
A-11-327	700+41	93.5 LT "B" Line	51.5	490.0	465.0	499	05/31/11
A-08–236	700+68	95.7' LT "B" Line	30	490.0	467.0	499	12/08/08
A-09–237	703+29	92.4' LT "B" Line	30	505.0	476.0	502	02/03/09
A-09–238	706+23	96.7' LT "B" Line	30	506.0	-		02/03/09
A-08–239	709+14	89.5' LT "B" Line	15	504.5	-		12/23/08
A-08–240	712+10	97.5' LT "B" Line	45	503.5	480.1	510	12/18/08
A-08–241	715+06	98.2' LT "B" Line	20	507.3	489.3	511.5	12/08/08
A-08–242	718+04	100.0' LT "B" Line	20	505.4	487.4	513	12/08/08
A-08–243	720+90	102.2' LT "B" Line	20	507.0	489.5	514.5	12/08/08
A-08–244	723+92	96.3' LT "B" Line	20	507.7	487.4	516	12/17/08
A-08–245	727+00	93.2' LT "B" Line	60	514.0	496.0	517.5	12/17/08
A-08–247	729+88	97.0' LT "B" Line	15	515.0	-		12/18/08
A-09–248	732+93	93.0' LT "B" Line	30	520.0	495.0	522	02/04/09
A-09–249	735+93	110.4' LT "B" Line	30	530.0	-	-	02/08/09
A-09–250	738+95	103.5' LT "B" Line	30	533.0	-	-	02/12/09
A-09–252	652+23	196.0'RT "B" Line	20	463.5	-	-	01/12/09
A-09–253	657+00	14.6' RT "B" Line	20	467.0	-	-	01/12/09
A-09–254	659+42	99.2' RT "B" Line	20	475.0	-	-	01/12/09
A-09–260	694+46	83.5' RT "B" Line	25	490.0	472.5	488	01/12/09
A-09–261	697+45	73.7' RT "B" Line	25	495.0	472.5	495	01/12/09
A-09–262	700+59	74.0' RT "B" Line	25	497.0	-	-	01/12/09
A-09–274	773+00	116.0' LT "B" Line	30	524.0	510.5	528.5	01/13/09
A-08–275	776+07	115.8' LT "B" Line	30	525.2	505.2	530	12/30/08
A-08–276	779+00	116.1' LT "B" Line	30	525.5	503.5	530.5	12/30/08
A-08–277	782+05	95.7' LT "B" Line	30	526.0	500.0	531.5	12/30/08
A-08-295	849+89	97.6' LT "B" Line	30	558.4	536.4	561	12/30/08
A-09–300	862+26	187.9' RT "B" Line	30	576.0	571.0	575.5	02/09/09
A-09–301	864+97	158.2' RT "B" Line	30	589.0	-	-	02/09/09

TABLE 1C: SUMMARY OF SUPPLEMENTAL BORINGS (OVERHEAD SIGN STRUCTURES)

Boring No.	Station (ft)	Offset (ft)	Boring Depth (ft)	Approx. Ground Elev. (ft)	Approx. Groundwater Elev. (ft)	Approx. Finish Grade Elev. (ft)	Date Drilled
A-11-324	550+00	97.0 LT "B" Line	36.;5	417.0	397.0	421.0	06/01/11
A-11-325	601+50	108.0 LT "B" Line	31.5	435.0	-	-	05/31/11
A-11-326	690+00	108.0 LT "B" Line	31.5	499.0	458.5	499.0	05/31/11
A-09-307	764+85	78.3' LT "B" Line	30	524.0	508.5	527	01/13/09
A-11-328	816+00	108.5 LT "B" Line	31.5	539.0	529.0	---	06/03/11
A-09–308	817+42	104.2' LT "B" Line	30	537.0	523.5	541.5	01/13/09
A-09–309	844+95	105.0' LT "B" Line	30	554.3	532.3	557	01/13/09
A-11-329	847+00	108.5 LT "B" Line	36.5	556.0	536.0	---	06/02/11
A-09-318	854+65	137.0' LT "B" Line	30	561.8	543.8	564	02/03/09

TABLE 1D: SUMMARY OF BRIDGE BORINGS INCLUDING CPT'S

Bridge	Boring No.	Station (ft)	Offset (ft)	Boring Depth (ft)	Approx. Ground Elev. (ft)	Approx. Groundwater Elev. (ft)	Date Drilled
Las Positas Bridge (33-0012)*	AL1-01 (CPT)	584+13	79.0' LT "B" Line	100	416.6	N/A	12/19/08
Las Positas Bridge (33-0203)	AL2-01	617+50	66.4' LT "B" Line	80	444.0	-	02/18/09
	AL2-02 (CPT)	617+26	82.0' RT "B" Line	67	447.8	N/A	12/19/08
Las Positas Bridge (33-0085)	A-08-234/ AL3-01	694+41	86.4' LT "B" Line	65	489.0	464.0	12/22/08
North Livermore Undercrossing (33-0153)	LIV-01	650+96	75.0' RT "B" Line	75	480.0	444.0	12/15/08
* Bridge not in contract							

5.2 Geologic Mapping

The project site consists of older alluvial deposits and embankment. The subject was considered and was determined to be not significant for the project.

5.3 Geophysical Studies

The subject was considered and was determined to be not applicable to the project.

5.4 Instrumentation

The subject was considered and was determined to be not applicable to the project.

5.5 Exploration Notes

Roadway fill material consisting of lean clay and sandy lean clay to silty sand and sandy silt was typically encountered in the shallow borings up to 5-ft depth. The other exploratory borings encountered alluvial deposits, predominantly consisting of very stiff to hard lean clay interbedded occasionally with layers of dense to very dense silty sands.

6. GEOTECHNICAL TESTING

6.1 In-Situ Testing

In-situ testing consisted of recording blow counts during sampling in the field. The soil samples were obtained during drilling by driving a 2.5-inch I.D. Modified California sampler or a 1.4-inch I.D. Standard Penetration Test Sampler into the subsurface soils under the impact of a 140-lb hammer falling through 30 inches. Based on our previous experience, when correlating standard penetration data in similar soils, the blow counts for the Modified California Sampler can be taken as roughly 1.6 times that for the Standard Penetration Test Sampler in similar soils. The equivalent field blow counts (SPT-N values) typically ranged from 10 to more than 50 (practical refusal). From the average SPT-N values for various soil materials encountered in the field exploration, the subsoils are generally stiff to hard for the clay and medium dense to very dense for the sandy soils.

6.2 Laboratory Testing

Laboratory tests performed for the study include the following: Laboratory determination of Moisture-Density (California Test Method T226), Atterberg Limits (California Test Method T204), Grain Size Analysis (California Test Method T203), Unconfined Compression Test (California Test Method T221), R-value Test (California Test Method T301), and Corrosion Test (California Test Method T 643). The laboratory test results are presented in Appendix B.

In general, the average natural moisture content of the soils is on the order of 10% to 30%. Laboratory data of moisture contents, total density, grain size distribution, Atterberg Limits and unconfined compression strengths are presented on the Log of Test Borings (LOTB) sheets.

7. GEOTECHNICAL CONDITIONS

7.1 Site Geology

General geologic features pertaining to the site were evaluated by reference to the Quaternary Geology of Alameda County and Surrounding Areas, California, by E.J. Helley and R.W. Graymer, 1997. Based on the map, different geologic units are present along the alignment. According to the geologic map, majority of the project alignment passes through areas where the surficial materials are Alluvial Fan and Fluvial Deposits (Qpaf) or Alluvial Terrace Deposits (Qpaf1), both of the Pleistocene age. Available as-built soil data indicate primarily stiff clayey material at shallow depth. The properties of the near surface fine-grained materials have major influence on the current roadway widening project.

A geologic map of the general project area is shown on Plate 3. Descriptions of the main geologic units are as follows:

Qhfp - Floodplain Deposits (Holocene). Deposits are generally less than one meter thick and consist of rounded gravel and historic artifacts in a clayey silt matrix.

Qhb - Basin Deposits (Holocene). Very fine silty clay to clay deposits occupying flat-floored basins at the distal edge of alluvial fans adjacent to the bay mud

Qhaf - Alluvial Fan and Fluvial Deposits (Holocene). Alluvial fan deposits are brown or tan, medium dense to dense, gravely sand or sandy gravel that generally grades upward, to sandy or silty clay.

Qpaf - Alluvial Fans Deposits (Pleistocene). Brown dense gravely and clayey sand or clayey gravel that fines upward to sandy clay.

Qpaf1 Alluvial Terrace Deposits (Pleistocene) -- Deposits consist of crudely - bedded, clast - supported, gravels, cobbles, and boulders with a sandy matrix.

QTl - Livermore gravels (Pliocene and Pleistocene). Poorly to moderately consolidated, indistinctly bedded, cobble conglomerate, gray conglomeratic sandstone, and gray coarse-grained sandstone. Also includes some siltstone and claystone.

The native soils may have been stripped during highway construction. Majority of the borings drilled along the alignment encountered fill near the surface. This fill may have been the stripped material (reused as fill) or have been imported. The main geotechnical issue for roadway would be expansive potential (if any) of the subgrade and its impact on the pavement design.

7.1.1 Lithology

The project site consists of mainly Pleistocene Alluvial Fans and Fluvial Deposits and Pleistocene Alluvial Terrace Deposits. The subject was considered and was determined to be not applicable for the project.

7.1.2 Structure

The fault that is closest to the project site is the Greenville Fault, which is a strike-slip fault.

7.1.3 Existing Slope Stability

The existing slopes along the corridor appear to be stable. Some shallow slumps related to local and surficial deposits are noted. Most of these slopes will be replaced by new retaining walls.

7.2 Subsurface Soil Conditions

Based on the boring data and as-built LOTBs, the subsurface soil conditions at the project site indicate predominantly stiff to hard lean clays and sandy clays and medium dense to very dense sands, silty sands and clayey sands. Other pertinent information includes:

a) There was no evidence of soft clays in any of the borings. Firm clay layers were found in eight borings (Boring Nos. 195, 227, 228, 240, 241, 242, 244, 247, 275 and AL2-01). The layers were generally 5-ft thick and no more than 10 feet thick.

b) A 5-ft thick stiff to very stiff fat (potentially expansive) clay layer was encountered 5 to 10 feet below ground surface in Borings 241, 242 and 243. Isolated fat clay layers, 5 to 10 feet thick were encountered in borings 201, 213 and 230.

c) A 15-ft layer of peat/organic silt/organic fat clay was encountered in Boring 235, about 12 feet below ground surface. Organic lean clay layers, 5 to 10 feet thick were encountered, approximately 7 feet below ground surface in borings 260 and 261, respectively.

d) Loose sands were encountered in Boring 301 at the surface and in Boring 318 just below the water table.

e) Medium dense potentially liquefiable sands were encountered in several locations. Liquefaction is discussed in greater detail in Section 8.1.3.

f) Groundwater was encountered in 33 borings. Except for Boring No. 300, where groundwater occurred 5 feet below ground surface, groundwater occurred 10 to 36 feet below ground surface. Groundwater conditions at the project site are described in Section 7.3.2.

Detailed descriptions of the materials encountered in the exploratory borings are presented in the LOTB in Appendix A. It should be noted that these descriptions and related information depict subsurface conditions only at the locations indicated and on the particular date noted on the LOTB. Because of the variability from place to place within soil/rock in general, subsurface conditions at other locations may differ from conditions occurring at the locations explored. The abrupt stratum changes shown on the logs may be gradational, and relatively minor changes in soil types within a stratum may not be noted due to inherent limitations in the field investigations. Also, the passage of time may result in a change in the soil conditions at the locations due to environmental changes.

7.3 Water

7.3.1 Water Drainage

The terrain at the project site gently slopes towards the north, and the surface water/drainage sheet flows towards the north. The project alignment goes over Arroyo Las Positas Creek and Arroyo Seco Creek. Arroyo Las Positas Creek crosses the alignment twice and is considered the main drainage element.

7.3.1.1 Scour

The subject was considered and was determined to be not applicable for the roadway project.

7.3.1.2 Erosion

The existing slopes have established landscaping to help control erosion. The subject was considered and was determined to be not

applicable for the project. It is recommended that construction of the proposed project be undertaken during the dry season or winterization measures be undertaken. Newly graded slopes should be covered with erosion control measures.

7.3.2 Groundwater

Borings where groundwater was encountered during drilling are listed in Table 2. The table includes the stations and offsets, approximate ground elevations and approximate groundwater elevations for the borings. Groundwater was not encountered west of Sta. 650+00 during drilling, except for Boring No. A-11-324 at Sta. 550+00.

TABLE 2: SUMMARY OF GROUNDWATER ELEVATIONS

Boring No.	Station (ft)	Offset (ft)	Boring Depth (ft)	Approx. Ground Elev. (ft)	Approx. Finished Grade Elev. (ft)	Approx. Groundwater Elev. (ft)
A-11-324	550+00	97 LT "B" Line	36.5	417.0	421	397.0
A-08-LIV-01	650+96	75.0' RT "B" Line	75	480.0	482	444.0
A-09-224	664+07	93.7' LT "B" Line	30	476.0	476	449.0
A-08-225	667+05	81.6' LT "B" Line	25	479.0	476.5	459.0
A-09-226	669+89	88.4' LT "B" Line	45	490.0	477	452.0
A-08 -227	673+00	86.4' LT "B" Line	30	474.0	478	453.0
A-11-326	690+00	108.0 LT "B" Line	31.5	499.0	499.0	458.5
A-08–234/AL3-01	694+41	86.4' LT "B" Line	65	489.0	492	463.0
A-08–235	697+61	109.4' LT "B" Line	30	487.0	495.5	464.0
A-11-327	700+41	93.6 LT "B" Line	51.5	490.0	499	465.0
A-08–236	700+68	95.7' LT "B" Line	30	490.0	499	467.0
A-09–237	703+29	92.4' LT "B" Line	30	505.0	502	476.0
A-08–240	712+10	97.5' LT "B" Line	45	503.5	510	480.1
A-08–241	715+06	98.2' LT "B" Line	20	507.3	511.5	489.3
A-08–242	718+04	100.0' LT "B" Line	20	505.4	513	487.4
A-08–243	720+90	102.2' LT "B" Line	20	507.0	514.5	489.5
A-08–244	723+92	96.3' LT "B" Line	20	507.7	516	487.4
A-08–245	727+00	93.2' LT "B" Line	60	514.0	517	496.0
A-09–248	732+93	93.0' LT "B" Line	30	520.0	522	495.0
A-09–260	694+46	83.5' RT "B" Line	25	490.0	488	472.5
A-09–261	697+45	73.7' RT "B" Line	25	490.0	495	472.5
A-09-307	764+85	78.3 LT "B" Line	30	524.0	527	508.5
A-09–274	773+00	116.0' LT "B" Line	30	524.0	528.5	510.5
A-08–275	776+07	115.8' LT "B" Line	30	525.2	530	505.2
A-08–276	779+00	116.1' LT "B" Line	30	525.5	530.5	503.5
A-08–277	782+05	95.7' LT "B" Line	30	526.0	531.5	500.0
A-11-328	816+00	108.5 LT "B" Line	31.5	539.0	541	529.0
A-09-308	817+42	104.2' LT "B" Line	30	537.0	541.5	523.5
A-09-309	844+95	105.0' LT "B" Line	30	554.3	557	532.3
A-11-329	847+00	108.5 LT "B" Line	36.5	556.0	558.5	536.0
A-08-295	849+89	97.6' LT "B" Line	30	558.4	561	536.4
A-09-318	854+65	137.0' LT "B" Line	30	561.8	564	543.8
A-09–300	862+26	187.9' RT "B" Line	30	576.0	575.5	571.0

In general, groundwater was encountered between Elev. 444.0 and 571.0 feet during field exploration. Groundwater was generally encountered at depths greater than 13 feet below ground surface or greater. Boring A-09-300 was an exception, where groundwater was encountered at only 5-ft depth.

It is anticipated that groundwater level will vary with the passage of time due to seasonal groundwater fluctuations, surface and subsurface flow, ground surface run-off and other environmental factors.

7.4 Project Site Seismicity

7.4.1 Ground Motions

The project is located in a seismically active part of northern California. Many faults in the San Francisco Bay Area are capable of producing earthquakes, which may cause strong ground shaking at the site. The attached Fault Map (Plate 4A) presents the locations of the fault systems relative to the project site.

Maximum Credible Earthquake (MCE) magnitudes for some of the major faults in the area determined by Mualchin (California Seismic Hazard Map 1996) are summarized below. These maximum credible earthquake magnitudes represent the largest earthquakes that could occur on the given fault based on the current understanding of the regional tectonic structure. The table also provides the peak bedrock accelerations at the site, per Sadigh et al (1997) corresponding to the nearest distances to the faults.

TABLE 3 – SEISMIC SOURCES

Fault	Estimated Nearest Distance to the Project Alignment (miles)	Maximum Credible Earthquake	Peak Bedrock Acceleration
Greenville (strike-slip)	0.75	7.25	0.71g
Calaveras – Pacines – San Benito (strike-slip)	5.5	7.50	0.46g
Coast Ranges – Sierran Block (reverse including thrust)	5.1	7.00	0.42g
Verona – Williams (unknown type)	4.8	6.00	0.31g
Hayward(strike-slip)	12.5	7.50	0.27g

Peak bedrock accelerations at the site range from 0.71g at the eastern end and 0.46g at the western end.

7.4.2 Ground Rupture

Potential seismic hazards may arise from three sources: surface fault rupture, ground shaking, and liquefaction. Based on available geological and seismic data, the possibility of the site to experience strong ground shaking may be considered moderate to high. In this project, the eastern project boundary (Route 580 / Greenville Road Interchange) lies within Alquist Priolo Earthquake Fault Zones (EFZ, formerly Special Studies Zone), adopted by the California State Geologist (see Plate 4B). In particular, it is located within the Greenville Fault Zone. The potential for fault rupture within this zone is considered high. No culverts, retaining walls, or any other structures are planned within the fault zone. The impact of the earthquake within this zone is considered to be minimal with regard to the roadway widening project. Roadway maintenance should be expected if pavement distress or damage occurred after seismic events.

8. GEOTECHNICAL ANALYSES AND DESIGN

8.1 Seismic Analysis

8.1.1 Parameter Selection

The value of PBA for the project sites for the three bridge locations within the project limits were calculated from the distances to the applicable faults in the project vicinity using the Caltrans1996 Seismic Hazard Map and the attenuation relation by Sadigh et al. (1997). The computed PBA value was increased by 20%, also per Sadigh (1997), to account for the reverse fault effect, wherever applicable. A PBA of 0.5g was established for all three structures.

Design ARS curves were computed for the bridges per Caltrans SDC 1.4, which are presented in the applicable Foundation Reports.

8.1.2 Analysis

Majority of the proposed cuts and fills are supported by retaining walls. For the minor slopes, the maximum slope heights, relatively flat slopes, the competent subsurface soils and the low groundwater table suggest that the slopes will be stable under seismic loads. Therefore, analyses to assess the stability of the slopes in the project site were not deemed necessary and were not performed.

8.1.3 Liquefaction Potential

Liquefaction is a phenomenon in which saturated soils are subject to a temporary but essentially total loss of shear strength under the reversing, cyclic shear stresses associated with earthquake shaking. Submerged, cohesionless sands and silts of low relative density are the type of soils which usually are susceptible to liquefaction - the susceptibility increases with decreasing relative density (reflected by the number of blows to drive a sampler), and decreasing fines content. Accepted procedures for the assessment for liquefaction potential for cohesionless soils have evolved over the years through research and field observations (Youd et al, 2001). Recent research and field observations have shown that clays of low plasticity are also potentially liquefiable, based on the moisture content and plasticity characteristics of the clay. Procedures for the assessment of liquefaction potential for clay soils have also been established and have received general acceptance. (Bray et. al., 2004). The liquefaction potential for the general area is found to be relatively low.

Based on the analyses, potentially liquefiable layers of loose to medium dense sands and gravels were identified at the following locations and depths:

Potential Liquefaction Locations and Depths

Boring No.	Depth (ft)	Soil Description	Comments
A-08-235	27 - 30	Very Stiff Silt with Gravel	Potentially liquefiable layer at bottom of boring
A-08-241	18 - 20	Medium Dense Silty Sand with Gravel	Potentially liquefiable layer at bottom of boring and just below water table
A-08-242	18 - 20	Medium Dense Silty Gravel with Sand	Potentially liquefiable layer at bottom of boring and just below water table
A-08-243	18 - 20	Medium Dense Silty Gravel with Sand	Potentially liquefiable layer at bottom of boring and just below water table
A-08-245	22 - 27	Poorly graded Sand with Silt and Gravel	
A-09-308	14 - 19	Medium Dense Poorly Graded Sand with Silt	Potentially liquefiable layer just below water table
A-08-243	18 - 20	Medium Dense Silty Gravel with Sand	Potentially liquefiable layer at bottom of boring and just below water table
A-09-261	18 - 22	Medium Dense Poorly Graded Sand with Silt and Gravel	Potentially liquefiable layer just below water table
A-08-295	27 - 30	Medium Dense Clayey Sand	Potentially liquefiable layer at bottom of boring and just below water table
A-09-300	10 - 15	Medium Dense Gravel with Silt and Sand	
A-08-LIV-01	40 - 45	Medium Dense Poorly Graded Sand with Silt	
	45 - 50	Medium Dense Silty Sand	Potentially liquefiable layer just below water table
A-09-318	18 - 23	Loose Well Graded Sand with Silt	Potentially liquefiable layer just below water table
	23 - 28	Medium Dense Silty Sand	

As may be noted from the above table, except for the area from Borings 241 through 245, liquefaction for the other locations are localized and are of minimal significance for the roadway and the retaining wall. It should also be noted that the major number of occurrences of potential liquefaction occurs just below the water table. This is perhaps not a

coincidence, since it is well established that this is perhaps a reflection of hollow stem auger techniques.

8.2 Cuts and Excavations

Based on the plans, the finish grades for Route 580 widening will, in general be matched to the adjacent grades for the existing road surface. Significant cuts and excavations for the project will be required for:

- Cutting into the toe of a 2:1 cut slope for widening of the road on the north side of the westbound travel way from Sta. 622+50 to Sta. 648+00. The maximum cut depths will be about 16 feet and will be supported by a retaining wall (Wall No. 3).
- Cutting a 2:1 slope, maximum height 28 feet from Sta. 648+00 to Sta. 648+50.
- Cutting into the toe of a 2:1 cut slope for widening of the road on the north side of the westbound travel way from Sta. 659+50 to Sta. 663+50. The maximum cut depths will be about 15 feet and will be supported by a retaining wall (Wall No. 4).
- Cutting into the toe for widening of the road on the north side of the westbound travel way from Sta. 666+00 to Sta. 671+50. The maximum cut depths will be about 14 feet and will be supported by a retaining wall (Wall No. 5).
- Cutting into the toe of a 2:1 cut slope for widening of the road on the north side of the westbound travel way from Sta. 685+50 to Sta. 688+00. The maximum cut depths will be about 11.5 feet and will be supported by a retaining wall (Wall No. 7).
- Cutting into the toe of a cut slope for widening of the road on the north side of the westbound travel way from Sta. 703+00 to Sta. 704+50. The maximum cut depths will be about 12 feet and will be supported by a retaining wall (Wall No. 10).
- Cutting into the toe of a cut slope for widening of the road on the north side of the westbound travel way from Sta. 733+00 to Sta. 742+50. The maximum cut depths will be about 12 feet and will be supported by a retaining wall (Wall No. 14).

8.2.1 Stability

Where not contained by retaining walls, the maximum heights of the cut slopes is estimated to be less than 10 feet and the slope gradients are 2(H): 1(V) or flatter. The subsurface soil conditions generally consist of very stiff to hard and medium dense to dense sands. Groundwater was not encountered within the cut depths.

Based on the subsurface soil conditions, it appears that the stability of the cut slopes should be acceptable.

8.2.2 Rippability

The proposed cuts are anticipated to be in native soils. Based on the investigation, rippability does not appear to be a concern for construction.

8.2.3 Grading Factor

Source of the fill may include the fill generated from the cuts planned for the project. Fill may also be imported from outside borrow sources. The source of borrow is unknown at the time of report preparation. Based on previous experience, for preliminary estimate, a grading factor of 0.9 may be assumed for import materials.

8.3 Embankments

8.3.1 Evaluation of Embankment Settlements

The finish grades for the new westbound HOV lane will be matched with the existing I-580 traveled way. Embankment fill will therefore be required in several locations for widening of the I-580 traveled way and for the construction of the associated auxiliary lanes and the HOV bypass lanes for the on-ramps. The approximate maximum fill thicknesses for proposed fills 10 feet or greater are summarized in Table 4 below. All the fills noted in Table 4 are retained by retaining walls.

TABLE 4: SUMMARY OF PROPOSED CONSTRUCTION AND MAXIMUM FILL THICKNESS

Fill No.	Proposed Construction	Approx. Max Fill Thickness (ft)	Relevant Boring(s)
1	Widening of westbound I-580 traveled way – Sta. 619+58 to Sta. 621+80	14	200, 201
2	Widening of westbound I-580 traveled way – Sta. 672+00 to Sta. 684+75	14	227, 228,229, 230, 231
3	Widening of westbound I-580 traveled way – Sta. 694+07 to Sta. 702+70	15	234, 235, 236, 237

Subsurface Soil Conditions

Fill No. 1

Fill No. 1 will be retained by Retaining Wall No. 1. The boring data indicates that the subsurface soil conditions underneath the proposed fill indicates predominantly hard silts and clays. Groundwater is not indicated within the bottom of the boring, 20 feet below bottom of the proposed fill.

Fill No. 2

Fill No. 2 will be retained by Retaining Wall No. 6. The boring data indicates that the subsurface soil conditions underneath the proposed fill indicates predominantly stiff to very stiff clays. Groundwater is indicated within 10 feet below bottom of the proposed fill in one boring (Boring A-08-227) near the western end of the fill, but is not indicated in any of the other borings.

Fill No. 3

Fill No. 2 will be retained by Retaining Wall No. 9. The boring data indicates that the subsurface soil conditions underneath the proposed fill indicates predominantly stiff to very stiff clays. Groundwater is not indicated within 15 to 20 feet below bottom of the proposed fill.

Evaluations

As indicated above, the soils were predominantly stiff to hard clays. The competent subsurface conditions coupled with the relatively deep groundwater table (at least 10 feet below bottom of the proposed fill)

preclude the potential occurrence of significant consolidation settlements for the embankment (maximum height of 15 feet). A potential consolidation settlement of less than 1 inch is estimated for a 15-ft embankment.

Waiting Periods

Based on our previous Caltrans project experience, the standard "30-day waiting period" is considered adequate. The waiting period serves as a contingency for the estimated consolidation settlement within the over-consolidated range.

Differential Settlement

Since total settlements are not significant, differential settlements will also not be significant.

8.3.2 Evaluation of Embankment Stability

New embankment fill will be required at the locations as described in Section 8.3.1 above. The maximum height of embankment at locations where not supported by retaining walls will be on the order of 5 to 6 feet. The gradient of the slope is 4(H): 1(V) or flatter. The underlying soils are stiff to hard clays and medium dense to dense sands. Groundwater was encountered at least 13 feet below ground surface, except at one location. A minimum factor of safety of 1.5 for static and 1.1 for pseudo-static condition is required. It was judged that under the above conditions, potential for slope instability was minimal. Therefore, analyses to assess the stability of the slopes in the project site were not deemed necessary.

8.4 Earth Retaining System

It is our understanding that due to right-of-way and other geometric constraints, the project will require construction of nineteen retaining walls. Information of approximate wall locations, type of walls, design loading cases, and maximum wall heights was provided by the designer and is summarized in Tables 5A and 5B.

TABLE 5A: SUMMARY OF PROPOSED RETAINING WALLS – Westbound Side

Wall No.	Wall Type	Location			Design Height (ft)	Total Length (ft)	Relevant Borings
		Control Line	Starting Station	End Station			
1	Type 1	B	588+90	593+50	8 - 12	481	194, 195
2	Type 1	B	619+48	621+80	10 - 20	232	200, 201
3	Soil Nail	B	623+00	638+92	6 - 16	2359	201, 202, 203, 204, 205, 206
		"MKR2"	638+92	648+50			207, 208, 209
4	Soil Nail	B	659+50	664+00	3 – 12	450	223, 224
5	Soil Nail	B	665+50	671+90	3 - 14	640	224, 225, 226
6	Type 1	B	672+50	684+75	8 - 18	1232	227, 228, 229, 230, 231
7	Soil Nail	B	685+30	688+00	3 – 17	274	232
8	Type 1	B	690+50	692+74	6 - 8	226	234[(1)]
9	Type 1	B	694+07	702+70	10 - 18	870	234, 235, 236, 237
10	Soil Nail	B	703+00	704+50	3 – 12	150	237, 238
11	Type 7 (Mod.)	B	707+20	707+80	7	60	238, 239
12	Type 5	B	709+30	713+50	6 - 8	420	239, 240
13	Type 1	B	715+50	719+50	8 - 10	400	241, 242, 243
14	Soil Nail	B	733+50	734+16	3 - 12	908	248, 249, 250
		"MXR3"	734+16	742+75			
15	Type 5	"MXR3"	747+25	748+55	6	153	250

Note: (1) Boring approximately 170 feet east of the wall

TABLE 5B: SUMMARY OF PROPOSED RETAINING WALLS – Eastbound Side

Wall No.	Wall Type	Location			Design Height (ft)	Total Length (ft)	Relevant Borings
		Control Line	Starting Station	End Station			
16	Type 5	B	645+50	649+60	6 - 8	413	218, 219
17	Type 5	B	651+23	654+18	6 - 8	295	LIV-01
18	Type 5	MKL1	654+50	657+50	6 - 10	300	253, 254
19	Type 5	MGR2	862+25	864+85	8 - 12	242	300, 301

Per the tables above, the proposed walls are either reinforced concrete walls (Type 1, Type 5 or Type 7) on spread footings or conforming to the Caltrans Standard Plans or Soil Nail walls. A tieback wall is proposed in a portion of Wall No. 10, which runs in the proximity of the north abutment of Las Colinas Bridge.

The Caltrans Standard walls should conform to the Caltrans design requirements and guidelines. Recommendations for soil nail walls are presented below.

Caltrans specifications for soil nail construction are recommended. The strength of the soil nails shall be verified during construction using proof tests on nails. Appropriate drainage shall be provided behind the soil nail walls. The facing should be reinforced and shotcreted expeditiously. The contractor should make his own interpretation regarding constructability of the nails. Proper quality control by the contractor and appropriate inspections and testing should be implemented.

Mechanically Stabilized Embankment (MSE) walls were considered for fill walls. It was found that construction of MSE walls would require significantly greater excavation compared to a Type 1 or Type 5 wall. Additionally, the small wall heights required in most cases did not make MSE walls cost effective. Thus, MSE walls are not used for this project.

<u>Retaining Wall No. 1 ("B" Line: Sta. 588+90 to Sta. 593+50)</u>

Retaining Wall No. 1 is a fill wall, approximately 481 feet long, located on the north side of westbound I-580, approximately 500 feet east of Arroyo Las Positas Bridge (Bridge No. 33-0012). The wall height, as planned, varies from 8 to 12 feet. There are no right-of-way (ROW) restrictions for the entire wall alignment. Based on information from Boring No. A-09-195 at the western end of the proposed wall, soil conditions at the foundation levels are firm to stiff clays. An allowable bearing capacity of 2.0 ksf is recommended. A Type 1 wall on spread footing may be used. However, per Caltrans Standard Plans, the required allowable bearing pressures (2.2 ksf for an 8-ft high wall and 2.8 ksf for a 12-ft high wall) would exceed the recommended bearing capacity. Therefore, the footing size should be increased to satisfy the recommended bearing capacity.

Alternatively, 2 feet of soil below the footing for 8-ft and 10-ft high walls and 3-ft of soil below the footing for 12-ft high walls should be removed and replaced with aggregate base, in which case, Caltrans standard design for Type 1 wall can be used. The excavation should extend on either side beyond the footing footprint – the extension should be equal to the depth of excavation. A reinforcing geotextile fabric should be placed at the bottom of the excavation prior to placement of the aggregate base. The fabric should be wrapped on top of the aggregate base with a minimum of 2 feet over the aggregate base.

Retaining Wall No. 2 ("B" Line: Sta. 619+48 to Sta. 621+80)

Retaining Wall No. 2 is a fill wall, approximately 232 feet long, located on the north side of westbound I-580, approximately 1700 feet east of Wall No. 1. The wall height, as planned, varies from 10 to 20 feet. There are no right-of-way (ROW) restrictions for the entire wall alignment. Based on the relevant soil borings, soil conditions in this section indicate the soils to be predominantly hard clays. An allowable bearing capacity of 5 ksf (ultimate bearing pressure of 15 ksf) is recommended. A Type 1 wall on spread footing is reasonable, since the required allowable bearing capacity (4.3 ksf) per Caltrans Standard Plans for a 20-ft high wall is less than the recommended allowable bearing pressure of 5 ksf.

Retaining Wall No. 3 ("B" Line: Sta. 623+00 to Sta. 638+92; "MKR2 Line: Sta. 638+92 to 648+50)

Retaining Wall No. 3 is a cut wall, approximately 2359 feet long, starting on the north side of westbound I-580, 120 feet east of Wall No. 2 and continuing on the north side of the on-ramp from North Livermore Avenue to westbound I-580. The cut depths range from 6 to 16 feet along the alignment. There is generally a high 2:1 slope behind the wall.

A Soil Nail wall is proposed for the entire length of the wall. Based on the soil conditions as revealed by the relevant soil borings, the wall alignment is divided into four segments. Pertinent geotechnical input information for design of the soil nails is provided for the four segments as follows:

Sta. 623+00 to Sta. 628+00 ("B" Line)
Soil Conditions:
0 to 8-ft depth (Medium Dense to Very Dense Sand)
Unit Weight of Soil = 120 pcf; Cohesion = 0; Friction Angle = 36 degrees

Below 8-ft depth (Hard Clay)
Unit Weight of Soil = 125pcf; Cohesion = 500 psf; Friction Angle = 28 degrees

Caving problems through the sands during drilling should be anticipated. Also, special measures such as shotcreting of the clean sands may be required to prevent sloughing of the face during construction.

Sta. 628+00 to Sta. 636+00
Soil Conditions: Hard Clays to Very Dense Sands
Unit Weight of Soil = 125 pcf; Cohesion = 500; Friction Angle = 30 degrees

Difficult drilling through the hard clays and very dense sands should be anticipated.

Sta. 636+00 to Sta. 643+00
Soil Conditions: Very Dense Sands
Unit Weight of Soil = 130 pcf; Cohesion = 0; Friction Angle = 40 degrees

Difficult drilling through the very dense sands and caving conditions should be anticipated.

Sta. 643+00 to Sta. 648+50
Soil Conditions:
0 to 8-ft depth (Medium Dense to Dense Sands)
Unit Weight of Soil = 130 pcf; Cohesion = 0; Friction Angle = 35 degrees

Below 8-ft depth (Hard Clay)
Unit Weight = 125 pcf; Cohesion = 500 psf; Friction Angle = 28 degrees

Caving problems through the sands during drilling should be anticipated. Also, special measures such as shotcreting of the clean sands may be required to prevent sloughing of the face during construction.

The soil nail wall has been designed with the aid of the SNAILZ computer program developed by Caltrans. SNAILZ run outputs supplied by the Designer are presented in Appendix C.

There may be some ROW limitations between Sta. 623+00 and Sta. 632+00, which may require acquiring additional ROW easement.

Retaining Wall No. 4 ("B" Line: Sta. 659+50 to Sta. 664+0)

Retaining Wall No. 4 is a cut wall, approximately 440 feet long, located on the north side of the westbound I-580, approximately 1000 feet east of North Livermore Avenue. The cut depths range from 3 to 12 feet with a 2:1 backslope in the easternmost portion of the alignment.

A Soil Nail wall is proposed for the entire length of the wall. Based on the soil conditions as revealed by the relevant soil borings, pertinent geotechnical input information for design of the soil nails is provided below:

Sta. 659+50 to Sta. 662+50
El. Above 482.
Soil Conditions: Stiff to Very Stiff Clay
Unit Weight = 125 pcf; Cohesion = 250 psf; Friction Angle = 28 degrees
El. 482 to 478.
Soil Conditions: Hard Clay
Unit Weight = 125 pcf; Cohesion = 500; Friction Angle = 30 degrees
El. 478 to 473.
Soil Conditions: Medium Dense Silty Sand
Unit Weight = 130 pcf; Cohesion = 50 psf; Friction Angle = 30 degrees
El. Below 473.
Soil Conditions: Dense, well graded sand with gravel
Unit Weight = 130 pcf; Cohesion = 0; Friction Angle = 37 degrees

Caving problems through the sands during drilling should be anticipated. Also, special measures such as shotcreting of the clean sands may be required to prevent sloughing of the face during construction.

Sta. 662+50 to Sta. 664+00
Soil Conditions: Very stiff to hard Clay
Unit Weight = 125 pcf; Cohesion = 500 psf; Friction Angle = 28 degrees

The soil nail wall has been designed with the aid of the SNAILZ computer program developed by Caltrans. SNAILZ run outputs supplied by the Designer are presented in Appendix C.

Sign Structure L will be located adjacent to the wall at Sta. 660+17.5. To avoid loads from the sign structure foundation being imposed on the wall, the sign structure will be isolated from the wall by a double-wall casing. Details of the foundation are discussed in Section 8.6.2.2. To accommodate the casing, spacing between the two vertical rows of soil nail adjacent to the casing will be increased. Required lengths of the nails in these rows due to the larger spacing have been computed by SNAILZ.

<u>Retaining Wall No. 5 ("B" Line: Sta. 665+50 to Sta. 671+90)</u>
Retaining Wall No. 5 is a cut wall, approximately 640 feet long, located on the north side of westbound I-580, approximately 150 feet east of Retaining Wall No. 4. The cut depths range from 3 to 14 feet along the alignment.

A Soil Nail wall is proposed for the entire length of the wall. Based on the soil conditions as revealed by the relevant soil borings, the wall alignment is divided into two segments. Pertinent geotechnical input information for design of the soil nails is provided for the two segments as follows:

Sta. 665+50 to Sta. 667+50
Soil Conditions: Medium Dense to Dense Poorly Graded Sand
Unit Weight of Soil = 130 pcf; Cohesion = 0; Friction Angle = 38 degrees

Caving problems through the sands during drilling should be anticipated. Also, special measures such as shotcreting of the clean sands may be required to prevent sloughing of the face during construction.

Sta. 667+50 to Sta. 671+90
Soil Conditions: 0 to 5 feet - Stiff Clay
Below 5 feet – Hard Clay
Unit Weight of Soil = 120 pcf (0 to 5 feet); 125 pcf (below 5 feet)
Cohesion = 200 psf (0 to 5 feet); 500 psf (below 5 feet)
Friction Angle = 25 degrees (0 to 5 feet); 28 degrees (below 5 feet)

Difficult drilling through the hard clays should be anticipated.

The soil nail wall has been designed with the aid of the SNAILZ computer program developed by Caltrans. SNAILZ run outputs are presented in Appendix C.

<u>Retaining Wall No. 6 ("B" Line: Sta. 672+50 to Sta. 684+75)</u>
Retaining Wall No. 6 is a fill wall, approximately 1232 feet long, located on the north side of westbound I-580, starting from approximately 70 feet east of Wall No. 5. The wall heights range from 8 to 18 feet along the alignment. Relevant soil borings indicate the presence of firm to stiff clay all along the alignment at or near the 'bottom of footing' elevations, which range from Elev. 460.0 to Elev. 476.0 feet. An allowable bearing capacity of 1.7 ksf (ultimate – 5.1 ksf) is recommended. Type 1 wall on spread footing may be used, if special measures in design and construction are taken for the wall toe pressures to satisfy the allowable bearing capacity requirements. We understand that increasing the footing widths per the Caltrans Standard Plans to satisfy the bearing capacity requirements is not preferred. It is therefore suggested that lightweight fill be used as backfill, which will reduce the required toe pressures as noted in the Caltrans Standard Plans by approximately one-half. Lightweight fill may consist of natural aggregate type or expanded shale aggregate type, which consists of a rotary kiln expanded shale aggregate of the extruded type. Other lightweight fill

such as shredded tires or EPS-Styrofoam blocks are not recommended. Caltrans Standard Special provisions should be followed for lightweight fill.

Per our computations:

- For wall heights from up to 16 feet, use of lightweight backfill will reduce the toe pressures to less than or equal to the recommended allowable bearing capacity. Spread footing foundations will thereby be tenable for wall heights up to 16 feet.
- For 18-ft high walls, in addition to the use of lightweight backfill, 2 feet of soil under the footing should be removed and replaced with aggregate base. Thereby the toe pressures would be reduced to less than the recommended bearing capacity, making spread footing foundations tenable for 18-ft high walls.

The computations also suggest the following alternative for spread footing foundations to be tenable:

- Use standard backfill for 8-ft and 10-ft high walls. In that case, soil under the footing should be removed to 2-ft and 3-ft depths for wall heights of 8 feet and 10 feet, respectively, and replaced by aggregate base.
- Use lightweight backfill for wall heights of 12 to 16 feet. No additional measures are required.
- Use lightweight backfill for 18-ft high walls. In addition, remove 2 feet of soil under the footing and replace with aggregate base.

Where soil below the footing is removed and replaced with aggregate base, the excavation should extend on either side beyond the footing footprint – the extension should be equal to the depth of excavation. A reinforcing geotextile fabric should be placed at the bottom of the excavation prior to placement of the aggregate base. The fabric should be wrapped on top of the aggregate base with a minimum of 2 feet over the aggregate base.

Retaining Wall No. 7 ("B" Line: Sta. 685+30 to Sta. 688+00)

Retaining Wall No. 7 is a cut wall, approximately 274 feet long, located on the north side of westbound I-580 starting approximately 50 feet east of Wall No. 6. Cut depths range from 3 to 11.5 feet.

A Soil Nail wall is proposed for the entire length of the wall. Based on the soil conditions as revealed by the relevant soil borings, pertinent geotechnical input information for design of the soil nails is provided below:

Soil Conditions: Very stiff, lean clay and silt (with possibility of a 4-ft medium dense sand layer)
Unit Weight of Soil = 120 pcf
Cohesion = 300 psf
Friction Angle = 28 degrees

In the event sand is encountered, special measures such as shotcreting may be required to prevent sloughing of the face during construction.

The soil nail wall has been designed with the aid of the SNAILZ computer program developed by Caltrans. SNAILZ run outputs supplied by the Designer are presented in Appendix C.

Retaining Wall No 8 ("B" Line: Sta. 690+50 to Sta. 692+74)

Retaining Wall No. 8 is a fill wall, approximately 226 feet long, located on the north side of westbound I-580 starting approximately 250 feet east of Wall No. 7. The design wall heights range from 6 to 8 feet. This wall is a new addition and thus, there are no soil borings within the wall alignment. The nearest boring (Boring A-08-234, 170 feet east of the eastern edge of the wall) indicates the presence of stiff clays at the foundation level elevations. An allowable bearing capacity of 2.5 ksf (ultimate bearing pressure of 7.5 ksf) is recommended. A Type 1 wall on spread footing is reasonable, since the required toe pressure per Caltrans Standard Plans for an 8-ft high wall (2.2 ksf) is less than the recommended allowable bearing pressure of 2.5 ksf.

Retaining Wall No. 9 ("B" Line: Sta. 694+07+30 to Sta. 702+70)

Retaining Wall No. 9 is a fill wall, approximately 870 feet long, located on the north side of westbound I-580 starting approximately 130 feet east of Wall No. 8. The wall heights range from 8 to 18 feet. Additionally, there is a small (24-foot long) segment of a 22-ft high wall, necessitated by the presence of a 3-ft diameter pipe passing through it. The footing at this location is depressed to accommodate the pipe. The wall height is a new addition. Based on the relevant soil borings, soil conditions in this section indicate the soils at the foundation levels to be stiff clays. An allowable bearing capacity of 3 ksf (ultimate – 9 ksf) is recommended for this section. A Type 1 wall is feasible for this alignment. Per Caltrans standard plans, the required toe pressures are 2.8 ksf and 3.3 ksf, for 12-foot and 14-foot high walls, respectively. Therefore, Caltrans Standard Type 1 wall may be used for walls up to 12 feet high. Higher walls may be feasible up to a point by widening the footings. Alternatively, for wall heights up to 18 feet, appropriate thickness of soil below the footing may be removed and replaced by aggregate base, in which case, Caltrans standard design for Type 1 wall may be used for 14-ft to 18-ft high walls. A 2-foot removal will suffice for 14-ft and 16-ft high walls and; a 3-ft soil removal will be required for 18-ft high wall heights. The excavation should extend on either side beyond the footing footprint – the extension should be equal to the depth of excavation. A reinforcing geotextile fabric should be placed at the bottom of the excavation prior to placement of the aggregate base. The fabric should be wrapped on top of the aggregate base with a minimum of 2 feet over the aggregate base.

Per Boring A-11-327 at the location of the 22-ft high wall segment, the bottom of footing for the wall should be on stiff clay at El. 377. Very stiff clay occurs at El.370. It is proposed that 4 feet of soil below the footing be excavated and replaced by aggregate base. The footing width should be designed based on a recommended allowable bearing capacity is 3.6 ksf for a footing width between 12 and 16 feet. Calculations for bearing capacity are presented in Appendix C. The excavation should extend on either side beyond the footing footprint – the extension should be equal to the depth of excavation. A reinforcing geotextile fabric should be placed at the bottom of the excavation prior to placement of the aggregate base. The fabric should be wrapped on top of the aggregate base with a

minimum of 2 feet over the aggregate base. Per the Designers, scour around the 3-ft diameter CMP passing through the retaining wall is not an issue, since this is the inlet side of the pipe.

Another alternative is to use lightweight backfill for walls 14 feet or higher, in which case, no excavation below the footings will be required for wall heights from 14 to 22 feet.

A 5-ft thick fat clay layer is noted in a relevant boring at foundation level. In the event the fat clay is exposed at the foundation grade, it should be over excavated to 2' and replaced with aggregate base.

Retaining Wall No. 10 ("B" Line: Sta. 703+00 to Sta. 704+50)

Retaining Wall No. 10 is a cut wall, approximately 150 feet long, located on the north side of the westbound I-580, 30 feet east of Wall No. 9. The cut depths range from 3 to 12 feet along the alignment. Part of the wall runs in front of the north abutment of Las Colinas Bridge, approximately 20 feet from the abutment.

An 18-ft high tieback wall is proposed in front of the abutment (Sta. 703+60 to Sta. 704+20). The abutment is on spread footing. The tieback wall should consider the load from the footing as well as any loads from the surcharge above the footing elevation. Geotechnical design and recommendations considering lateral earth pressure and footing surcharge as provided to the designer is presented in Appendix C. Associated calculations are also included in the Appendix.

A Soil Nail wall is proposed for the wall beyond the edges of the tieback wall. Based on the soil conditions as revealed by the relevant soil borings, pertinent geotechnical input information for design of the soil nails is provided below:

Soil Conditions: Very stiff lean clay

Unit Weight of Soil = 125 pcf
Cohesion = 300 psf
Friction Angle = 28 degrees

The soil nail wall has been designed with the aid of the SNAILZ computer program developed by Caltrans. SNAILZ run outputs supplied by the Designer are presented in Appendix C.

Retaining Wall No. 11 ("B" Line: Sta. 707+20 to Sta. 708+30)

Retaining Wall No. 11 is a cut wall, approximately 60 feet long, located on the north side of the westbound I-580, starting 270 feet east of Wall No. 10. The wall has a design height of 7 feet with a chain link fence (Type CL-4) on top of the wall for the entire wall alignment. The ROW line is within 6 feet of the proposed cut. The ROW may pose limitations for the required excavation for a Caltrans Standard Type 1 wall. A Type 7 (Mod.) wall is therefore recommended. A soil boring (Boring No. A-09-238) approximately 100 feet west of the western end of the wall indicates hard clays at the foundation elevation and a soil boring (Boring No. A-09-239) approximately 85 feet east of the eastern end of the wall indicates very dense silty sand with gravel at the foundation elevation. Based on the above information, the following design parameters are recommended:

Active Earth Pressure:
35 pcf (equivalent fluid pressure)
Passive Earth Pressure: 3000 psf (uniform pressure)
Coefficient of Friction: 0.35
Allowable Bearing Capacity: 5 ksf

A Type 7 (Mod.) wall on spread footing is therefore reasonable since the required toe pressure capacity of 2.0 ksf per Caltrans Standard Plans for a wall up to 12-ft height will be less than the allowable bearing capacity of the underlying soil.

Retaining Wall No. 12 ("B" Line: Sta. 709+30 to Sta. 713+50)

Retaining Wall No. 12 is a fill wall, approximately 420 feet long, located on the north side of westbound I-580, approximately 150 feet east of Wall No. 11. The design wall height ranges from 6 to 8 feet. The retaining wall is at the edge of Las Colinas Road and thus abuts on the ROW line for the entire wall alignment. Therefore, if a Type 1 wall is used, footing excavations will extend under the road. This will require a temporary construction easement (TCE). A Type 5 wall

is therefore recommended to minimize the excavation. Based on the relevant soil borings, soil conditions at the foundation level indicate the soils to be medium dense silty and clayey sands, underlain by stiff to very stiff clays. An allowable bearing pressure of 2.5 ksf (ultimate – 7.5 ksf) is recommended. A Type 5 wall on spread footing is reasonable, since the required toe pressure per Caltrans Standard Plans for an 8-ft high wall is 2.5 ksf.

Retaining Wall No. 13 ("B" Line: Sta. 715+50 to Sta. 719+50)

Retaining Wall No. 13 is a fill wall, approximately 400 feet long, located on the north side of westbound I-580, approximately 200 feet east of Wall No. 12. The design wall heights, as planned, range from 8 to 10 feet. There are no right-of-way (ROW) restrictions for the entire wall alignment. Based on the relevant soil borings, soil conditions in this section indicate the soils to be stiff clays and sandy clays and medium dense silty sand at the foundation level. A 5-ft thick layer of stiff black fat clay is present approximately 5 feet below bottom of footing, which is not expected to be of any significance to the stability of the retaining wall. Assuming the bottom of footing on silty sand, an allowable bearing capacity of 1.9 ksf (ultimate – 5.7ksf) for a 4-ft wide footing and 2.3 ksf (ultimate – 7.0ksf) for a 5-ft wide footing are recommended. If the bottom of the footing is on stiff clay, an allowable bearing capacity of 2.5 ksf (ultimate – 7.5 ksf) is recommended. A Type 1 wall on spread footing is thus reasonable, since the noted toe pressures per Caltrans Standard Plans for 6-ft and 8-ft high walls (footing widths of 4.25 feet and 5.25 feet) are 1.9 ksf and 2.2 ksf, respectively. Groundwater was encountered at an elevation of 487.00 to 489.00. A potentially liquefiable layer of medium dense silty sand/silty gravel was encountered just below the water table in all the three relevant borings. The layer occurred at the bottom of the boring in all three cases and therefore, the thickness of the layer could not be definitively established. Based on the adjacent borings, the layer is expected to be of limited (less than 10 feet) thickness and is unlikely to have any significant effect on the retaining wall. In the event the fat clay is exposed at the foundation grade, it should be over excavated to 2' and replaced with aggregate base.

Retaining Wall No. 14 ("B" Line: Sta. 733+50 to Sta. 734+16; "MXR3" Line: 734+16 to 742+75)

Retaining Wall No. 14 is a cut wall, approximately 908 feet long, starting on the north side of westbound I-580, approximately 1400 feet east of Wall No. 13 and continuing on the north side of the on-ramp from First Street to westbound I-580. The design wall heights range from 3 to 16 feet along the alignment – wall heights west of Sta. 738+50 are 8 feet or less.

A Soil Nail wall is proposed for the entire length of the wall. Based on the soil conditions as revealed by the relevant soil borings, the wall alignment is divided into two segments. Pertinent geotechnical input information for design of the soil nails is provided for the two segments as follows:

Sta. 733+50 to Sta. 738+00

Soil Conditions: 0 to 5 feet – Medium Dense Clayey Sand
Below 5 feet – Very Dense Silty/Clayey Sand

Unit Weight of Soil = 120 pcf (0 to 5 feet); 125 psf (below 5 feet)
Cohesion = 50 psf (0 to 5 feet); 0 (below 5 feet)
Friction Angle = 30 degrees (0 to 5 feet); 40 degrees (below 5 feet)

Sta. 738+00 to Sta. 742+75

Soil Conditions: Above Elev. 527.00 – Very Stiff Lean Clay
Below Elev. 527.00 – Hard Lean Clay

Unit Weight of Soil = 120 pcf (above El. 527): 125 pcf (below El. 527)
Cohesion = 300 psf (above El. 527); 500 psf (below El. 527)
Friction Angle = 28 degrees (above El. 527); 28 degrees (below El. 527)

Difficult drilling and caving conditions should be anticipated in the very dense sands and the hard clays.

The soil nail wall has been designed with the aid of the SNAILZ computer program developed by Caltrans. SNAILZ run outputs supplied by the Designer are presented in Appendix C.

There is potential for ROW limitations beyond Sta. 739+50 and 740+50, which may require acquiring additional ROW/easement.

Retaining Wall No. 15 ("MXR3" Line: Sta. 747+25 to Sta. 748+55)

Retaining Wall No. 15 is a fill wall, approximately 153 feet long, located on the north side of the on-ramp from First Street to westbound I-580 between Wall No. 14 and First Street. The design wall height is 6 feet for the entire alignment. A 2:1 slope is indicated below the toe of the retaining wall. Per Caltrans standard plans, the slope should be at least 3 feet beyond the toe of the retaining wall. This would require a deeper embedment of the footing for a Type 1 wall, compared to a standard Type 5 wall. A Type 5 wall is therefore recommended. There are no ROW limitations for this wall. Per Caltrans Standard Plans, a toe pressure of 2.2 ksf is required for a 6-ft high Type 5 wall. Boring A-09-250, approximately 900 feet southwest of the wall indicates hard clays for the entire boring. Based on the subsurface conditions at the site, the required toe pressure should be less than the allowable bearing capacity at the foundation level. A Type 5 wall on spread footing is reasonable.

Retaining Wall No. 16 ("B" Line: Sta. 645+50 to Sta. 649+59)

Retaining Wall No. 16 is a fill wall, approximately 412 feet long, located on the south side of eastbound I-580, immediately west of the North Livermore Avenue Undercrossing. The design wall height, as planned, varies from 6 to 8 feet. There are no right-of-way (ROW) restrictions for the entire wall alignment. A 2:1 slope is indicated below the toe of the retaining wall. Per Caltrans standard plans, the slope should be at least 3 feet beyond the toe of the retaining wall. This would require a deeper embedment of the footing for a Type 1 wall, compared to a standard Type 5 wall. A Type 5 wall is therefore recommended. Based on the relevant soil borings, soil conditions in this section indicate the soils to be predominantly stiff to very stiff clays at the foundation level. An allowable bearing capacity of 3 ksf (ultimate bearing pressure of 9 ksf) is recommended. A Type 5 wall on spread footing is reasonable, since the required toe pressure per Caltrans Standard Plans for an 8-ft high wall (2.5 ksf) is less than the recommended allowable bearing pressure of 3 ksf.

Retaining Wall No. 17 ("B" Line: Sta. 651+23 to Sta. 654+18)

Retaining Wall No. 17 is a fill wall, approximately 295 feet long, located on the south side of eastbound I-580, immediately east of the North Livermore Avenue Undercrossing. The design wall height, as planned, varies from 6 to 8 feet. There are no right-of-way (ROW) restrictions for the entire wall alignment. A 2:1 slope is indicated below the toe of the retaining wall. Per Caltrans standard plans, the slope should be at least 3 feet beyond the toe of the retaining wall. This would require a deeper embedment of the footing for a Type 1 wall, compared to a standard Type 5 wall. A Type 5 wall is therefore preferred. Based on the relevant soil borings, soil conditions at the foundation level in this section indicate the soils to be predominantly firm to stiff sandy clays. An allowable bearing capacity of 2 ksf (ultimate bearing pressure of 6 ksf) is recommended. The required toe pressure per Caltrans Standard Plans for 6-ft and 8-ft high walls would be 2.2 ksf and 2.5 ksf, respectively, which are greater than the recommended allowable bearing pressure of 2 ksf. The footing should therefore be widened to satisfy the recommended bearing capacity. Excavating 2 feet of soil and replacing with aggregate base may also be considered to meet the bearing capacity requirements. The excavation should extend on either side beyond the footing footprint – the extension should be equal to the depth of excavation. A reinforcing geotextile fabric should be placed at the bottom of the excavation prior to placement of the aggregate base. The fabric should be wrapped on top of the aggregate base with a minimum of 2 feet over the aggregate base.

Retaining Wall No. 18 ("MKL1" Line: Sta. 654+50 to Sta. 657+50)

Retaining Wall No. 18 is a fill wall, approximately 300 feet long, located on the south side of the on-ramp from North Livermore Avenue to eastbound I-580. The design wall height, as planned, varies from 6 to 10 feet. There are no right-of-way (ROW) restrictions for the entire wall alignment. A 2:1 slope is indicated below the toe of the retaining wall. Per Caltrans standard plans, the slope should be at least 3 feet beyond the toe of the retaining wall. This would require a deeper embedment of the footing for a Type 1 wall, compared to a standard Type 5 wall. A Type 5 wall is therefore recommended. Based on the relevant soil borings, soil conditions in this section indicate the soils to be predominantly stiff to very stiff clays near the surface. An allowable bearing capacity of 3 ksf (ultimate bearing

pressure of 9 ksf) is recommended. A Type 5 wall on spread footing is reasonable, since the required toe pressure per Caltrans Standard Plans for a 10-ft high wall (3.0 ksf) is equal to the recommended allowable bearing pressure of 3 ksf.

Retaining Wall No. 19 ("MGR2" Line: Sta. 862+25 to Sta. 865+00)

Retaining Wall No. 19 is a fill wall, approximately 242 feet long, located on the south side of the on-ramp from Greenville Road to eastbound I-580. The design wall height, as planned, varies from 8 to 12 feet. There are no right-of-way (ROW) restrictions for the entire wall alignment. A 2:1 slope is indicated below the toe of the retaining wall. Per Caltrans standard plans, the slope should be at least 3 feet beyond the toe of the retaining wall. This would require a deeper embedment of the footing for a Type 1 wall, compared to a standard Type 5 wall. A Type 5 wall is therefore recommended. Based on the relevant soil borings, soil conditions in this section indicate the soils near the footing elevations to be predominantly medium dense silty sands. Groundwater was encountered at 5 feet below ground surface at the western end, therefore water and soft soils may be encountered during excavation. The soft soils can be mitigated by removal and replacement with aggregate base rock and use of geotextile fabric. Also, there is a 5-ft potentially liquefiable layer of medium dense gravel with sand and silt at a depth of 10 feet. The liquefiable layer is of limited extent and thickness and is therefore of minimal consequence to the wall.

An allowable bearing capacity of 3 ksf (ultimate bearing capacity of 9 ksf) and 4.3 ksf (ultimate bearing capacity of 13 ksf) are recommended for 8-ft and 12-ft high walls, respectively. A Type 5 wall on spread footing is reasonable, since the required toe pressures per Caltrans Standard Plans for 8-ft and 12-ft high walls (2.5 ksf and 3.6 ksf) are less than the recommended allowable bearing capacities noted above.

8.5 Culverts

The drainage plans provided by the designer indicates several new Alternative Pipe Culverts (APC) with diameters ranging from 18 to 24 inches. It is our understanding that small diameter culverts (24 inches and under) can be designed

and constructed using Standard Plans and Specifications, and no specific geotechnical investigation is required per Caltrans guidelines.

8.5.1 Corrosion Investigation

The corrosion investigation for this project was performed in general accordance with the provisions of California Test Method 643. Representative native soil samples at the anticipated pipe subgrade were obtained for corrosion tests. A summary of the corrosion test results is presented in Table 6.

TABLE 6: SUMMARY OF CORROSION TEST RESULTS

Boring No.	Station	Offset From "B Line" (ft)	Corrosion Tests					
			Sample No.	Depth (ft)	pH	Resistivity (ohm-cm)	Chloride (ppm)	Sulfate (ppm)
A-09-200	619+19	81.5 LT	1	3	7.85	1580	13.5	36.2
A-09-202	625+55	96.0 LT	8	25	7.87	960	15.8	8.7
A-09-208	646+90	157.7 LT	4	14.5	7.45	990	15.5	17.4
A-09-216	636+90	76.9 RT	2	4	7.07	2650	15.8	21.9
A-09-218	645+41	83.3 RT	1	2.5	7.72	1980	9.4	11.1
A-09-219	648+98	79.0 LT	2	9.5	7.74	1420	28.7	32.8
A-09-227	673+00	86.4 LT	1	3	7.88	1660	9.5	43.4
A-09-229	678+97	86.6 LT	2	4.5	7.98	1050	21.0	31.2
A-09-235	697+61	109.4 LT	2	4.5	7.47	1310	10.5	53.4
A-09-243	720+90	102.2 LT	2	4.5	8.18	1470	17.0	27.0
A-09-247	729+88	97.0 LT	2	4.5	8.12	1050	37.1	105.7
A-09-254	659+42	99.2 RT	2	4.5	7.97	3220	14.0	26.3
A-09-261	697+45	73.7 RT	3	9.5	7.71	750	27.1	62.7
A-09-276	779+00	116.1 LT	3	9	7.94	910	24.3	39.0
A-09-277	782+05	95.7 LT	5	19.5	7.48	940	38.5	24.0
A-09-301	846+97	158.2 RT	3	10	8.01	2300	26.9	4.4
A-08-LIV-01	650+96	75.0 RT	1	3	7.85	1370	40.1	8.5
A-09-AL2-01	617+50	66.4' LT	2	4.5	7.67	1740	7.4	10.2
A-09-AL2-01	617+50	66.4' LT	12/13*	54.5/59.5*	8.02	1070	27.6	27.8
A-09-234	694+45	86.4 LT	3	9.5	7.98	670	87.7	136.9
A-09-234	694+45	86.4 LT	7	29.5	8.14	910	81.2	34.6
* Composite Sample								

For selection of pipe material for culvert and storm drain applications, it is our understanding that AltPipe computer program is used by Caltrans to assist the designers. AltPipe program is a web-based tool (http://dapl.ca.gov//design/altpipe) and update and supersedes the previous CULVERT4 program. The computations performed by AltPipe are based

on the procedures and Caltrans Test Methods described in Chapter 850 of the Caltrans Highway Design Manual (HDM). AltPipe incorporates current requirements from the HDM supplemented by Caltrans Design Information Bulletin No. 83 (D.I.B. No. 83, June 30, 2003) for abrasion potential for material selection. The AltPipe program is intended for final design by the civil or hydraulic engineer. In addition to the soil corrosivity data, the input require data such as Abrasion Level, 2-5 year flow velocity and height of cover, which should be determined while finalizing the drainage design.

Analyses were performed by the Designers using the AltPipe program (Version 6.08) and the soil corrosivity data presented in Table 6. Analyses were performed for 90 drainage units: 34 units are 18 inches in diameter; 54 are 24 inches in diameter; and 2 are 36 inches in diameter. Appropriate depths of soil cover and soil corrosion values from Table 6 were incorporated in the analyses, based on the location of the unit. All analyses used a 50-year design life and an Abrasion Level of 3. The 2-5 year flow velocities ranged from 3 to 8 ft/sec. (generally 3 to 5 ft/sec.) The results of the analyses performed by the designers are presented in Appendix C.

Following are some general findings, based on the analyses. The designer should refer to the calculations in Appendix C for more specific information.

- Corrugated steel pipes with helical or annular corrugations are allowable for 85 of the 90 units. Minimum thickness of pipes ranged from 0.052 to 0.079 inches for helical corrugations and was 0.064 to 0.079 inches for annular corrugations for all units (polymeric sheet (PS) or polymerized asphalt (PA) coating).
- Plastic PVC (Ribbed) and Plastic HDPE (Corrugated Types S) pipes are allowable for all drainage units. Plastic PVC (Corrugated) and Plastic HDPE (Ribbed and Corrugated Types S) pipes are allowable for 88 of 90 drainage units.

- Reinforced concrete pipes are allowable for all drainage units. Required thickness of steel cover ranges from 0.75-in. to 1-in. Five sacks of concrete and 10 percent water is indicated in the Alt Pipe output for all units.
- Corrugated aluminum pipes (annular corrugations) are allowable for all units and aluminum pipes (helical corrugations) are allowable for all except one unit. Aluminum spiral rib pipes are allowable for most units. Where allowable, the required minimum thickness is generally 0.060 inches.

8.5.2 Bore-and-Jack Culvert

Based on the information provided by the designer, there is no bore-and-jack culvert planned for this project.

8.6 Minor Structure Foundations

8.6.1 Soundwall

One precast concrete panel soundwall is planned for the project on the north side of westbound on-ramp from Vasco Road (Sta. 792+ 45.60 to Sta. 795+50.97 – "B" Line). Per the Plans provided by the Designer (BKF Engineers), the soundwall will be designed by the Contractor's Registered Engineer.

8.6.2 Overhead Sign Structures

It is proposed to install eight new overhead sign structures (Caltrans Standard Signs Truss-Single Post Type) and relocate one sign structure along I-580. Eight of the sign structures will be in the westbound direction of I-580; only one structure will be in the eastbound direction. Caltrans Standard Overhead Signs Truss Single Post Type with Post Type VII will be used for one of the structures; with Post Type VIII for four of the structures and with Post Type IX for three of the structures. A 24NPS

tubular single post will be used for the remaining structure. All of the structures will be founded on cast-in-drilled-hole (CIDH) piles.

8.6.2.1 Subsurface Soil Conditions

Subsurface soil conditions for all the sign structure locations were established from adjacent borings and are summarized in the table below.

TABLE 7: SUMMARY OF OVERHEAD SIGN STRUCTURES

Sign	Location		Post Type	Post Height (ft)	Relevant Borings		Subsurface Soil Conditions[1]
	Station	Direction			Boring No.	Stationing	
A	550+00 ("B" line)	Westbound	VIII	16'-3"	A-11-324	550+00 ("B" line)	Hard lean clay at the surface to a depth of 10 feet, underlain by 5 feet of dense silty san, underlain in turn by stiff to very stiff lean clay to 30-ft depth, the maximum depth drilled. Groundwater was encountered at 20-ft during drilling.
C[1]	601+50 ("B" line)	Westbound	IX	N/A	A-11-325	601+50 ("B" line)	Very stiff to hard clays to 31-ft depth, the maximum depth explored.
D	617+20 ("B" line)	Westbound	24 NPS Post	20'-11"	AL2-01	617+50 ("B" line)	Very stiff sandy lean clay to 7-ft depth, underlain by dense silty sand with gravel to 13-ft depth, underlain by firm to stiff lean clays to 22-ft depth, underlain by medium dense, well graded sand to 30-ft depth
I[3]	649+00 ("B" line)	Eastbound	IX	27'-1"	A-08-219	648+98 ("B" line)	Very stiff clays and silts to 15-ft depth (the maximum depth drilled)
J	651+80 ("B" line)	Westbound	VIII	20'-3"	LIV-01	650+96 ("B" line)	Firm to stiff sandy lean clay with gravel to 17-ft depth, underlain by dense to very dense silty and clayey sands with gravel to 30-ft depth..
L[4]	660+17.5 ("B" line)	Westbound	VII	9'-4"	A-09-223	661+00 ("B" line)	Stiff lean clay to 8-ft depth, underlain by medium dense silty and clayey sands to 17-ft depth, underlain by very dense clayey sands to 28-ft depth
N	690+00 ("B" line)	Westbound	VIII	15'-0"	A-11-326	690+00 ("B" line)	A 3-ft layer of very stiff fat clay underlain by medium dense clayey sand with gravel to 10-ft depth, underlain by sandy lean clay and lean clay to a depth of 29 feet, stiff at the top, grading to hard at the bottom. Very dense silty sand was encountered from 29-ft to 31-ft depth, the maximum depth drilled. Groundwater was encountered during drilling near the bottom of the boring.
O	816+10 ("B" line)	Westbound	IX	20'-3"	A-11-328	816+00 ("B" line)	Very stiff lean clay at the surface to 8-ft depth, underlain by very stiff sandy silt to 18-ft depth. The sandy silt layer is underlain by stiff lean clay with gravel to 21-ft depth, underlain by medium dense potentially liquefiable silty sand to 30-ft depth. Very dense sand was encountered below 30-ft to 31.5-ft, the maximum depth drilled. Groundwater was encountered at a depth of 13.5 feet during drilling.
Q	847+80 ("B" line)	Westbound	VIII	19'-4"	A-11-329	847+00 ("B" line)	Very stiff to hard lean clay at the surface to 15-ft depth underlain by loose to medium dense potentially liquefiable silty sand to 35-ft depth. Very dense sand was encountered from 35-ft to 36-ft,the maximum depth drilled. Groundwater encountered at 20-ft depth during drilling.

(1) Groundwater was not encountered during drilling unless mentioned otherwise.
(2) Sign structure "C" will be relocated approximately 30 feet to the west.
(3) Sign structure "I" is 5 feet behind Retaining Wall No. 16.
(4) Sign structure "L" is very close behind Retaining Wall No. 4, requiring special foundation design.

8.6.2.2 Pile Capacity

The piles for the overhead sign structures are subject to vertical loads, lateral loads, bending moments and torsional moments. Pile foundations are required to withstand the loads. Caltrans Standard Plans are recommended for all sign structures, except Sign Structure L, for which special measures are required, as discussed later. For Standard Plans to be usable for Sign Structure I, a clear distance of 5 feet is recommended between the sign structure pile and the back of Retaining Wall No. 16 (L-shaped Type 5 wall).

For the sign structures where Caltrans Standard Plans are recommended, for Post Types VII, VIII and IX (2006 Standard Plan S7) the recommended pile diameter is 5 feet (60 inches) The recommended pile length is 23 feet for Post Type VII and 25 feet for Post Types VIII and IX. The remaining sign structure on pile (Structure 'D') will be on a 24 NPS Post (Type II or Type III, where per Caltrans Standard Plan (2006 Standard Plan S36), the recommended pile diameter is 5 feet (60 inches) and the pile length is 25 feet. Based on the field investigations and laboratory test results, the subsurface soils are generally stiff to very stiff clays and medium dense to dense sands. The existing subsurface soil conditions for all sign structures are therefore judged to meet the foundation design basis specified in the Caltrans Standard Plans (e.g. a cohesionless material with a friction angle of 30 degrees and a unit weight of 120 pcf).

Proposed location of Sign Structure L is so close to Retaining Wall No. 4 (soil nail wall) that the sign structure deflections would impose loads on the wall, unless special measures were taken. Lateral load (LPILE) analyses were performed to determine the magnitude of lateral deflections for the sign structure. Based on the analyses, it was decided to isolate the sign structure foundation from the adjacent retaining wall. A 12-foot long double casing

with wall thicknesses of ½-inch a 3-inch clear spacing will first be installed. A CIDH pile will then be installed by drilling through the inner casing to a tip at 23 feet below the bottom of the casing. Thereby, the required embedment of 23 feet as required for Post Type VII will be maintained.

8.6.3 Other Minor Structures

According to the designer, the other minor structures for this project include the traffic signal systems and minor drainage structures. The foundation design of these minor structures should be according to the Caltrans Standard Plans. Based on the borings, the subsurface soil conditions at the proposed traffic signal systems generally consist of stiff to hard lean clays or medium dense to dense. The existing soils on site should provide adequate design capacity for these structures.

9. STRUCTURAL PAVEMENT

According to the designer, the structural pavement design will be required for:

- New pavement for the outside lane and shoulder along the north side of westbound I-580 from Sta. 540+00 to Sta. 869+45
- New pavement for the median on the south side of westbound I-580 from Sta. 540+00 to Sta. 862+00
- New pavement for the shoulder on the south side of eastbound I-580 from Sta. 640+82 to 649+74; and from Sta. 651+33 to Sta. 655+63;
- Overlay of the existing AC pavement section from Sta. 538+90 to Sta. 692+63;
- Overlay of the existing PCC pavement section from Sta. 693+94 to Sta. 800+11; and from Sta. 803+50 to Sta. 869+45
- New concrete pavement for Mainline roadway below Vasco Road, between Sta. 799+00 and Sta. 805+00; for the approaches to the bridges and near the eastern limits of the project (Sta. 868+20 to Sta. 869+45).
- New pavement for auxiliary lanes and HOV bypass lanes for:
    - Isabel Avenue - Westbound On-Ramp, Loop On-Ramp and Off-Ramp
    - North Livermore Avenue - Eastbound On-Ramps
    - North Livermore Avenue - Westbound On and Off-Ramp

  - Small portion of North Livermore Avenue
  - First Street Eastbound and Westbound On-Ramps
  - Vasco Road - Eastbound and Westbound On- and Off-Ramps
  - Greenville Road Eastbound and Westbound On-Ramps
- New pavement for Truck Scale Westbound On- and Off-Ramps

9.1 Laboratory Tests on Subgrade Material

Laboratory tests were conducted on seventeen representative bulk samples collected at subgrade level. Our previous experience for the I-580 eastbound HOV lane widening project indicated the presence of low R-value material at the subgrade level, whereby, lime treated subgrade was recommended for the pavement section. In anticipation of similar conditions, eleven of the samples were treated with lime before performance of the appropriate tests. The percentage of lime used for treatment (5 percent) was determined according to the pH test results of the treated materials on selected samples (ASTM C977). Therefore, the samples were treated with 5% SS-lime by dry weight of the soil for subsequent tests. Unconfined compression tests (California Test Method No. 373) were performed on nine samples of the treated soil. R-value tests were also performed on three samples of treated soil, and on eight samples of untreated soil. Finally, liquid and plastic limit tests were performed on twelve (untreated) samples for pertinent additional classification of the subgrade soils. The test results are summarized in Table 8. Additional data on the tests are presented in Appendix B.

TABLE 8: SUMMARY OF R-VALUE TESTS

Boring No.	Station (ft.)	Offset (ft.) From "B" line	Date Drilled	Atterberg Limits	R-Value Test Results		
					Untreated Sample	Lime Treated Sample	Compressive Strength (Lime Treated) (psi)
A-09-190	552+00	83.5' Lt.	02/13/09				311
A-09-197	600+10	88.5' Lt.	01/06/09	LL=37, PI=19	18		
A-09-205	634+59	85.8' Lt.	1/13/09			-	338
A-09-209	648+74	196.0' Lt.	12/30/09	LL=32, PI=18	11	-	-
A-09-221	649+00	81.1' Lt.	01/06/09	LL=48, PI=26	9	-	464
A-09-256	665+00	0'	02/19/09	-	25	-	473
A-09-257	675+00	0'	02/19/09	LL=39, PI=20	25		
A-09-265	725+00	0'	02/19/09	LL=36, PI=16			442
A-09-269	755+00	87.1' Lt.	01/06/09	LL=39, PI=22	<5	-	459
A-09-272	759+10	90.5' Lt.	01/05/09	LL=40, PI=23	-	85	478
A-09-273	760+00	86.9' Lt.	01/05/09	LL=42, PI=25	-	85	-
A-09-278	775+00	0'	02/18/09	LL=38, PI=8			
a-09-280	793+00	89.0' Lt.	01/05/09	LL=27, PI=14[(1)]	28[(1)]	-	-
A-09-281	795+05	96.3' Lt.	01/05/09				
A-09-286	805+00	94.9' Lt.	01/05/09	-	-	-	655
A—09-294	845+00	0'	02/18/09				314
A-09-296	859+50	115.0' Lt.	01/05/09	LL=41, PI=25	-	85	461
A-09-299	861+00	305.6' Rt.	01/05/09	LL=31, PI=15	8		
Note: (1) Composite sample from A-09-280 and A09-281							

The R-values of the subsurface soils at the project site were typically between <5 and 28. A lower R-value of 5 was used for the pavement design to account for the subgrade variation throughout the alignment.

The unconfined compressive strength (UCS) test results for lime stabilized materials ranged from 311 to 655 psi. Caltrans requires a minimum test threshold of 300 psi. Based on the laboratory test results, it is our opinion that the subgrade should be treated with minimum 5% SS-lime mixture to achieve the required minimum UCS of 300 psi. However, it is recommended that the specifications require the determinations of the percent lime content for the required minimum UCS for the Lime Stabilized Soil (LSTS) during construction. The pavement structural section has been designed based on this strength as provided in the HDM. All treatment operations should be performed in accordance with the project specifications and Caltrans standards.

9.2 As-Built Pavement Sections

The following are the as-built pavement sections based on the "Typical Cross Sections" of the plan provided by the Designer:

TABLE 9A: AS-BUILT PAVEMENT SECTIONS – MAINLINE

Location	Station	Pavement Section			
Westbound Travelway	"B" Line Sta. 538+90.00 to 540+00.00	Lanes 3/4		Lanes 1/2	
		0.20-ft Min & Var AC (Type A) 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.38-ft AC (Type A) 0.85 to 1.00-ft CTB (Cl A) 1.15-ft AS (Cl 1)	0.10- ft AC (OPEN GRADED) 0.20- ft AC (GAP GRADED) 0.65-ft AC (Type A) 0.80-ft LCB 1.50-ft LTS	0.20-ft Min & Var AC (Type A) 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.35 to 0.52-ft AC (Type A) 0.35 to 0.50-ft CTB (Cl A) 0.25 to 0.35-ft AC (Type A) / PCC	0.10- ft AC (OPEN GRADED) 0.20- ft AC (GAP GRADED) 0.15-ft Min & Var AC (Type A) 0.50-ft AC (Type A) 0.80-ft LCB 1.80-ft AS (Class 4)
	"B" Line Sta. 540+00 to 558+50.98	Lanes 3/4 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.38-ft AC (Type A) 0.85 to 1.00-ft CTB (Cl A) 1.15-ft AS (Cl 1)		Lanes 1/2 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.35 to 0.52-ft AC (Type A) 0.35 to 0.50-ft CTB (Cl A) 0.25 to 0.35-ft AC (Type A) / PCC	
	"B" Line Sta. 558+50.98 to 561+88.28	Lanes 3/4 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.60-ft AC (Type A) 0.85-ft CTB (Cl A) 1.15-ft AS (Cl 1)		Lanes 1/2 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.25-ft AC (Type A) 0.35 CTB (Cl A) 0.35-ft AC (Type A) / PCC	

TABLE 9A: AS-BUILT PAVEMENT SECTIONS – MAINLINE

Location	Station	Pavement Section	
	"B" Line Sta. 561+88.28 to 568+30.72	Lanes 3/4 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.60-ft AC (Type A) 0.58 to 0.85-ft CTB (Cl A) 1.15-ft AS (Cl 1)	Lanes 1/2 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.25-ft AC (Type A) 0.35 CTB (Cl A) 0.35-ft AC (Type A) /PCC
	"B" Line Sta. 568+30.72 to 581+76.08 "B" Line Sta. 583+49.44 to 585+03.95	Lanes 3/4 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.60-ft AC (Type A) 0.58 to 0.85-ft CTB (Cl A) 1.15-ft AS (Cl 1)	Lanes 1/2 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 1.00 to 1.28-ft AC (Type A) 0.35 CTB (Cl A) 0.35-ft AC (Type A) / PCC
	"B" Line Sta. 585+03.95 to 587+49.57	Lanes 3/4 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.60-ft AC (Type A) 0.85-ft CTB (Cl A) 1.15-ft AS (Cl 1)	Lanes 1/2 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 1.00 to 1.28 -ft AC (Type A) 0.35-ft CTB (Cl A) 0.35-ft AC (Type A) Unk. PCC
	"B" Line Sta. 587+49.57 to 593+89.00	Lanes 3/4 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.60-ft AC (Type A) 0.85-ft CTB (Cl A) 1.15-ft AS (Cl 1)	Lanes 1/2 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.25 -ft AC (Type A) 0.35-ft CTB (Cl A) 0.35-ft AC (Type A) Unk. PCC
	"B" Line Sta. 593+89.00 to 601+97.36	Lanes 3/4 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.05-ft AC (Type A) 0.75-ft PCC 0.50-ft RMCTB (Cl A) 0.50-ft AS (Cl 1)	Lanes 1/2 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.05 -ft AC (Type A) 0.67-ft PCC 0.33-ft CTB 1.00-ft IBM

TABLE 9A: AS-BUILT PAVEMENT SECTIONS – MAINLINE

Location	Station	Pavement Section	
	"B" Line Sta. 601+97.36 to 617+69.65	Lanes 3/4 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.05 to 0.08-ft AC (Type A) 0.73 to 0.80-ft PCC 0.50-ft RMCTB (Cl A) 0.50-ft AS (Cl 1)	Lanes 1/2 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.05 -ft AC (Type A) 0.67-ft PCC 0.33-ft CTB 1.00-ft IBM
	"B" Line Sta. 621+95.00 to 638+91.75	Lanes 3/4 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.05 to 0.08-ft AC (Type A) 0.73 to 0.80-ft PCC 0.50-ft RMCTB (Cl A) 0.50-ft AS (Cl 1)	Lanes 1/2 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.05 -ft AC (Type A) 0.67 to 0.71-ft PCC 0.33 to 0.38-ft CTB 1.00-ft IBM
	"B" Line Sta. 638+91.75 to 646+27.17	Lanes 3/4 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.05-ft AC (Type A) 0.75-ft PCC 0.50-ft RMCTB (Cl A) 0.50-ft AS (Cl 1)	Lanes 1/2 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.05 -ft AC (Type A) 0.67 to 0.71-ft PCC 0.33-ft CTB 1.00-ft IBM
	"B" Line Sta. 646+07.91 to 649+73.83 "B" Line Sta. 651+32.75 to 656+91.26	Lanes 3/4 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.05-ft AC (Type A) 0.75-ft PCC 0.50-ft RMCTB (Cl A) 0.50-ft AS (Cl 1)	Lanes 1/2 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.32 -ft AC (Type A) 0.67 to 0.73-ft PCC 0.33-ft CTB 1.00-ft IBM
	"B" Line Sta 656+91.26 to 660+08.22	Lanes 3/4 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.05-ft AC (Type A) 0.75-ft PCC 0.50-ft RMCTB (Cl A) 0.50-ft AS (Cl 1)	Lanes 1/2 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.05 ft AC (Type A) 0.67 ft PCC 0.33-ft CTB 1.00-ft IBM
	"B" Line Sta 660+08.22 to 672+50.00	Lanes 3/4 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.05-ft AC (Type A) 0.75-ft PCC 0.50-ft RMCTB (Cl A) 0.50-ft AS (Cl 1)	Lanes 1/2 0.25- ft AC (Type A) GPI 0.10-ft AC (Type A) 0.05 to 0.13-ft AC (Type A) 0.67 to 0.73-ft PCC 0.33-ft CTB 1.00-ft IBM

TABLE 9A: AS-BUILT PAVEMENT SECTIONS – MAINLINE

<table>
<tr><th>Location</th><th>Station</th><th colspan="3">Pavement Section</th></tr>
<tr><td rowspan="3"></td><td>“B” Line Sta 672+50.00 to 692+59.49</td><td>Lanes 3/4
0.25- ft AC (Type A)
GPI
0.10-ft AC (Type A)
0.05-ft AC (Type A)
0.75 to 0.77-ft PCC
0.50-ft RMCTB (Cl A)
0.50-ft AS (Cl 1)</td><td colspan="2">Lanes 1/2
0.25- ft AC (Type A)
GPI
0.10-ft AC (Type A)
0.05 to 0.13-ft AC (Type A)
0.67 to 0.73-ft PCC
0.33-ft CTB
1.00-ft IBM</td></tr>
<tr><td>“B” Line Sta. 694+06.76 to 813+39.61</td><td>Lanes 3/4
0.75-ft PCC
0.50-ft RMCTB (Cl A)
0.50-ft AS (Cl 1)</td><td colspan="2">Lanes 1/2
0.67-ft PCC
0.33-ft CTB
1.00-ft IBM</td></tr>
<tr><td>“B” Line Sta. 813+39.61 to 869+44.52</td><td>Lanes 3/4
0.75-ft PCC
0.50-ft CTB (Cl F)
0.92-ft AS (Cl 5)</td><td colspan="2">Lanes 1/2
0.67-ft PCC
0.35-ft CTB (Cl F)
1.15-ft AS (Cl 5)</td></tr>
<tr><td rowspan="4">I-580 Westbound Shoulder</td><td rowspan="2">“B” Line Sta. 538+90.00 to 540+00</td><td rowspan="2">Outside Shld
0.10- ft AC (OPEN GRADED)
0.20- ft AC (GAP GRADED)
0.65-ft AC (Type A)
0.80-ft LCB
1.50-ft LTS</td><td colspan="2">Inside Shld</td></tr>
<tr><td>0.20-ft Min & Var AC (Type A)
0.65-ft AC (Type A)
0.80-ft LCB
1.50-ft LTS</td><td>0.20-ft Min & Var AC (Type A)
0.65-ft AC (Type A)
0.80-ft LCB
1.50-ft LTS</td></tr>
<tr><td>“B” Line Sta. 540+00 to 551+36.99
“B” Line Sta. 568+30.72 to 581+76.08
“B” Line Sta. 583+49.44 to 585+03.95</td><td>Outside Shld
0.06-ft & Var OGAC
0.08-ft & Var AC (Type A)
0.70-ft AC (Type A)
Var-ft CTB (Cl A)
1.15-ft AS (Cl 1)</td><td colspan="2" rowspan="2">Inside Shld
0.06-ft & Var OGAC
0.08-ft & Var AC (Type A)
0.35-ft &Var AC (Type A)
0.35-ft CTB
0.25-ft AC (Type A)
0.20-ft AB (Cl 2)
1.00-ft AC (Type A)</td></tr>
<tr><td>“B” Line Sta. 551+36.99 to 568+30.72
“B” Line Sta. 585+03.95 to 593+89.00</td><td>Outside Shld
1.08-ft HMA (Type A)
0.50-ft LCB
1.50-ft LTS</td></tr>
<tr><td>“B” Line Sta. 593+89.00 to 601+97.36</td><td>Outside Shld
0.80-ft AC (Type A)
0.70-ft CTB (CL F)
0.85-ft AS (Cl 1)</td><td colspan="2">Inside Shld
Var-ft HMA (Type A)
0.06-ft & Var OGAC
0.08-ft & Var AC (Type A)
0.25-ft AC (Type A)
0.50-ft AB (Cl 2)
0.75-ft AS (Cl 1)</td></tr>
</table>

TABLE 9A: AS-BUILT PAVEMENT SECTIONS – MAINLINE

Location	Station	Pavement Section	
	"B" Line Sta. 601+97.36 to 617+69.65 "B" Line Sta. 619+48.41 to 646+27.17 "B" Line Sta. 646+07.91 to 649+73.83 "B" Line Sta. 651+32.75 to 692+59.49	Outside Shld 0.06-ft & Var OGAC 0.08-ft & Var AC (Type A) 0.35-ft AC (Type A) Var AB (Cl 2) 0.50-ft AS (Cl 1)	Inside Shld Var-ft HMA (Type A) 0.06-ft & Var OGAC 0.08-ft & Var AC (Type A) 0.25-ft AC (Type A) 0.50-ft AB (Cl 2) 0.75-ft AS (Cl 1)
	"B" Line Sta. 694+06.76 to 734+16.22 "B" Line Sta. 740+75.65 to 758+62.36 "B" Line Sta. 758+62.36 to 761+84.23 "B" Line Sta. 761+84.23 to 772+29.00 "B" Line Sta. 772+29.00 to 787+67.08 "B" Line Sta. 787+67.08 to 813+39.61	Outside Shld 0.35-ft AC (Type A) Var AB (Cl 2) 0.50-ft AS (Cl 1)	Inside Shld Var-ft AC (Type A) 0.35-ft AC (Type A) 0.50-ft CTB (Cl A) 1.20-ft AS (Cl 1)
	"B" Line Sta. 734+16.22 to 740+75.65	Outside Shld 0.15-ft AC (Type A) 0.35-ft AC (Type A) 0.70-ft CTB (CL F) 1.10-ft AS (Cl 1)	Inside Shld Var-ft AC (Type A) 0.35-ft AC (Type A) 0.50-ft CTB (Cl A) 1.20-ft AS (Cl 1)
	"B" Line Sta. 813+39.61 to 816+09.59	Outside Shld 0.35-ft AC (Type A) Var AB (Cl 2) 0.50-ft AS (Cl 1)	Inside Shld Var-ft AC (Type A) 0.20-ft AC (Type B) 0.50-ft CTB (Cl F) Var AS Cl (5)
	"B" Line Sta. 816+09.59 to 834+84.18	Outside Shld 0.25-ft AC (Type A) PRF 0.55-ft AC (Type A) 0.85-ft CTB (CL F) 1.60-ft AS (Cl 1)	Inside Shld Var-ft AC (Type A) 0.20-ft AC (Type B) 0.50-ft CTB (Cl A) Var-ft AS (Cl 1)
Westbound Shoulder	"B" Line Sta. 834+84.18 to 844+73.22	Outside Shld 0.25-ft AC (Type B) 0.50-ft CTB (Cl F) Var AS (Cl 5)	Inside Shld Var-ft AC (Type A) 0.20-ft AC (Type B) 0.50-ft CTB (Cl F) Var AS Cl (5)
	"B" Line Sta. 844+73.22 to 847+90.18	Outside Shld 0.15-ft AC (Type A) PRF 0.55-ft CTB (Cl F) 0.85-ft CTB (Cl F) 1.60-ft AS (Cl 1)	Inside Shld Var-ft AC (Type A) 0.20-ft AC (Type B) 0.50-ft CTB (Cl F) Var AS Cl (5)
	"B" Line Sta. 847+90.18 to 856+52.57	Outside Shld 0.25-ft AC (Type A) PRF 0.30-ft AC (Type A) 0.85-ft CTB (Cl F) 1.60-ft AS (Cl 1)	Inside Shld Var-ft AC (Type A) 0.20-ft AC (Type B) 0.50-ft CTB (Cl F) Var AS Cl (5)

TABLE 9A: AS-BUILT PAVEMENT SECTIONS – MAINLINE

Location	Station	Pavement Section	
	"B" Line Sta. 856+52.57 to 861+97.98	Outside Shld 0.25-ft AC (Type A) PRF 0.30-ft AC (Type A) 0.85-ft CTB (Cl F) 1.60-ft AS (Cl 1)	Inside Shld 0.20-ft AC (Type B) 0.50-ft CTB (Cl F) Var AS Cl (5)
	"B" Line Sta. 861+97.98 to 868+20.00 "B" Line Sta. 868+20.00 to 869+44.52	Outside Shld 0.25-ft AC (Type B) 0.50-ft CTB (Cl F) Var AS (Cl 5)	Inside Shld 0.20-ft AC (Type B) 0.50-ft CTB (Cl F) Var AS Cl (5)
RMCTB – Road Mixed Cement Treated Base PRF – Pavement Reinforcing Fabric CSC – Cross Slope Correction			

TABLE 9B: AS-BUILT PAVEMENT SECTIONS – RAMPS AND STREETS

Location	Station	Pavement Section
Isabel Avenue	"MIL3" Line Sta. 551+36.99 to Sta. 556+95.23 (Westbound Diagonal On-Ramp) "MIR2" Line Sta. 561+88.28 to Sta. 566+94.39 (Westbound Loop On-Ramp) "MIR3" Line Sta. 584+34.29 to Sta. 587+49.57 (Westbound Off-Ramp)	1.08-ft HMA (Type A) 0.50-ft LCB 1.50-ft LTS
	"MIL3" Line Sta. 556+95.23 to Sta. 558+51.37 (Westbound Diagonal On-Ramp) "MIR2" Line Sta. 566+94.39 to Sta. 569+14.00 (Westbound Loop On-Ramp)	0.15-ft RHMA-G 0.40-ft HMA (Type A) 0.74-ft AB (Cl 3) 1.28-ft AS (Cl 4)
North Livermore Avenue	"MKR2" Line Sta. 646+02.16 to Sta. 650+42.20 (Westbound On-Ramp)	0.35 to 0.55-ft AC (Type A) 0.50 to 0.85-ft AB (Cl B) 1.15-ft AS (Cl 1)
	"MKL1" Line Sta. 652+50.00 to Sta. 656+11.00 (Eastbound On-Ramp)	0.20-ft RAC (Type (G) 0.35-ft AC (Type A) 0.70-ft AB (Cl 2) 1.10-ft AS (Cl 1)
	"MKR1" Line Sta. 655+51.21 to Sta. 656+90.46 (Westbound Off-Ramp)	0.35-ft AC (Type A) 0.70-ft CTB (Cl B) 1.10-ft AS (Cl 1)
	""MK" Line Sta. 20+49.79 to Sta. 23+04.04	0.35-ft AC (Type A) 0.70-ft CTB (Cl A) 1.10-ft AS (Cl 1)
First Street	"MXR1" Line Sta. 757+50.00 to Sta. 758+66.20 (Westbound Off-Ramp) "MXR3" Line Sta. 740+67.11 to Sta. 750+06.37 (Westbound Off-Ramp)	0.35-ft AC (Type A) 0.70-ft CTB (Cl A) 1.10-ft & Var AS (Cl 1)
	""MXL1" Line Sta. 745+50.00 to Sta. 753+15.91 (Eastbound On-Ramp)	0.20-ft RAC (Type G) 0.35-ft AC (Type A) 0.70-ft CTB (Cl A) 1.10-ft & Var AS (Cl 1)
Vasco Road	"MVR4" Line Sta. 795+71.41 to Sta. 806+86.22 (Westbound On-Ramp) "MVL1" Line Sta. 800+01.71 to Sta. 810+95.93 (Eastbound On-Ramp) "MVL2" Line Sta. 800+50.00 to Sta. 802+12.86 (Eastbound On-Ramp) "MVR5" Line Sta. 812+00.00 to Sta. 812+93.41 (Westbound Off-Ramp)	0.35-ft AC (Type A) 0.70-ft CTB (Cl A) 1.10-ft AS (Cl 1)
	"MVL1" Line Sta. 810+95.93 to Sta. 813+88.93 (Eastbound On-Ramp)	0.15-ft RAC (Type G) 0.10-ft to 0.85-ft Var AC (Type A 0.70-ft AC (Type A) 0.85-ft LCB 1.50-ft LTS
Greenville Road	"MGR2" Line Sta. 858+20.00 to Sta. 862+63.27 (Eastbound On-Ramp)	0.40-ft & Var AC 0.9-ft CTB 1.00-ft AS

	"MGR2" Line Sta. 862+63.27 to Sta. 865+42.74 (Eastbound On-Ramp)	0.15-ft RAC (Type G) 0.10-ft to 0.85-ft Var AC (Type A) 0.70-ft AC (Type A) 0.85-ft LCB 1.50-ft LTS
	"MGL1" Line Sta. 862+03.84 to Sta. 866+25.80 (Westbound On-Ramp)	Exist Pvmt
Truck Scale	"MSN" Line Sta. 827+67.75 to 834+15.13	0.25-ft AC (Type A) PRF 0.30-ft AC (Type A) 0.85-ft CTB (Cl F) 1.60-ft AS (Cl 5)
	"MSN" Line Sta. 834+15.13 to 835+47.59	0.55-ft AC (Type A) 0.85-ft CTB 1.60-ft AS (Cl 5)
	"MSN" Line Sta. 835+47.59 to 847+90.92	0.85-ft PCC 0.55-ft LCB 1.60-ft AS (Cl 5)

The existing and proposed new pavement sections of westbound I-580 and the pertinent on- and off-ramps at are presented as Appendix D. The information on as-built pavement sections in the above table represents the most up to date information based on as-built data. It should further be noted that existing pavements in the traveled ways in the Mainline between stations west of Sta. 694+33.60 are AC pavements and east of Sta. 694+33.60 are PCC pavements. Based on the as-built information provided by the Designer, there are no Asphalt Treated Permeable Base (ATPB) layers in the existing pavement section in the Eastern Segment.

9.3 Recommended Structural Pavement Sections

9.3.1 Design Procedures and Design Parameters

Pavement design was based on Caltrans Highway Design Manual. Appropriate Traffic Index (TI) values as recommended by the Designers were used for the specific locations. Concrete pavements were designed for Inland Valley Type II subgrade soil condition. Other design parameters used are discussed below.

- A design R-value of 5 was adopted for the subgrade for both the Mainline and ramp pavements.
- Unconfined compression tests on mainline subgrade soils treated with 5% SS-lime yielded strengths greater than the required value of 300 psi (5% lime was established based on pH tests);
- The recommended minimum R-value for Class 3 Aggregate Base (AB) is 78 and for Class 4 Aggregate Subbase (AS) it is 50.
- A lean concrete base (LCB) shall be used as base on all flexible pavement sections for TI values of 12 or greater. A minimum thickness of 0.5 feet of asphalt concrete layer is required above the LCB layer for pavements where traffic (including temporary traffic) is planned.
- For rigid pavements where the conventional jointed plain concrete pavement (JPCP) is not feasible, precast prestressed concrete pavement (PPCP) or Individual Slab Replacement Precast Concrete panels (ISRPCP) are recommended as appropriate. PPCP and ISRPCP eliminate the concrete curing time and are therefore more suitable in some areas where traffic should be suspended for a minimum length of time.
- Consideration was given to the pavement design to avoid “bathtub” effects.

9.3.2 Mainline

Recommended pavement sections noted in the following sections correspond to pavement structural section numbers presented in Plate X-1 of the typical cross-sections in Appendix D

9.3.2.1 New Pavement

The Traffic Index (TI) recommended by BKF Engineers for the westbound HOV lanes along I-580 is 15.5 for 20-year design. This value has been used in the structural pavement design for new pavements. Earlier, a 40-year design value was considered. However, per Caltrans instructions, the 40-year design has been eliminated from consideration. Pavement sections are provided for both flexible (HMA) and rigid (PCC) pavement. The recommended pavement sections for the mainline are presented in Table 10A. Calculations are presented in Appendix C.

TABLE 10A
RECOMMENDED PAVEMENT SECTIONS FOR MAINLINE HOV WIDENING (Using Equation)

Design Life (years)	TI	Flexible Pavement Section (ft.)						Rigid Pavement Section (ft.)					
		HMA-O	RHMA-G	HMA-A	LCB	LSTS[3]	Total	JPCP	LCB[1]	HMA-A[1]	AS[2]	LSTS	Total
20	15.5	0.1	0.2	0.65	0.80	1.50	**3.15**	1.20	0.35	0.25	0.70	0.65	**2.9/2.8**

Notes:
Subgrade R-value is 5. Subgrade is recommended to be treated with 5% lime.

(1) Either LCB or HMA-A will be used. If HMA-A is used, a prime coat is recommended on subbase surface prior to placement of HMA-A.
(2) AS can be combined with LTS to make a total LTS section of 1.35'
(3) In narrow (<12-ft wide) segments, LSTS layer may be substituted by 1.80-ft thick layer of AS

TI: Traffic Index
HMA-A: Asphalt Concrete (Type A)
RHMA-G: Rubberized Asphalt Concrete (Gap Graded)
HMA-O: Asphalt Concrete (Open Graded)
LCB: Lean Concrete Base
AS: Aggregate Subbase (Class 4, R-Value=50)
LSTS: Lime Stabilized Soil
JPCP: Jointed Plain Concrete Pavement
Subgrade Type: Inland Valley, Type II Subgrade Soil
Flexible Pavement: Gravel Equivalent Calculation **(**Table 633.1, Highway Design Manual, July 2008)
Rigid Pavement Thickness: Table 623.1G Inland Valley Type II subgrade soil condition; Without Lateral Support (Highway Design Manual, July 2008)
The Rigid Pavement section has been modified per the PPB09-01, dated August 27, 2009.

Flexible Pavement

It should be mentioned in this context that the recommended TI value of 15.5 is beyond the design charts provided in the Highway Design Manual (HDM) for flexible pavement design (the maximum TI value in the chart is 15.0). Thus, Table 10A is based on the equation provided in the HDM. It should be noted however, that per the HDM, the equation should not be used for TI values greater than 15.0, though Caltrans has on occasions allowed its use beyond TI greater than 15.0.

In order to use a cost-effective approach in view of the low R-value for the subgrade, it was decided that subgrade soils should be treated with lime to increase the strength. Based on our previous experience and general practice, we have used a 1.5-ft thick lime stabilized soil (LSTS) to reduce the AC/Base thickness on the top. Where new flexible pavement is required in narrow (< 12 feet wide) sections, LSTS cannot be constructed by conventional equipment. It is proposed that LSTS layer be replaced by 1.80-ft thick AS (Class 4) (Pavement Section 18).

For certain segments, a thicker HMA-A layer than the recommended minimum is used to adjust for revised road surface profiles and also for cross-slope corrections. Also, for new flexible pavement adjacent to new rigid pavement, the 0.1-ft HMA-O layer will be eliminated and the 0.2-ft layer of RHMA-G will be replaced by the same thickness of HMA-A (Pavement Sections 25, 28, 29, 30, 31).

In sections where a full depth of HMA is proposed over the subgrade, a thickness of 2.15 feet is recommended (Pavement Section 33). For sections too narrow for construction using conventional equipment, a section consisting of 2.25-ft of Minor Concrete, overlain by 0.35-ft thick HMA-A is recommended. A GPI layer should be placed between the Minor Concrete AND HMA-A to mitigate the effects of cracking in the Minor Concrete propagating to the surface (Pavement Section 16). Associated calculations for the two sections are presented in Appendix C.

Rigid Pavement

The PCC is based on HDM tables for Inland Valley Type II Subgrade Soil conditions. It should be noted that the above HDM tables apply to subgrades with R-values of 10 and above. Per recommendations in the HDM, we have used a 0.65-ft thick layer of LTS to raise the effective R-value of the subgrade to 10 and above. The PCC design can further reduce the LCB section to 0.35-ft and the HMA section to 0.25-ft as per the "Rigid Pavement Base Design - Pavement Policy Manual PPB09-01" dated August 27, 2009. Where new concrete pavement is required in narrow (< 12 feet wide) sections, LTS cannot be constructed by conventional equipment. It is proposed that LSTS be replaced by equivalent thickness of AS.

As noted earlier, conventional jointed plain concrete pavement (JPCP) was not feasible, in certain areas where concrete pavement was desired in the Mainline, due to small closure windows requiring rapid curing times. In general, precast prestressed concrete pavement (PPCP) should be used. Per Caltrans, PPCP is suitable for tangent alignments, where the length of the pavement is 64 feet or greater. For curved alignments, Individual Slab Replacement Precast Concrete Panels (ISRPCP) should be used.

Where PPCP is used, for new pavement, the following pavement section recommended by Caltrans should be used (Pavement Section 12):

- PPCP: 0.9-ft
- LCB-RS (Rapid Setting LCB): 0.35-ft
- AS (Class 4): 1.35-ft

For locations where reconstruction of existing pavement is involved, the following PPCP section should be used (Pavement Section 15:

- PPCP: 0.9-ft
- LCB-RS: 0.35-ft (min.) and various
  (The AS layer is eliminated)

Where ISRPCP is used, the following section is recommended (Pavement Section 17):

- ISRPCP: 0.70-ft to 0.80-ft

- LCB-RS: 0.35-ft (min.) and variable

PPCP will be used in the Mainline roadway under Vasco Road (between Sta. 799+00 and Sta. 805+00 ("B" Line)). Per the Designer, due to vertical clearance issues and small closure windows for construction, overlay with HMA is not feasible and a new pavement is required. PPCP will also be used for the following locations for bridge approach slabs, since the bridge approaches are in tangent alignment:

- 580+30 to 581+76; and 583+49 to 587+00 (Bridge No. 33-0012)
- 615+60 to 617+70; and 619+64 to 621+95 (Bridge No. 33-0023)
- 651+49 to 653+65 (Bridge No. 33-0153)

ISRPCP will be used for the following locations for bridge approach slabs, since the approaches are in curved alignment, and near the eastern limits of the project:

- 647+84 to 649+71 (Bridge No. 33-0153)
- 691+00 to 692+62; and 694+10 to 695+15 (Bridge No. 33-0085)
- 868+20 to 869+45 (eastern limit of the project)

The Contractor should employ appropriate means and methods for all transition tapers from Mainline overlay to either PPCP or ISRPCP.

9.3.2.2 Pavement Rehabilitation and Overlay

Initially, under a contract with Parikh Consultants, CHEC Management Services performed an evaluation of the existing Mainline pavement from Approximate Stations 180+00 to Sta.890+00 based on visual examination of the pavement (deflection testing and analyses were not performed). Their findings as discussed in their report dated August 31, 2009 provide recommendations for rehabilitation 20-year service life and also for 10-year service life for the pavement for a TI of 15.5.

Subsequently, under a contract with BKF Engineers, CHEC Management Services performed deflection analysis and testing on the existing westbound Mainline pavement from Sta. 306+46 to Sta. 692+00. Their findings and

recommendations are presented in their report dated May, 2011 (Reference 5). The segment studied by CHEC includes the entire segment of the Mainline with an HMA surface; the western end of the Mainline, which has a PCC surface was not part of their study.

The CHEC study identifies areas where existing pavements are significantly damaged and require rehabilitation. The recommended rehabilitation consists of cold planning a specified thickness of damaged HMA, followed by placement of 0.10-ft of HMA leveling course, which in turn should be overlain by a geosynthetic pavement interlayer (GPI) prior to placement of the surface overlay layers to finish grade (Pavement Structural Section 14). For segments of existing pavement not identified for rehabilitation, a GPI will be placed on top of the pavement surface prior to placement of surface overlay layers (Pavement Section No. 2). Per information provided by Caltrans, pavement for I-580 between PM 11.7 and PM 15.0 was rehabilitated by Contract No. 04-2G5704. The work consisted of cold planning 0.35' of existing pavement, followed by successively placing 0.10-ft HMA-A, GPI and 0.25-ft HMA-A. Surface overlay layers to be placed on this rehabilitated segment will not require a GPI (Pavement Section 13). A GPI layer will also not be required for newly constructed pavements.

Present plans are to construct the new pavement and to rehabilitate and reconstruct the existing pavement concurrently in one contract. Overlay operations are all planned on all existing pavements with HMA surfaces and some segments of pavements with PCC surfaces.

The recommended surface overlay layers for an HMA pavement consist of: 0.15-ft (min.) HMA-A, overlain by 0.2-ft of Rubberized Gap Graded HMA (RHMA-G), overlain by 0.1-ft of Open Graded HMA at the road surface finish grade. The HMA-A layer may be thicker than the recommended minimum to adjust for revised road surface profiles and also for cross-slope corrections. A GPI layer should be placed over the HMA surface prior to overlay, if applicable.

Existing PCC pavements designated for overlay will be 'cracked and seated' prior to overlay. CHEC study identifies several isolated locations where the existing

pavement is cracked or spalled. The existing pavement at those locations should be removed and replaced by the following section (Pavement Section No. 32) prior to the 'crack and seat' operations:

RSC (Rapid Setting Concrete): 0.70-ft to 0.80-ft

LCB-RS (Rapid Setting Lean Concrete Base): 0.35-ft (min.) and variable

The locations of replaced sections are presented in the Project Layout sheets.

Overlay operations for PCC pavements should consist of placement of a 0.1-ft thick HMA leveling course, overlain by GPI. The recommended surface overlay layers overlying the GPI should be the same as recommended for HMA pavements (Section No. 11 in Appendix D).

For sections where an initial section will be laid and subjected to traffic prior to placement of the recommended overlay, the following sections (Pavement Section Nos. 21 and 3) are proposed:

Initially:	HMA-A:	0.50-ft
	LCB:	0.80-ft
	LTS:	1.50-ft

(For narrow (<12-ft wide) sections, the LTS should be replaced by1.80-ft AS (Pavement Section No. 3)

Overlay:	RHMA-O:	0.10-ft
	RHMA-G:	0.20-ft
	HMA-A:	0.15-ft (min.)

Recommended pavement sections for the Mainline, based on the information above is presented below (the section numbers indicate corresponding pavement structural section numbers presented in Plate X-1 of the typical cross-sections in Appendix D).

TABLE 10B: RECOMMENDED PAVEMENT SECTIONS FOR MAINLINE HOV WIDENING

Location	Station	TI	Pavement Section
I-580 Westbound Mainline – Outside Lane (where rehabilitation is proposed for adjacent pavement sections)	"B" 540+00.00 to 550+11.00 "B" 556+94.96 to 558+50.98 "B" 566+87.63 to 579+20.00 "B" 592+11.50 to 615+60.00 "B" 621+95.00 to 641+35.00 "B" 645+04.82 to 647+84.00 "B" 653+65.00 to 658+30.56 "MKR1" 660+08.22 to "B" 691+00.00 "B" 695+15.00 to "MXR3" 738+44.00 "B" 752+31.89 to 759+35.69 "MXR1" 761+75.49 to "MVR5" 789+13 "MVR5" 793+83.68 to 799+00.00 "B" 805+00.00 to 814+24.48 "MVR5" 815+87.22 to "MSN" 831+37 "B" 834+10.88 to 844+73.22 "MSN" 849+00 to "MGL1" 858+89 "B" 861+43.41 to 868+20	15.5	0.10-ft HMA (Open Graded) 0.20-ft RHMA (Gap Graded) 0.65-ft HMA (TYPE A) 0.80-ft LCB 1.50-ft LSTS (Pvmt No. 1)
	"B" 799+00.00 to 805+00.00	15.5	0.90-ft PPCP 0.35-ft LCB-RS 1.35-ft AS AS (Class 4) (Pvmt No. 12)
	"B" 550+11.00 to "MIL3" 555+37.40 "B" 558+50.98 to 559+71.74 "B" 579+20.00 to 580+30.00 "B" 588+19.37 to 592+11.50 "MKR1" 659+36.66 to 660+08.22 "MXR1" 758+36.79 to 761+75.49 "MVR5" 792+02.00 to 793+83.68 "MVR5" 813+40.31 to 815+87.22	15.5	0.10-ft HMA (Open Graded) 0.20-ft RHMA (Gap Graded) 0.65-ft HMA (TYPE A) 0.80-ft LCB 1.80-ft AS (Class 4) (Pvmt No. 18)
	"B" 641+35.00 to "MKR2" 646+21.14 "MGL1" 858+89.00 to 862+03.84	15.5	0.10-ft HMA (Open Graded) 0.20-ft RHMA (Gap Graded) Var 0.30-ft to 1.30-ft HMA (TYPE A) CSC 0.50-ft HMA (TYPE A) 0.80-ft LCB 1.80-ft AS (Class 4) (Pvmt No. 20)
	"MXR3" 738+44.00 to 740+68.34 "MVR5" 789+13.00 to 792+02.00 "MSN" 831+37.00 to 834+84.71 "MSN" 847+85.00 to 849+00.00	15.5	0.10-ft HMA (Open Graded) 0.20-ft RHMA (Gap Graded) Var 0.15-ft to 0.70-ft HMA (TYPE A) CSC 0.50-ft HMA (TYPE A) 0.80-ft LCB 150-ft LSTS (Pvmt No. 21)

	"B" 580+30.00 to 582+16.17 "B" 583+87.46 to 587+00.00 "MSN" 842+60.28 to 843+87.69 "B" 844+73.22 to 847+72.32 "B" 868+20 to 869+44.52	15.5	0.85-ft HMA (TYPE A) 0.80-ft LCB 1.80-ft AS (Class 4) (Pvmt No. 25)
	"MSN" 844+72.97 to 847+73.00	15.5	1.20-ft JPCP 0.35-ft LCB 0.70-ft AS (Class 4) 0.65-ft LSTS (Pvmt No. 26)
	"MSN" 844+72.97 to 847+85.00	15.5	Var 0.35-ft to 0.50-ft HMA (TYPE A) CSC 0.50-ft HMA (TYPE A) 0.80-ft LCB 1.80-ft AS (Class 4) (Pvmt No. 29)
	"B" 615+60.00 to 617+61.24 "B" 619+63.91 to 621+95.00 "B" 647+84.00 to 649+71.10 "B" 651+55.96 to 653+65.00 "B" 691+00.00 to 692+62.27 "B" 694+15.54 to 695+15.00	15.5	0.85-ft HMA (TYPE A) 0.80-ft LCB 1.50-ft LSTS (Pvmt No. 30)
	"B" 792+00.00 to "MVR5" 793+83.68	15.5	2.15-ft HMA (TYPE A) (Pvmt No. 33)
I-580 Westbound Mainline – Concrete Rehabilitation	"B" 580+30.00 to 581+76.08 "B" 583+49.44 to 587+00.00 "B" 615+60.00 to 617+69.65 "B" 619+63.91 to 621+95.00 "B" 651+48.58 to 653+65.00 "B" 799+00.00 to 805+00.00	15.5	0.90-ft PPCP 0.35-ft min & Var LCB-RS (Pvmt No. 15)
	"B" 647+84.00 to 649+71.10 "B" 691+00.00 to 692+62.27 "B" 694+09.76 to 695+15.00 "B" 868+20.00 to 869+44.52	15.5	0.70 to 0.80-ft ISRPCP 0.35-ft min & Var LCB-RS (Pvmt No. 17)
I-580 Eastbound Mainline – Outside Lane	"B" 647+88.00 to 649+49.00 "B" 651+31.71 to 654+17.74	15.5	0.10-ft HMA (Open Graded) 0.20-ft RHMA (Gap Graded) 0.65-ft HMA 0.80-ft LCB 1.50-ft LSTS (Pvmt No. 1)
	"B" 640+82.30 to 647+88.00 "B" 654+17.74 to 656+63.41 "MKL1" 656+63.38 to 658+48.61 "MVL1" 810+95.93 to 813+88.93	15.5	0.10-ft HMA (Open Graded) 0.20-ft RHMA (Gap Graded) 0.65-ft HMA 0.80-ft LCB 1.80-ft AS (Class 4) (Pvmt No. 18)

9.3.3 Truck Scales

New pavement will be constructed for on- and off-ramps for Truck Scales between Sta. 827+68 and Sta. 847+91 ("MSN" Line). Pavement design for the Truck Scale ramps should conform to a TI of 15.5, appropriate for a 20-year design life for the Mainline. The off-ramp (from Sta. 844+73 to Sta. 847+91 ("MSN" Line) will have central rigid pavement section, 12.5 to 13.5-ft wide, with flexible pavement sections for new shoulders and gore areas on either side. A rigid concrete pavement section is required to accommodate the truck scale weigh-in-motion (WIM) equipment. The proposed rigid pavement section (Pavement Section 26) presented below corresponds to the recommended JPCP section in Table 10A:

JPCP:	1.20-ft
LCB:	0. 35-ft
AS (Cl.4):	0.70-ft
LSTS:	0.65-ft

A new flexible pavement is recommended for the Truck Scales westbound on-ramp, corresponding to a TI of 15.5 (Pavement Sections 1, 21, 25 or 28, as applicable).

9.3.4 Ramps

BKF Engineers also recommended TI values for the ramps. Per these recommendations, a TI value of 12 is used for ramps at Greenville Road and Vasco Road and a value of 10 is used for ramps at North Livermore Avenue, Isabel Avenue and First Street. Recommended pavement sections corresponding to these two TI values are presented in Table 10C. Pavement sections are provided for flexible pavement using lean concrete base (LCB), aggregate base (AB) and aggregate subbase (AS).

TABLE 10C
RECOMMENDED PAVEMENT SECTIONS FOR RAMPS (R-value = 5)

TI	Option-1	Option-2				Option-3				
	FDHMA	HMA-A	AB	LCB	Total	HMA-A	AB	LCB	AS	Total
10[(1)]	1.30	0.50	1.95	--	2.45	0.50	0.85	--	1.20	2.55
12[(2)]	1.60[(3)]	--	--	--	--	0.60[(3)]	--	0.60	1.50	2.70

Note: **TI: Traffic Index**
FDHMA: Full Depth Hot Mix Asphalt (Type A)
HMA-A: Hot Mix Asphalt Concrete (Type A)
LCB: Lean Concrete Base
AB: Aggregate Base (Class 3, R-Value = 78)
AS: Aggregate Subbase (Class 4, R-Value=50)
(1) Use TI = 10 for ramp locations at Isabel Avenue, North Livermore Avenue and First Street
(2) Use TI = 12 for ramp locations at Greenville Road and Vasco Road
(3) For sections too narrow for construction using conventional equipment, a section consisting of 1.65-ft of Minor Concrete, overlain by 0.35-ft thick HMA-A is recommended. A GPI layer should be placed between the Minor Concrete and HMA-A to mitigate the effects of cracking in the Minor Concrete propagating to the surface (Pavement Section 16).

As for the Mainline, for certain segments of the ramps, a thicker HMA-A layer than the recommended minimum is used to adjust for revised road surface profiles and also for cross-slope corrections (Pavement Sections 4, 5, 22, 24).

For ramp widenings adjacent to travelways with RHMA-G at the surface, 0.2-ft of the HMA-A layer should be replaced by RHMA-G to avoid "bathtub" effects (Pavement Sections 7 and 9).

9.3.5 Pavement for Temporary Traffic during Construction

Per present plans, in the East Segment, temporary traffic may be carried by the outside widened section prior to placement of the overlay. A TI of 9.5 has been provided by the Designer for the temporary traffic (duration of 6-8 months for staging). As noted earlier, the following section is proposed prior to overlay:

HMA-A: 0.50-ft
LCB: 0.80-ft
LTS: 1.50-ft
(For narrow (<12-ft wide) sections, the LTS should be replaced by1.80-ft AS)

The above section is satisfactory for a TI of 9.5. Supporting calculations are presented in Appendix C.

Per the Designer (present traffic handling plans), the following existing shoulder locations in the East Segment will also be subject to temporary traffic during construction:

- Sta. 550+36 to Sta. 555+01 (Outside Shoulder)
- Sta. 563+92 to Sta. 587+73 (Outside Shoulder)

(All stations are with respect to "B" Line.)

Temporary traffic will only encroach 6 to 12 inches into the existing shoulder at these locations during construction.

A TI value of 9.5 has been provided to us by the Designer, for temporary traffic. The shoulder sections were evaluated for a TI of 9.5 and was found adequate. However, due to the age of the pavement and local conditions, some repair may be required. Calculations are presented in Appendix C.

The Designer also indicated need for minimum HMA depths under temporary traffic at four ramp locations. A TI of 8 was recommended by the Designer for temporary traffic at these locations. The recommended final pavement sections and the minimum HMA thicknesses under temporary traffic (assuming the layers below HMA were unchanged) are presented below:

<u>Greenville Westbound On-ramp and Greenville Eastbound On-ramp (TI = 12)</u>:

Final Section:	HMA-A:	Var. 0.70' to 1.00' (to match cross-slope)
	LCB:	0.60-ft
	AS:	1.50-ft (Class 4)
Minimum HMA thickness:		0.50-ft (minimum above LCB)

Vasco Toad Eastbound On-ramp and Vasco Road Westbound On-ramp (TI = 12):

Final Section:	HMA-A:	0.60
	LCB:	0.60-ft
	AS:	1.50-ft (Class 4)
Minimum HMA thickness:		0.50-ft (minimum above LCB)

North Livermore Westbound On-ramp and Off-ramp (TI = 10):

Final Section:	HMA-A:	Var. 0.70' to 1.00' (to match cross-slope)
	AB:	0.85-ft (Class 3)
	AS:	1.20-ft (Class 4)
Minimum HMA thickness:		0.40-ft

North Livermore Eastbound On-ramp and First St. Eastbound On-ramp (TI = 10):

Final Section:	HMA-A:	0.50-ft
	AB:	0.85-ft (Class 3)
	AS:	1.20-ft (Class 4)
Minimum HMA thickness:		0.40-ft

Calculations are presented in Appendix C.

10. MATERIAL SOURCES

There are several commercial sources of asphalt, concrete, and aggregate products in the area. Table 11 lists available commercial suppliers in the area.

TABLE 11: SOURCES OF IMPORTED BORROW

Source	Location	Approx. Haul Dist. (one way, miles)
Central Concrete Supply Co., Inc.	Pleasanton, Stanley Blvd.	3.0
RMC Pacific Materials, Inc.	Pleasanton, Sunol Blvd.	3.0
Voss L H Materials, Inc.	Dublin, Dougherty Rd.	5.1
Voss L H Materials, Inc.	Pleasanton, Sunol Blvd.	5.2

11. MATERIAL DISPOSAL

Majority of the project will require imported borrow material for the project. Disposal of ADL contaminated material (if any) is beyond the scope of this report.

12. CONSTRUCTION CONSIDERATIONS

12.1 Construction Advisories

The site is the existing I-580. Therefore traffic control and construction staging is required to maintain traffic flow during construction. There are numerous utility lines at the site. The contractor should verify the utility lines, be aware of the existing conditions and plan the construction activities accordingly.

The borings encountered clayey/sandy materials near the existing ground surface. Localized subgrade pumping may be encountered during earthwork construction depending on the weather, subsurface moisture, and surface drainage conditions. Equipment mobility may also be difficult if the subgrade is wet. In such a case, the subgrade soils may require reworking, aeration, or over-excavation and replacing with dry granular fill to facilitate earthwork construction.

12.2 Construction Consideration that Influence Specifications

The contractor should verify the existing utility line conditions, and these locations should not be used for stockpiling of borrow materials. Any utility conflicts with proposed construction should also be reviewed prior to construction. There may be excavations that are proposed near existing utility lines. Contractor should take precautions to protect the utilities from damage caused by such excavations.

12.3 Construction Monitoring and Instrumentation

In general, the construction subject of monitoring and instrumentation was considered and was determined to be not significant for the project. However, Contractor may need to monitor his excavations that are in near proximity to existing utilities or other improvements.

12.4 Hazardous Waste Considerations

The project environmental study report should be referred to for further details at the sites within the project.

12.5 Differing Site Conditions

The soil conditions described in this report are based on available boring data. It should be noted that these borings depict subsurface conditions only at the locations drilled. Because of the variability from place to place within soils in general, and the nature of geologic depositions, subsurface soil conditions could change between the explored locations.

Early communication should be made between the Resident Engineer, the Contractor and the Geotechnical Engineer as soon as conditions that differ from those established in this report are recognized by any of the parties. Additional recommendations could be provided if such conditions arise.

13. RECOMMENDATIONS AND SPECIFICATIONS

13.1 Summary of Recommendations

If the designer has questions or concerns regarding any of these recommendations, or, if conditions are found to be different during construction, the Geotechnical Engineer who prepared this report should be contacted. Additional fieldwork, analysis or changes in recommendations may be required. These services may be provided under a separate authorization, as necessary. A concise summary of the geotechnical recommendations is presented below:

- Design peak bedrock acceleration (PBA) = 0.7 g.
- The boring data indicates that the subsoils consist predominantly of stiff to hard clay with occasional layers of medium dense to very dense sand. Groundwater was encountered between Elev. 444.0 feet and 571.0 feet during drilling. The impact of liquefaction potential to the roadway project is considered low. (Ref.: Section 8.1.3).

- Three significant (higher than 10 feet) embankments are present within the project limits. The maximum embankment heights are approximately 15 feet and all the three embankments are retained by retaining walls. The underlying soils range from very stiff to hard clays and the groundwater is at least 10 feet below bottom of the fill. Consolidation settlements are expected to be less than 1 inch.

Pavement Sections for the roadway work (Ref: Section 9):

The structural pavement sections for the project include primarily HMA sections for the mainline widening, including overlays and for the on-off-ramps from I-580. A small section will have a new PCC pavement. These are detailed in Tables 10A through 10C.

13.2 Recommended Materials Specifications

13.2.1 Standard Specifications

Unless otherwise stated in the special provisions, all materials specifications should conform to Caltrans Standard Specifications, May 2006 edition, including but not limited to the following: Earthwork, Structure Backfill, Pervious Backfill Material, Reinforcing Geofabric, Thermoplastic Pipes, Asphalt Concrete, Aggregate Base, Aggregate Subbase and Lean Concrete Base, etc.

13.2.2 Special Provisions

Imported Borrow:

Imported material should be in accordance with the specifications set forth in Caltrans Section 19. In particular, for new embankment/roadway construction, the material placed within 1.5 feet of the finish pavement subgrade for the mainline should meet the following requirements:

1. Free of organic or other deleterious materials.
2. An R-value of no less than 15.

Aggregate Base:

Aggregate Base (Class 3) shall conform to the provisions in Section 26 of the Standard Specifications (2006) and to the Special Provisions. It shall also be clean and free from organic matter and other deleterious substances. The percentage composition by weight of Class 3 aggregate base shall conform to the following grading as determined by California Test Method No. 202.

Gradation Requirement (Percent Passing ¾ in. Maximum)

Sieve Sizes	Operating Range	Contract Compliance
1 in.	100	100
3/4 in.	90 – 100	87 – 100
No. 4	35 – 60	30 – 65
No. 30	10 – 30	5 – 35
No. 200	2 – 11	0 – 14

Gradation Requirement (Percent Passing 1-1/2 in. Maximum)

Sieve Sizes	Operating Range	Contract Compliance
2 in.	100	100
1-1/2 in.	90 – 100	87 – 100
1 in.	------	------
3/4 in.	50 – 85	45 – 90
No. 4	25 – 45	20 – 50
No. 30	10 – 25	6 – 29
No. 200	2 – 11	0 – 14

Aggregate Base (Class 3) shall also conform to the quality requirements given on the following table:

Quality Requirements

California Test Method	Operating Range	Contract Compliance
Sand Equivalent (217)	25 min	22 Min.
Resistance (R-value) (301)	-	78 Min.
Durability Index	-	35 Min.

Aggregate Subbase: Aggregate Subbase (Class 4) shall conform to the provisions in Section 25 of the Standard Specifications (2006) and to these Special Provisions.

Aggregate Subbase (Class 4) shall be clean and free from organic matter and other deleterious substances. The percentage composition by weight of Class 4 aggregate subbase shall conform to the following grading as determined by California Test Method No. 202.

Gradation Requirement (Percent Passing)

Sieve Sizes	Operating Range	Contract Compliance
2-1/2 in.	100	100
No. 4	30 - 65	25 - 70
No. 200	0 - 15	0 – 18

Aggregate Subbase (Class 4) shall also conform to the quality requirements given on the following table:

Quality Requirements

California Test Method	Operating Range	Contract Compliance
Sand Equivalent (217)	21 Min.	18 Min.
Resistance (R-value) (301)	-	50 Min.

14. INVESTIGATION LIMITATIONS

Our services consist of professional opinions and recommendations made in accordance with generally accepted geotechnical engineering principles and practices and are based on our field exploration and the assumption that the soil conditions do not deviate from observed conditions. No warranty, expressed or implied, of merchantability or fitness, is made or intended in connection with our work or by the furnishing of oral or written reports or findings. The scope of our services did not include any environmental assessment or investigation for the presence or absence of hazardous or toxic materials in structures, soil, surface water, groundwater or air, below or around this site.

Unanticipated soil conditions are commonly encountered and cannot be fully determined by taking soil samples and excavating test borings; differing soil conditions may require that additional expenditures be made during construction to attain a properly constructed project. Some contingency fund is thus recommended to accommodate these possible extra costs.

This report has been prepared for the proposed "Route 580 WB HOV Lane Widening – Eastern Segment" project as described earlier, to assist the engineer in the design of this project. In the event any changes in the design or location of the facilities are planned, or if any variations or undesirable conditions are encountered during construction, our findings and recommendations shall not be considered valid unless the changes or variations are reviewed and our recommendations modified or approved by us in writing.

This report is issued with the understanding that it is the designer's responsibility to ensure that the information and recommendations contained herein are incorporated into the project and that necessary steps are also taken to see that the recommendations are carried out in the field.

The findings in this report are valid as of the present date. However, changes in the soil conditions can occur with the passage of time, whether they are due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards occur, whether they result from legislation or from the broadening of knowledge. Accordingly, the findings in this report might be invalidated, wholly or partially, by changes outside of our control.

Respectfully submitted,
PARIKH CONSULTANTS, INC.

Partha Sircar, Ph.D., P.E C54619
Senior Engineer

S:\Ongoing Projects\208102\GDMR\Report

Gary Parikh, G.E. 666
Project Manager

15. REFERENCES

1. California Department of Transportation, May 2006, Standard Plans.

2. California Department of Transportation, May 2006, Standard Specifications, Sections 1 through 95.

3. California Department of Transportation, Highway Design Manual, June 2006

4. California Department of Transportation, “in-Progress” Seismic Hazard Map

5. CHEC Management Systems, Inc., “Deflection Testing and Analysis, Highway 580, Westbound Main Line, Sta. 692+00 to Sta. 306+46, Post Mile 19.0 to 11.7”, May 2011

6. E. J. Helley and R.W. Graymer., 1997, "Geologic Map of Quaternary Geology of Alameda County and Surrounding Area, CA" Derived from Digital Database open-file 97-97, Scale 1: 100, 000.

7. Youd, T.L. and Idriss, I.M., Co-Chairs, 2001, Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils, ASCE, Journal of Geotechnical and Geoenvironmental Engineering, V. 127, No. 4, p 297-313.

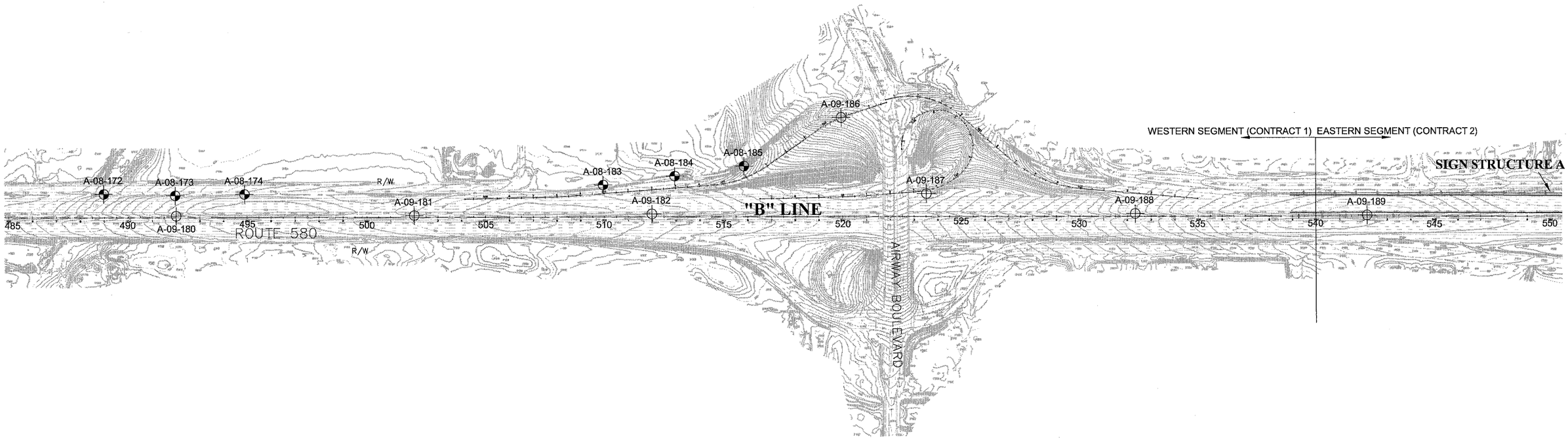
PROJECT LOCATION MAP

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT
ALAMEDA COUNTY, CALIFORNIA

JOB NO.: 208102.GDR	PLATE NO.: 1

LIVERMORE



LIVERMORE

LEGEND

A-09-180 — Approx. R-Value Boring Location

A-09-172 — Approx. Boring Location

SCALE: NO SCALE

Note: All units are in feet unless otherwise specified
Reference Map was provided by BKF Engineers / Surveyors / Planners

SITE PLAN

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS ENGINEERING

ROUTE 580 WB HOV LANE WIDENING-
EASTERN SEGMENT
ALAMEDA COUNTY, CALIFORNIA

JOB NO.: 208102.GDR | PLATE NO: 2A

LIVERMORE

LIVERMORE

LEGEND

A-09-194 — Approx. Boring Location

A-09-190 — Approx. R-Value Boring Location

CPT-09-AL1-01 — Approx.CPT Location

SCALE: NO SCALE

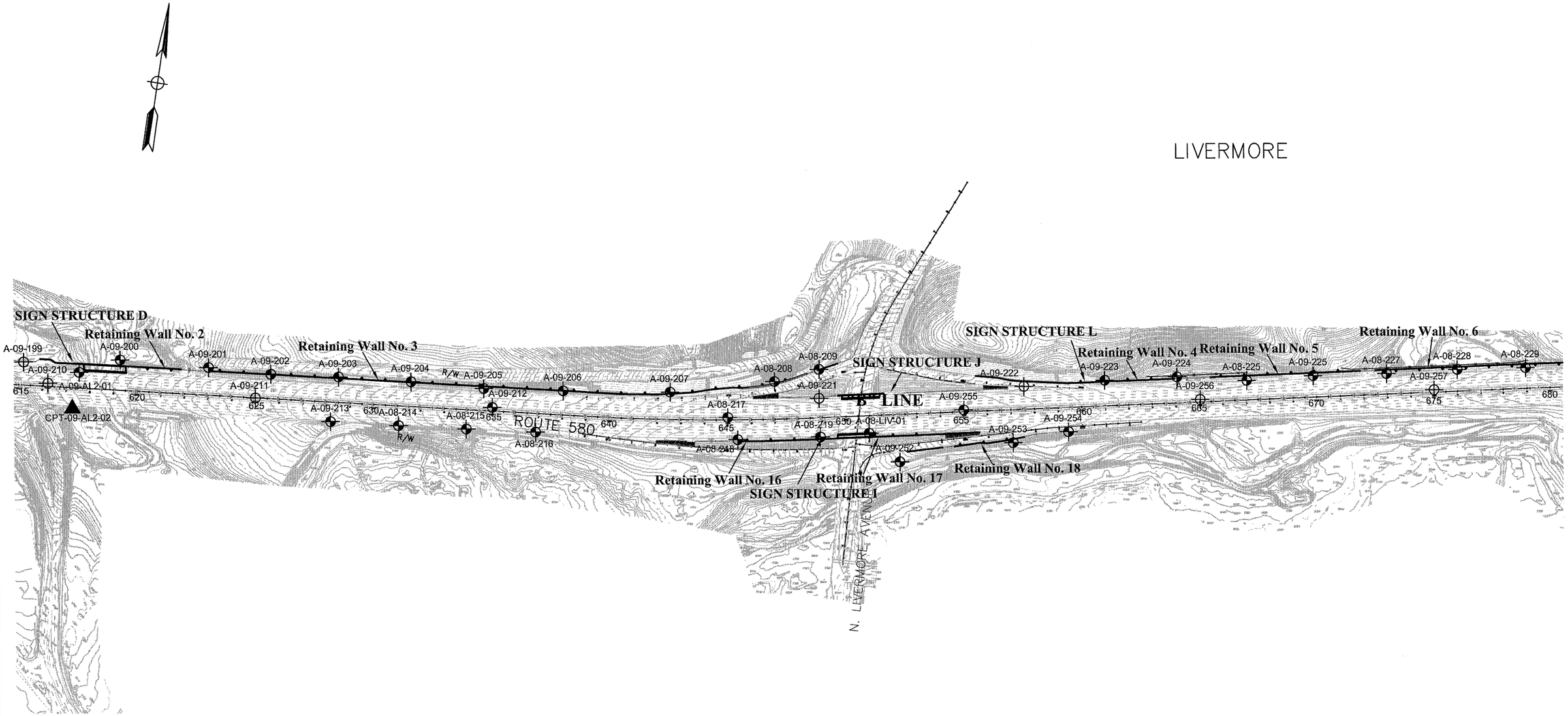
Note: All units are in feet unless otherwise specified
Reference Map was provided by BKF Engineers / Surveyors / Planners

SITE PLAN

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS ENGINEERING

ROUTE 580 WB HOV LANE WIDENING-
EASTERN SEGMENT
ALAMEDA COUNTY, CALIFORNIA

JOB NO.: 208102.GDR | PLATE NO: 2B



LEGEND

A-09-200
Approx. Boring Location

A-09-211
Approx. R-Value Boring Location

CPT-09-AL2-02
Approx.CPT Location

SCALE: NO SCALE

Note: All units are in feet unless otherwise specified
Reference Map was provided by BKF Engineers / Surveyors / Planners

SITE PLAN

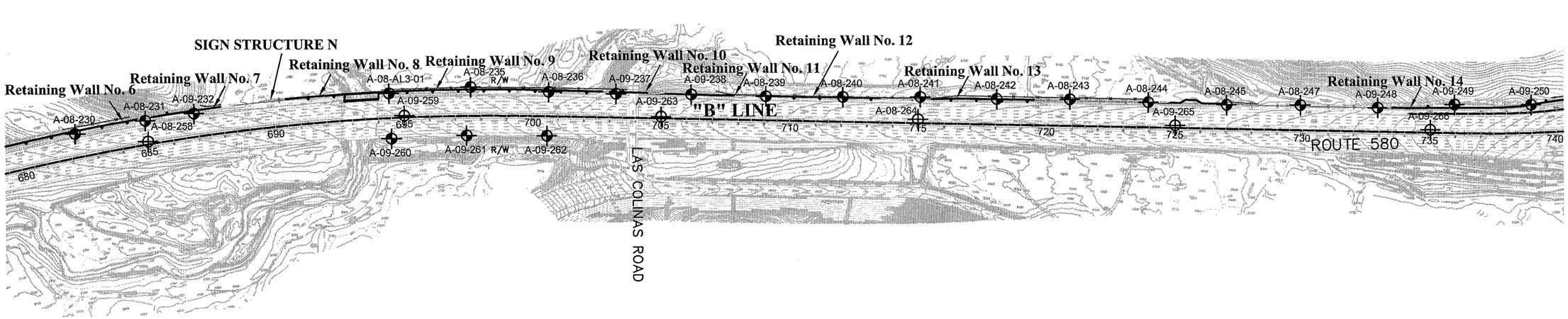
PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS ENGINEERING

ROUTE 580 WB HOV LANE WIDENING-
EASTERN SEGMENT
ALAMEDA COUNTY, CALIFORNIA

JOB NO.: 208102.GDR

PLATE NO: 2C

LIVERMORE



LIVERMORE

LEGEND

A-09-230 — Approx. Boring Location

A-09-258 — Approx. R-Value Boring Location

SCALE: NO SCALE

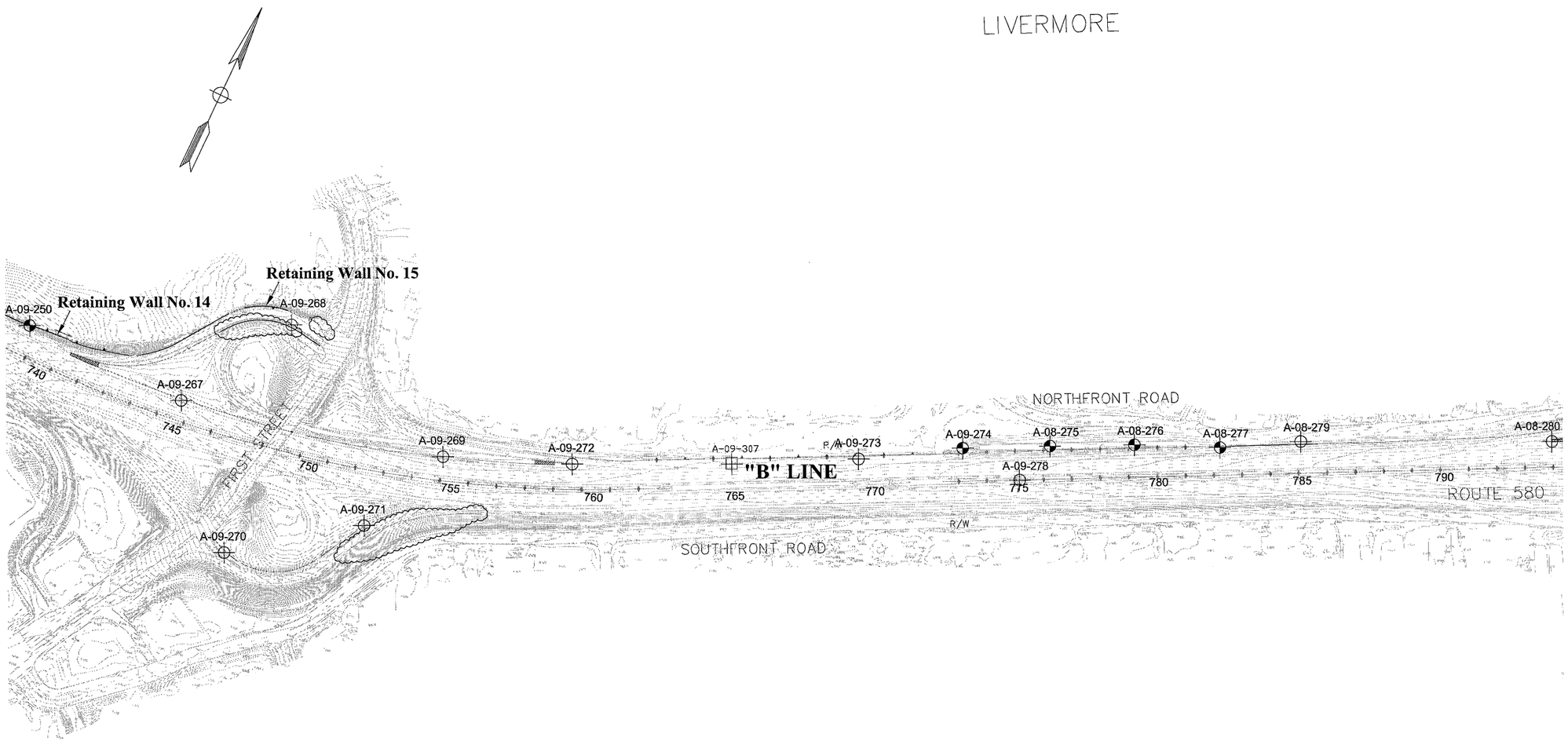
Note: All units are in feet unless otherwise specified
Reference Map was provided by BKF Engineers / Surveyors / Planners

SITE PLAN

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS ENGINEERING

ROUTE 580 WB HOV LANE WIDENING-
EASTERN SEGMENT
ALAMEDA COUNTY, CALIFORNIA

JOB NO.: 208102.GDR | PLATE NO: 2D



LEGEND

A-09-250 — Approx. Boring Location

A-09-267 — Approx. R-Value Boring Location

A-09-307 — Approx. Sign Structure Boring Location

SCALE: NO SCALE

Note: All units are in feet unless otherwise specified
Reference Map was provided by BKF Engineers / Surveyors / Planners

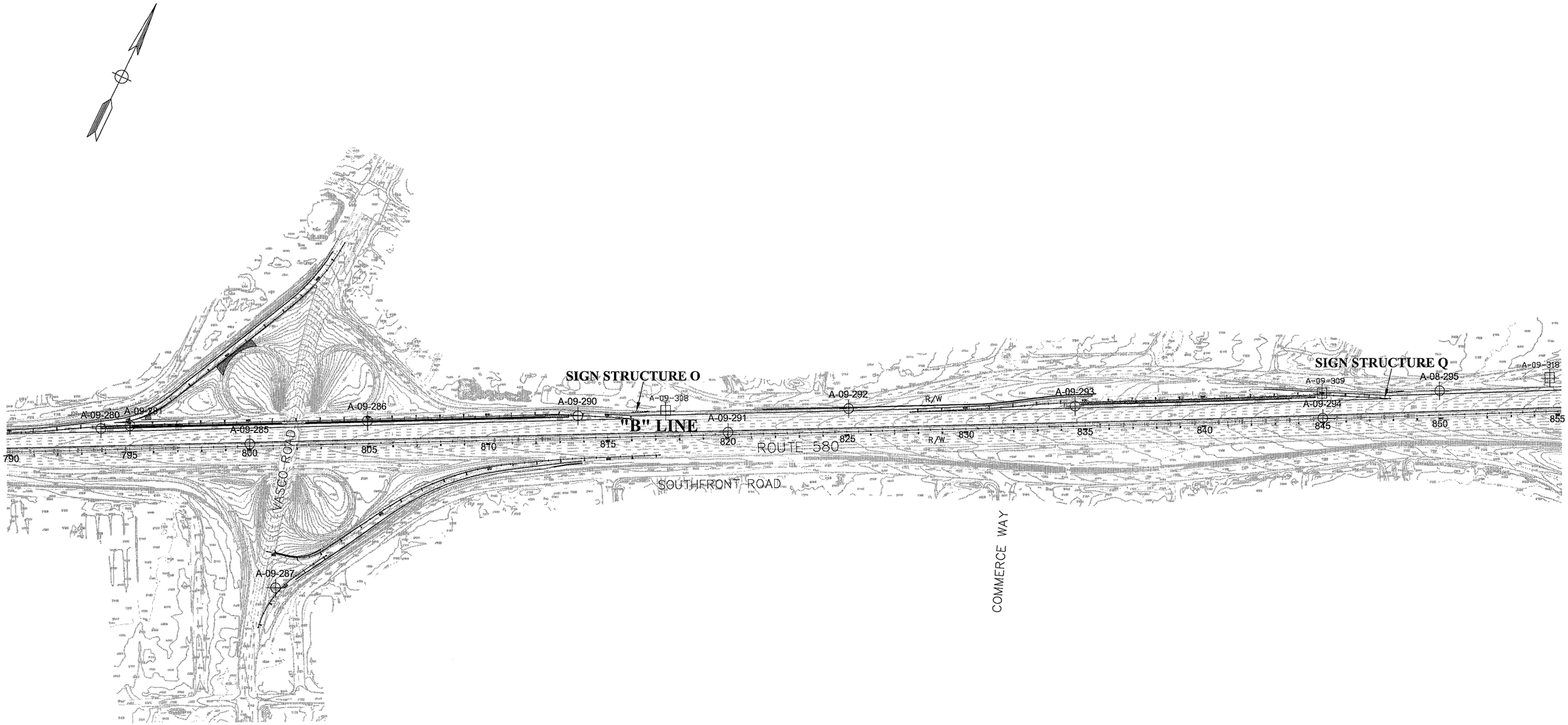
SITE PLAN

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS ENGINEERING

ROUTE 580 WB HOV LANE WIDENING-
EASTERN SEGMENT
ALAMEDA COUNTY, CALIFORNIA

JOB NO.: 208102.GDR

PLATE NO: 2E



LEGEND

A-09-267 — Approx. R-Value Boring Location

A-09-307 — Approx. Sign Structure Boring Location

SCALE: NO SCALE

Note: All units are in feet unless otherwise specified
Reference Map was provided by BKF Engineers / Surveyors / Planners

SITE PLAN

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS ENGINEERING

ROUTE 580 WB HOV LANE WIDENING-
EASTERN SEGMENT
ALAMEDA COUNTY, CALIFORNIA

JOB NO.: 208102.GDR

PLATE NO: 2F

LEGEND

A-08-295 — Approx. R-Value Boring Location

A-09-318 — Approx. Sign Structure Boring Location

SCALE: NO SCALE

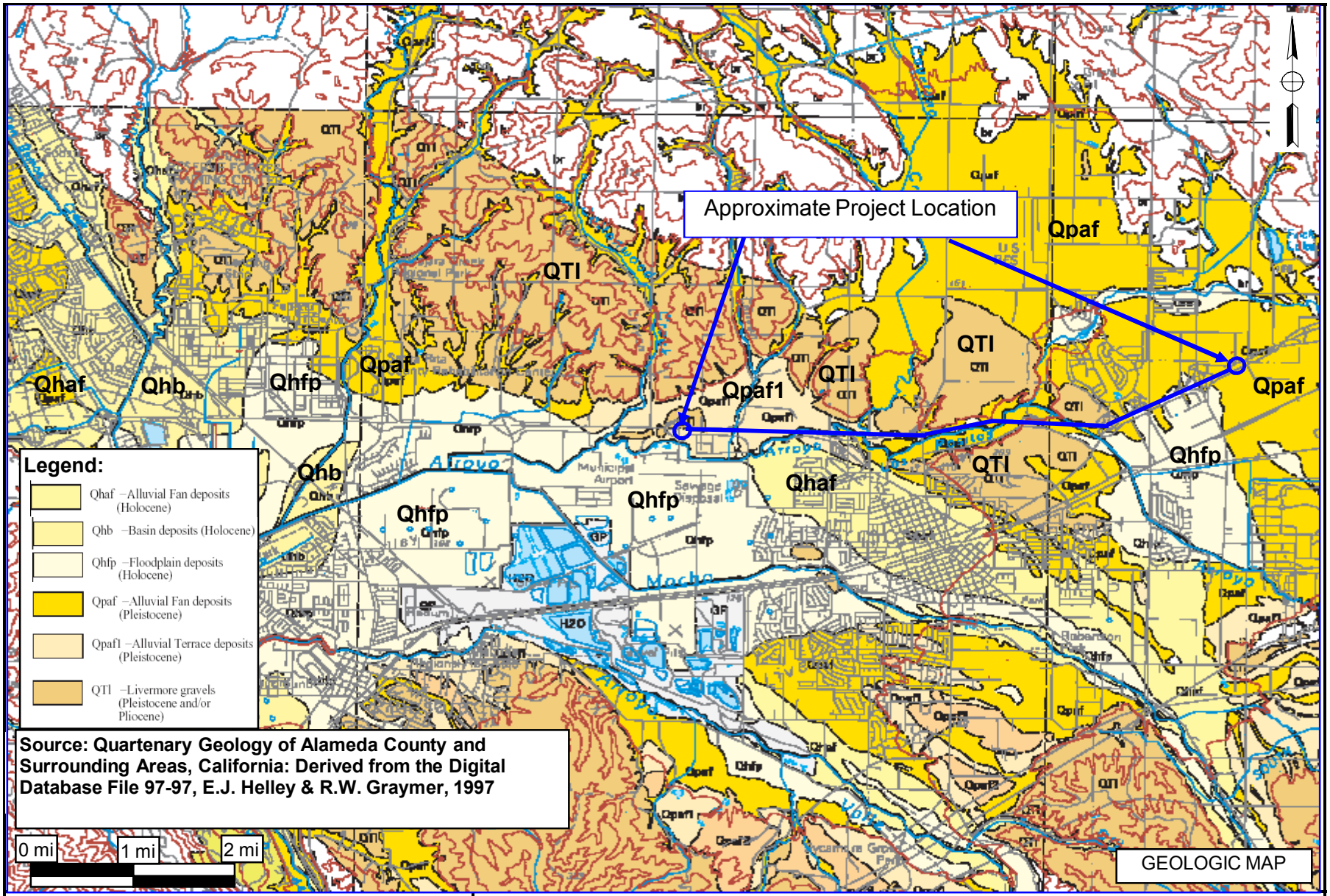
Note: All units are in feet unless otherwise specified
Reference Map was provided by BKF Engineers / Surveyors / Planners

SITE PLAN

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS ENGINEERING

ROUTE 580 WB HOV LANE WIDENING-
EASTERN SEGMENT
ALAMEDA COUNTY, CALIFORNIA

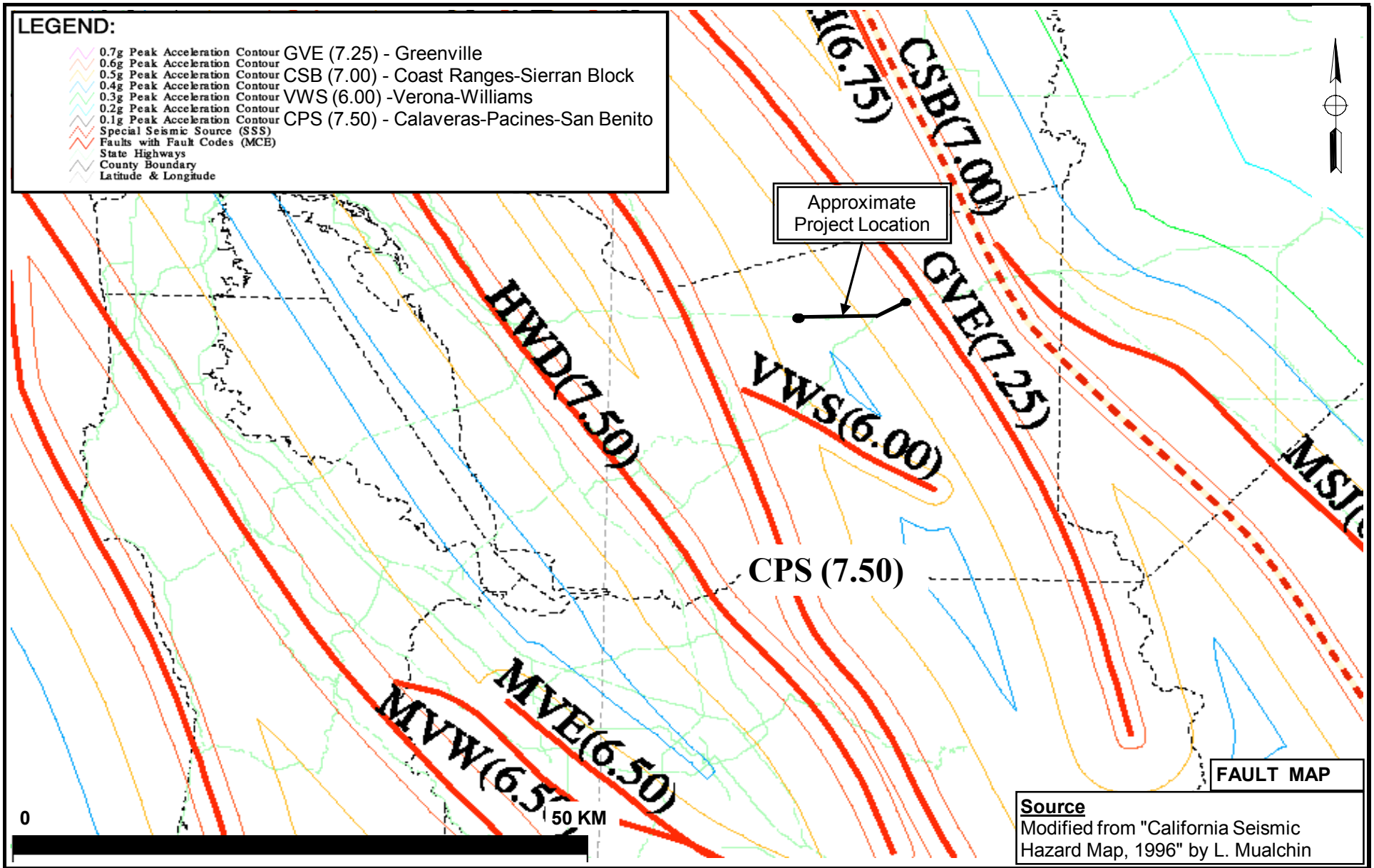
JOB NO.: 208102.GDR | PLATE NO: 2G



PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

ROUTE 580 HOV LANE WIDENING - EASTERN SEGMENT
LIVERMORE, CALIFORNIA

JOB NO.: 208102.GDR	PLATE NO.: 3



FAULT MAP

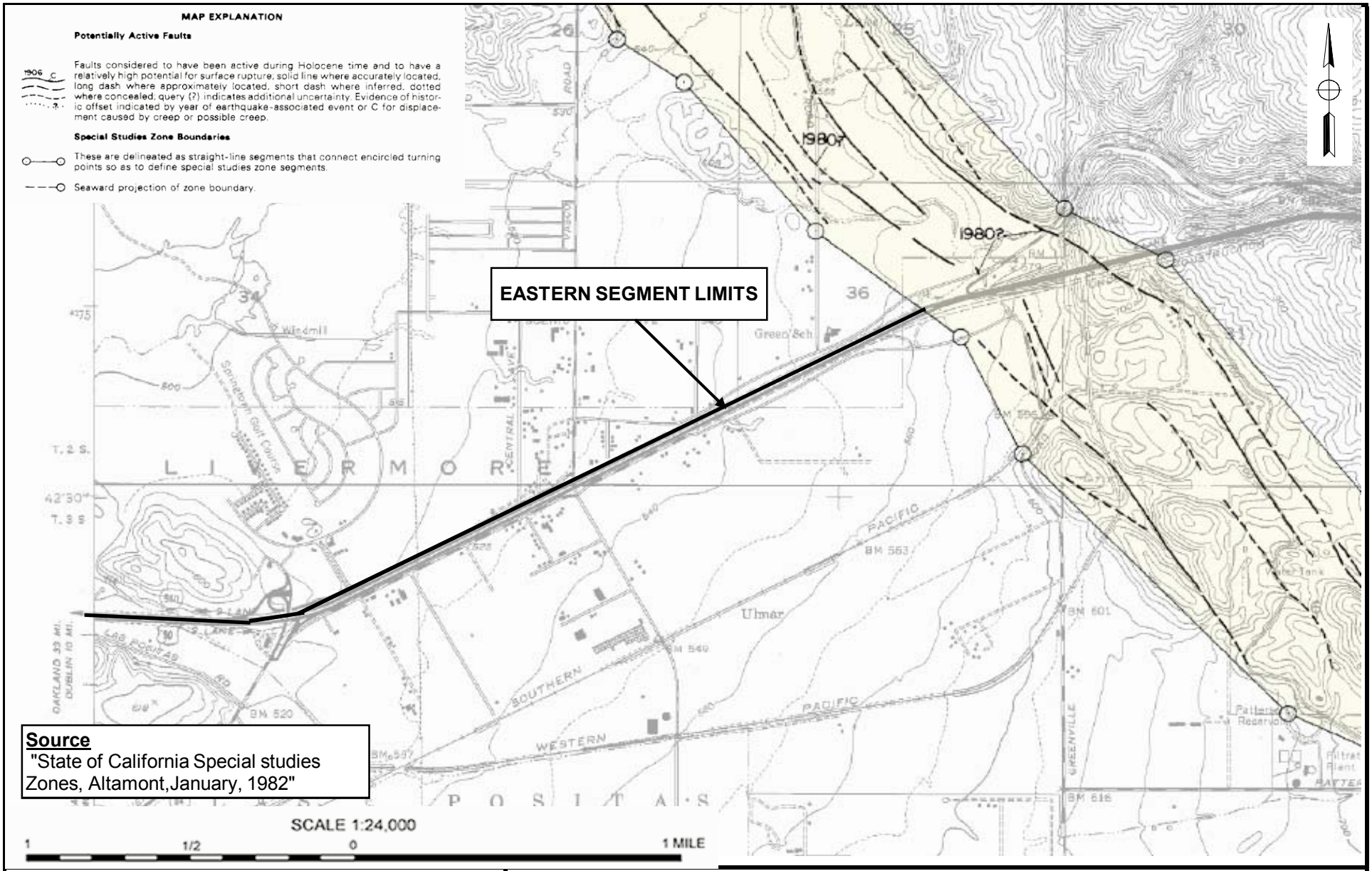
Source
Modified from "California Seismic Hazard Map, 1996" by L. Mualchin

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT
ALAMEDA COUNTY, CALIFORNIA

JOB NO.: 208102.GDR

PLATE NO.: 4A



Source
"State of California Special studies Zones, Altamont,January, 1982"

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

ROUTE 580 WB HOV LANE WIDENING-EASTERN SEGMENT
ALAMEDA COUNTY, CALIFORNIA

JOB NO.: 208102.GDR

PLATE NO.: 4B

APPENDIX A

APPENDIX A

INDEX

Plate Nos. 1 and 2 – Legends and Notes for Log of Test Borings (LOTB) Sheets

Plate No.	Boring and CPT Nos.
A-3	A-11-324 (Sign Structure A); and A-11-325 (Sign Structure B)
A-4	CPT_08-AL1-01; A-09-194 and A-09-195 (Retaining Wall No. 1)
A-5	A-09-AL2-01 (Sign Structure D); A-09-200 and A-09-201 (Retaining Wall No. 2)
A-6	A-09-201; A-09-202 and A-09-203 (Retaining Wall No. 3)
A-7	A-09-204; A-09-205 and A-09-206 (Retaining Wall No. 3)
A-8	A-09-207; A-09-208 and A-09-209 (Retaining Wall No. 3)
A-9	A-09-223; A-09-224 and A-09-225 (Retaining Wall Nos. 4 and 5)
A-10	A-09-226; A-09-227 and A-09-228 (Retaining Wall Nos. 5 and 6)
A-11	A-09-229; A-09-230 and A-09-231 (Retaining Wall No. 6)
A-12	A-08-231; A-09-232; A-11-326; and A-08-234/AL3-01 (Retaining Wall Nos. 7 and 8; and Sign Structure N)
A-13	A-08-235; A-08-236; A-09-237; and A-11-327 (Retaining Wall No. 9)
A-14	A-09-237; A-09-238; A-08-239; and A-08-240 (Ret. Wall Nos. 10, 11 and 12)
A-15	A-08-241; A-08-242; and A-08-243 (Retaining Wall No. 13)
A-16	A-08-244; A-08-245; and A-08-247
A-17	A-09-248; A-09-249; and A-09-250 (Retaining Wall No. 14)
A-18	A-09-250 (Retaining Wall No. 15)
A-19	A-09-307 and A-09-274
A-20	A-08-275 and A-08-276
A-21	A-08-277; A-08-328 (Sign Structure O): A-09-308; and A-09-309
A-22	A-11-329 (Sign Structure Q); A-08-295; a A-09-318

Plate No.	Boring and CPT Nos.
A-23	CPT-08-AL2-02; A-09-213
A-24	A-09-213; A-08-214; A-08-215: and A-08-216
A-25	A-08-218 and A-08-219 (Retaining Wall No. 16; A-08-LIV-01 (Ret. Wall No. 17)
A-26	A-09-252; A-09-253; and A-09-254 (Retaining Wall No. 18)
A-27	A-09-260; A-09-261; and A-09-262
A-28	A-09-300 and A-09-301 (Retaining Wall No. 19)
A-29	CPT-08-AL2-02; A-09-AL2-01; and A-09-200 (Arroyo Las Positas No. 33-0203)
A-30	A-08-234/AL3-01; and A-09-260 (Arroyo Las Positas No. 33-085)
A-31	A-08-219; and A-08-LIV-01 (North Livermore UC)
A-32	As-Built Boring Logs for Arroyo Las Positas Br. No. 33-0203
A-33	As-Built Boring Logs for Arroyo Las Positas Br. No. 33-0085
A-34	As-Built Boring Logs for North Livermore Undercrossing
A-35	As-Built Boring Logs for Arroyo Las Positas Br. No. 33-012
A-36	As-Built Boring Logs for Arroyo Las Positas Br. No. 33-012 (Widen) – 2001
A-37	As-Built Boring Logs for Arroyo Las Positas Br. No. 33-012 (Widen) – 2001-04

A-38	Summary of Borings (Pavement Design and Roadway) – 2 sheets
A-39 and A-40	CPT Logs for CPT-AL1-01
A-41	Pore Pressure Dissipation Test for CPT-AL1-01
A-42 and A-43	CPT Logs for CPT-AL2-02
A-44	Pore Pressure Dissipation Test for CPT-AL2-02

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (JUNE 2007)

GROUP SYMBOLS AND NAMES

Graphic/Symbol	Group Names	Graphic/Symbol	Group Names
GW	Well-graded GRAVEL Well-graded GRAVEL with SAND	CL	Lean CLAY Lean CLAY with SAND Lean CLAY with GRAVEL SANDY lean CLAY SANDY lean CLAY with GRAVEL GRAVELLY lean CLAY GRAVELLY lean CLAY with SAND
GP	Poorly graded GRAVEL Poorly graded GRAVEL with SAND		
GW-GM	Well-graded GRAVEL with SILT Well-graded GRAVEL with SILT and SAND	CL-ML	SILTY CLAY SILTY CLAY with SAND SILTY CLAY with GRAVEL SANDY SILTY CLAY SANDY SILTY CLAY with GRAVEL GRAVELLY SILTY CLAY GRAVELLY SILTY CLAY with SAND
GW-GC	Well-graded GRAVEL with CLAY (or SILTY CLAY) Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GP-GM	Poorly graded GRAVEL with SILT Poorly graded GRAVEL with SILT and SAND	ML	SILT SILT with SAND SILT with GRAVEL SANDY SILT SANDY SILT with GRAVEL GRAVELLY SILT GRAVELLY SILT with SAND
GP-GC	Poorly graded GRAVEL with CLAY (or SILTY CLAY) Poorly graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GM	SILTY GRAVEL SILTY GRAVEL with SAND	OL	ORGANIC lean CLAY ORGANIC lean CLAY with SAND ORGANIC lean CLAY with GRAVEL SANDY ORGANIC lean CLAY SANDY ORGANIC lean CLAY with GRAVEL GRAVELLY ORGANIC lean CLAY GRAVELLY ORGANIC lean CLAY with SAND
GC	CLAYEY GRAVEL CLAYEY GRAVEL with SAND		
GC-GM	SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL with SAND	OL	ORGANIC SILT ORGANIC SILT with SAND ORGANIC SILT with GRAVEL SANDY ORGANIC SILT SANDY ORGANIC SILT with GRAVEL GRAVELLY ORGANIC SILT GRAVELLY ORGANIC SILT with SAND
SW	Well-graded SAND Well-graded SAND with GRAVEL		
SP	Poorly graded SAND Poorly graded SAND with GRAVEL	CH	Fat CLAY Fat CLAY with SAND Fat CLAY with GRAVEL SANDY fat CLAY SANDY fat CLAY with GRAVEL GRAVELLY fat CLAY GRAVELLY fat CLAY with SAND
SW-SM	Well-graded SAND with SILT Well-graded SAND with SILT and GRAVEL		
SW-SC	Well-graded SAND with CLAY (or SILTY CLAY) Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	MH	Elastic SILT Elastic SILT with SAND Elastic SILT with GRAVEL SANDY elastic SILT SANDY elastic SILT with GRAVEL GRAVELLY elastic SILT GRAVELLY elastic SILT with SAND
SP-SM	Poorly graded SAND with SILT Poorly graded SAND with SILT and GRAVEL		
SP-SC	Poorly graded SAND with CLAY (or SILTY CLAY) Poorly graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	OH	ORGANIC fat CLAY ORGANIC fat CLAY with SAND ORGANIC fat CLAY with GRAVEL SANDY ORGANIC fat CLAY SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
SM	SILTY SAND SILTY SAND with GRAVEL		
SC	CLAYEY SAND CLAYEY SAND with GRAVEL	OH	ORGANIC elastic SILT ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY ORGANIC elastic SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
SC-SM	SILTY, CLAYEY SAND SILTY, CLAYEY SAND with GRAVEL		
PT	PEAT	OL/OH	ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	COBBLES COBBLES and BOULDERS BOULDERS		

FIELD AND LABORATORY TESTING

- (C) Consolidation (ASTM D 2435)
- (CL) Collapse Potential (ASTM D 5333)
- (CP) Compaction Curve (CTM 216)
- (CR) Corrosivity Testing (CTM 643, CTM 422, CTM 417)
- (CU) Consolidated Undrained Triaxial (ASTM D 4767)
- (DS) Direct Shear (ASTM D 3080)
- (EI) Expansion Index (ASTM D 4829)
- (M) Moisture Content (ASTM D 2216)
- (OC) Organic Content-% (ASTM D 2974)
- (P) Permeability (CTM 220)
- (PA) Particle Size Analysis (ASTM D 422)
- (PI) Plasticity Index (AASHTO T 90)
Liquid Limit (AASHTO T 89)
- (PL) Point Load Index (ASTM D 5731)
- (PM) Pressure Meter
- (PP) Pocket Penetrometer
- (R) R-Value (CTM 301)
- (SE) Sand Equivalent (CTM 217)
- (SG) Specific Gravity (AASHTO T 100)
- (SL) Shrinkage Limit (ASTM D 427)
- (SW) Swell Potential (ASTM D 4546)
- (TV) Pocket Torvane
- (UC) Unconfined Compression-Soil (ASTM D 2166)
Unconfined Compression-Rock (ASTM D 2938)
- (UU) Unconsolidated Undrained Triaxial (ASTM D 2850)
- (UW) Unit Weight (ASTM D 4767)
- (VS) Vane Shear (AASHTO T 223)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/14.6		

GEOTECHNICAL PROFESSIONAL — DATE 01/18/12

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA 94612

PARIKH CONSULTANTS, INC.
2360 QUME DRIVE, SUITE A
SAN JOSE, CA 95131

APPARENT DENSITY OF COHESIONLESS SOILS

Description	SPT N_{60} (Blows / 12 inches)
Very loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	> 50

MOISTURE

Description	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

PERCENT OR PROPORTION OF SOILS

Description	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

PARTICLE SIZE

Description		Size
Boulder		> 12"
Cobble		3" to 12"
Gravel	Coarse	3/4" to 3"
	Fine	No. 4 to 3/4"
Sand	Coarse	No. 10 to No. 4
	Medium	No. 40 to No. 10
	Fine	No. 200 to No. 40

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.	SOIL LEGEND
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008- JUNE 2011		PROJECT ENGINEER	POST MILES	LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000202101 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/3/09	12/23/09	8/9/11	01/18/12		

FILE => $REQUEST

TIME PLOTTED => $TIME
DATE PLOTTED => $DATE
USERNAME => $USER

PLATE NO: A-1

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (2010)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — DATE 01/18/12

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA 94612

PARIKH CONSULTANTS, INC.
2360 QUME DRIVE, SUITE A
SAN JOSE, CA 95131

CEMENTATION

Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

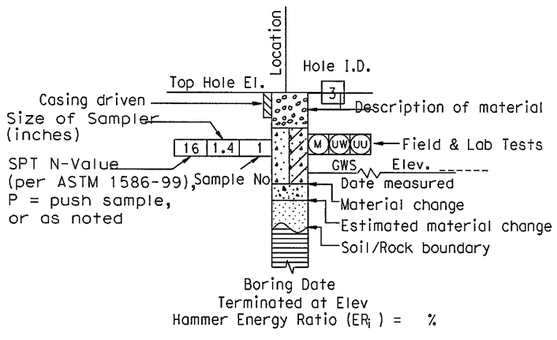
BOREHOLE IDENTIFICATION

Symbol	Hole Type	Description
Size	A	Auger Boring (hollow or solid stem bucket)
Size	R RW RC P	Rotary drilled boring (conventional) Rotary drilled with self-casing wire-line Rotary core with continuously-sampled, self-casing wire-line Rotary percussion boring (air)
Size	R	Rotary drilled diamond core
Size	HD HA	Hand driven (1-inch soil tube) Hand Auger
	D	Dynamic Cone Penetration Boring
	CPT	Cone Penetration Test (ASTM D 5778)
	O	Other (note on LOTB)

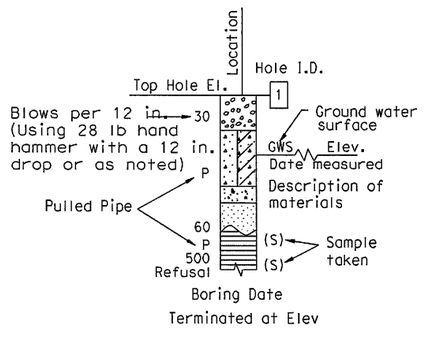
Note: Size in inches.

CONSISTENCY OF COHESIVE SOILS

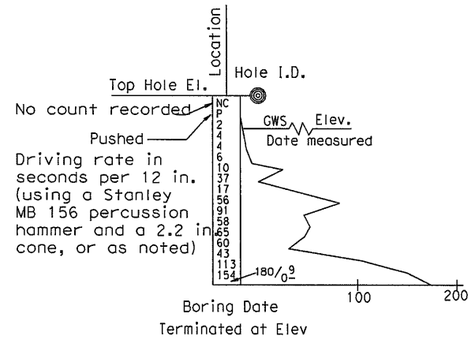
Description	Shear Strength (tsf)	Pocket Penetrometer Measurement, PP, (tsf)	Torvane Measurement, TV, (tsf)	Vane Shear Measurement, VS, (tsf)
Very Soft	Less than 0.12	Less than 0.25	Less than 0.12	Less than 0.12
Soft	0.12 - 0.25	0.25 - 0.5	0.12 - 0.25	0.12 - 0.25
Medium Stiff	0.25 - 0.5	0.5 - 1	0.25 - 0.5	0.25 - 0.5
Stiff	0.5 - 1	1 - 2	0.5 - 1	0.5 - 1
Very Stiff	1 - 2	2 - 4	1 - 2	1 - 2
Hard	Greater than 2	Greater than 4	Greater than 2	Greater than 2



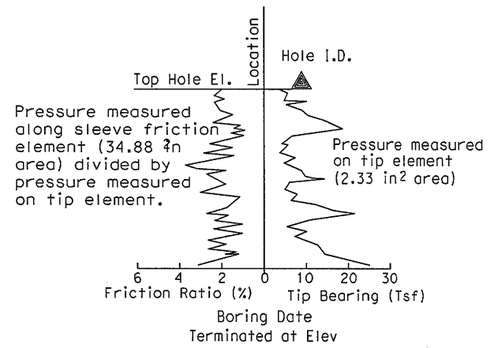
ROTARY BORING



HAND BORING



DYNAMIC CONE PENETRATION BORING



CONE PENETRATION TEST (CPT) BORING

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU		PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008- JANUARY 2011			PROJECT ENGINEER	POST MILES

SOIL LEGEND

LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000202111 CONTRACT NO.: 04-2908E4

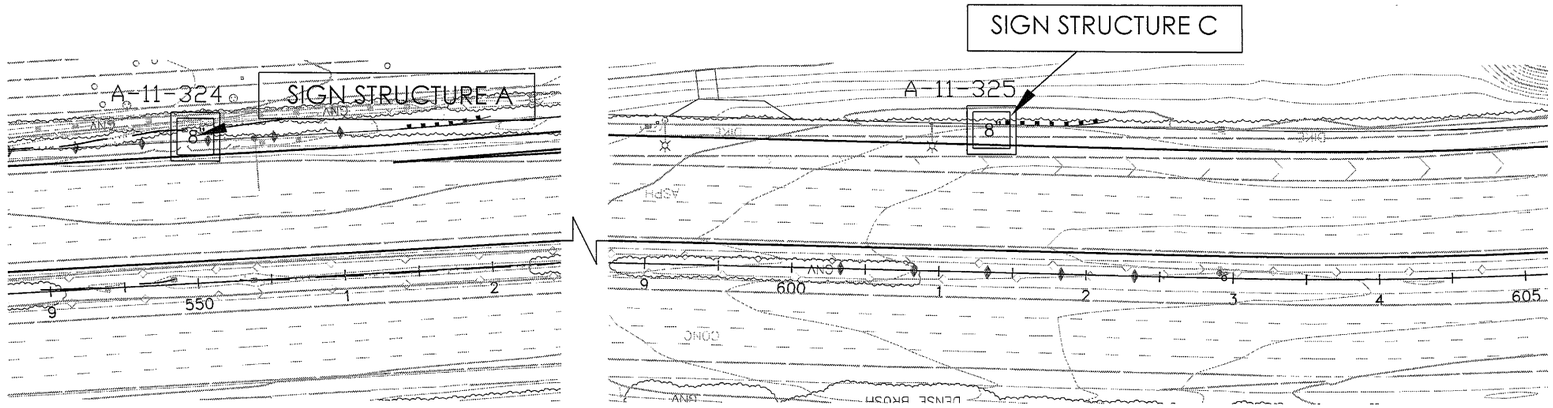
DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/3/09	12/23/09	8/8/11	01/18/12		

FILE => $REQUEST

DATE PLOTTED => $DATE TIME PLOTTED => $TIME USERNAME => $USER

PLATE NO: A-2



PLAN
1" = 50'

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — DATE 01/18/12

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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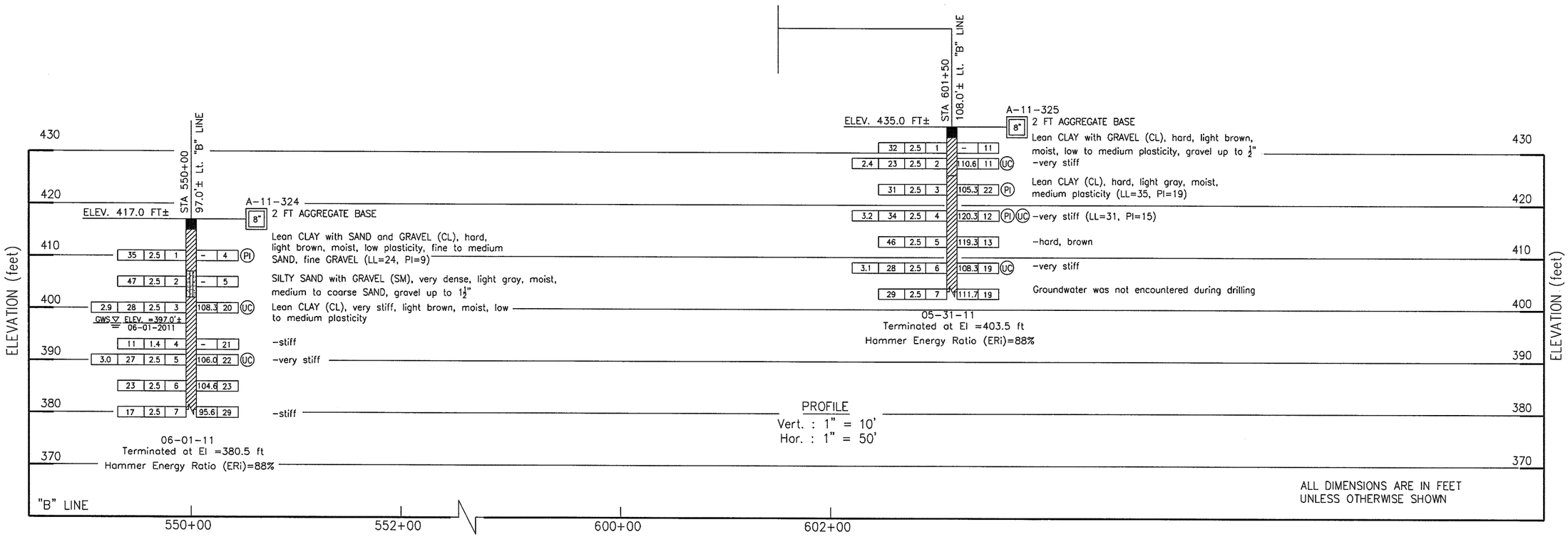
PARIKH CONSULTANTS, INC.
2360 OLUME DRIVE, SUITE A
SAN JOSE, CA 95131

BENCHMARK :
The Vertical Datum shown hereon is based on North American Vertical Datum of 1988 (NAVD). The 1988 Elevations for this project were Established using Digital Levelling & GPS Survey Measurements and a Least Squares Adjustment Holdings NGS Benchmarks GPS Control Point 35 – PID DE8495, L 1259 – PID HS4075, CHABOT A – PID AI7653, & OLD RM 3 = TIDAL 5 – PID HS3429 fixed to their published values.



PROFILE
Vert. : 1" = 10'
Hor. : 1" = 50'

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SHOWN

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.	ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JUNE 2011		PROJECT ENGINEER	POST MILES	LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

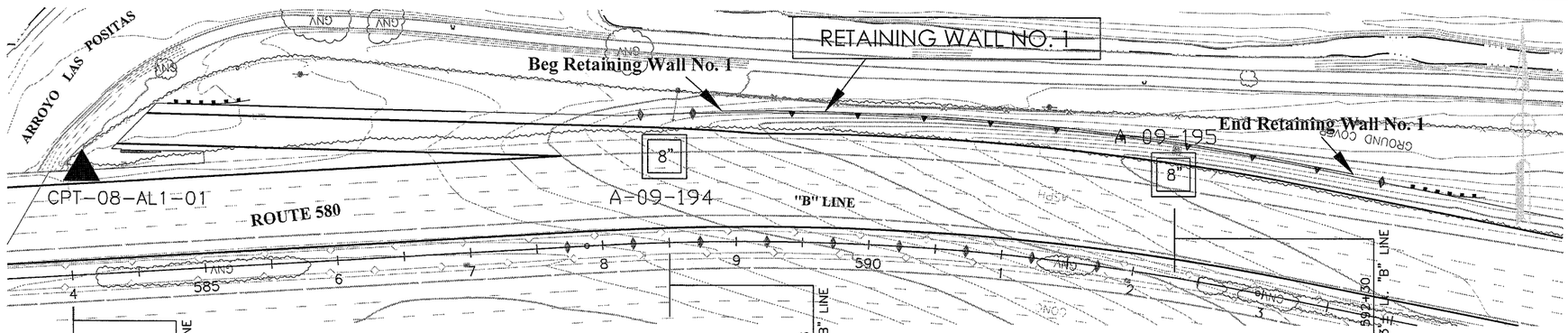
DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/21/08	12/23/08	8/8/11	01/18/12		

FILE => $REQUEST

USERNAME => $USER DATE PLOTTED => $DATE TIME PLOTTED => $TIME

PLATE NO: A-3



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 01/18/12 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 GEOTECHNICAL — STATE OF CALIFORNIA

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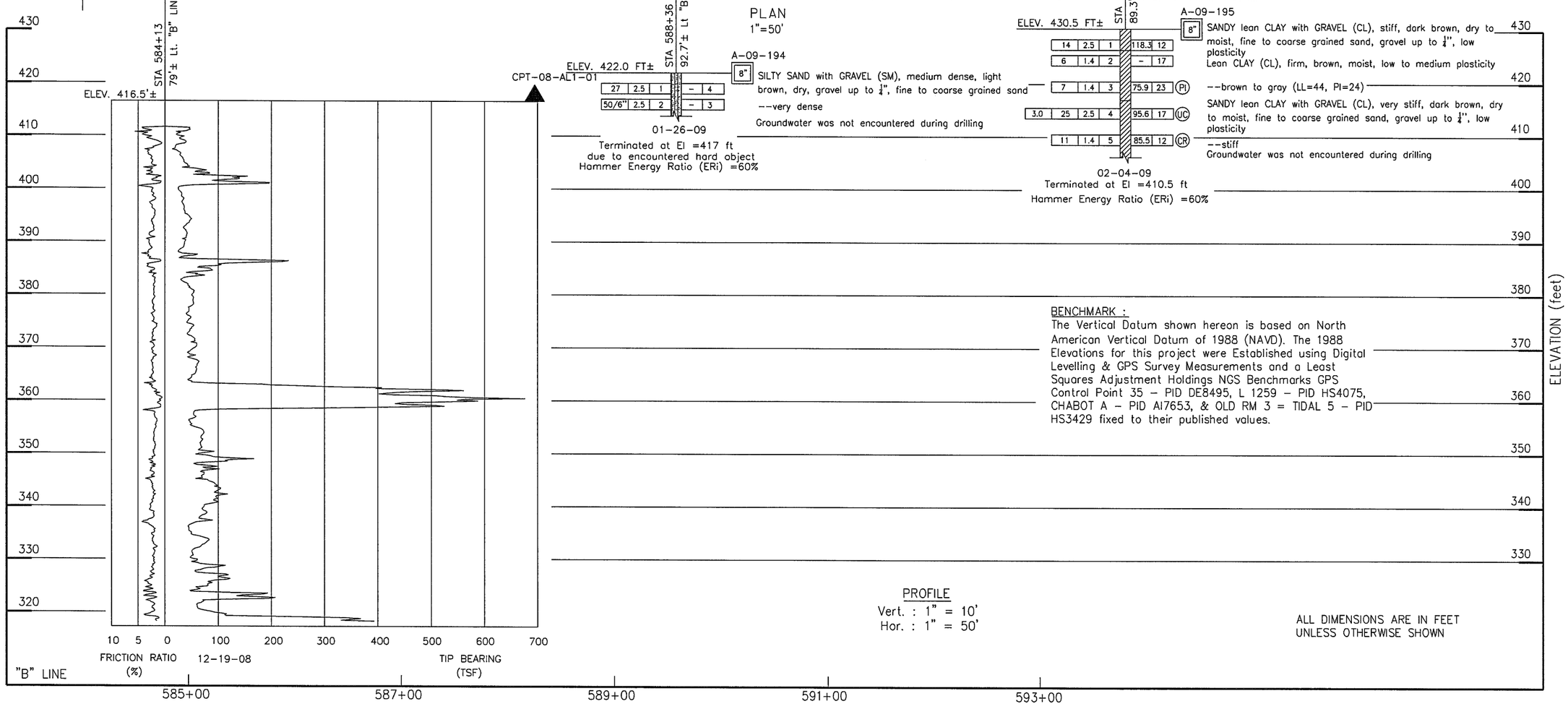
SAN JOSE, CA 95131



DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.	ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JUNE 2011		PROJECT ENGINEER	POST MILES	LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735 PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/27/09	12/23/09	8/9/11	01/18/12		

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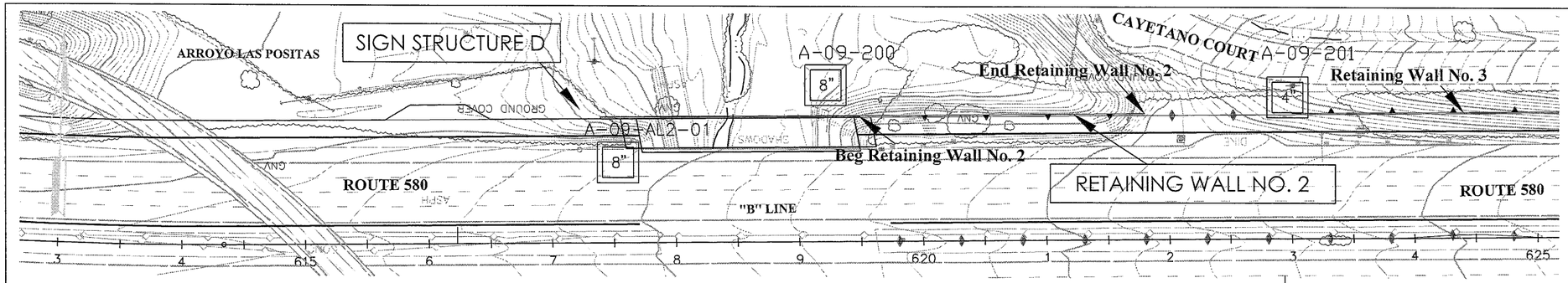

PLAN
1"=50'

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 01/18/12 DATE

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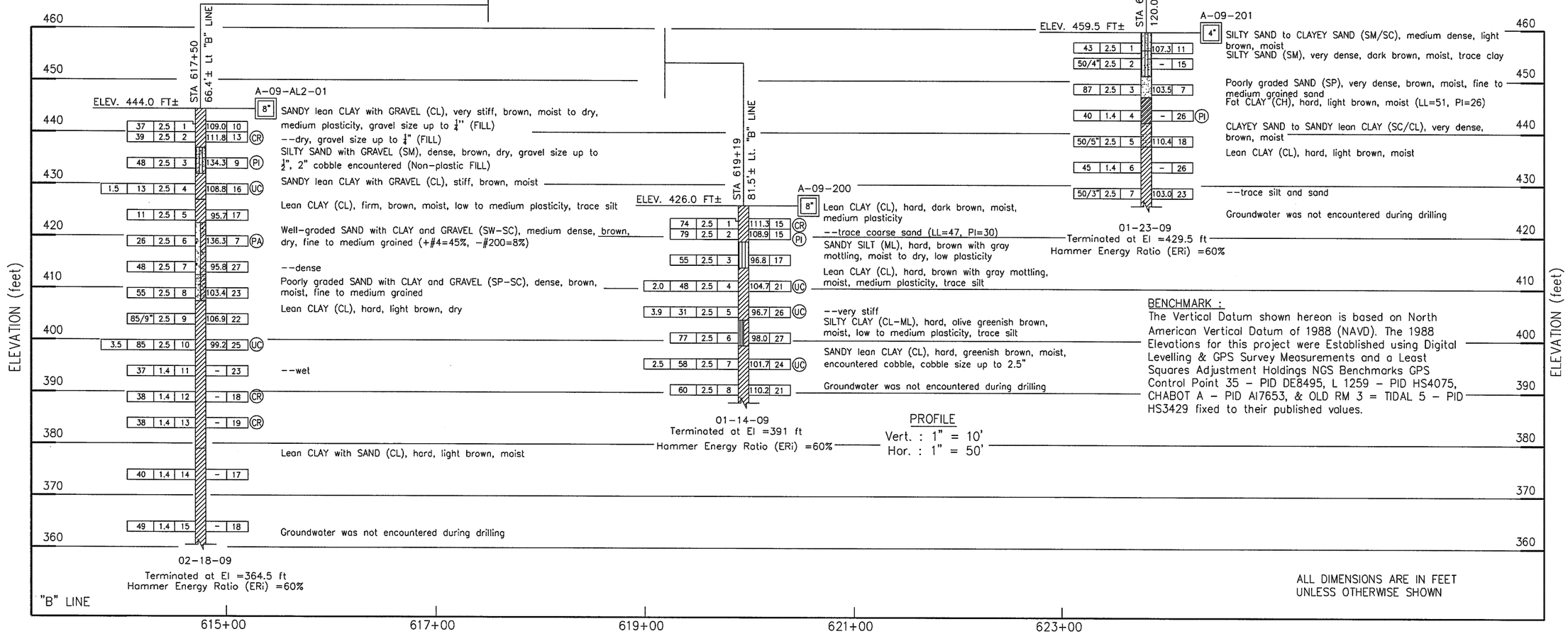

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.	ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JUNE 2011		PROJECT ENGINEER	POST MILES	LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/19/09	12/23/09	8/8/11	01/18/12		

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USERNAME => $USER DATE PLOTTED => $DATE TIME PLOTTED => $TIME

PLATE NO: A-5

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 01/18/12 DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

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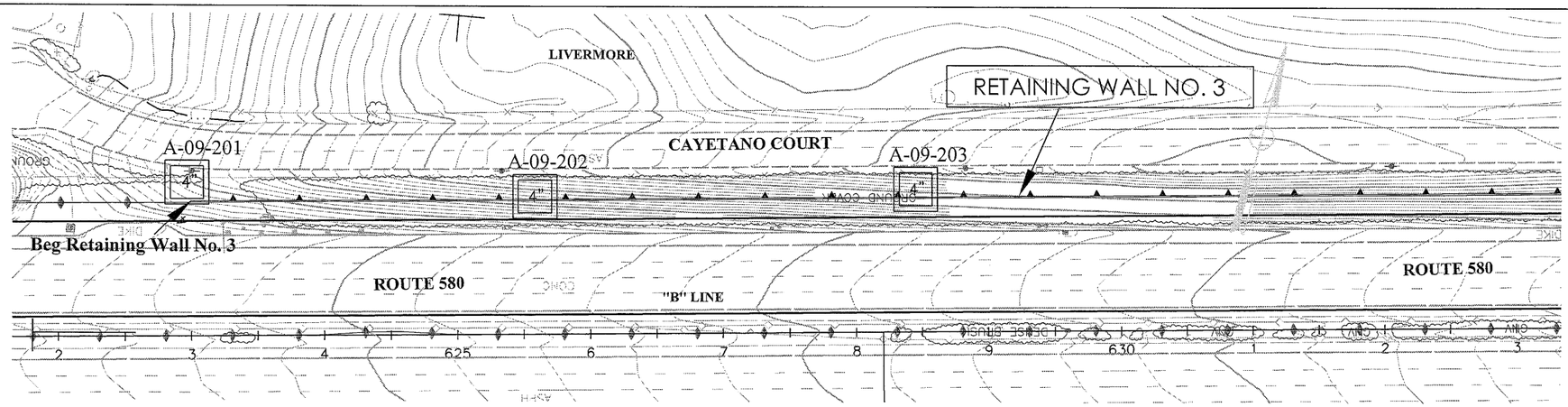

PLAN
1"=50'

BENCHMARK :
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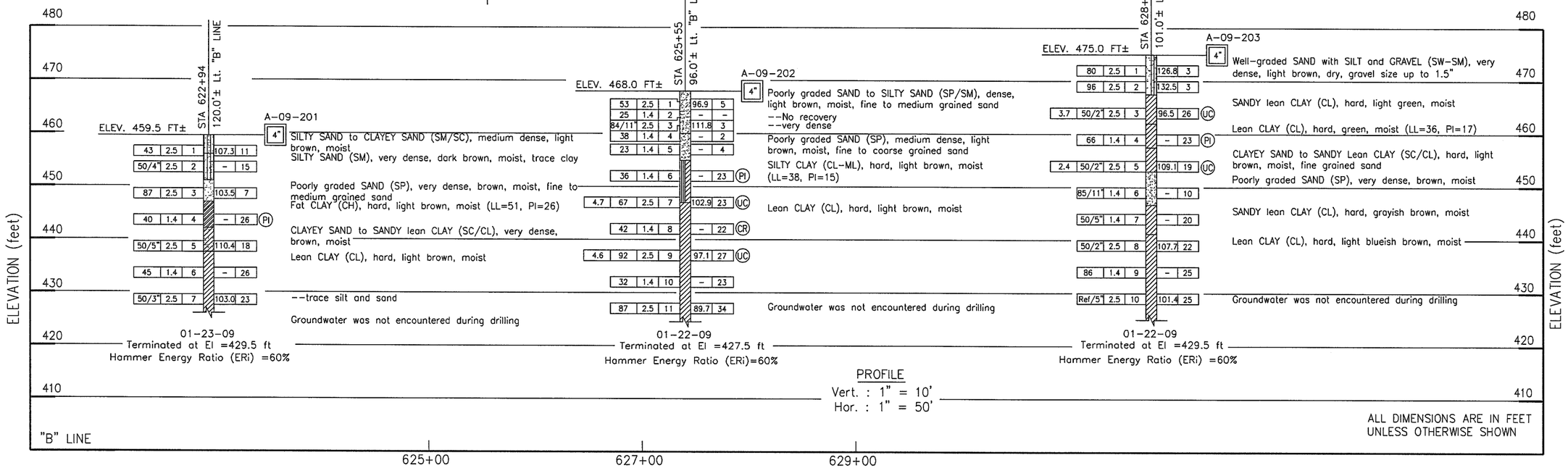

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU		PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JUNE 2011			PROJECT ENGINEER	POST MILES

ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT

LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/24/09	12/23/09	8/8/11	01/18/12		

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PLATE NO: A-6

USERNAME => $USER DATE PLOTTED => $DATE TIME PLOTTED => $TIME

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 01/18/12 DATE

PLANS APPROVAL DATE

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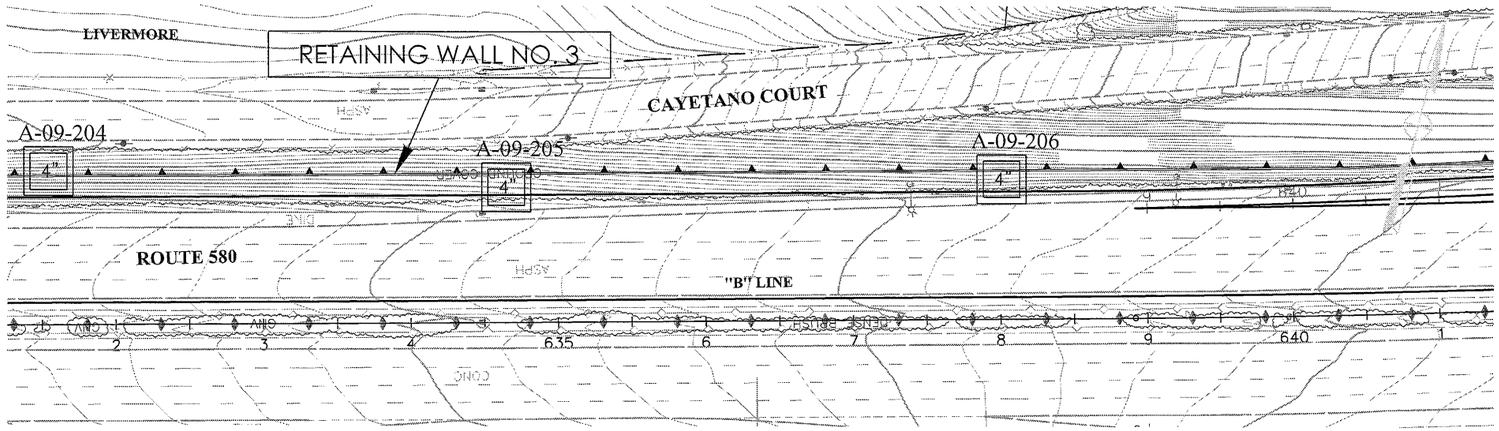
SAN JOSE, CA 95131



PLAN
1"=50'

BENCHMARK :
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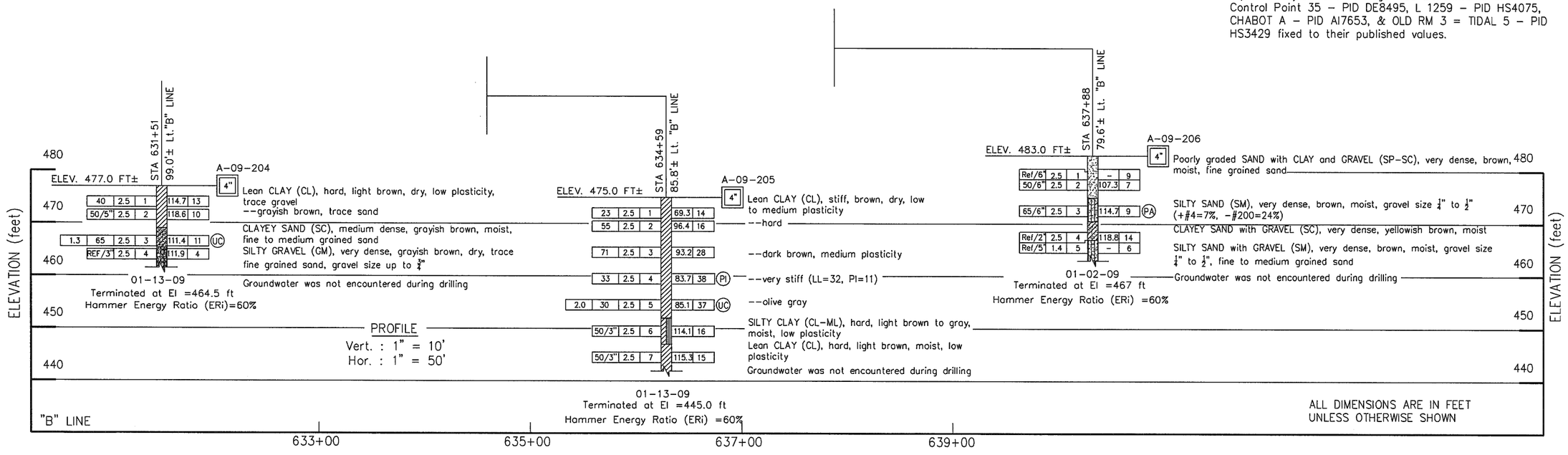

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.	ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JUNE 2011		PROJECT ENGINEER	POST MILES	LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/4/09	12/23/09	8/8/11	01/18/12		

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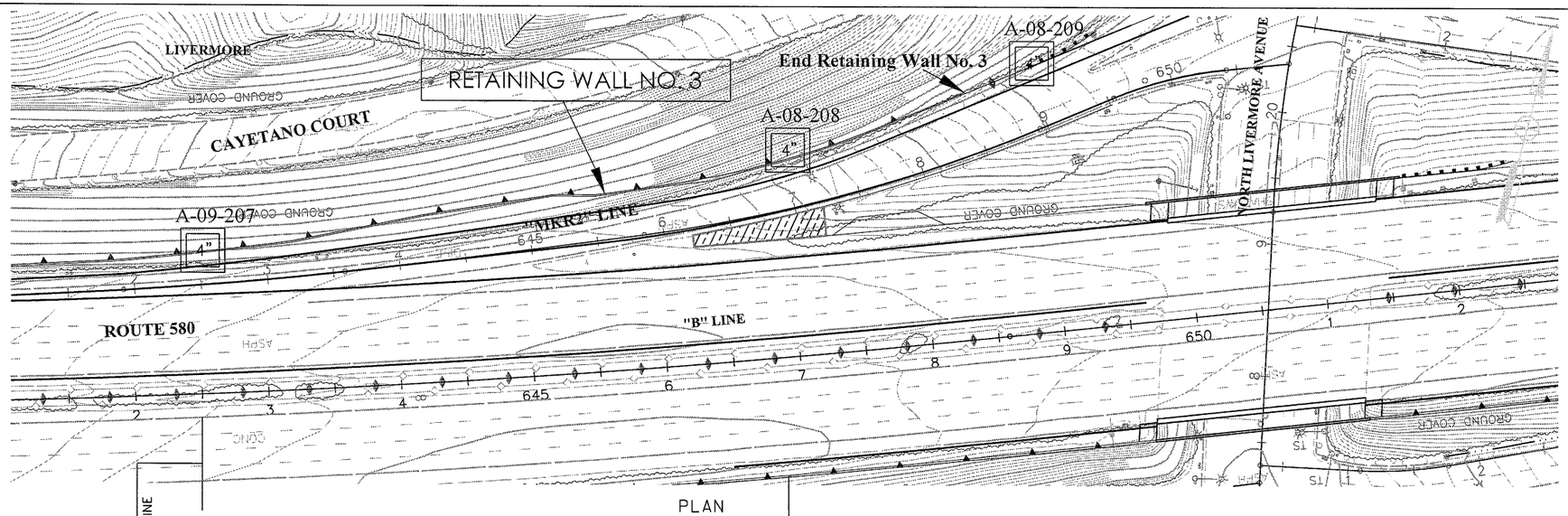
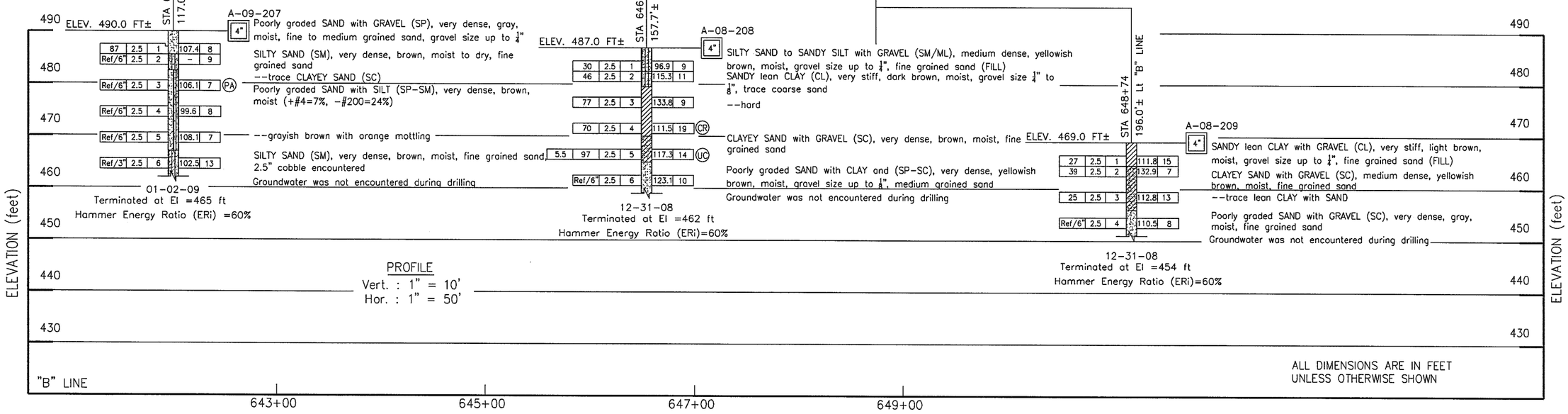


PLAN
1"=50'



PROFILE
Vert. : 1" = 10'
Hor. : 1" = 50'

ALL DIMENSIONS ARE IN FEET
UNLESS OTHERWISE SHOWN

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 01/18/12 DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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SAN JOSE, CA 95131

BENCHMARK :
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DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.	ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JUNE 2011		PROJECT ENGINEER	POST MILES	LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/21/08	12/22/08	8/31/11	01/18/12		

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PLATE NO: A-8

USERNAME => $USER DATE PLOTTED => $DATE TIME PLOTTED => $TIME

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 01/18/12 DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

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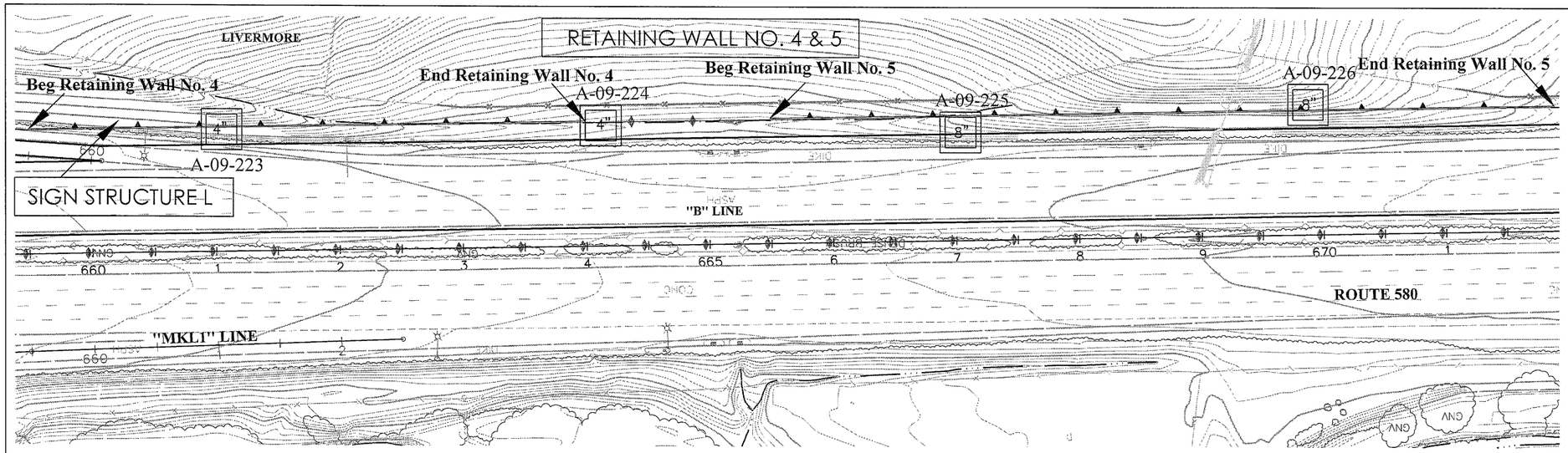
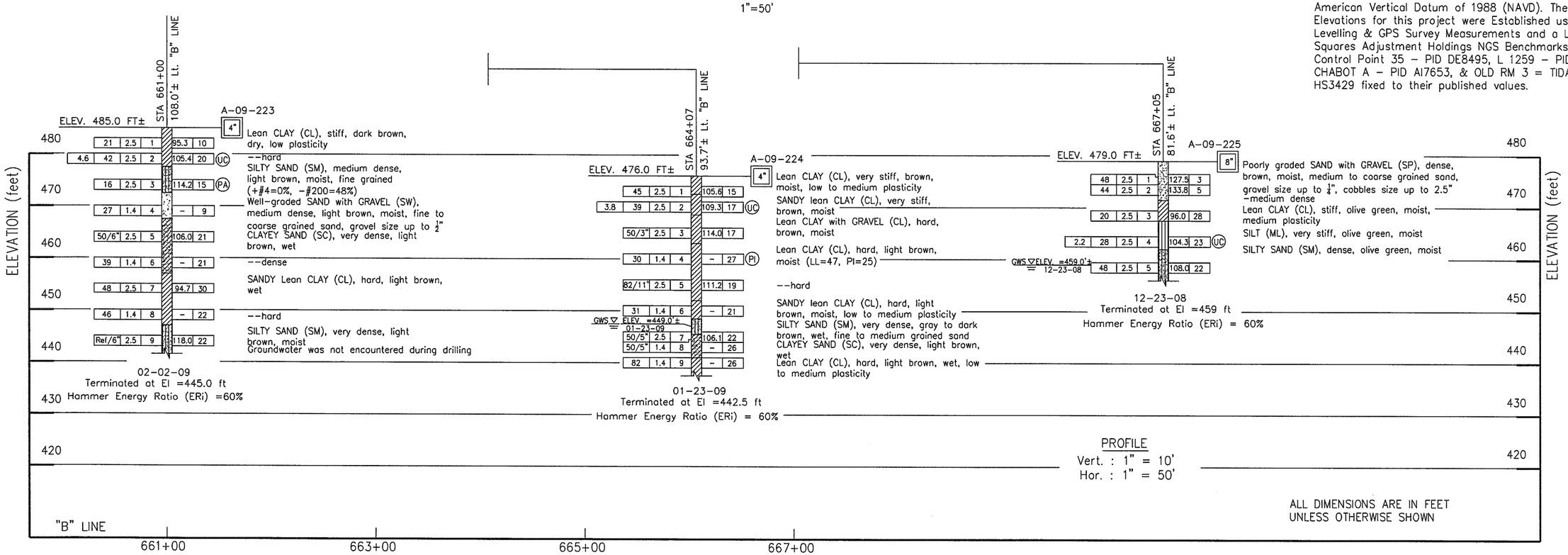
2360 OLUME DRIVE, SUITE A
SAN JOSE, CA 95131



PLAN
1"=50'



PROFILE
Vert. : 1" = 10'
Hor. : 1" = 50'

ALL DIMENSIONS ARE IN FEET
UNLESS OTHERWISE SHOWN

BENCHMARK :
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DESIGN OVERSIGHT
SIGN OFF DATE
DRAWN BY: O. GOUTHIER
CHECKED BY: P. SIRCAR
S. DUDDU
FIELD INVESTIGATION BY:
DATE: DECEMBER 2008 - JUNE 2011

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

P. SIRCAR
PROJECT ENGINEER

BRIDGE NO.
POST MILES

ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT

LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES				SHEET	OF
11/21/08	12/23/08	8/8/11	01/18/12		

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PLATE NO: A-9

TIME PLOTTED => $TIME
DATE PLOTTED => $DATE
USERNAME => $USER

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 01/18/12 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

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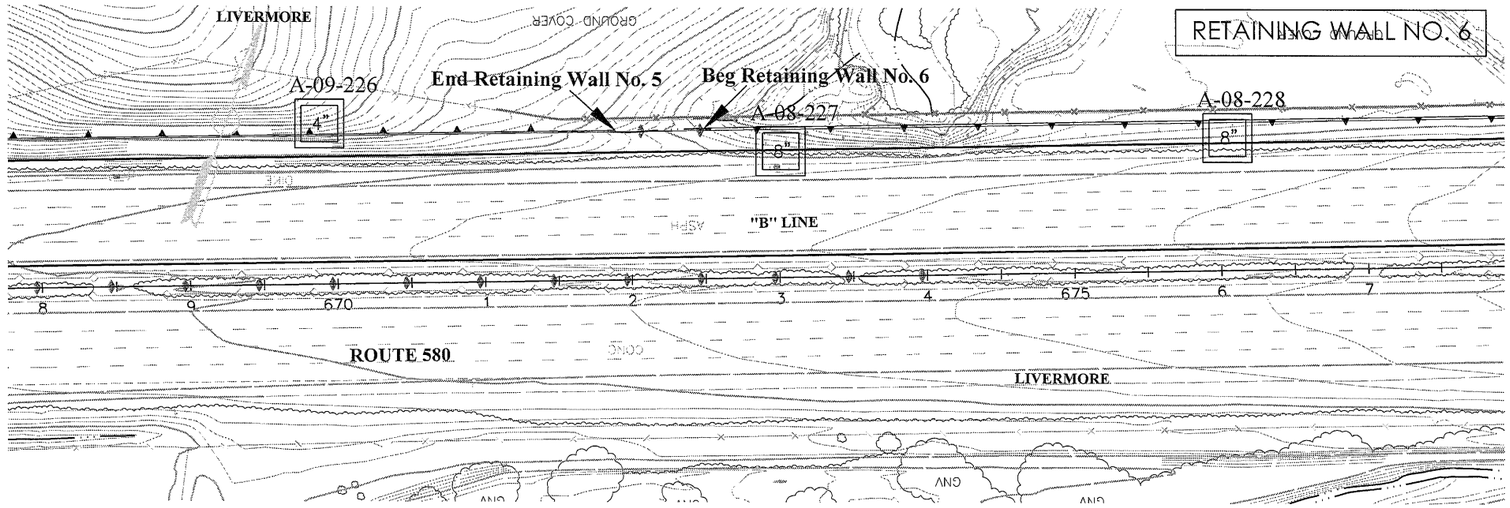

PLAN
1"=50'

BENCHMARK :
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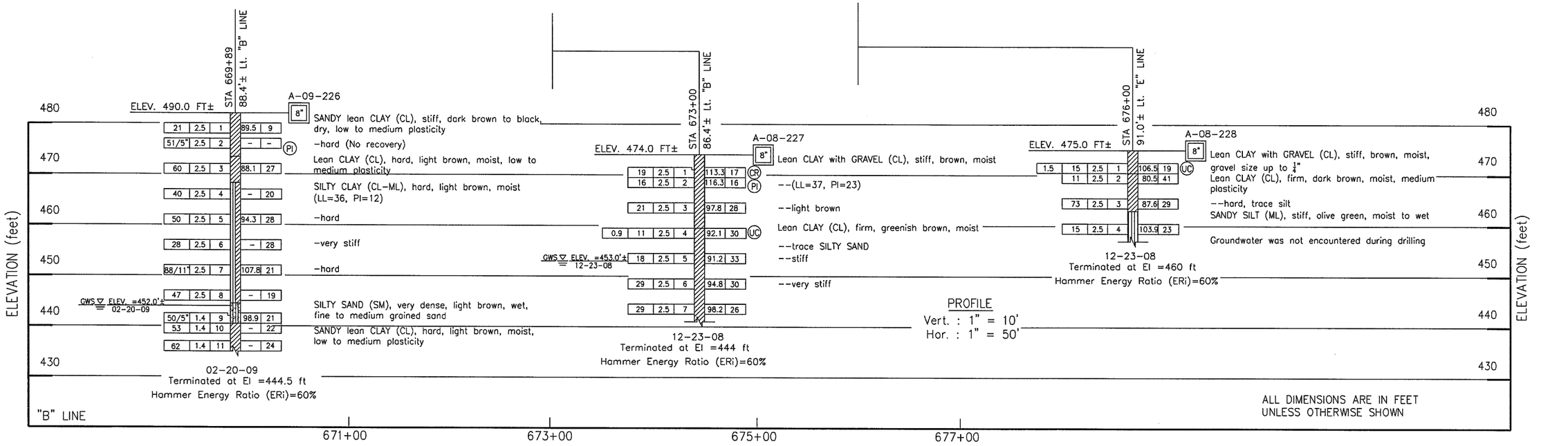

PROFILE
Vert. : 1" = 10'
Hor. : 1" = 50'

ALL DIMENSIONS ARE IN FEET
UNLESS OTHERWISE SHOWN

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JUNE 2011		PROJECT ENGINEER	POST MILES

ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT

LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/24/09	12/23/09	8/8/11	01/18/12		

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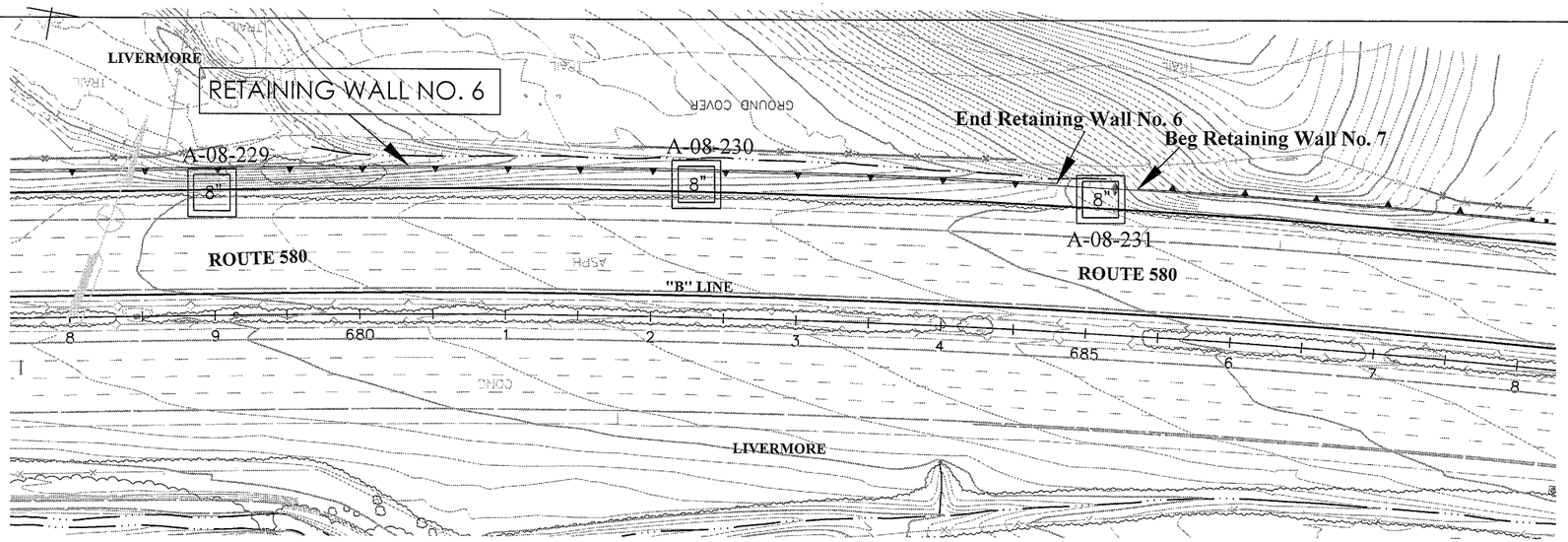

PLAN
1"=50'

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 01/18/12 DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp.12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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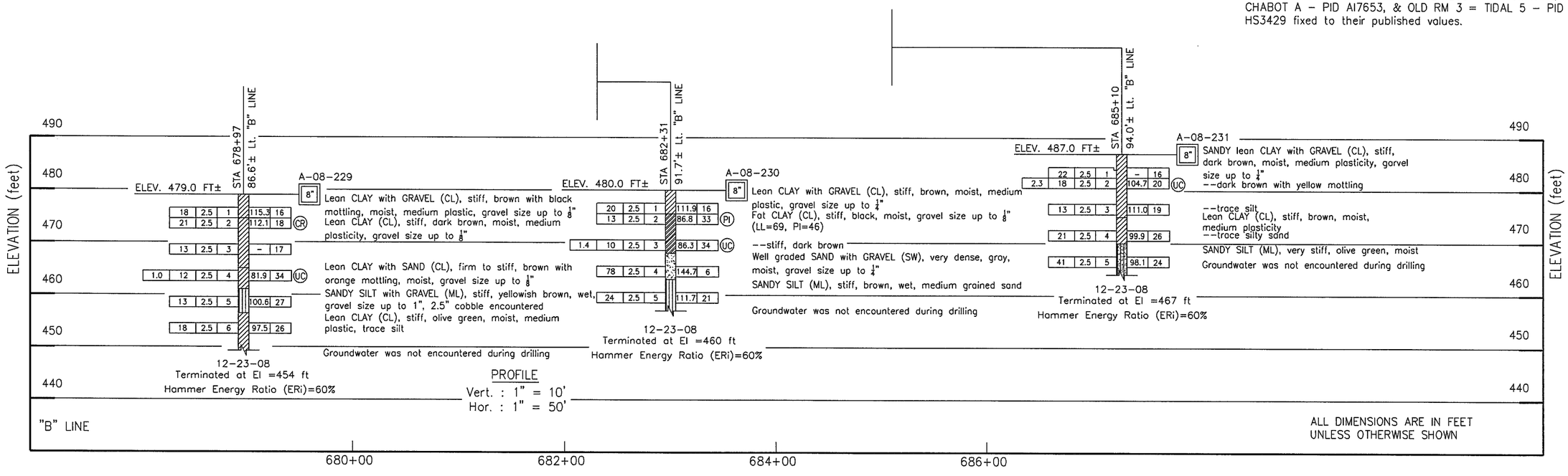

PROFILE
Vert. : 1" = 10'
Hor. : 1" = 50'

ALL DIMENSIONS ARE IN FEET
UNLESS OTHERWISE SHOWN

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.	ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JUNE 2011		PROJECT ENGINEER	POST MILES	LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES → REVISION DATES: 11/4/09, 12/23/09, 8/9/11, 01/18/12

SHEET | OF

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USERNAME => $USER DATE PLOTTED => $DATE TIME PLOTTED => $TIME

PLATE NO: A-11

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 01/18/12 DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp.12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

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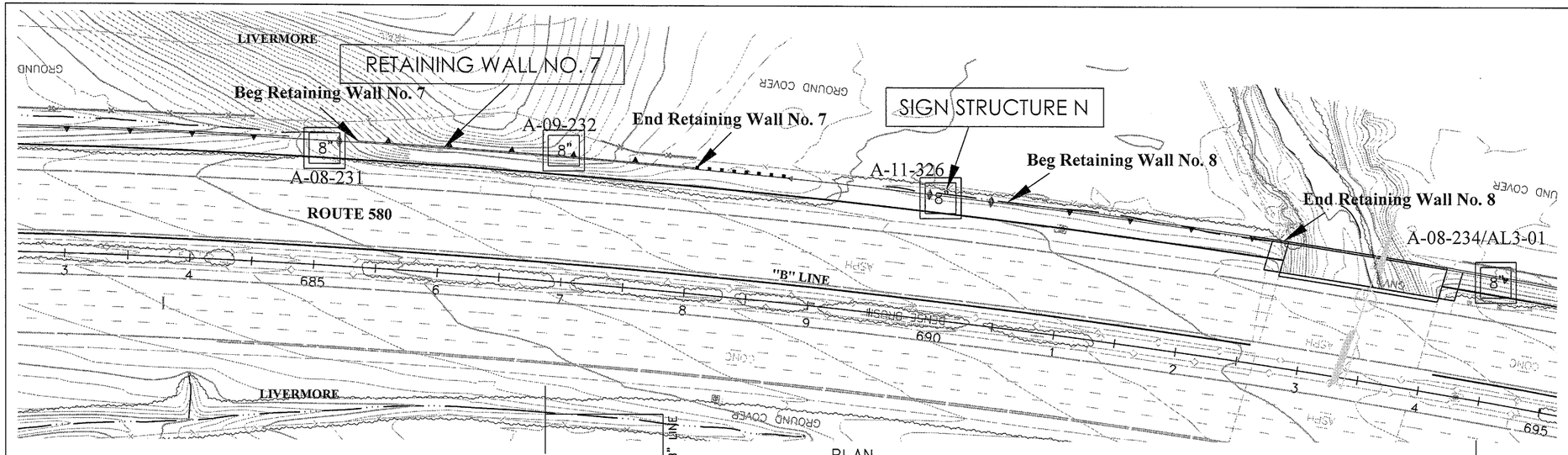
SAN JOSE, CA 95131



PLAN
1"=50'

BENCHMARK :
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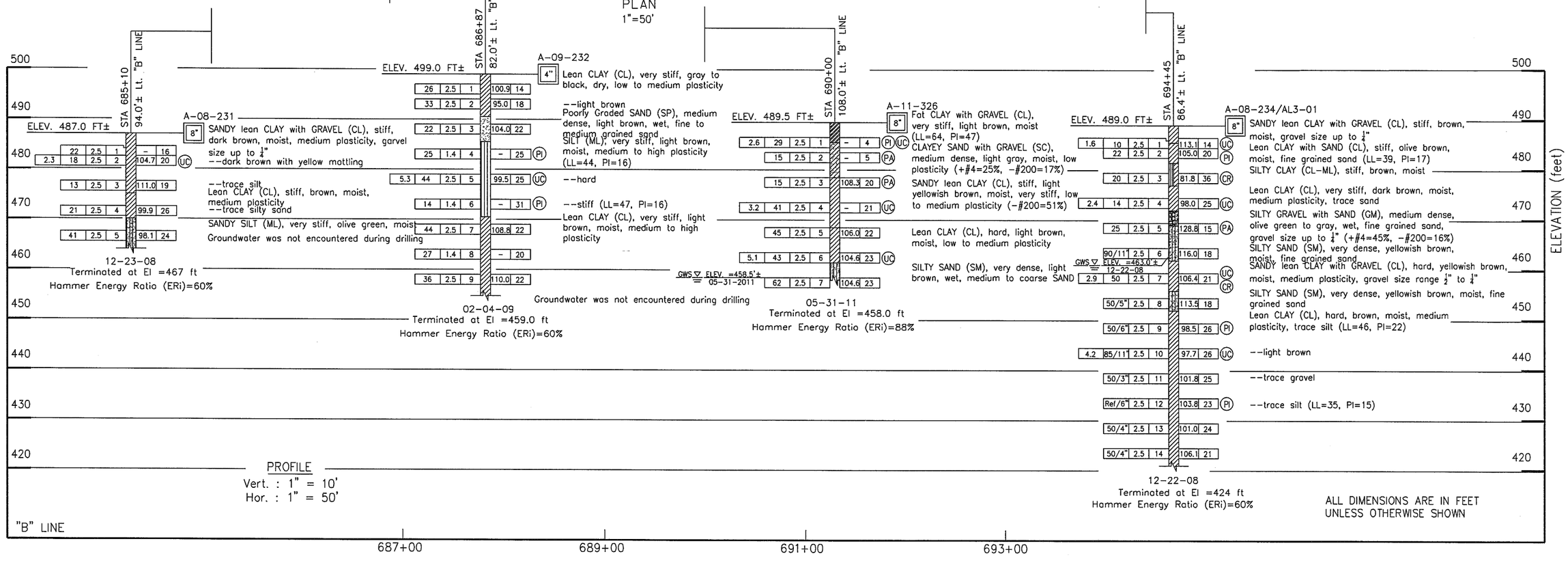

PROFILE
Vert. : 1" = 10'
Hor. : 1" = 50'

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SHOWN

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU		PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JUNE 2011			PROJECT ENGINEER	POST MILES

ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT

LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4
FILE => $REQUEST

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/24/09	12/23/09	8/8/11	01/18/12		

PLATE NO: A-12

USERNAME => $USER DATE PLOTTED => $DATE TIME PLOTTED => $TIME

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 01/18/12 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 GEOTECHNICAL — STATE OF CALIFORNIA

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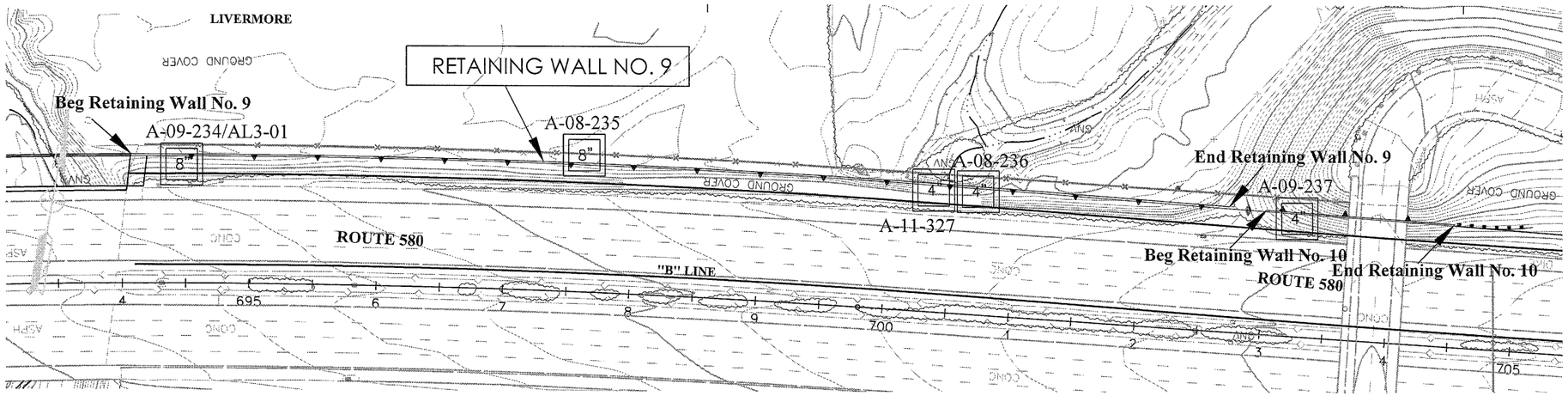

PLAN
1"=50'

BENCHMARK :
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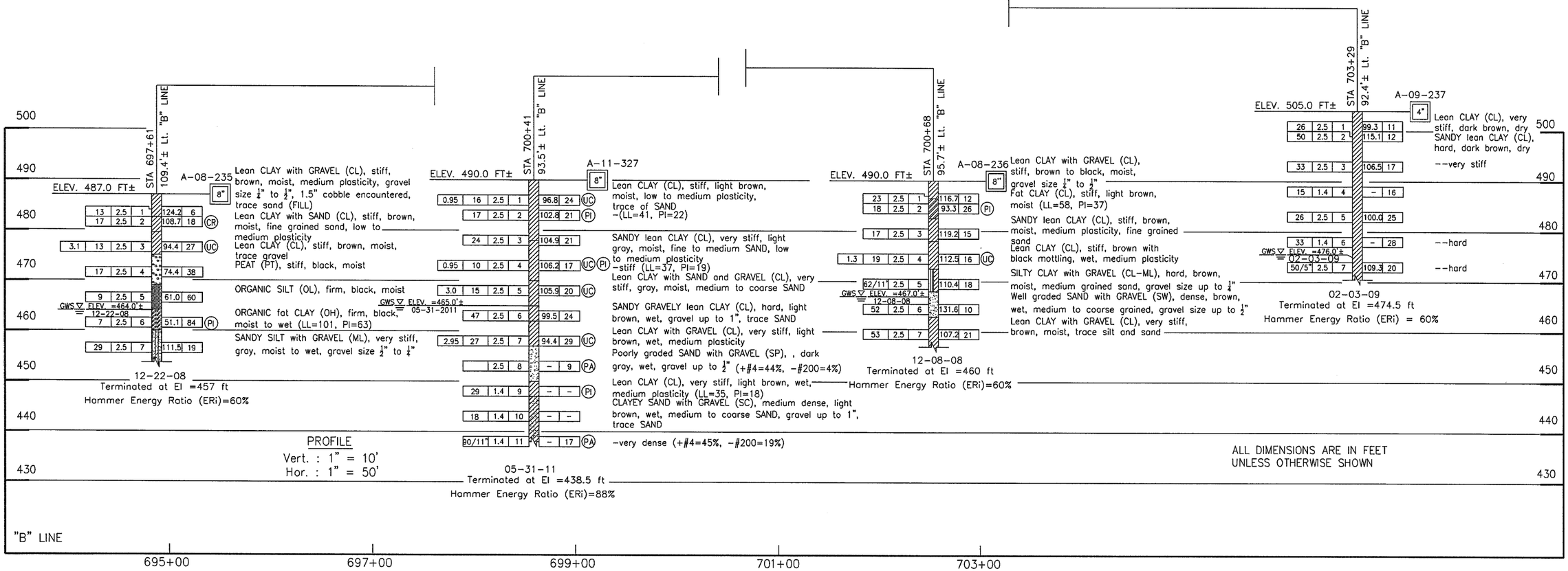

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU		PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JUNE 2011			PROJECT ENGINEER	POST MILES

ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT

LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/4/09	12/23/09	8/9/11	01/18/12		

FILE => $REQUEST

PLATE NO: A-13

DATE PLOTTED => $DATE TIME PLOTTED => $TIME USERNAME => $USER

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — DATE 01/18/12

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

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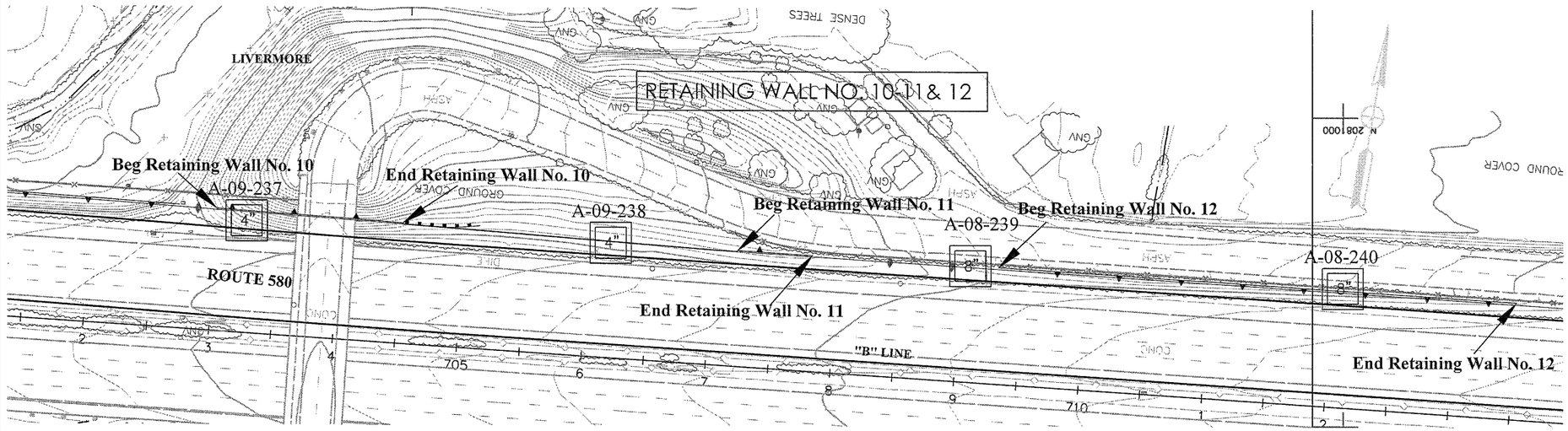
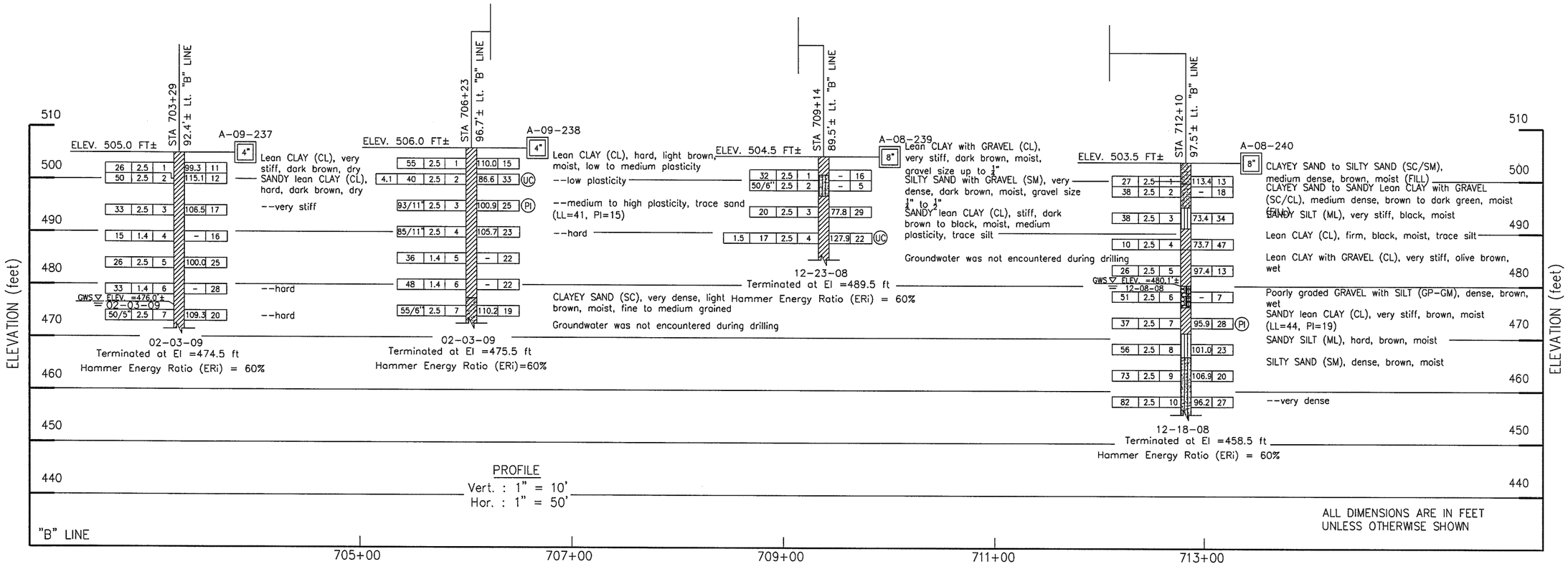
RETAINING WALL NO. 10-11& 12



PLAN
1"=50'



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DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU		PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JUNE 2011			PROJECT ENGINEER	POST MILES

ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT

LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/17/09	12/23/09	8/31/11	01/18/12		

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PLATE NO: A-14

TIME PLOTTED => $TIME
DATE PLOTTED => $DATE
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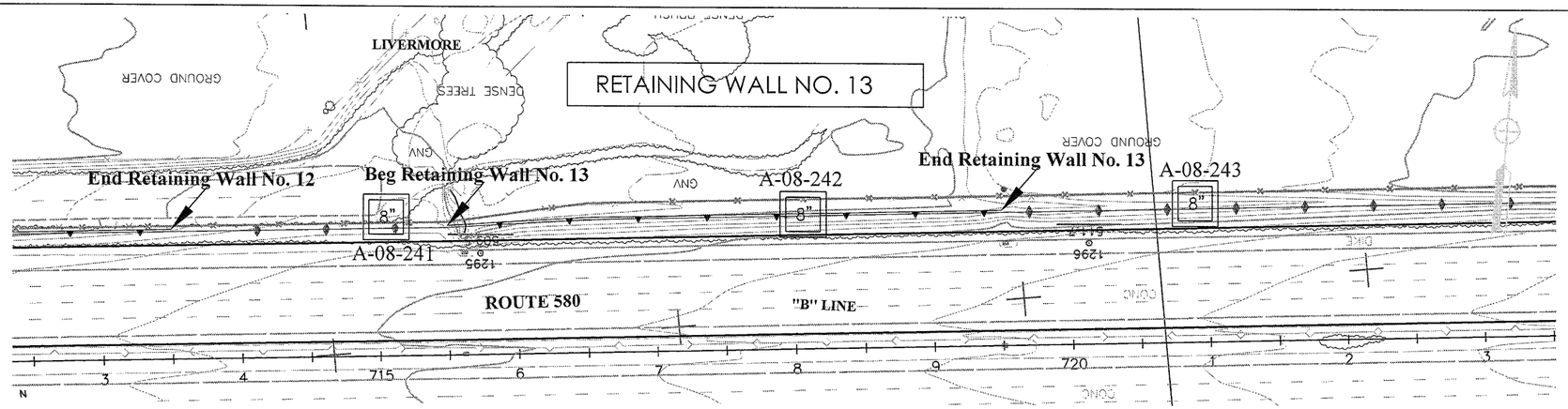

PLAN
1"=50'

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 01/18/12 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

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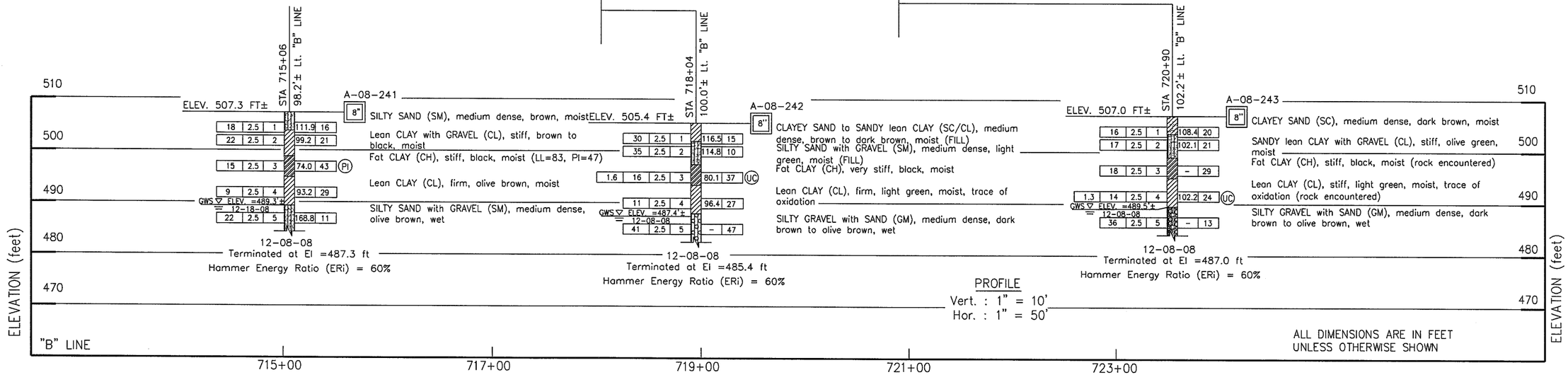

PROFILE
Vert. : 1" = 10'
Hor. : 1" = 50'

ALL DIMENSIONS ARE IN FEET
UNLESS OTHERWISE SHOWN

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.	ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JUNE 2011		PROJECT ENGINEER	POST MILES	LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4
FILE => $REQUEST

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/4/09	12/23/09	8/8/11	01/18/12		

PLATE NO: A-15

USERNAME => $USER DATE PLOTTED => $DATE TIME PLOTTED => $TIME

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — DATE 01/18/12

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

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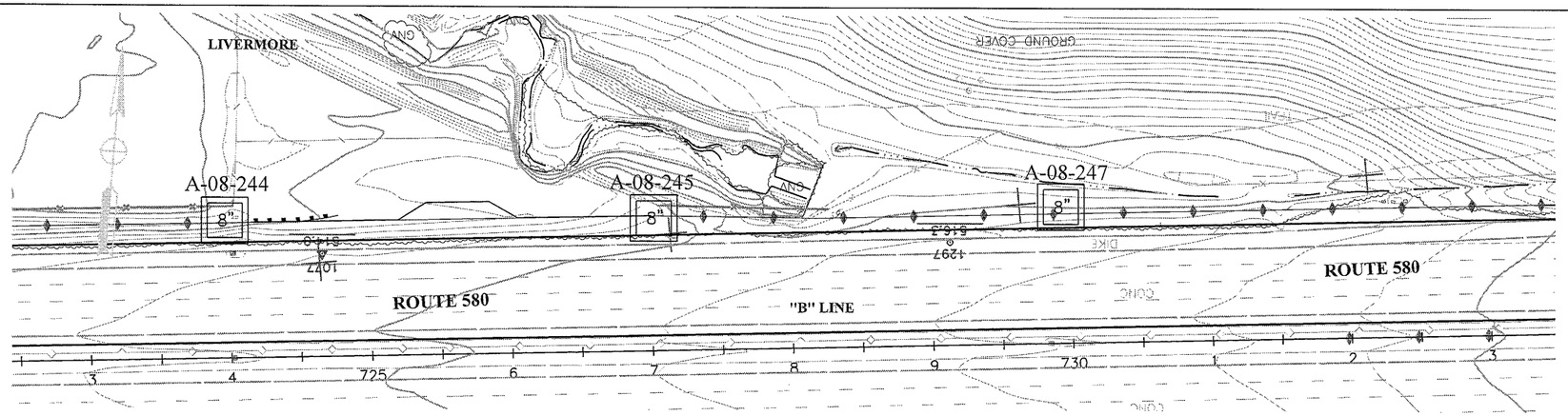
2360 OUME DRIVE, SUITE A
SAN JOSE, CA 95131



PLAN
1"=50'

BENCHMARK :
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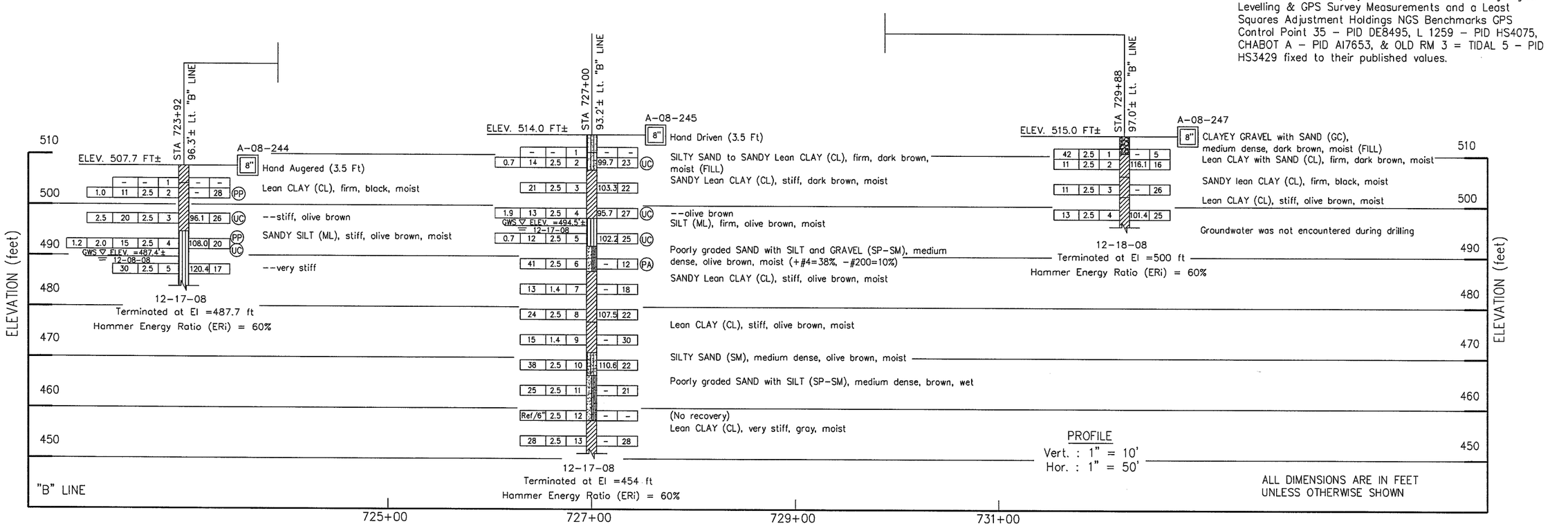

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU		PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JUNE 2011			PROJECT ENGINEER	POST MILES

ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT

LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

FILE => $REQUEST

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/23/09	12/23/09	8/8/11	01/18/12		

PLATE NO: A-16

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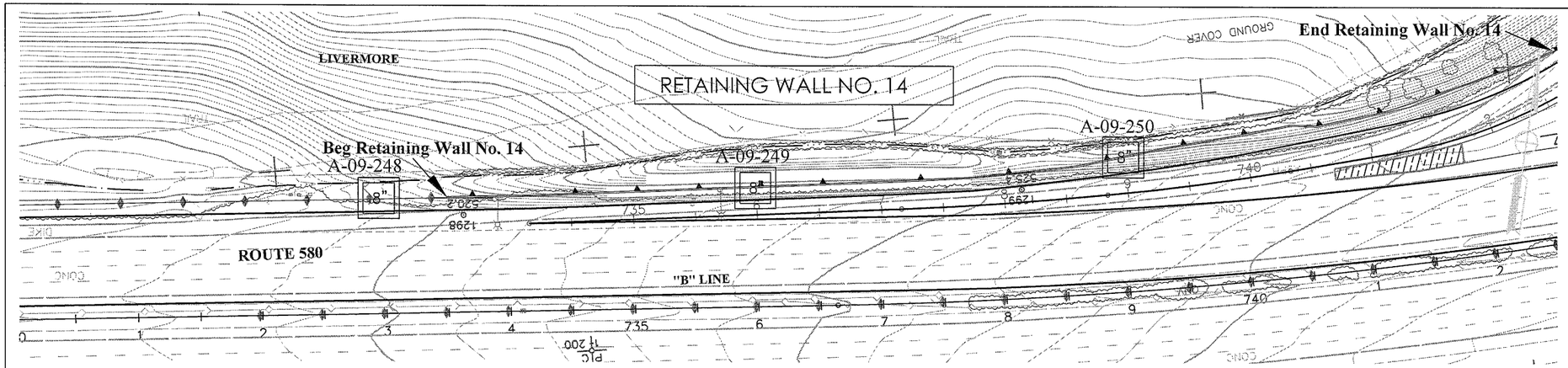

PLAN
1"=50'

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 01/18/12 DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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SAN JOSE, CA 95131

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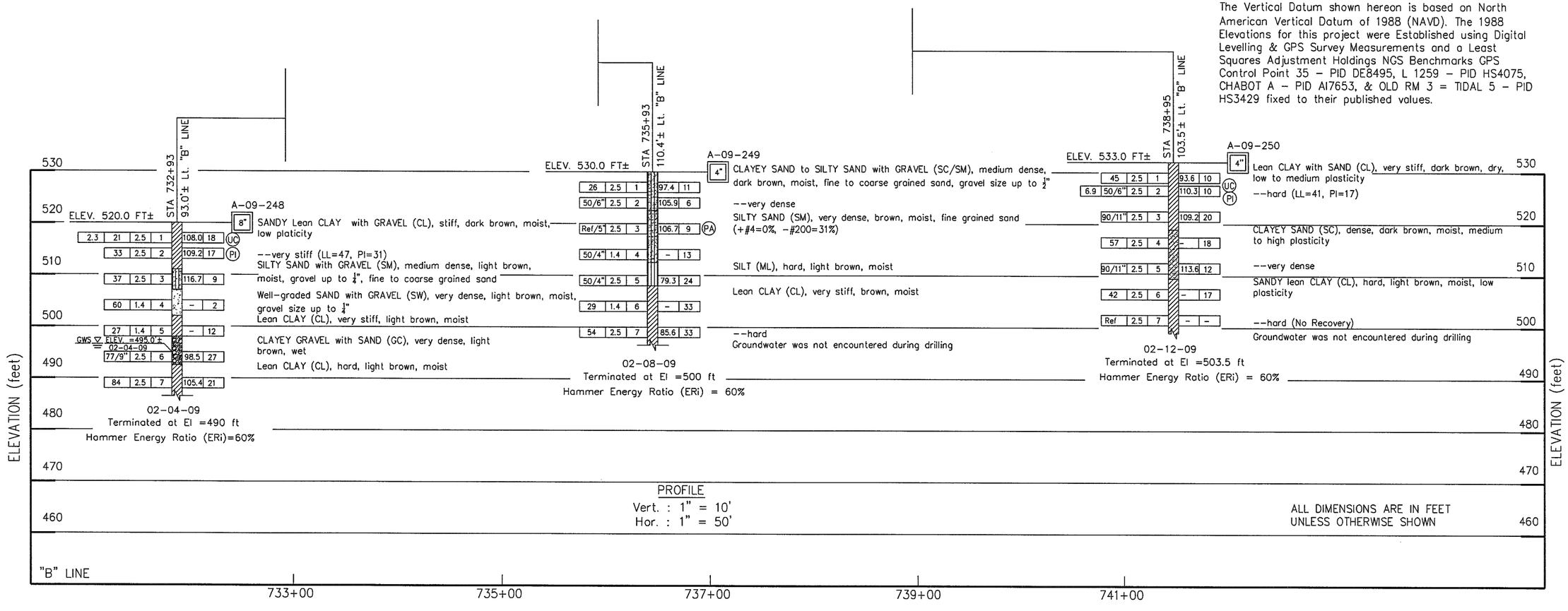

PROFILE
Vert. : 1" = 10'
Hor. : 1" = 50'

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SHOWN

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JUNE 2011		PROJECT ENGINEER	POST MILES

ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT

LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/24/08	12/30/08	8/8/11	01/18/12		

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TIME PLOTTED => $TIME
DATE PLOTTED => $DATE
USERNAME => $USER

PLATE NO: A-17

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 01/18/12 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

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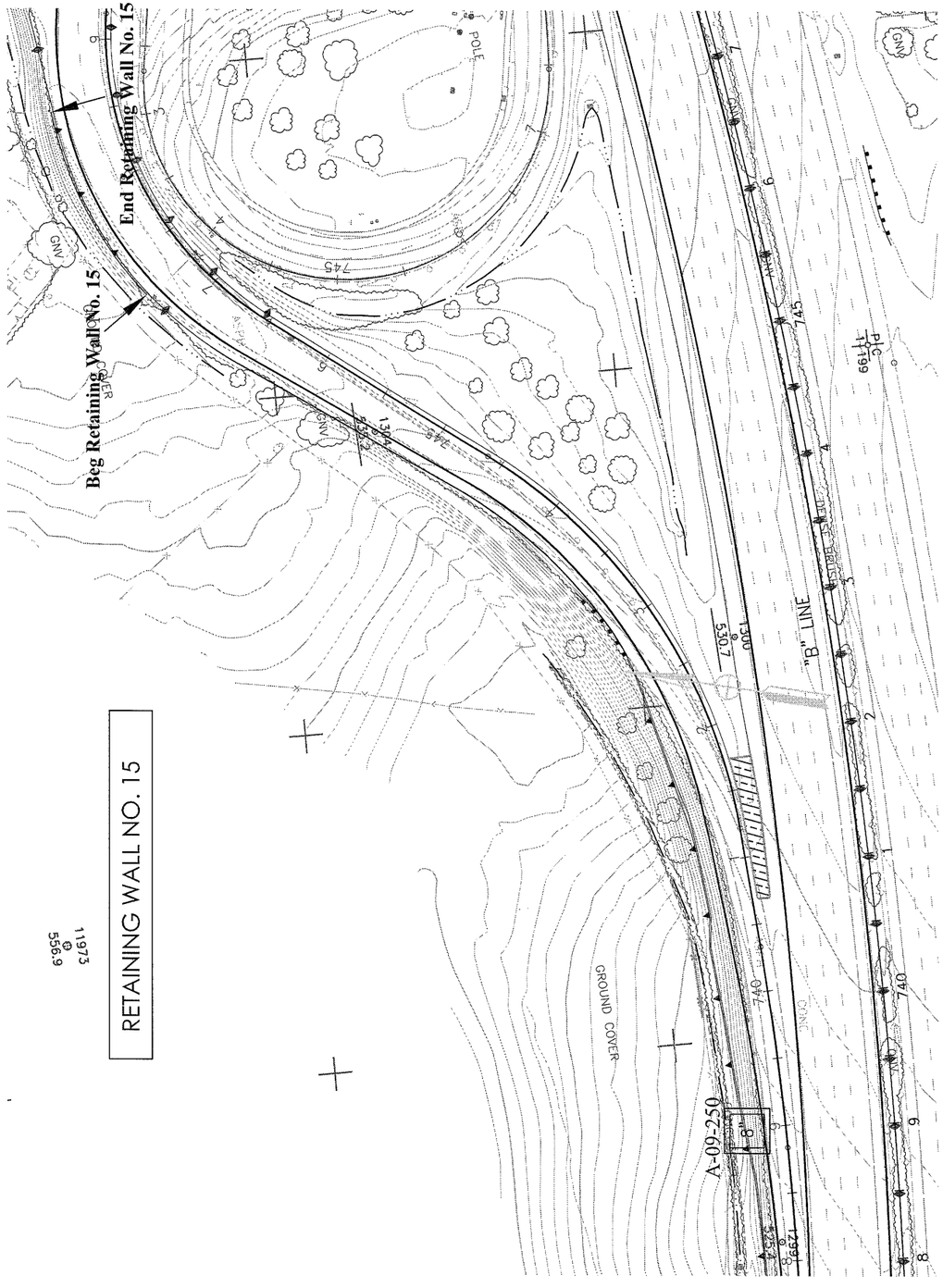
SAN JOSE, CA 95131

RETAINING WALL NO. 15

1197 @ 556.9



PLAN
1"=50'

BENCHMARK :
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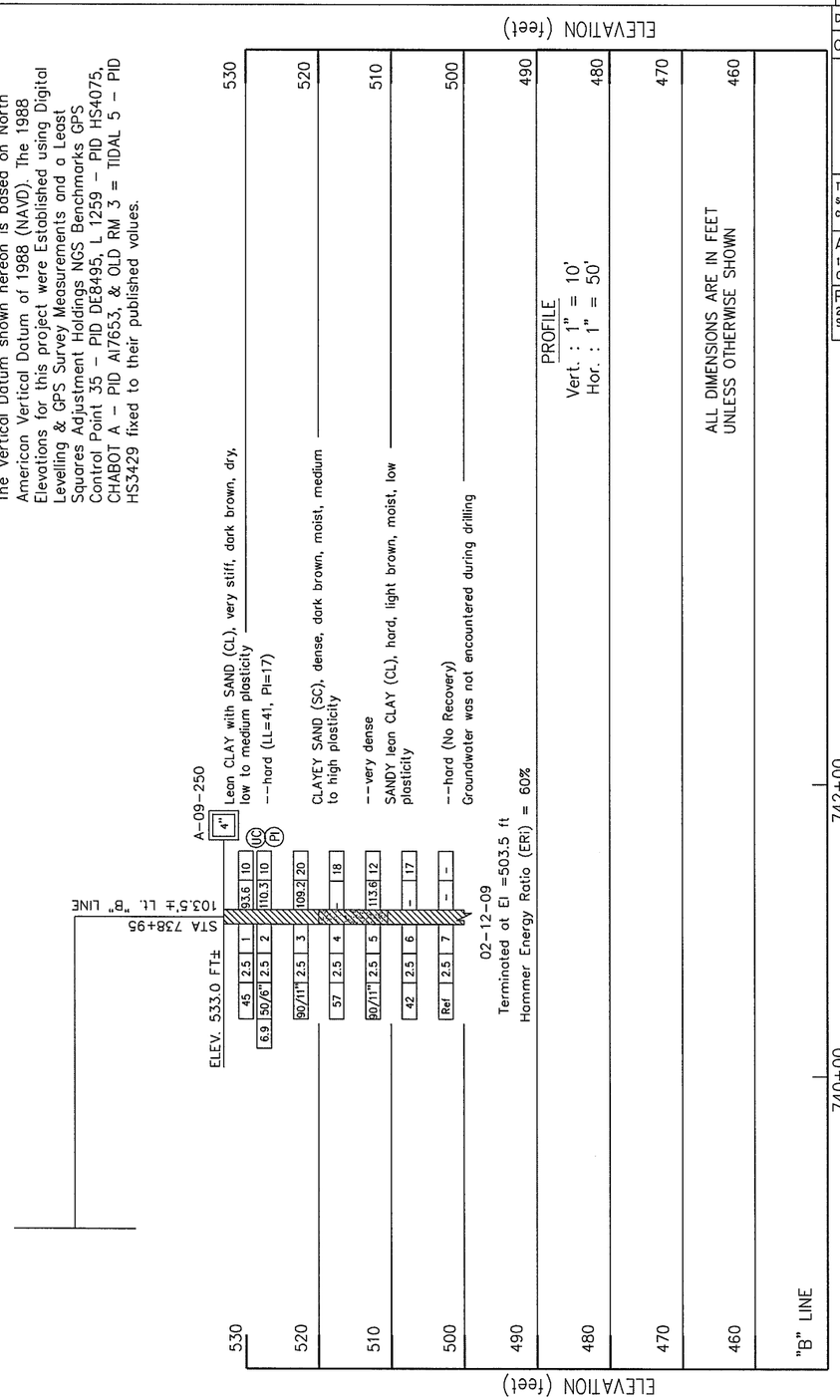

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JUNE 2011		PROJECT ENGINEER	POST MILES

ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT

LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/3/09	12/23/09	8/9/11	01/18/12		

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DATE PLOTTED => $DATE TIME PLOTTED => $TIME USERNAME => $USER

PLATE NO: A-18

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 01/18/12 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp.12/31/13 GEOTECHNICAL — STATE OF CALIFORNIA

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OAKLAND, CA 94612

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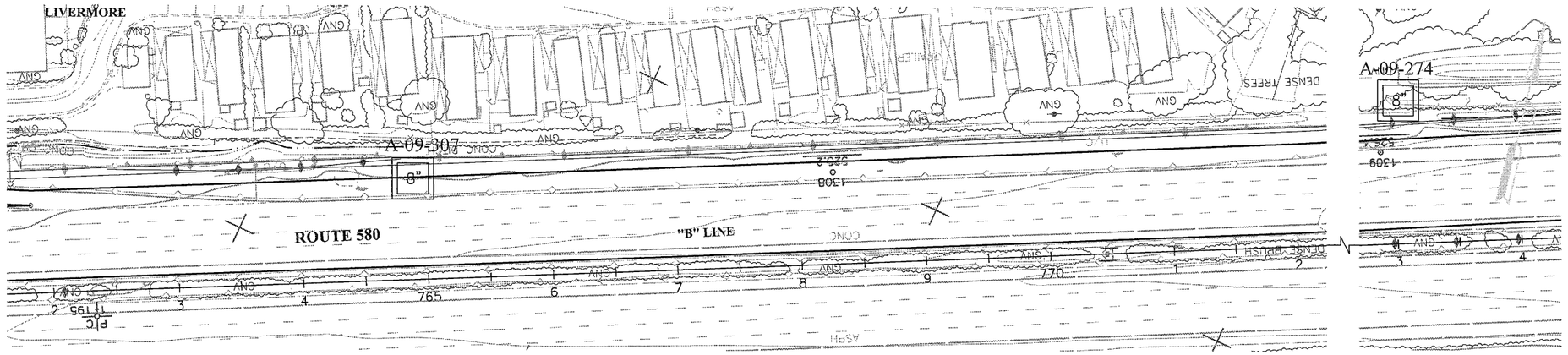
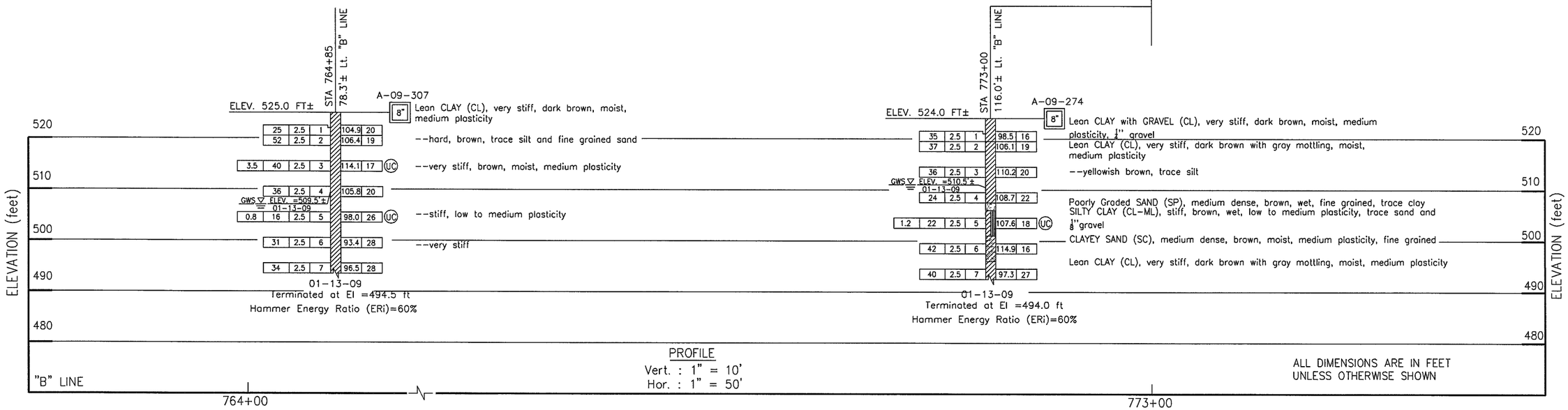
2360 QUME DRIVE, SUITE A
SAN JOSE, CA 95131



PLAN
1"=50'

BENCHMARK :
The Vertical Datum shown hereon is based on North American Vertical Datum of 1988 (NAVD). The 1988 Elevations for this project were Established using Digital Levelling & GPS Survey Measurements and a Least Squares Adjustment Holdings NGS Benchmarks GPS Control Point 35 – PID DE8495, L 1259 – PID HS4075, CHABOT A – PID AI7653, & OLD RM 3 = TIDAL 5 – PID HS3429 fixed to their published values.



PROFILE
Vert. : 1" = 10'
Hor. : 1" = 50'

ALL DIMENSIONS ARE IN FEET
UNLESS OTHERWISE SHOWN

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU		PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JUNE 2011			PROJECT ENGINEER	POST MILES

ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT

LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/13/09	12/23/09	8/8/11	01/18/12		

FILE => $REQUEST

PLATE NO: A-19

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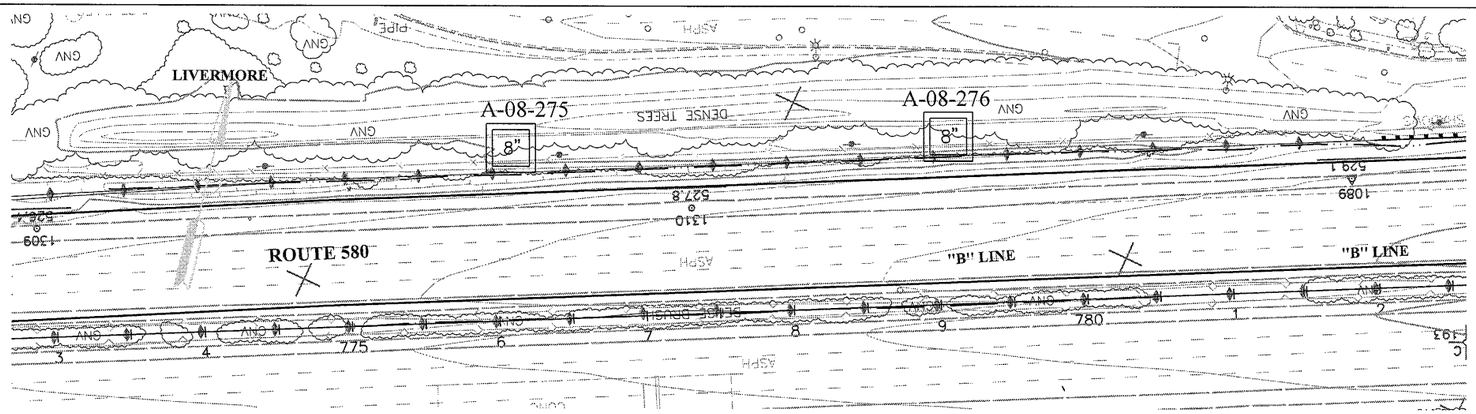

PLAN
1"=50'

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 01/18/12 DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 GEOTECHNICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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BENCHMARK :
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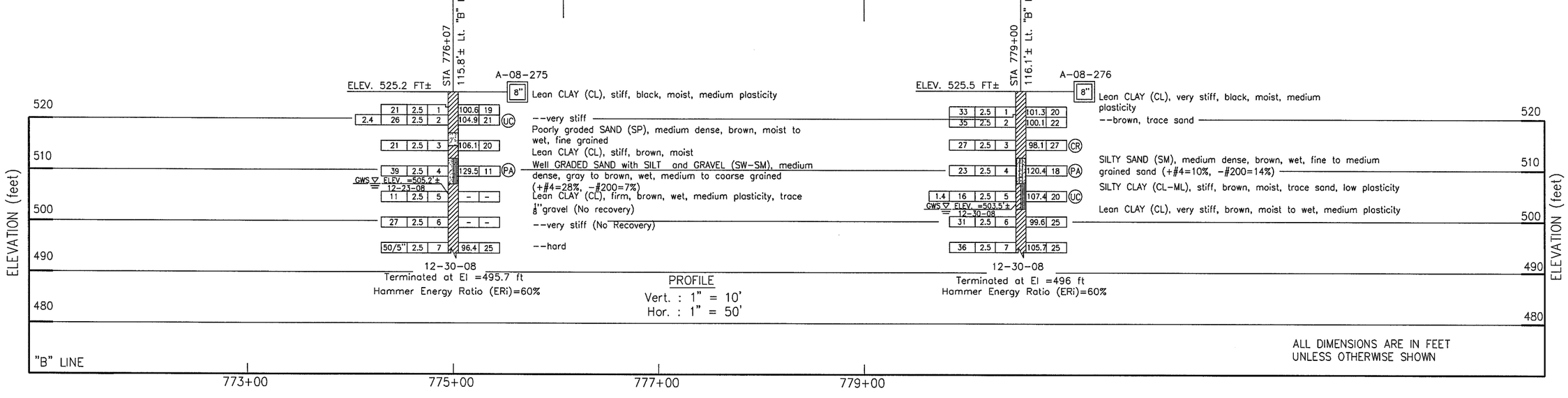

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU		PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JUNE 2011			PROJECT ENGINEER	POST MILES

ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT

LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/2/09	12/23/09	8/8/11	01/18/12		

FILE => $REQUEST

PLATE NO: A-20

DATE PLOTTED => $DATE TIME PLOTTED => $TIME USERNAME => $USER

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 01/18/12 DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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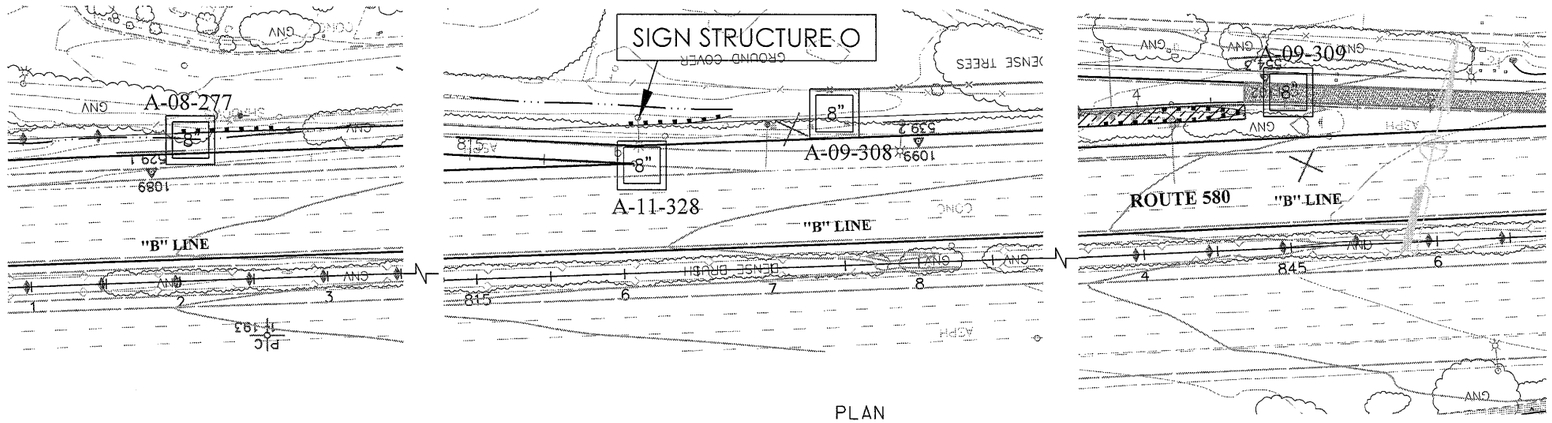

PLAN
1"=50'

BENCHMARK :
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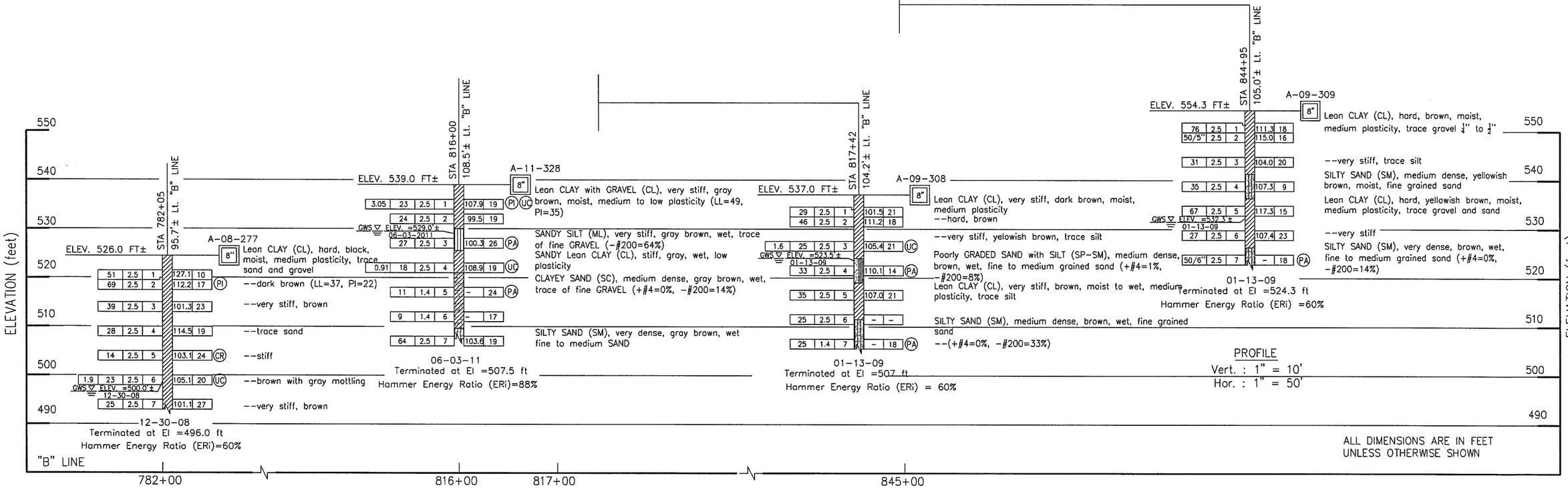

PROFILE
Vert. : 1" = 10'
Hor. : 1" = 50'

ALL DIMENSIONS ARE IN FEET
UNLESS OTHERWISE SHOWN

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.	ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JUNE 2011		PROJECT ENGINEER	POST MILES	LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/13/09	12/23/09	8/9/11	01/18/12		

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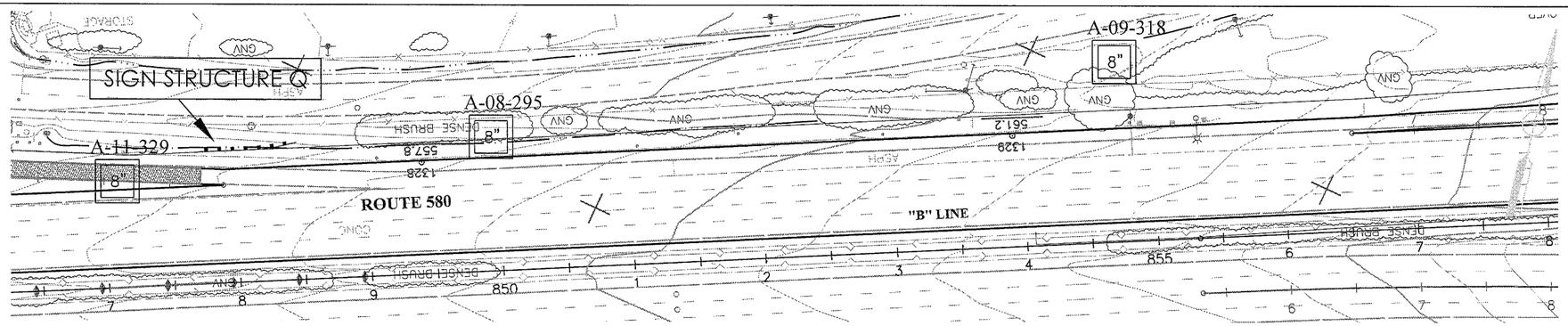
DATE PLOTTED => $DATE TIME PLOTTED => $TIME USERNAME => $USER

PLATE NO: A-21



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 01/18/12 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp 12/31/13 GEOTECHNICAL — STATE OF CALIFORNIA

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PLAN
1"=50'

BENCHMARK :
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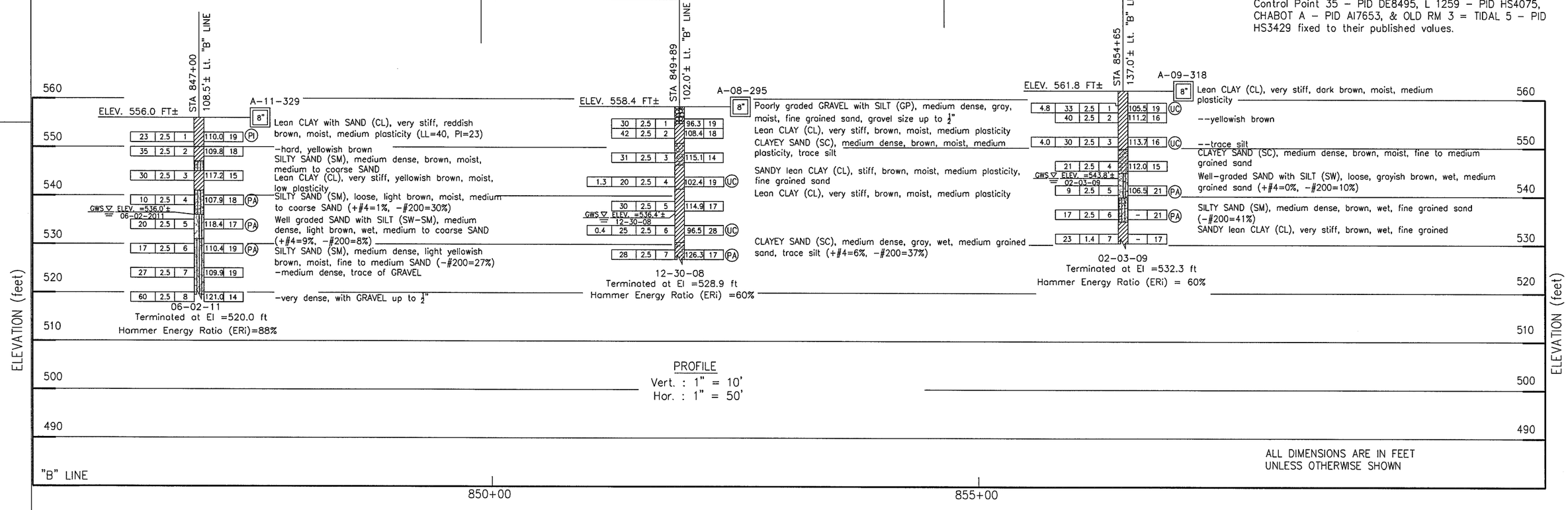

PROFILE
Vert. : 1" = 10'
Hor. : 1" = 50'

ALL DIMENSIONS ARE IN FEET
UNLESS OTHERWISE SHOWN

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.	ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JUNE 2011		PROJECT ENGINEER	POST MILES	LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/21/09	12/23/09	8/9/11	01/18/12		

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PLATE NO: A-22

USERNAME => $USER DATE PLOTTED => $DATE TIME PLOTTED => $TIME

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 01/18/12 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

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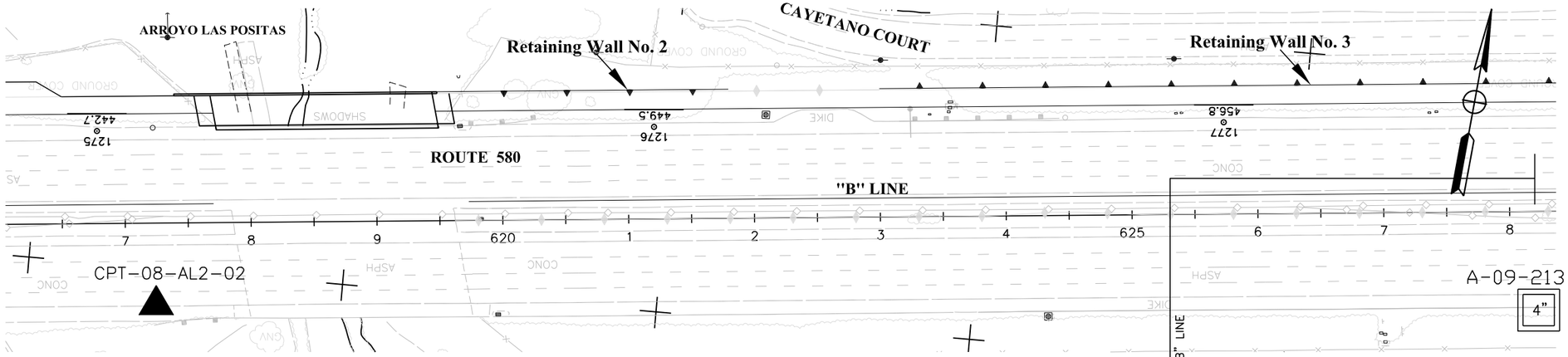

PLAN
1"=50'

BENCHMARK :
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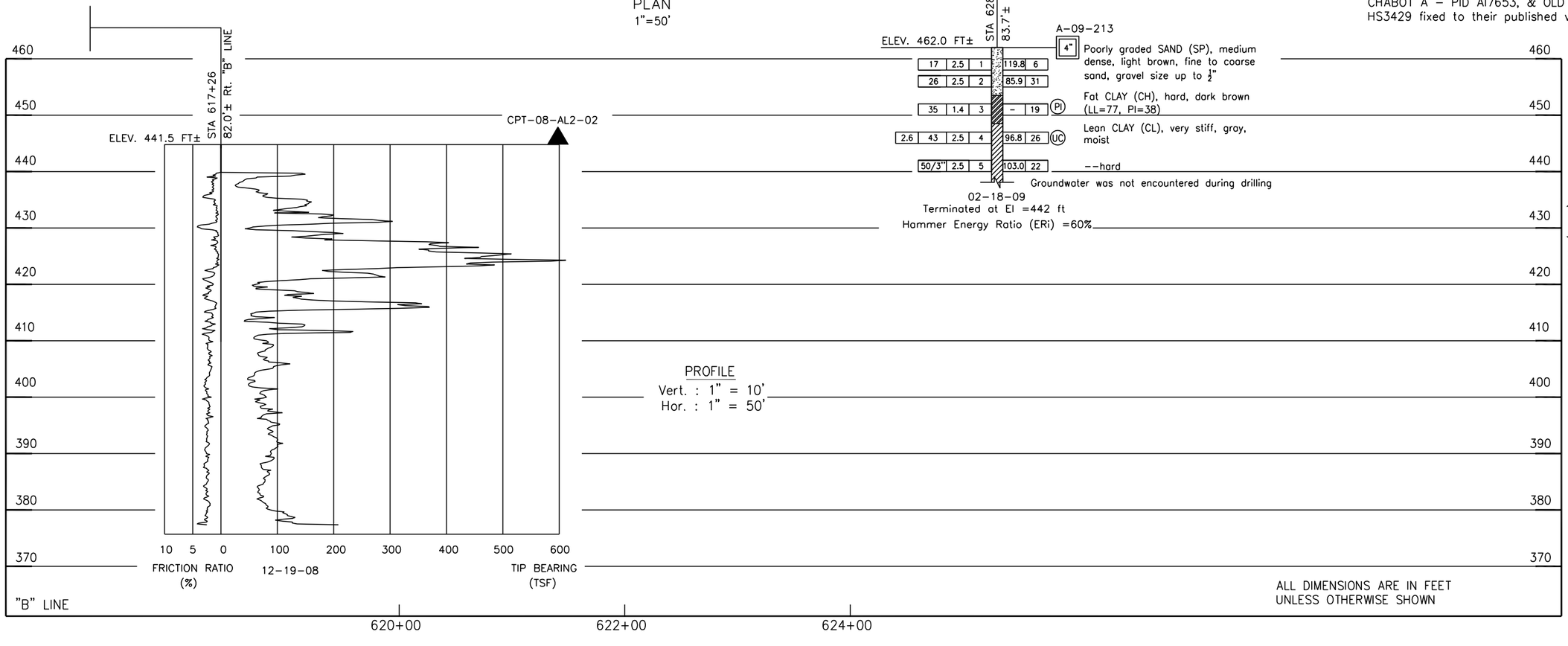

PROFILE
Vert. : 1" = 10'
Hor. : 1" = 50'

ALL DIMENSIONS ARE IN FEET
UNLESS OTHERWISE SHOWN

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.	ROUTE 580 WB HOV LANE WIDENING- EASTERN SEGMENT
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008– JUNE 2011		PROJECT ENGINEER	POST MILES	LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/3/09	12/23/09	8/9/11	01/18/12		

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PLATE NO: A-23

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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — DATE 01/18/12

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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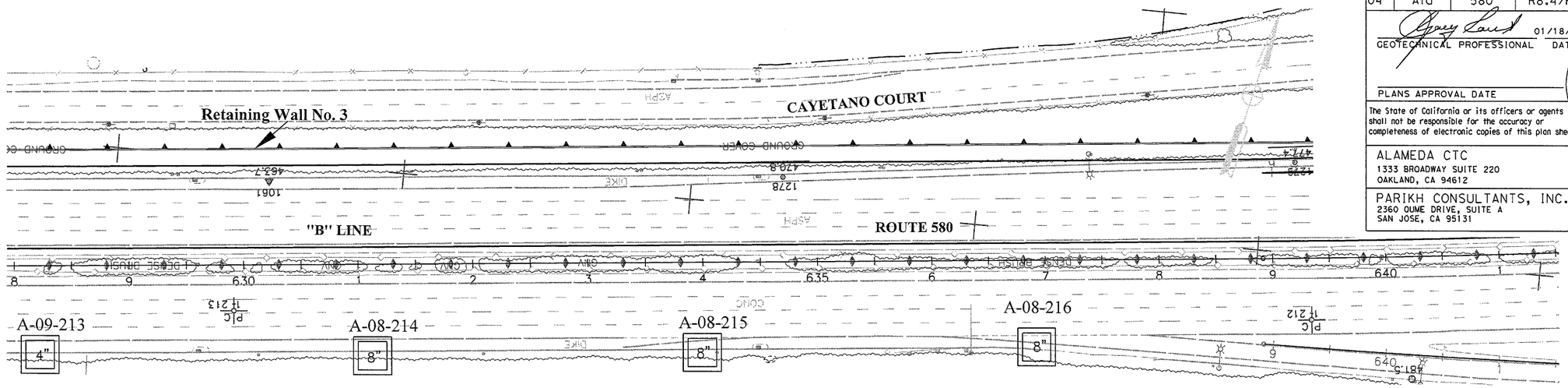
SAN JOSE, CA 95131



BENCHMARK :
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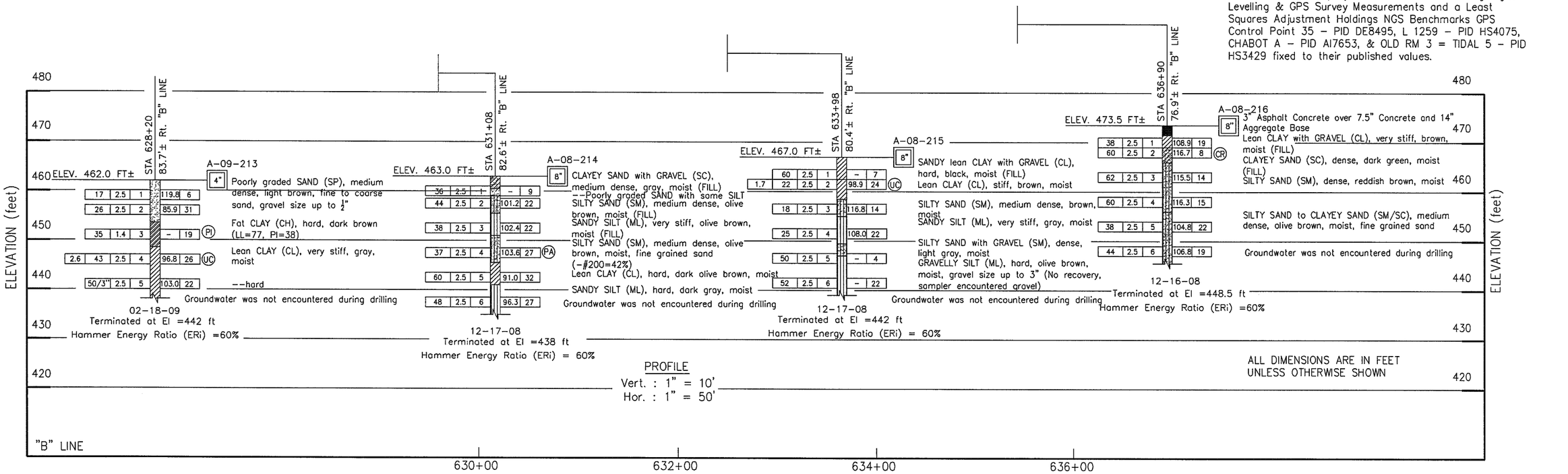

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU		PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008- JUNE 2011			PROJECT ENGINEER	POST MILES

ROUTE 580 WB HOV LANE WIDENING- EASTERN SEGMENT

LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES				SHEET	OF
11/3/08	12/23/08	8/9/11	01/18/12		

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PLATE NO: A-24

TIME PLOTTED => $TIME
DATE PLOTTED => $DATE
USERNAME => $USER

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

Gary Parikh 01/18/12
GEOTECHNICAL PROFESSIONAL DATE

PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
GARY PARIKH
No. G.E. 666
Exp. 12/31/13
GEOTECHNICAL
STATE OF CALIFORNIA

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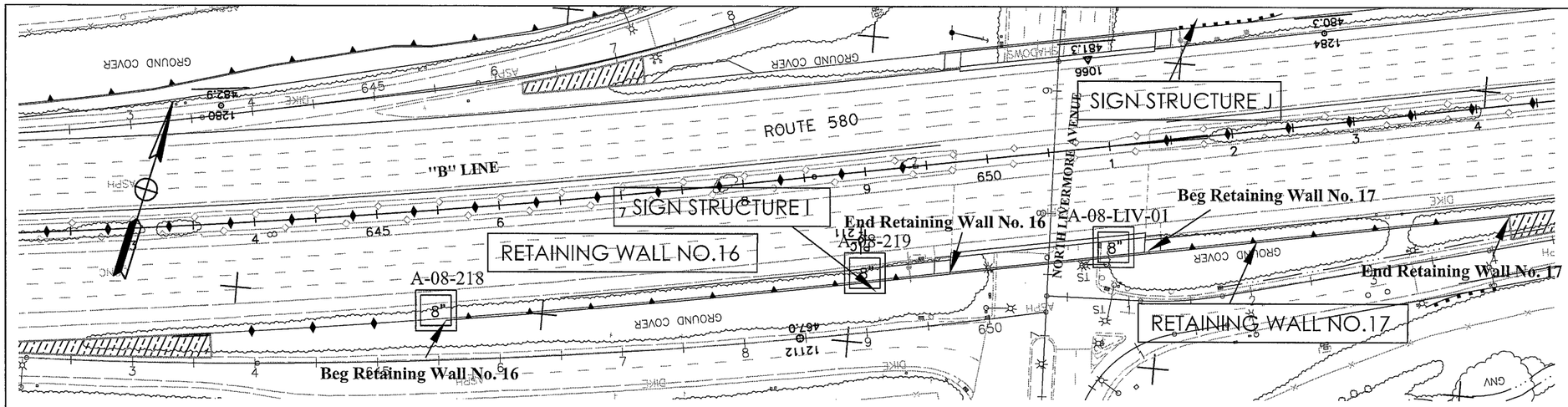
OAKLAND, CA 94612

PARIKH CONSULTANTS, INC.
2360 OLME DRIVE, SUITE A
SAN JOSE, CA 95131



PLAN
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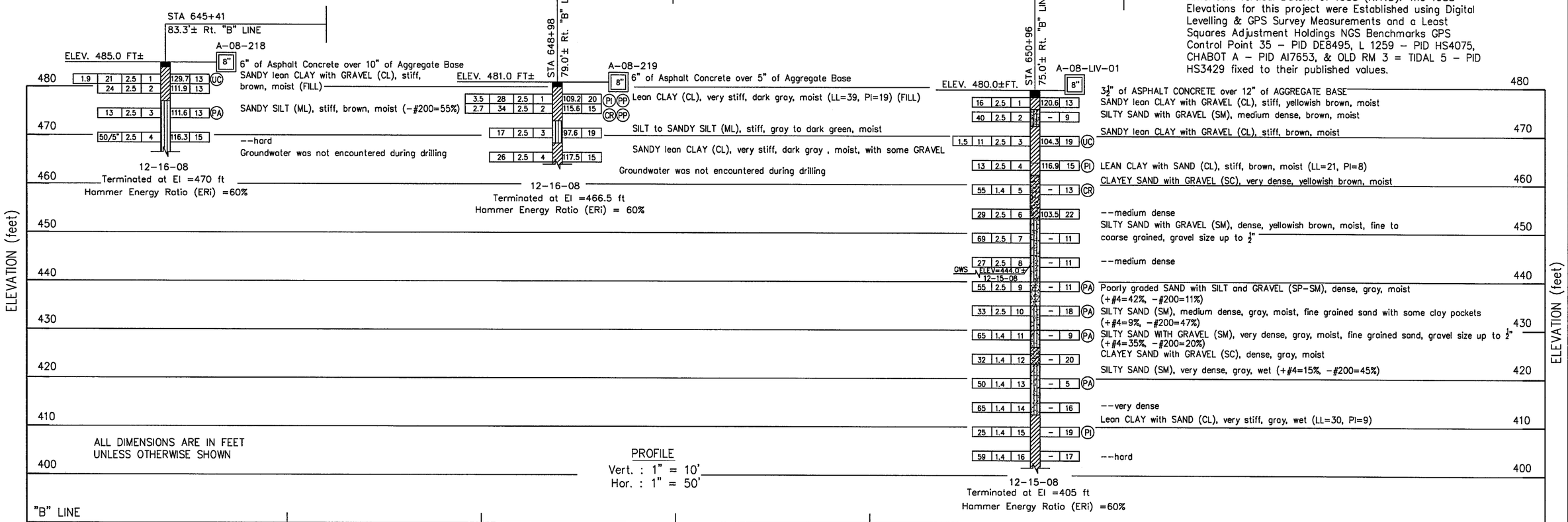

BENCHMARK :
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DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008- JUNE 2011		PROJECT ENGINEER

BRIDGE NO.
POST MILES

ROUTE 580 WB HOV LANE WIDENING- EASTERN SEGMENT

LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4
FILE => $REQUEST

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/21/08	12/23/08	8/8/11	01/18/12		

PLATE NO: A-25

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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 01/18/12 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 GEOTECHNICAL — STATE OF CALIFORNIA

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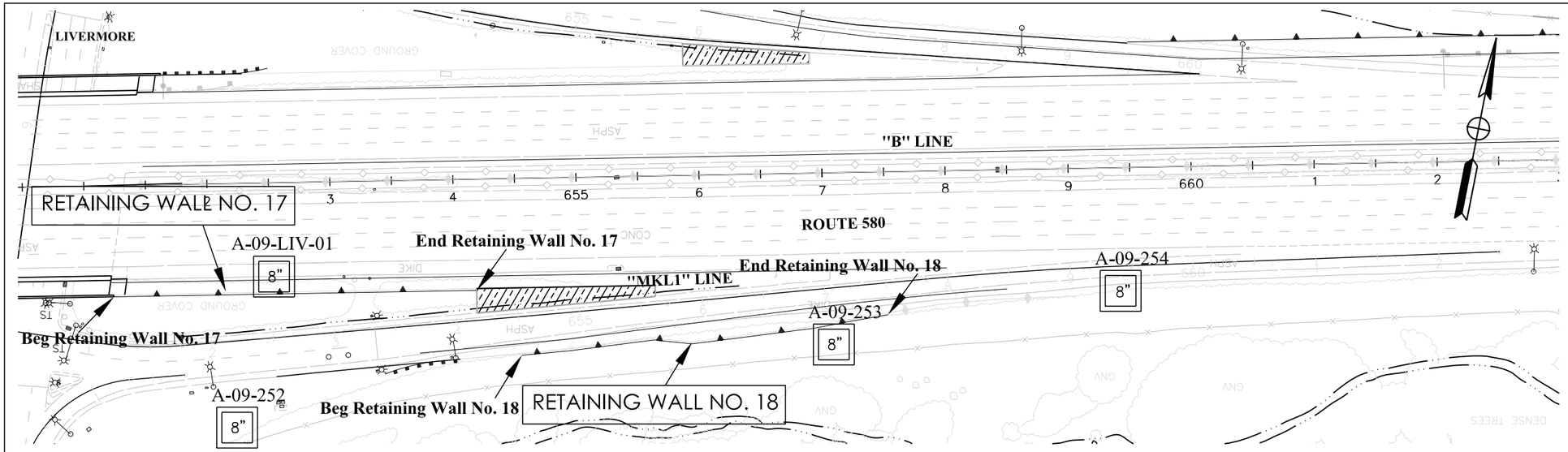
2360 QUME DRIVE, SUITE A
SAN JOSE, CA 95131



PLAN
1"=50'

BENCHMARK :
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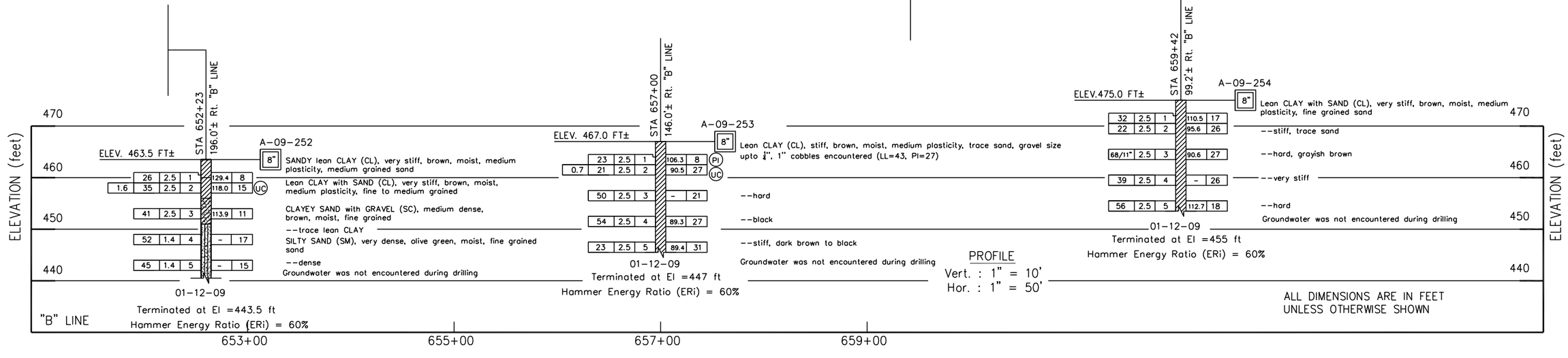

PROFILE
Vert. : 1" = 10'
Hor. : 1" = 50'

ALL DIMENSIONS ARE IN FEET
UNLESS OTHERWISE SHOWN

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.	ROUTE 580 WB HOV LANE WIDENING- EASTERN SEGMENT
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008– JUNE 2011		PROJECT ENGINEER	POST MILES	LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/3/08	12/23/09	8/9/11	01/18/12		

PLATE NO: A-26

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USERNAME => $USER DATE PLOTTED => $DATE TIME PLOTTED => $TIME

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 01/18/12 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp 12/31/13 GEOTECHNICAL — STATE OF CALIFORNIA

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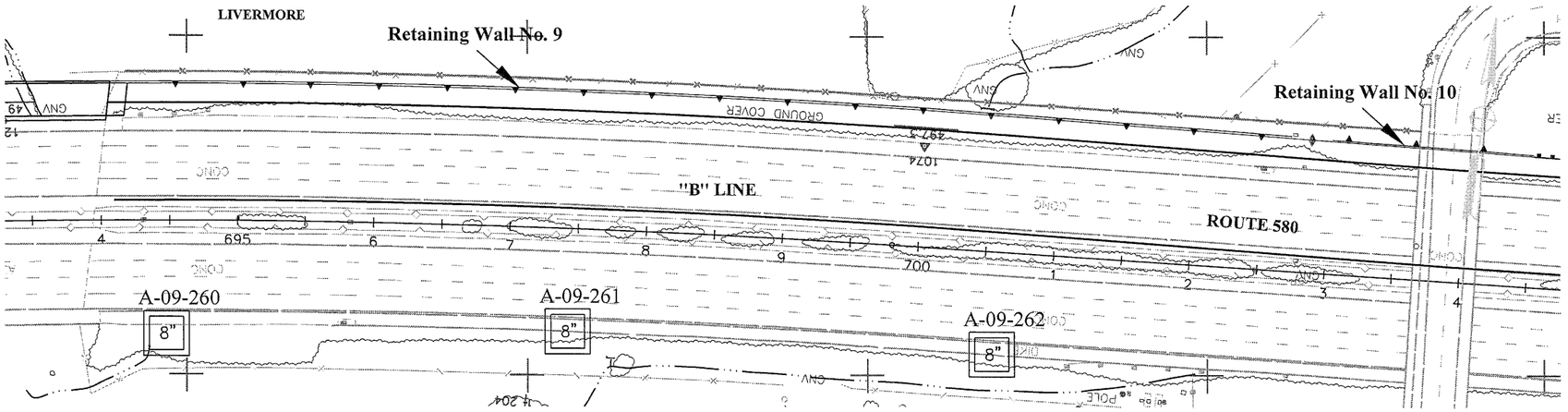
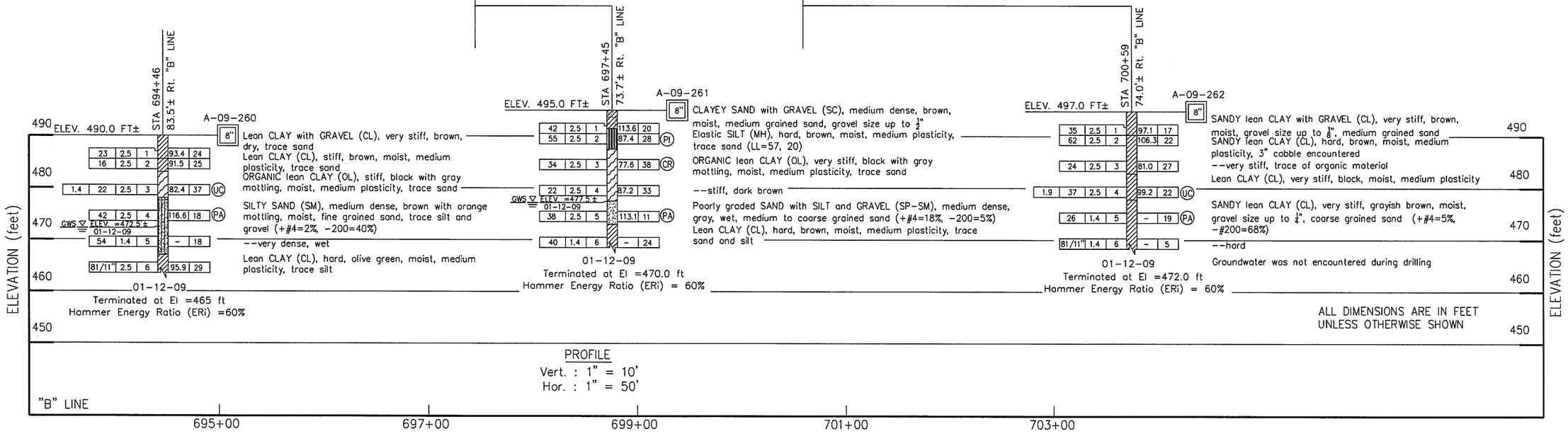
SAN JOSE, CA 95131



PLAN
1"=50'

BENCHMARK :
The Vertical Datum shown hereon is based on North American Vertical Datum of 1988 (NAVD). The 1988 Elevations for this project were Established using Digital Levelling & GPS Survey Measurements and a Least Squares Adjustment Holdings NGS Benchmarks GPS Control Point 35 – PID DE8495, L 1259 – PID HS4075, CHABOT A – PID AI7653, & OLD RM 3 = TIDAL 5 – PID HS3429 fixed to their published values.



ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SHOWN

PROFILE
Vert. : 1" = 10'
Hor. : 1" = 50'

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU		PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008- JUNE 2011			PROJECT ENGINEER	POST MILES

ROUTE 580 WB HOV LANE WIDENING- EASTERN SEGMENT

LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 040000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/19/09	12/23/09	8/3/11	01/18/12		

FILE => $REQUEST

PLATE NO: A-27

USERNAME => $USER DATE PLOTTED => $DATE TIME PLOTTED => $TIME

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — DATE 01/18/12

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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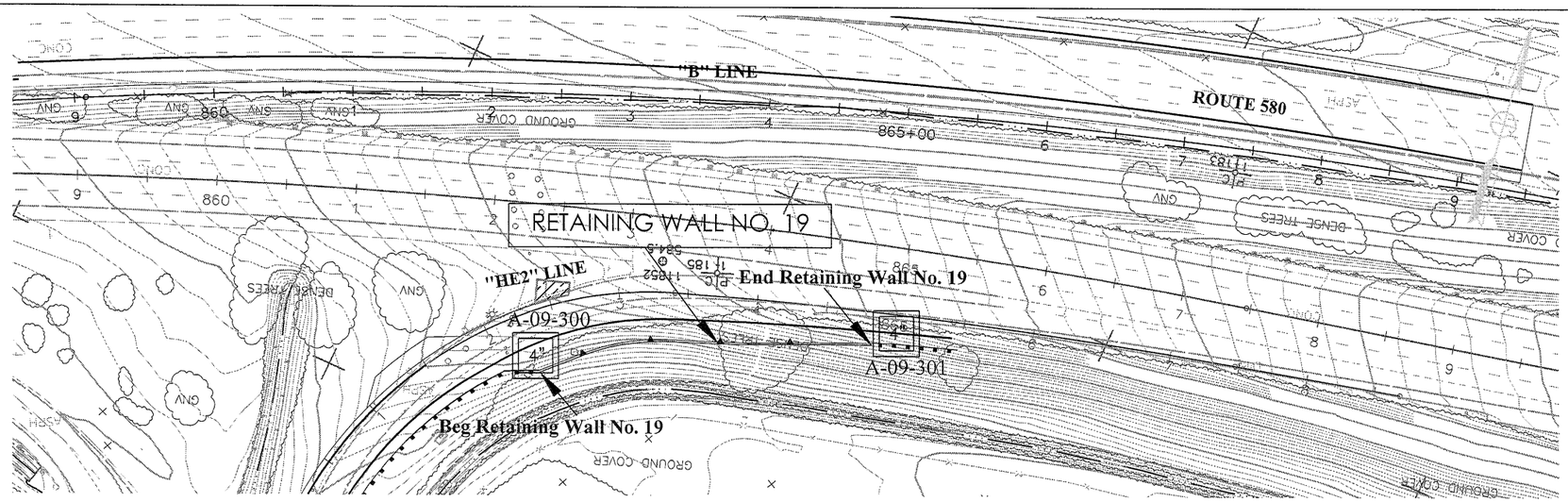
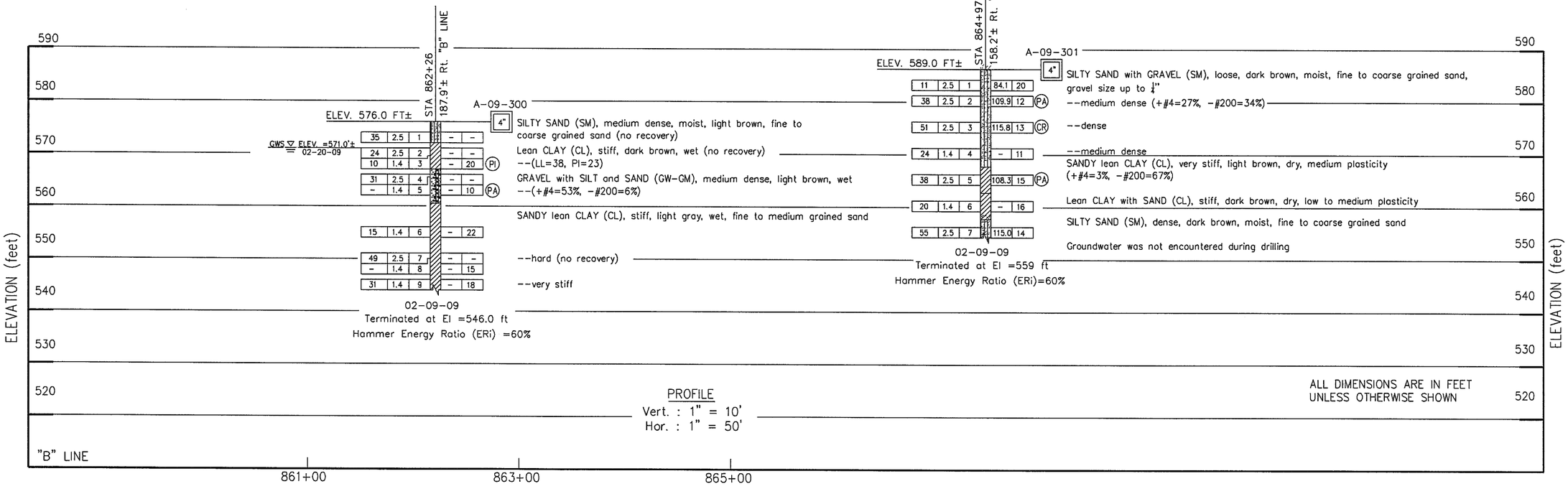
ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA 94612

PARIKH CONSULTANTS, INC.
2360 QUME DRIVE, SUITE A
SAN JOSE, CA 95131



PLAN
1"=50'



PROFILE
Vert. : 1" = 10'
Hor. : 1" = 50'

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SHOWN

BENCHMARK :
The Vertical Datum shown hereon is based on North American Vertical Datum of 1988 (NAVD). The 1988 Elevations for this project were Established using Digital Levelling & GPS Survey Measurements and a Least Squares Adjustment Holdings NGS Benchmarks GPS Control Point 35 – PID DE8495, L 1259 – PID HS4075, CHABOT A – PID AI7653, & OLD RM 3 = TIDAL 5 – PID HS3429 fixed to their published values.

DESIGN OVERSIGHT — SIGN OFF DATE
DRAWN BY: O. GOUTHIER
CHECKED BY: P. SIRCAR
S. DUDDU — FIELD INVESTIGATION BY:
DATE: DECEMBER 2008- JUNE 2011
PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION
P. SIRCAR — PROJECT ENGINEER
BRIDGE NO.
POST MILES

ROUTE 580 WB HOV LANE WIDENING- EASTERN SEGMENT

LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4
FILE => $REQUEST

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/2/09	12/28/09	8/9/11	01/18/12		

PLATE NO: A-28

USERNAME => $USER DATE PLOTTED => $DATE TIME PLOTTED => $TIME

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 1/18/12 DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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ALAMEDA CTC
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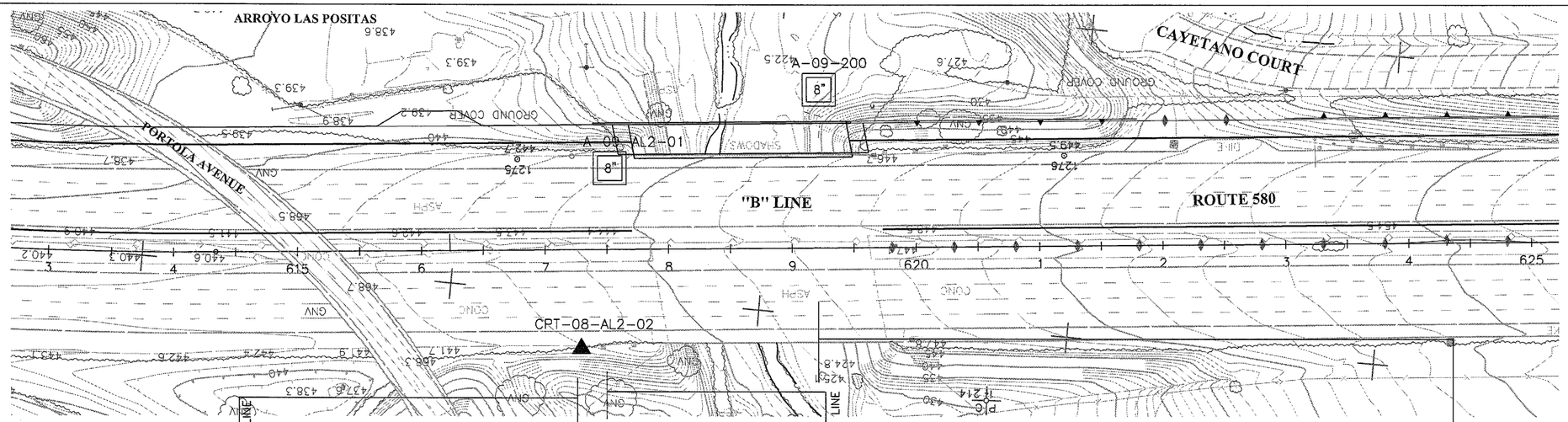
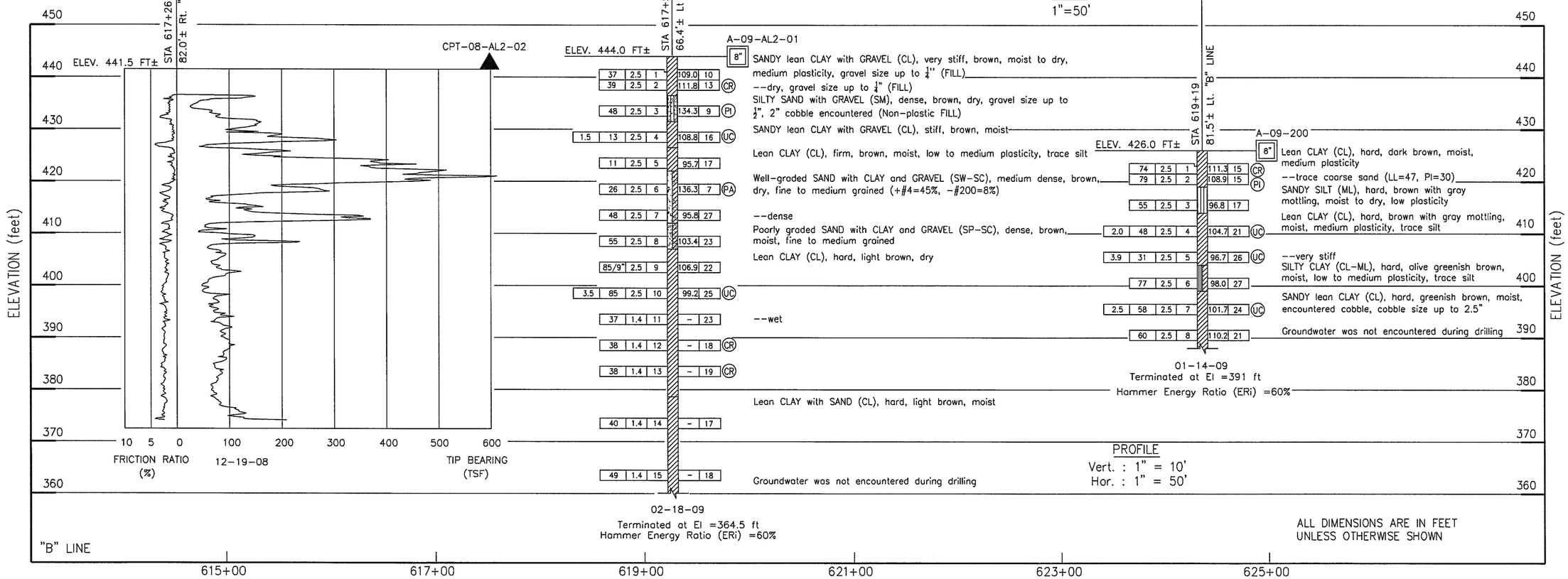
OAKLAND, CA 94612

PARIKH CONSULTANTS, INC.
2360 QUME DRIVE, SUITE A
SAN JOSE, CA 95131

BENCHMARK :
The Vertical Datum shown hereon is based on North American Vertical Datum of 1988 (NAVD). The 1988 Elevations for this project were Established using Digital Levelling & GPS Survey Measurements and a Least Squares Adjustment Holdings NGS Benchmarks GPS Control Point 35 – PID DE8495, L 1259 – PID HS4075, CHABOT A – PID AI7653, & OLD RM 3 = TIDAL 5 – PID HS3429 fixed to their published values.



PLAN
1"=50'



PROFILE
Vert. : 1" = 10'
Hor. : 1" = 50'

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SHOWN

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU FIELD INVESTIGATION BY:	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR PROJECT ENGINEER	BRIDGE NO. 33-0203	ARROYO LAS POSITAS BRIDGE (WIDEN)
SIGN OFF DATE	CHECKED BY	P. SIRCAR	DATE: DECEMBER 2008 TO FEBRUARY 2009			POST MILES 13.13	LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES				SHEET	OF
11/3/10	12/30/10	3/8/11	1/18/12		

FILE => $REQUEST

USERNAME => $USER DATE PLOTTED => $DATE TIME PLOTTED => $TIME

PLATE NO: A-29

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — 1/18/12 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

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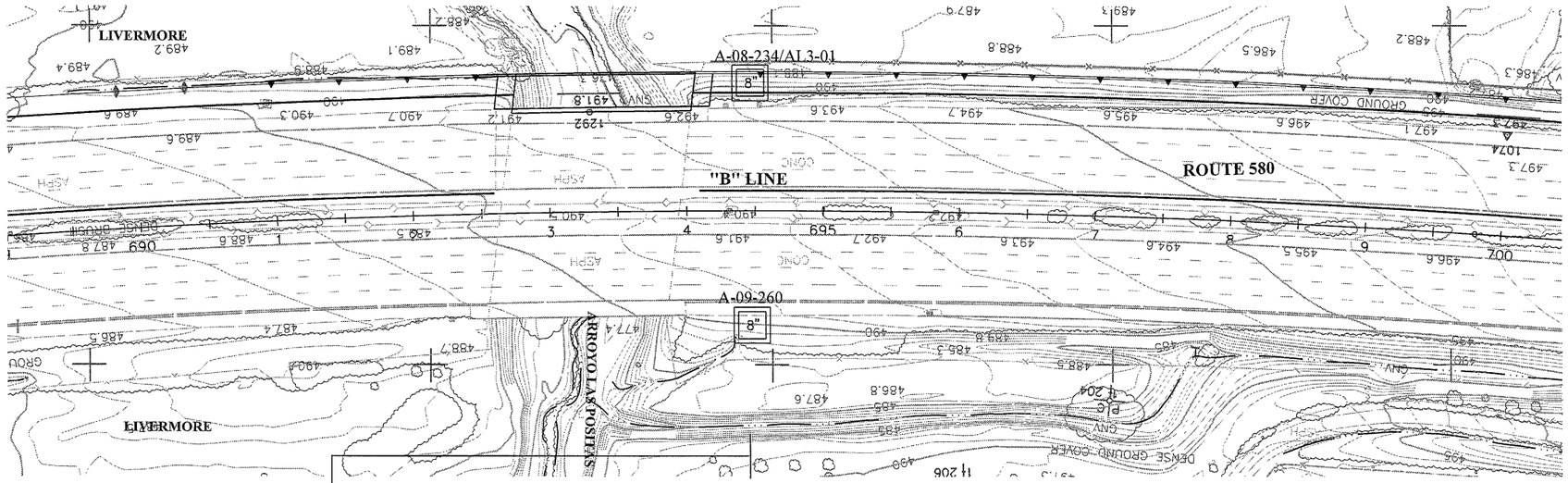
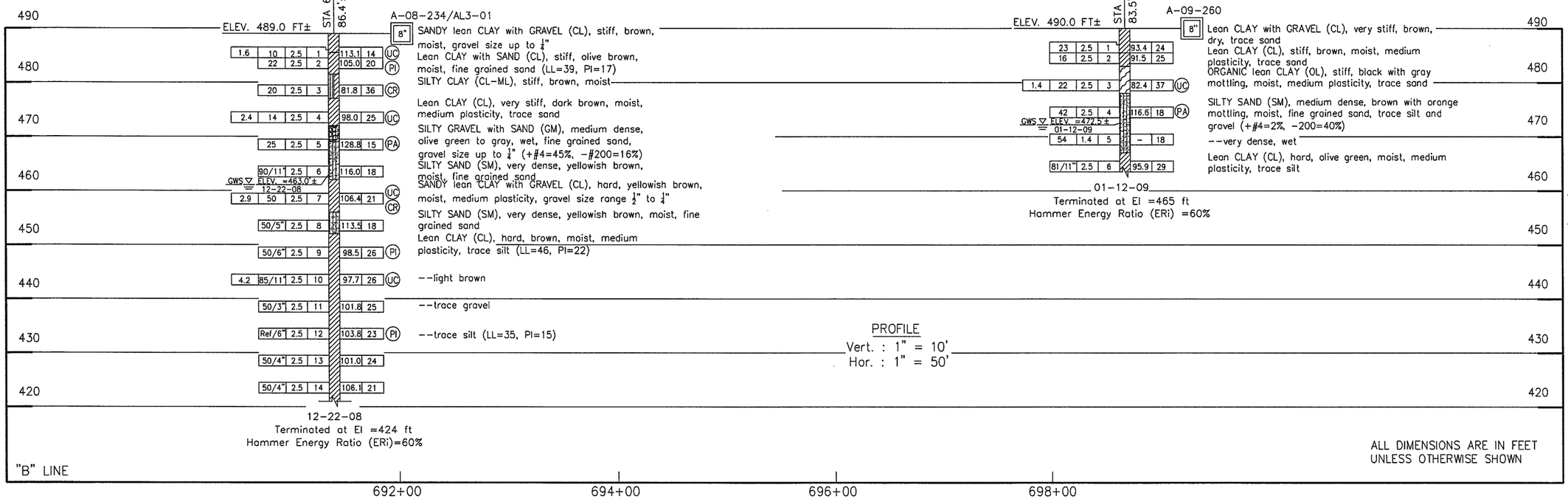
OAKLAND, CA 94612

PARIKH CONSULTANTS, INC.
2360 QUME DRIVE, SUITE A
SAN JOSE, CA 95131



BENCHMARK :
The Vertical Datum shown hereon is based on North American Vertical Datum of 1988 (NAVD). The 1988 Elevations for this project were Established using Digital Levelling & GPS Survey Measurements and a Least Squares Adjustment Holdings NGS Benchmarks GPS Control Point 35 – PID DE8495, L 1259 – PID HS4075, CHABOT A – PID AI7653, & OLD RM 3 = TIDAL 5 – PID HS3429 fixed to their published values.



DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU		PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO. 33-0085
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JANUARY 2009			PROJECT ENGINEER	POST MILES 11.72

ARROYO LAS POSTIAS BRIDGE (WIDEN)

LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735 PROJECT NUMBER & PHASE: 04000212481 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11/14/08	12/29/08	8/9/11	1/18/12		

FILE => $REQUEST

PLATE NO: A-30

USERNAME => $USER DATE PLOTTED => $DATE TIME PLOTTED => $TIME

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

GEOTECHNICAL PROFESSIONAL — DATE 1/18/12

PLANS APPROVAL DATE

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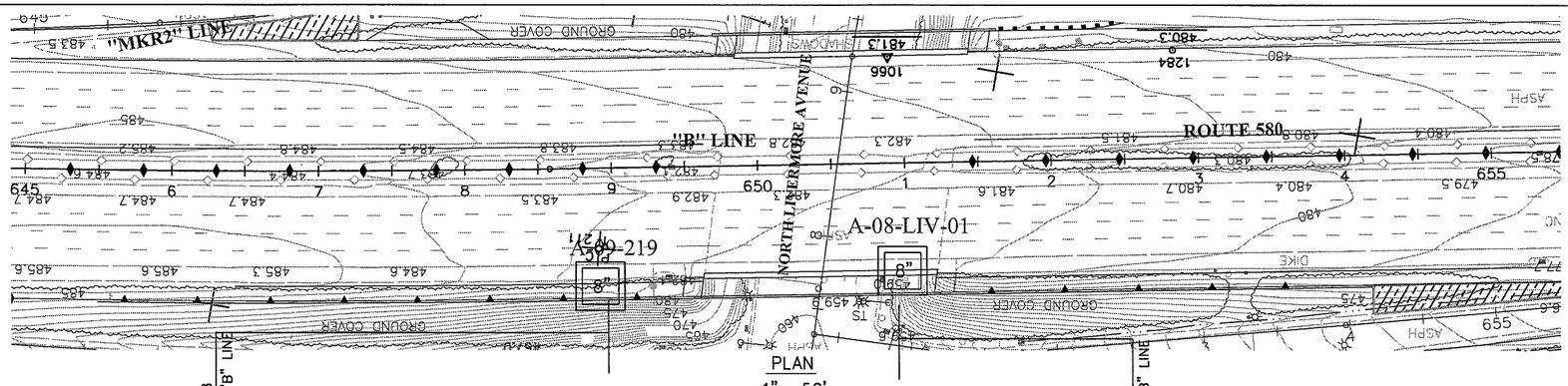
REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA 94612

PARIKH CONSULTANTS, INC.
2360 OUME DRIVE, SUITE A
SAN JOSE, CA 95131



BENCHMARK :
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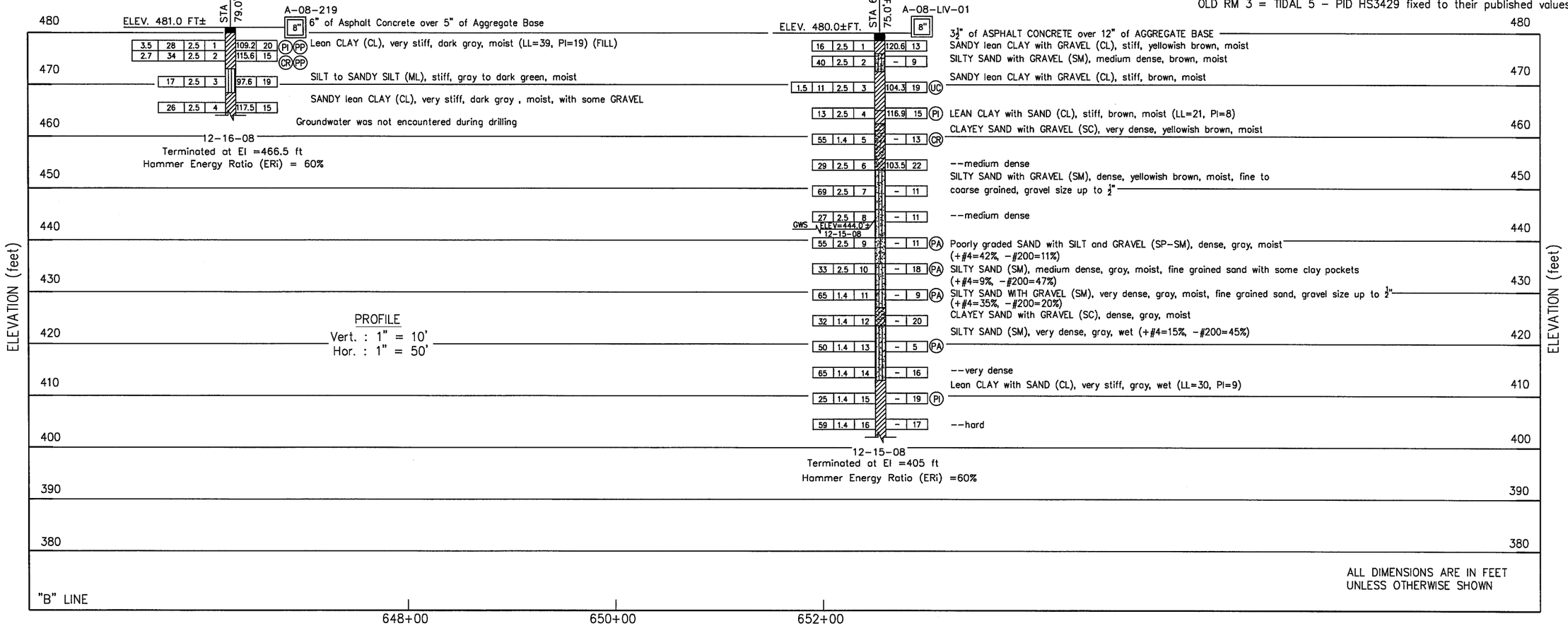

DESIGN OVERSIGHT	DRAWN BY	O. GOUTHIER	S. DUDDU	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	P. SIRCAR	BRIDGE NO.	NORTH LIVERMORE AVE UC (WIDEN)
SIGN OFF DATE	CHECKED BY	P. SIRCAR	FIELD INVESTIGATION BY: DATE: DECEMBER 2008 - JUNE 2011		PROJECT ENGINEER	POST MILES	LOG OF TEST BORINGS

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 0735
PROJECT NUMBER & PHASE: 04000202101 CONTRACT NO.: 04-2908C4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
1/31/05	07/31/09	8/2/11	01/18/12		

FILE => $REQUEST

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PLATE NO: A-31

DIVISION OF ENGINEERING SERVICES — GEOTECHNICAL SERVICES

As-Built Log of Test Borings sheet is considered an informational document only. As such, the State of California registration seal with signature, license number and registration certificate expiration date confirm that this is a true and accurate copy of the original document. This drawing is available and presented only for the convenience of any bidder, contractor or other interested party.

DIST.	COUNTY	ROUTE	POST MILES-TOTAL PROJECT	Sheet No.	Total Sheets
04	Ala	580			

REGISTERED CIVIL ENGINEER — 11/8/11 DATE

ARROYO LAS POSITAS BRIDGE (WIDEN)

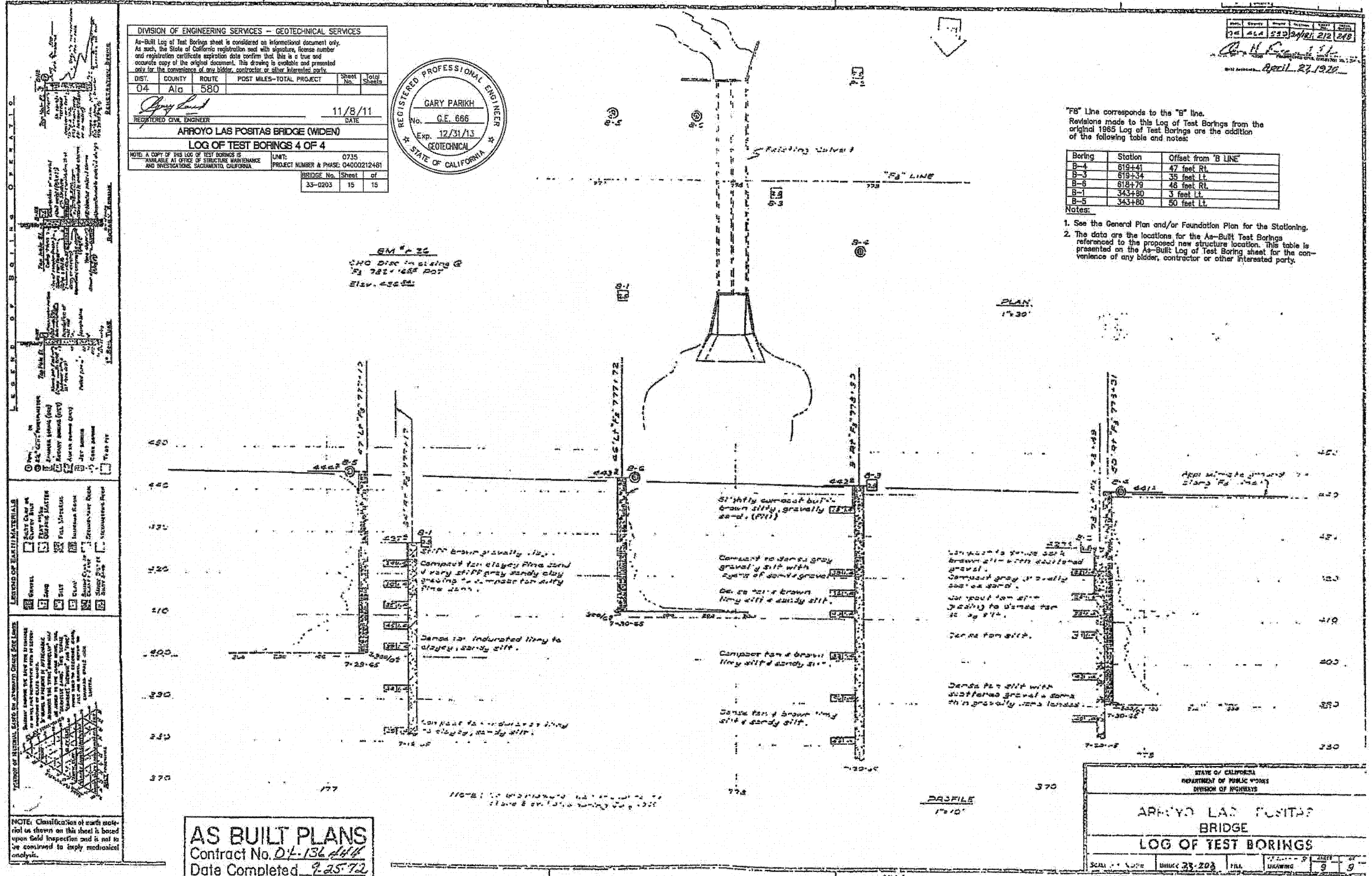
LOG OF TEST BORINGS 4 OF 4

NOTE: A COPY OF THIS LOG OF TEST BORINGS IS AVAILABLE AT OFFICE OF STRUCTURE MAINTENANCE AND INVESTIGATIONS, SACRAMENTO, CALIFORNIA

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481

BRIDGE No.	Sheet	of
33-0203	15	15

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA



"F8" Line corresponds to the "B" line.
Revisions made to this Log of Test Borings from the original 1965 Log of Test Borings are the addition of the following table and notes:

Boring	Station	Offset from 'B LINE'
B-4	619+41	47 feet Rt.
B-3	619+34	35 feet Lt.
B-6	618+79	46 feet Rt.
B-1	343+80	3 feet Lt.
B-5	343+80	50 feet Lt.

Notes:
1. See the General Plan and/or Foundation Plan for the Stationing.
2. The data are the locations for the As-Built Test Borings referenced to the proposed new structure location. This table is presented on the As-Built Log of Test Boring sheet for the convenience of any bidder, contractor or other interested party.

PLAN 1"=30'

PROFILE 1"=10'

NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

AS BUILT PLANS
Contract No. 04-136 444
Date Completed 9-25-72

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

ARROYO LAS POSITAS BRIDGE

LOG OF TEST BORINGS

BRIDGE 33-203

April 27, 1970

51

Plate No: A-32

DIVISION OF ENGINEERING SERVICES – GEOTECHNICAL SERVICES

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DIST.	COUNTY	ROUTE	POST MILES–TOTAL PROJECT	Sheet No.	Total Sheets
04	Ala	580			

REGISTERED CIVIL ENGINEER — DATE 11/8/11

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

ARROYO LAS POSITAS BRIDGE (WIDEN)

LOG OF TEST BORINGS 4 OF 4

NOTE: A COPY OF THIS LOG OF TEST BORINGS IS AVAILABLE AT OFFICE OF STRUCTURE MAINTENANCE AND INVESTIGATIONS, SACRAMENTO, CALIFORNIA

UNIT: 0735

PROJECT NUMBER & PHASE: 04000212481

BRIDGE No.	Sheet	of
33-0085	15	15

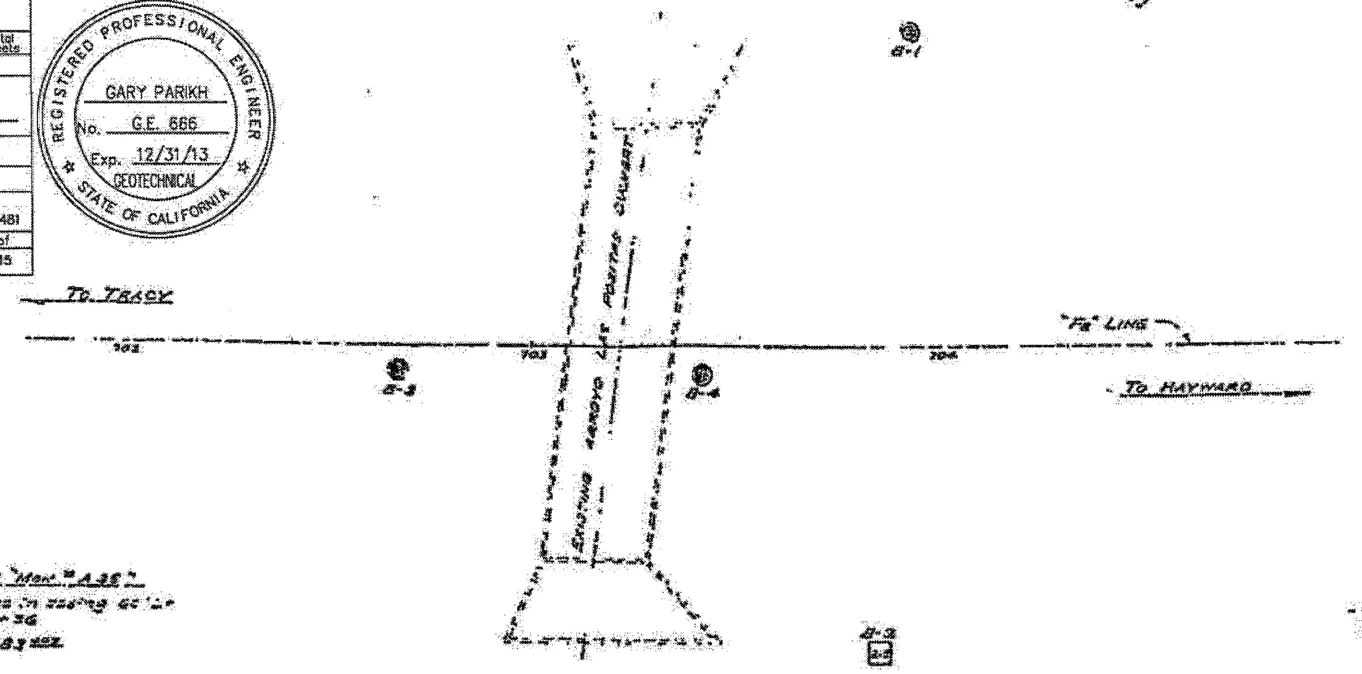
April 27 1970

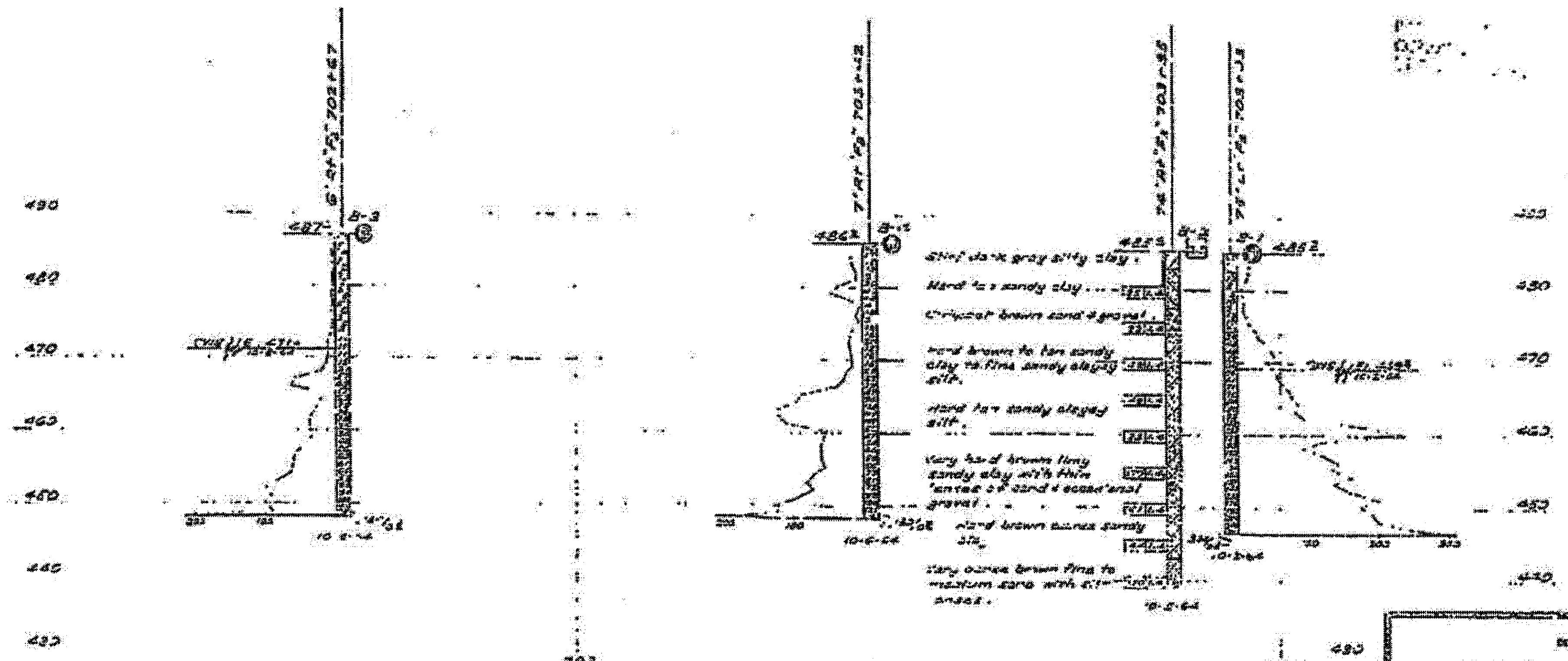
"F8" Line corresponds to the "B" line.

Revisions made to this Log of Test Borings from the original 1965 Log of Test Borings are the addition of the following table and notes:

Boring	Station	Offset from 'B LINE'
B-1	692+58	75 feet Rt.
B-3	692+56	74 feet Lt.
B-4	693+09	7 feet Lt.
B-3	693+84	6 feet Lt.

1. See the General Plan and/or Foundation Plan for the Stationing.
2. The data are the locations for the As-Built Test Borings referenced to the proposed new structure location. This table is presented on the As-Built Log of Test Boring sheet for the convenience of any bidder, contractor or other interested party.





STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

ARROYO LAS POSITAS BRIDGE

LOG OF TEST BORINGS

Note: Classification of each material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

AS BUILT PLANS
Contract No. 04-136.414
Date Completed 9-25-72
Document No. 6229

32

Plate No: A-33

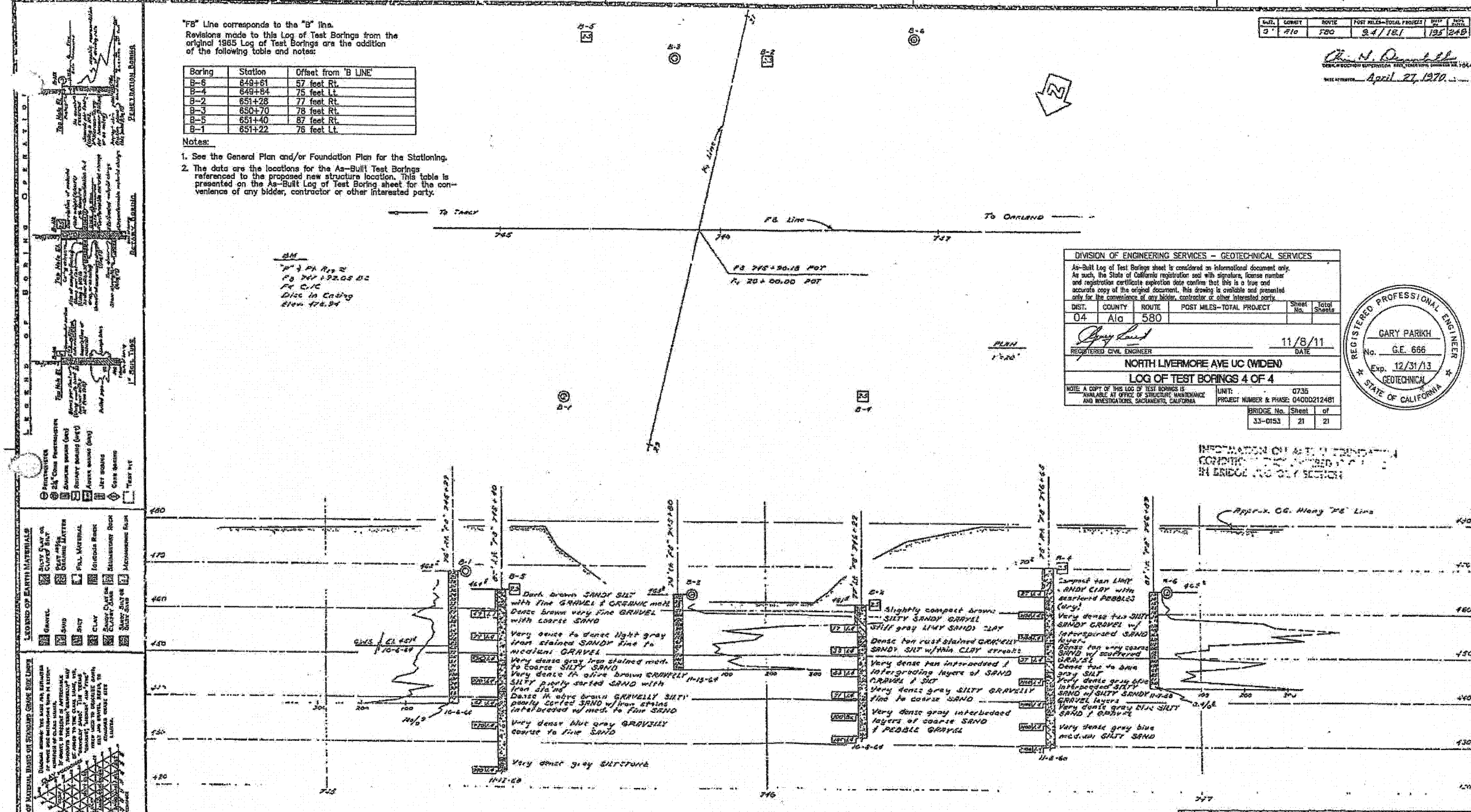
"FB" Line corresponds to the "B" line.

Revisions made to this Log of Test Borings from the original 1965 Log of Test Borings are the addition of the following table and notes:

Boring	Station	Offset from 'B LINE'
B-6	649+61	57 feet Rt.
B-4	649+84	75 feet Lt.
B-2	651+28	77 feet Rt.
B-3	650+70	78 feet Rt.
B-5	651+40	87 feet Rt.
B-1	651+22	76 feet Lt.

Notes:

1. See the General Plan and/or Foundation Plan for the Stationing.
2. The data are the locations for the As-Built Test Borings referenced to the proposed new structure location. This table is presented on the As-Built Log of Test Boring sheet for the convenience of any bidder, contractor or other interested party.



DIVISION OF ENGINEERING SERVICES – GEOTECHNICAL SERVICES

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DIST.	COUNTY	ROUTE	POST MILES–TOTAL PROJECT	Sheet No.	Total Sheets
04	Ala	580			

REGISTERED CIVIL ENGINEER — DATE 11/8/11

NORTH LIVERMORE AVE UC (WIDEN)

LOG OF TEST BORINGS 4 OF 4

NOTE: A COPY OF THIS LOG OF TEST BORINGS IS AVAILABLE AT OFFICE OF STRUCTURE MAINTENANCE AND INVESTIGATIONS, SACRAMENTO, CALIFORNIA

UNIT: 0735
PROJECT NUMBER & PHASE: 04000212481

BRIDGE No.	Sheet	of
33-0153	21	21

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

AS BUILT PLANS
Contract No. 04-136444
Date Completed 9-25-72
Document No. 62219

STATE OF CALIFORNIA
TRANSPORTATION AGENCY
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

NORTH LIVERMORE AVE. UNDERCROSSING

LOG OF TEST BORINGS

BRIDGE No. 33-153 — POST MILE 13.53 — SHEET 10 OF 10

April 27, 1970

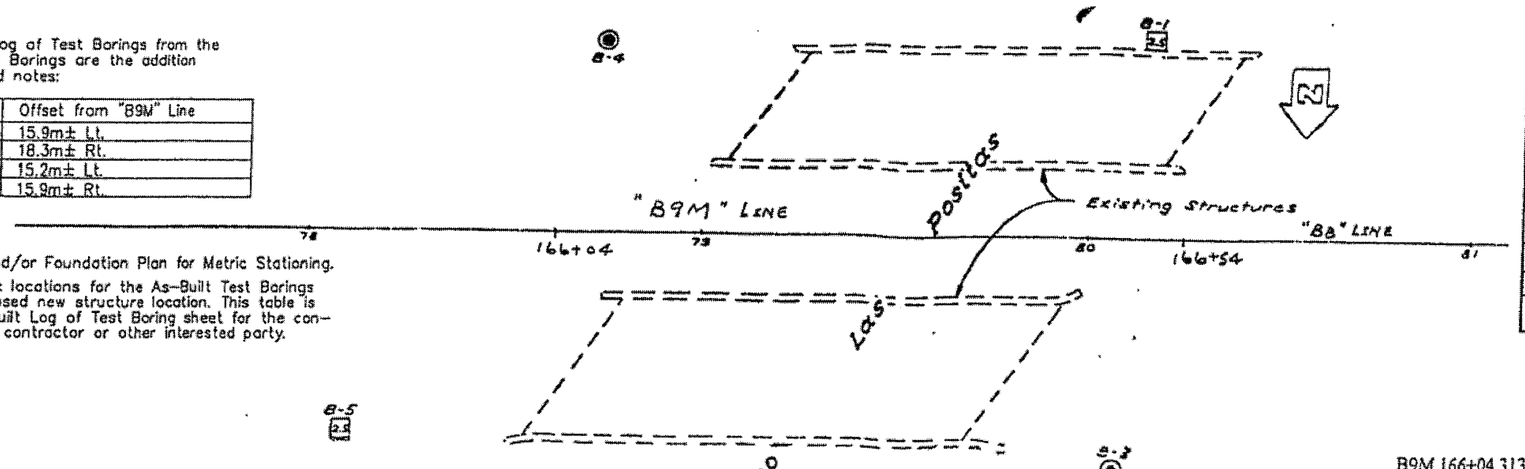
Plate No: A-34

Revisions made to this Log of Test Borings from the original 1970 Log of Test Borings are the addition of the following table and notes:

Boring	Station	Offset from "B9M" Line
B-1	166+51	15.9m± Lt.
B-3	166+49	18.3m± Rt.
B-4	165+08	15.2m± Lt.
B-5	165+88	15.9m± Rt.

Notes:

1. See the General Plan and/or Foundation Plan for Metric Stationing.
2. The data are the metric locations for the As-Built Test Borings referenced to the proposed new structure location. This table is presented on the As-Built Log of Test Boring sheet for the convenience of any bidder, contractor or other interested party.



PROFILE
Vert. 1"=10'
Horiz. 1"=20'

DIVISION OF ENGINEERING SERVICES – GEOTECHNICAL SERVICES

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DIST.	COUNTY	ROUTE	KILOMETER POST-TOTAL PROJECT	Sheet No.	Total Sheets
04	Ala	580	R12.6/30.7		

CERTIFIED ENGINEER — 12/18/06 DATE

ARROYO LAS POSITAS BRIDGE (WIDEN)

LOG OF TEST BORINGS 3 OF 3

NOTE: A COPY OF THIS LOG OF TEST BORINGS IS AVAILABLE AT OFFICE OF STRUCTURE MAINTENANCE AND INVESTIGATIONS, SACRAMENTO, CALIFORNIA

CU: 04258
EA: 290801

BRIDGE No. 33-012

Sheet 13 of 13

April 27 1970

AS BUILT PLANS
Contract No. 04-136444
Date Completed 9-25-72
Document No. 6229

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

ARROYO LAS POSITAS BRIDGE

LOG OF TEST BORINGS

SCALE As Noted | BRIDGE 33-12 | FILE | 3412-8 DRAWING | SHEET 10 of 10

PROJ. DRAWING NO. PR-3312-

06204
13C461

PLATE A-31

Plate No: A-35

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	ALa	580	R12.6/30.7		

REGISTERED ENGINEER–GEOTECHNICAL

PLANS APPROVAL DATE

GARY PARIKH No. G.E. 666 Exp 12/31/07 GEOTECHNICAL REGISTERED PROFESSIONAL ENGINEER STATE OF CALIFORNIA

PARIKH CONSULTANTS, INC.
356 SOUTH MILPITAS BLVD
MILPITAS CA 95035

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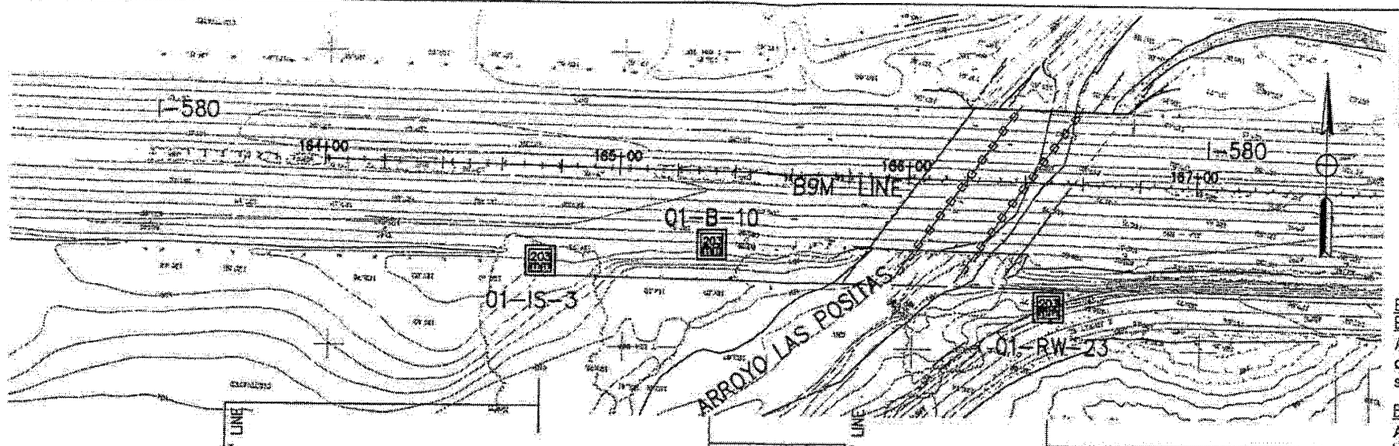
PLAN
1 : 1000



BENCH MARKS

BENCHMARK NO. Y–1257

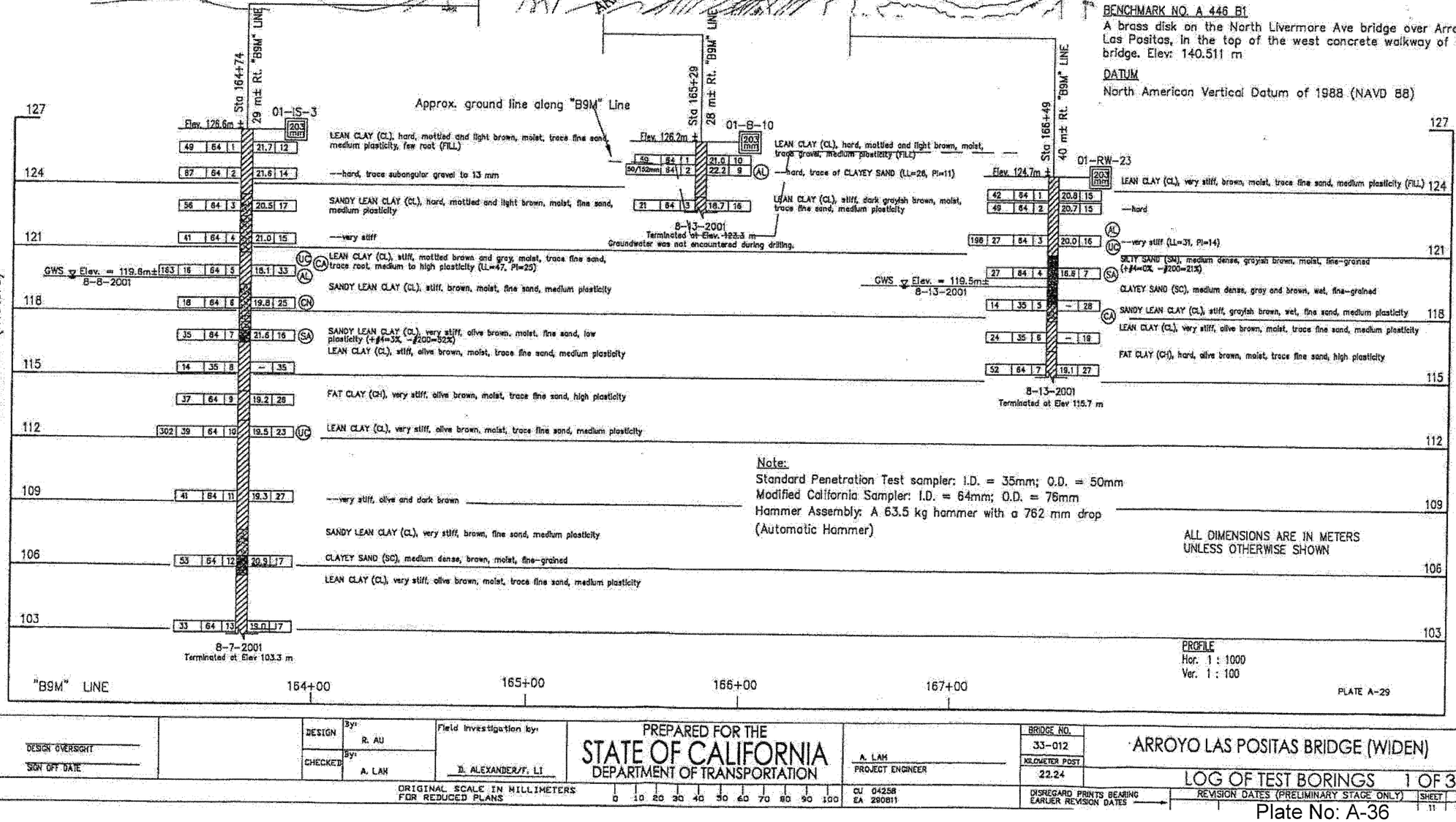
A brass disk set in the top of the south concrete wall of a 0.9 m by 1.2 m structure of a catch basin, located south of the east bound lanes of I–580. Elev: 127.129 m

BENCHMARK NO. A 446 B1

A brass disk on the North Livermore Ave bridge over Arroyo Las Positas, in the top of the west concrete walkway of the bridge. Elev: 140.511 m

DATUM

North American Vertical Datum of 1988 (NAVD 88)



Note:
Standard Penetration Test sampler: I.D. = 35mm; O.D. = 50mm
Modified California Sampler: I.D. = 64mm; O.D. = 76mm
Hammer Assembly: A 63.5 kg hammer with a 762 mm drop (Automatic Hammer)

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

PROFILE
Hor. 1 : 1000
Ver. 1 : 100

PLATE A–29

DESIGN OVERSIGHT

SIGN OFF DATE

DESIGN By: R. AU
CHECKED By: A. LAH

Field Investigation by: D. ALEXANDER/F. LI

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

A. LAH
PROJECT ENGINEER

BRIDGE NO. 33–012
KILOMETER POST 22.24

ARROYO LAS POSITAS BRIDGE (WIDEN)

LOG OF TEST BORINGS 1 OF 3

CU 04258
EA 290811

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS
0 10 20 30 40 50 60 70 80 90 100

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY) | SHEET | OF
11 | 13

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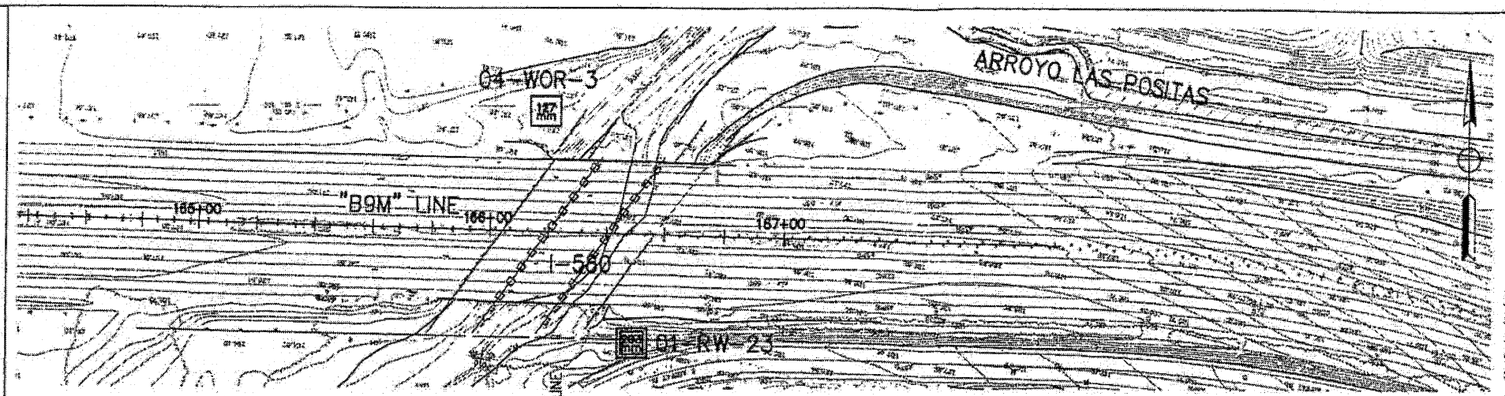
Plate No: A-36



DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	ALa	580	R12.6/30.7		

REGISTERED ENGINEER–GEOTECHNICAL

PLANS APPROVAL DATE

GARY PARIKH No. GE 668 Exp 12/31/97 GEOTECHNICAL STATE OF CALIFORNIA

PARIKH CONSULTANTS, INC.
356 SOUTH MILPITAS BLVD
MILPITAS CA 95035

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

PLAN
1 : 1000

BENCH MARKS

BENCHMARK NO. Y–1257

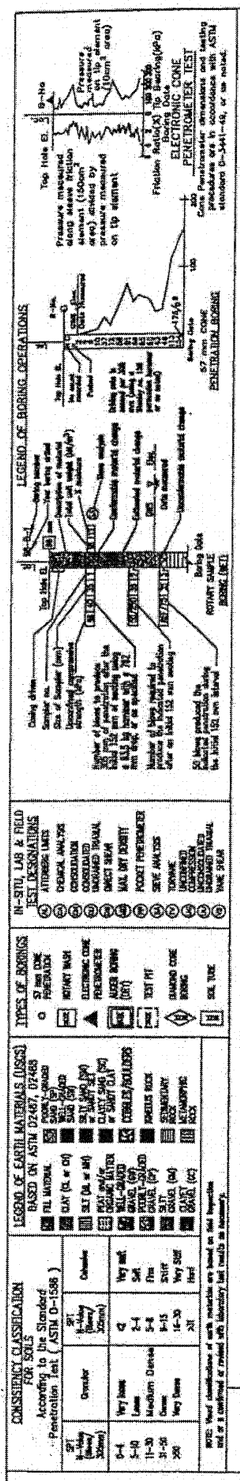
A brass disk set in the top of the south concrete wall of a 0.9 m by 1.2 m structure of a catch basin, located south of the east bound lanes of I–580. Elev: 127.129 m

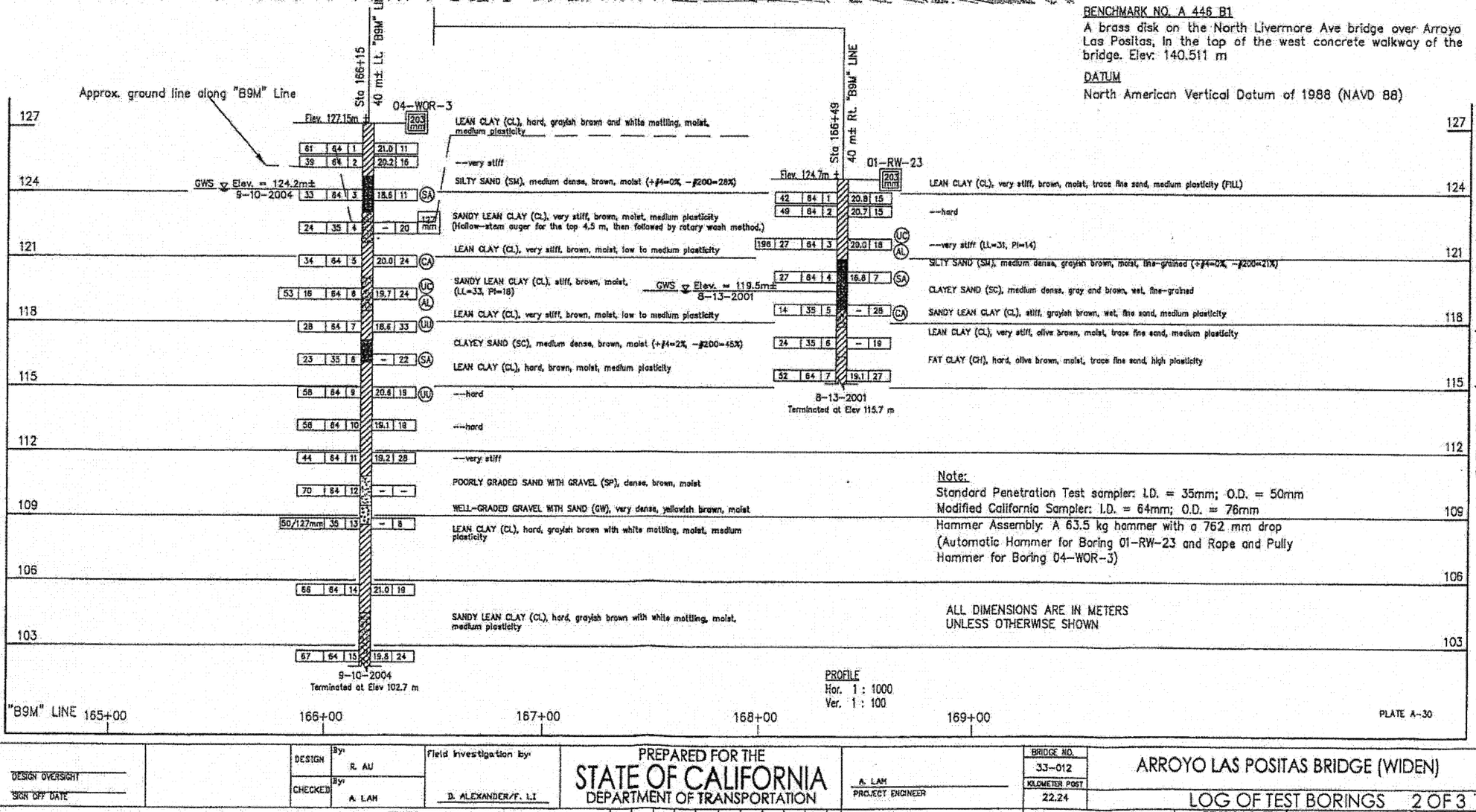
BENCHMARK NO. A 446 B1

A brass disk on the North Livermore Ave bridge over Arroyo Las Positas, in the top of the west concrete walkway of the bridge. Elev: 140.511 m

DATUM

North American Vertical Datum of 1988 (NAVD 88)





Note:
Standard Penetration Test sampler: I.D. = 35mm; O.D. = 50mm
Modified California Sampler: I.D. = 64mm; O.D. = 76mm
Hammer Assembly: A 63.5 kg hammer with a 762 mm drop
(Automatic Hammer for Boring 01–RW–23 and Rope and Pully Hammer for Boring 04–WOR–3)

ALL DIMENSIONS ARE IN METERS
UNLESS OTHERWISE SHOWN

PROFILE
Hor. 1 : 1000
Ver. 1 : 100

PLATE A–30

DESIGN OVERSIGHT

SIGN OFF DATE

DESIGN By: R. AU
CHECKED By: A. LAH

Field Investigation by: D. ALEXANDER/F. LI

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

A. LAH
PROJECT ENGINEER

ORIGINAL SCALE IN MILLIMETERS
FOR REDUCED PLANS
0 10 20 30 40 50 60 70 80 90 100

CU 04258
EA 290811

BRIDGE NO.	ARROYO LAS POSITAS BRIDGE (WIDEN)
33–012	
KILOMETER POST 22.24	LOG OF TEST BORINGS 2 OF 3

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY) | SHEET | OF

I:\ACAD\20116O\Structural Plates.dwg

Plate No: A-37

SUMMARY OF BORINGS (PAVEMENT DESIGN AND ROADWAY)

Boring No.	Station (ft.)	Offset (ft)	Boring Depth (ft)	Approx. Ground Elev. (ft)	Approx. Groundwater Elev. (ft)	Date Drilled	Soil Description
A-09-189	542+13	0' LT "B" Line	5	425.4	-	02/13/09	Poorly Graded Gravel with Sand & Clay
A-09-190	552+41	83.5' LT "B" Line	5	417.9	-	02/13/09	Lean Clay
A-09-191	557+50	0' LT "B" Line	5	421.1	-	02/13/09	Lean Clay with Gravel
A-09-192	562+00	0' LT "B" Line	5	420.0	-	02/13/09	Lean Clay
A-09-193	572+00	0' LT "B" Line	5	417.0	-	02/13/09	Lean Clay
A-09-196	595+00	0' LT "B" Line	5	431.4	-	02/13/09	Lean Clay
A-09-197	600+16	88.5' LT "B" Line	5	435.0	-	01/06/09	Lean Clay with Sand & Gravel
A-09-198	605+00	0' LT "B" Line	5	439.0	-	02/13/09	Lean Clay
A-09-199	615+16	96.8' LT "B" Line	5	438.9	-	02/20/09	Lean Clay with Gravel & Sand
A-09-210	616+23	0' LT "B" Line	5	443.0	-	02/20/09	Lean Clay with Gravel & Sand
A-09-211	625+00	0' LT "B" Line	5	456.0	-	02/20/09	Poorly Graded Sand with Gravel
A-09-212	635+00	0' LT "B" Line	5	472.0	-	02/20/09	Lean Clay with Gravel
A-09-217	645+00	0' LT "B" Line	5	485.0	-	02/19/09	Clayey Sand
A-09-221	648+89	81.1' LT "B" Line	5	480.0	-	01/06/09	Lean Clay with Sand
A-09-222	657+59	97.4' LT "B" Line	5	476.5	-	01/06/09	Lean Clay
A-09-255	655+00	0' LT "B" Line	5	480.0	-	02/19/09	Lean Clay with Sand
A-09-256	665+00	0' LT "B" Line	5	474.3	-	02/19/09	Lean Clay with Sand
A-09-257	675+00	0' LT "B" Line	5	477.8	-	02/19/09	Lean Clay with Gravel
A-09-258	685+00	0' LT "B" Line	5	485.0	-	02/19/09	Lean Clay
A-09-259	695+00	0' LT "B" Line	5	491.0	-	02/19/09	Lean Clay
A-09-263	705+00	0' LT "B" Line	5	501.0	-	02/19/09	Lean Clay
A-09-264	715+00	0' LT "B" Line	5	509.9	-	02/19/09	Lean Clay
A-09-265	725+00	0' LT "B" Line	5	515.0	-	02/19/09	Lean Clay
A-09-266	735+00	0' LT "B" Line	5	523.0	-	02/18/09	Lean Clay
A-09-267	745+3	72.1' LT "B" Line	5	530.0	-	01/06/09	Lean Clay
A-09-268	748+15	437.1' LT "B" Line	5	537.8	-	01/06/09	Silty Clay
A-09-269	754+60	87.1' LT "B" Line	5	524.0	-	01/06/09	Lean Clay
A-09-270	747+89	391.6' RT "B" Line	5	544.0	-	02/13/09	Lean Clay with Gravel
A-09-271	752+25	192.0' RT "B" Line	5	531.0	-	02/13/09	Lean Clay with Gravel
A-09-272	759+23	90.5' LT "B" Line	5	523.7	-	01/05/09	Lean Clay
A-09-273	769+37	86.9' LT "B" Line	5	525.0	-	01/05/09	Silty Lean Clay
A-09-278	775+00	0' LT "B" Line	5	527.9	-	02/18/09	Lean Clay
A-09-279	785+00	110.9' LT "B" Line	5	529.0	-	01/05/09	Lean Clay with Gravel
A-09-280	793+83	89.0' LT "B" Line	5	523.5	-	01/05/09	Lean Clay
A-09-281	795+5	96.3' LT "B" Line	5	533.2	-	01/05/09	Lean Clay
A-09-285	800+00	0' LT "B" Line	5	535.4	-	02/18/09	Lean Clay

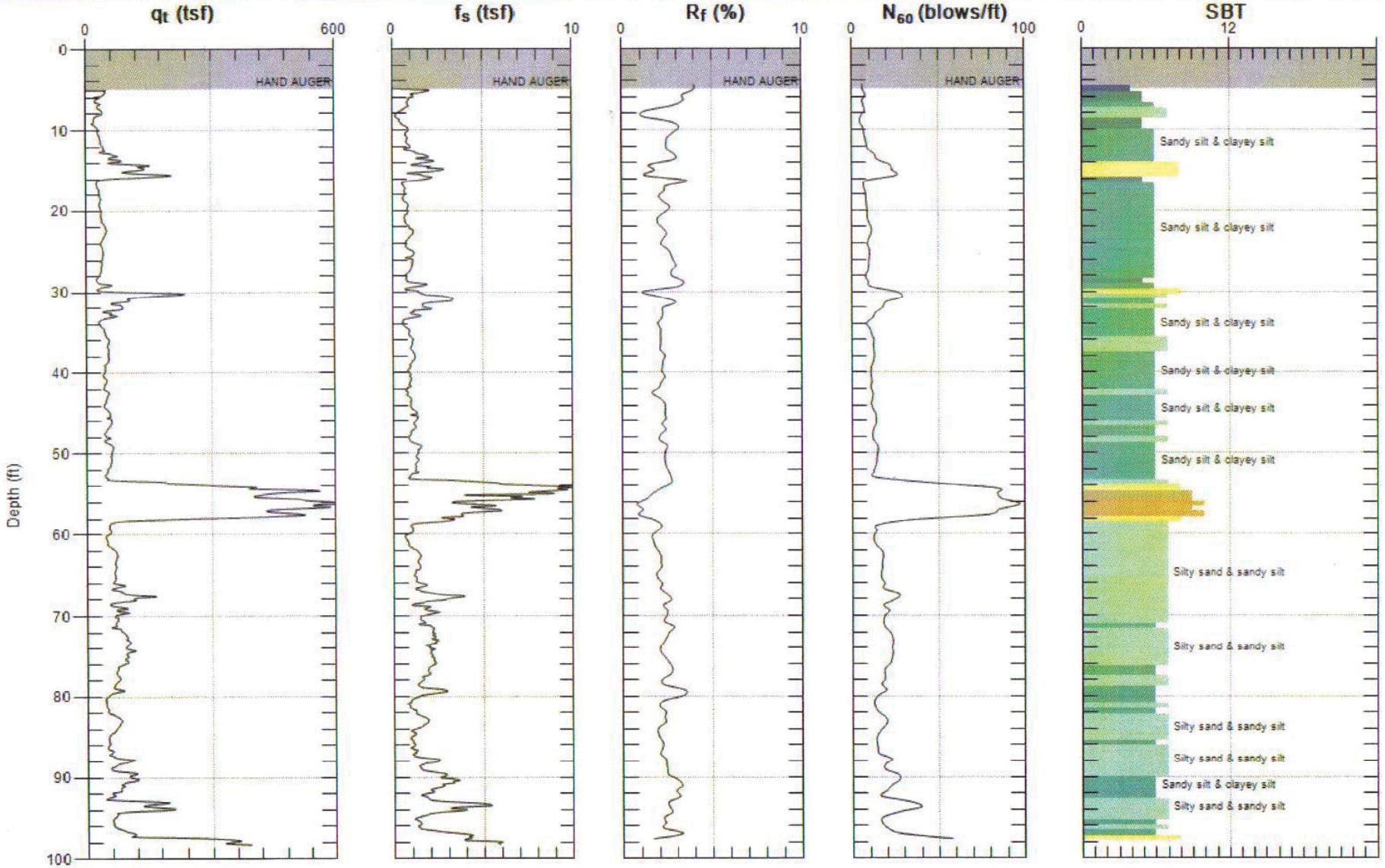
Boring No.	Station (ft.)	Offset (ft)	Boring Depth (ft)	Approx. Ground Elev. (ft)	Approx. Groundwater Elev. (ft)	Date Drilled	Soil Description
A-09-286	805+00	94.9' LT "B" Line	5	536.0	-	01/05/09	Lean Clay
A-09-287	800+91	591.1' LT "B" Line	5	536.1	-	02/20/09	Lean Clay
A-09-290	813+77	93.1' LT "B" Line	5	538.7	-	02/19/08	Lean Clay
A-09-291	820+00	0' LT "B" Line	5	540.6	-	02/18/09	Lean Clay
A-09-292	825+12	96.3' LT "B" Line	5	540.0	-	02/19/08	Lean Clay
A-09-293	834+62	83.5' LT "B" Line	5	548.4	-	02/18/09	Lean Clay
A-09-294	845+00	0' LT "B" Line	5	555.8	-	02/18/09	Silty Clay with Gravel
A-08-295	849+94	103.4' LT "B" Line	5	557.8	-	12/30/08	Lean Clay
A-09-296	859+64	115.0' LT "B" Line	5	565.4	-	01/05/09	Lean Clay
A-09-297	864+20	209.6' LT "B" Line	5	568.8	-	01/05/09	Lean Clay
A-09-298	865+00	0' LT "B" Line	5	570.0	-	02/20/09	Lean Clay
A-09-299	860+53	305.6' RT "B" Line	5	568.6	-	01/05/09	Lean Clay

GREGG

PARIKH CONSULTANTS

Site: RTE 580 WB PROJ.
Sounding: CPT-AL1-01

Engineer: G.PARIKH
Date: 12/19/2008 08:46



Max. Depth: 98.261 (ft)
Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)

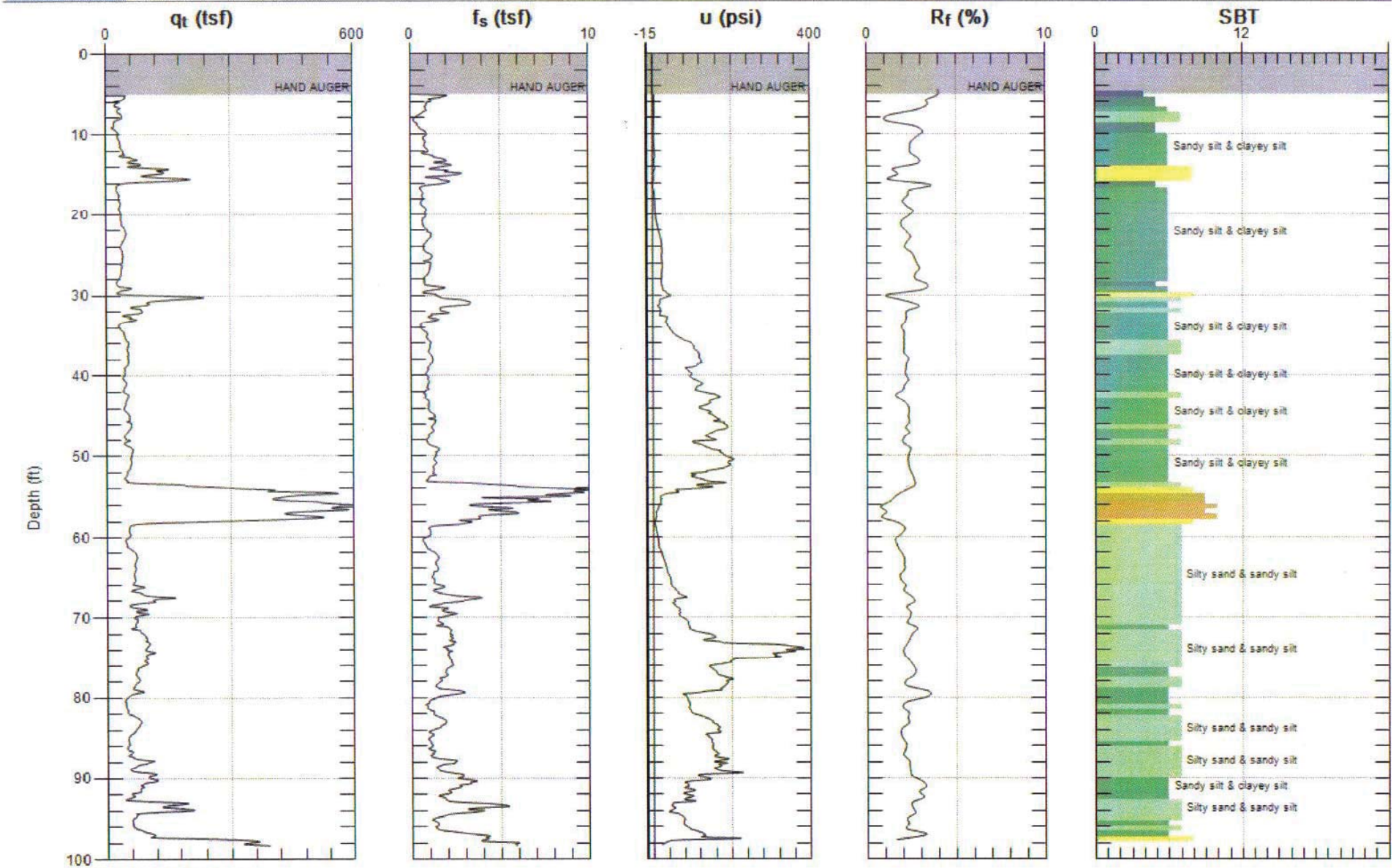
Plate No: A-39

GREGG

PARIKH CONSULTANTS

Site: RTE 580 WB PROJ.
Sounding: CPT-AL1-01

Engineer: G.PARIKH
Date: 12/19/2008 08:46



Max. Depth: 90.261 (ft)
Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)

Plate No: A-40

GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

Sounding: CPT-AL1-01
Depth: 58.071
Site: RTE 580 WB
Engineer: G.PARIKH

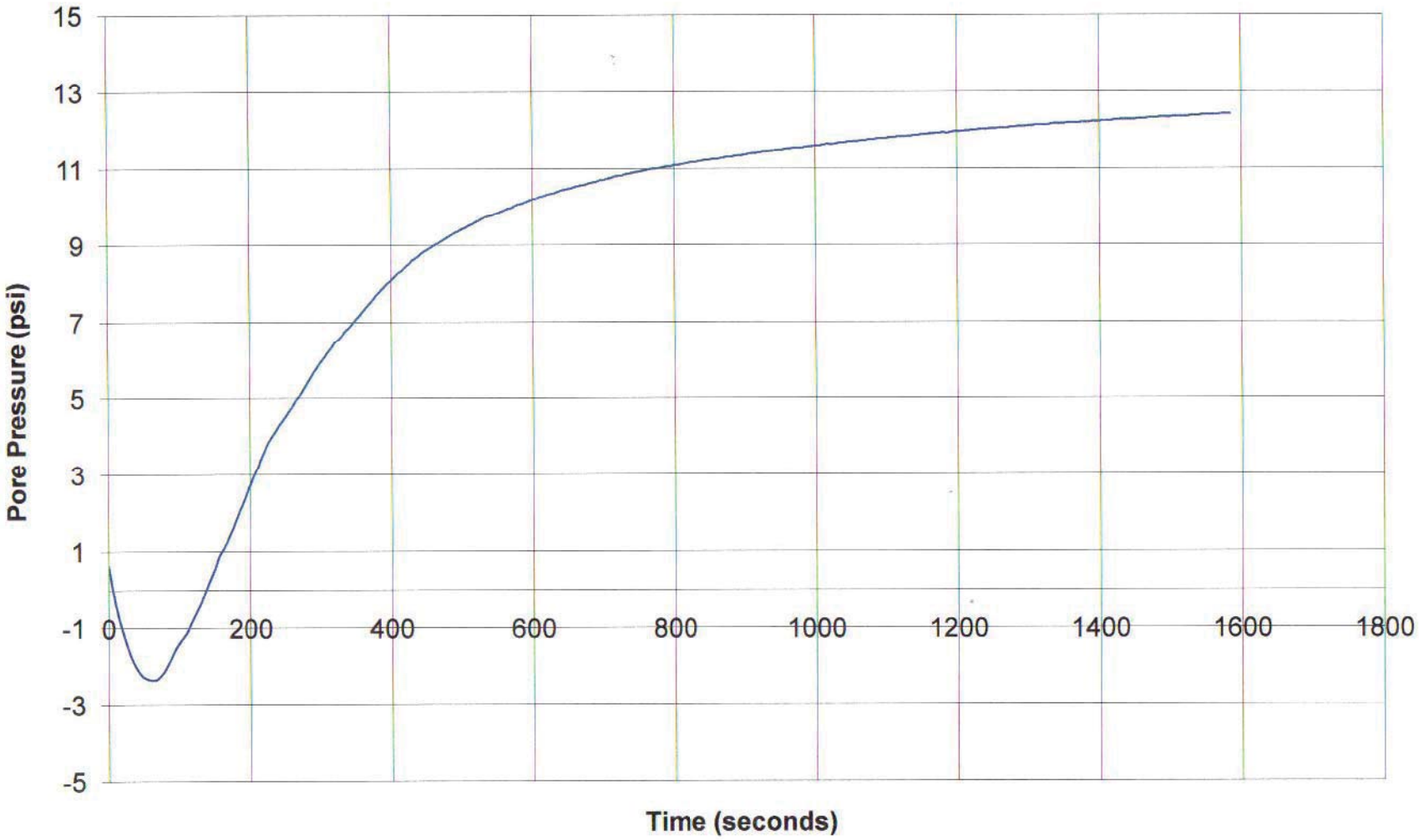


Plate No: A-41

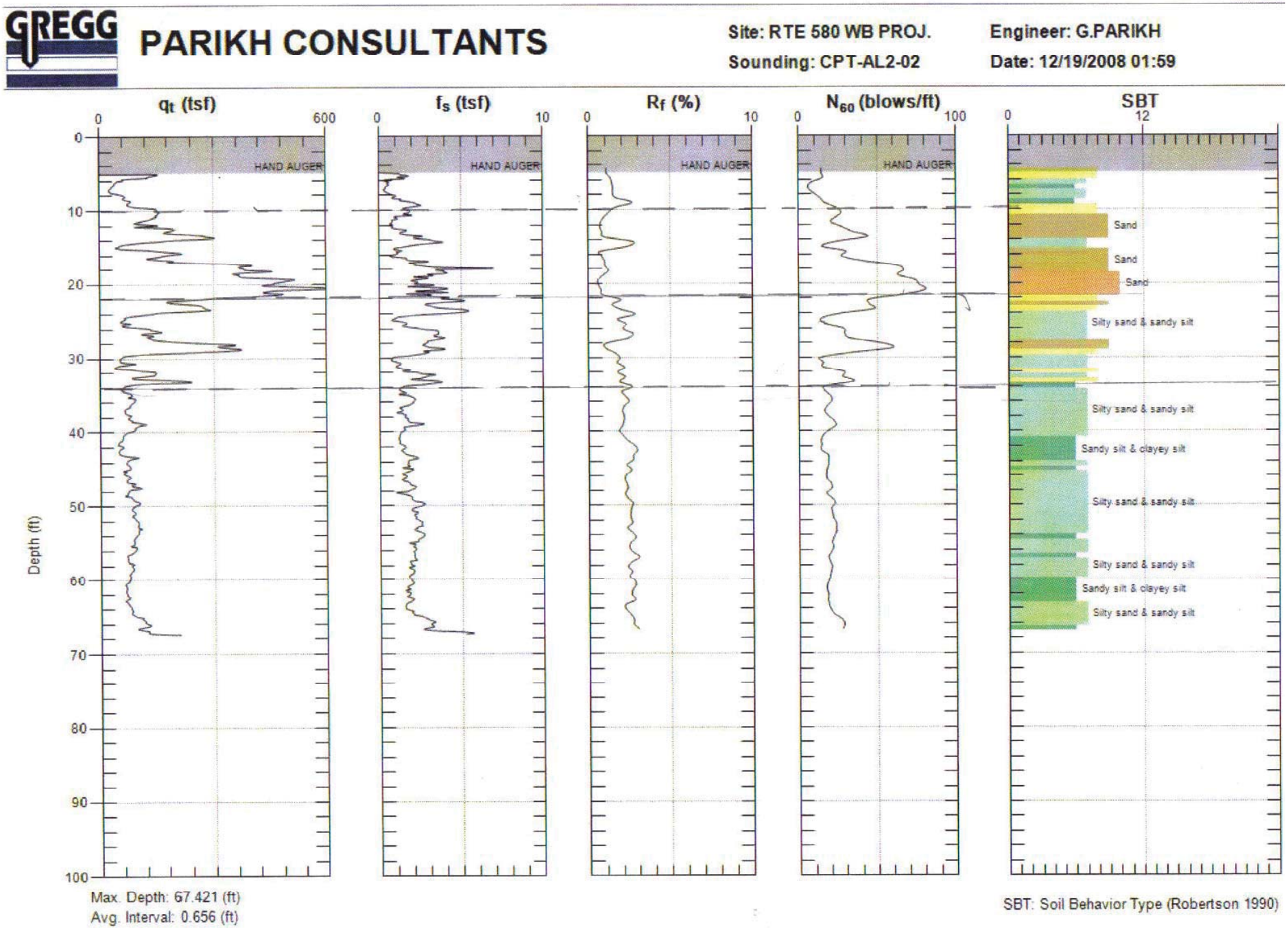
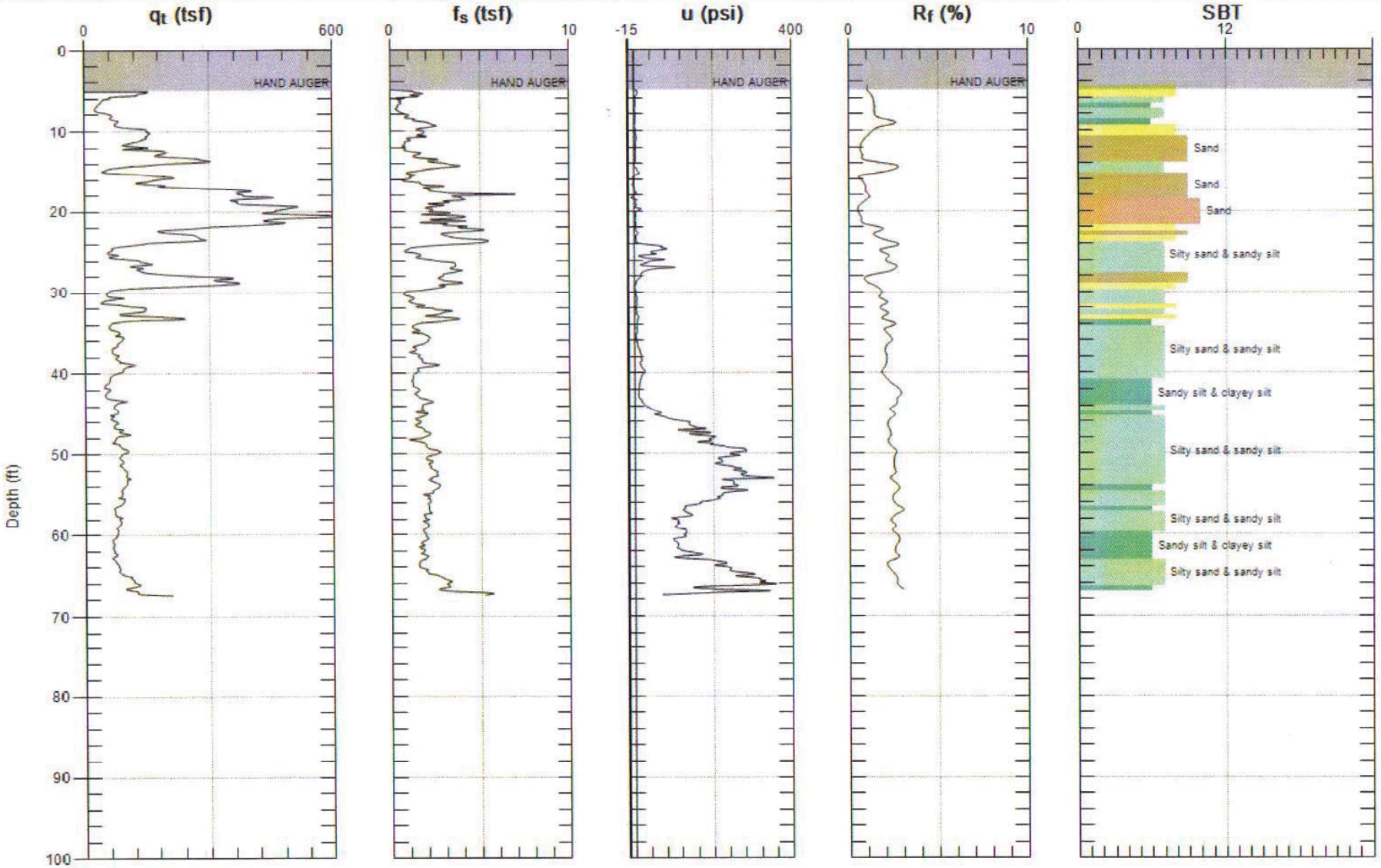

GREGG
PARIKH CONSULTANTS
Site: RTE 580 WB PROJ.
Sounding: CPT-AL2-02
Engineer: G.PARIKH
Date: 12/19/2008 01:59
q_t (tsf)
f_s (tsf)
R_f (%)
N_{60} (blows/ft)
SBT
HAND AUGER
Depth (ft)
Sand
Silty sand & sandy silt
Sandy silt & clayey silt
Max. Depth: 67.421 (ft)
Avg. Interval: 0.656 (ft)
SBT: Soil Behavior Type (Robertson 1990)

Plate No: A-42

GREGG

PARIKH CONSULTANTS

Site: RTE 580 WB PROJ.
Engineer: G.PARIKH
Sounding: CPT-AL2-02
Date: 12/19/2008 01:59



Max. Depth: 67.421 (ft)
Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)

Plate No: A-43

GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

Sounding: CPT-AL2-02
Depth: 67.421
Site: RTE 580 WB
Engineer: G.PARIKH

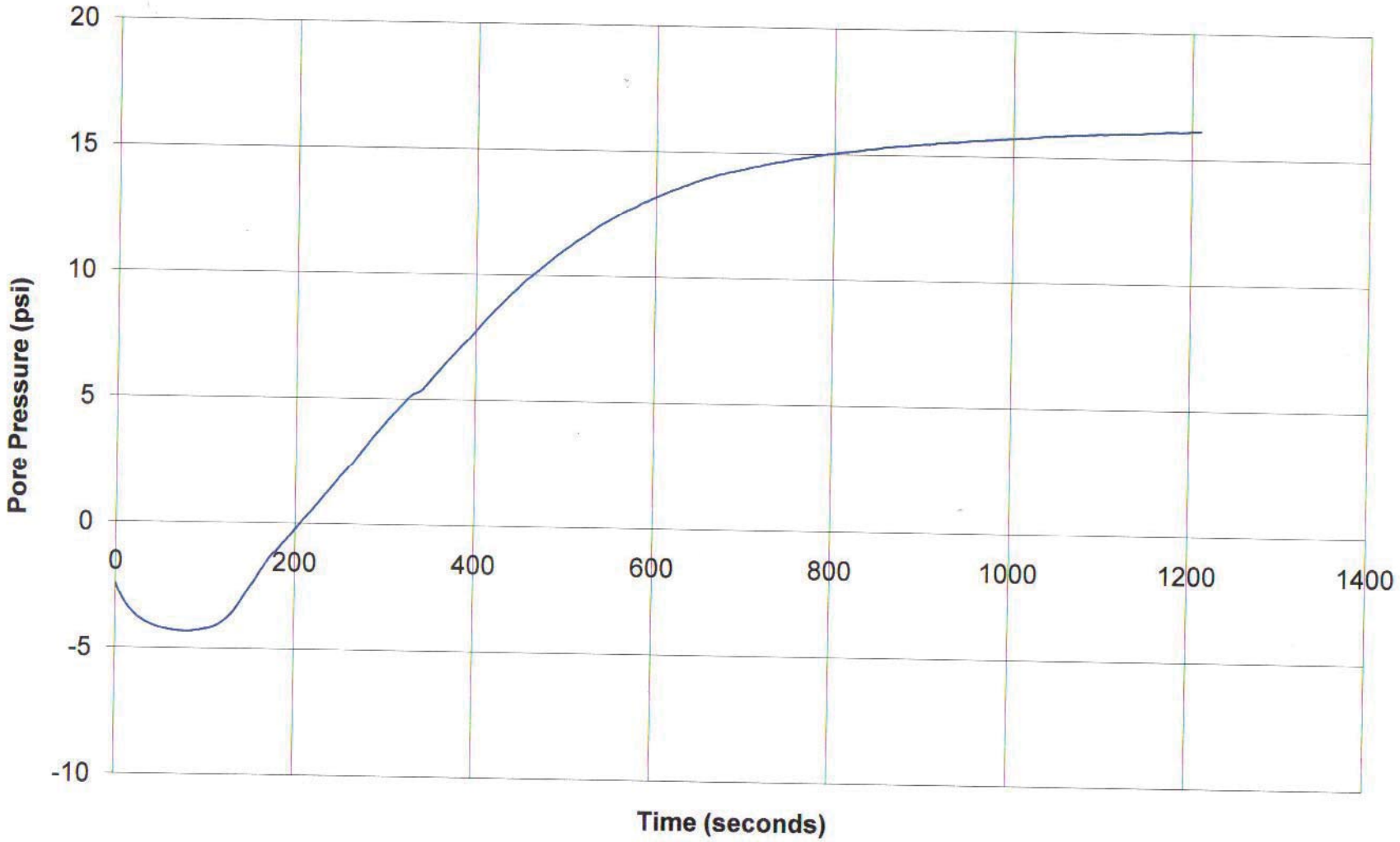


Plate No: A-44

APPENDIX B

APPENDIX B

LABORATORY TESTS

Classification Tests
The field classifications of the samples were visually verified in the laboratory according to the Unified Soil Classification System. The results are presented in "Log of Test Borings", Appendix A.

Moisture-Density
The natural moisture contents and dry unit weights were determined for selected undisturbed samples of the soils in general accordance with ASTM Test Method D 2216-92. This information was used to classify and correlate the soils. The results are presented at the appropriate depths on the "Log of Test Borings", Appendix A.

Atterberg Limits
The Atterberg Limits were determined for selected samples of the fine-grained materials. These results were used to classify the soils, as well as to obtain an indication of the effective strength characteristics and expansion potential with variations in moisture content. The Atterberg Limits were determined in general accordance with ASTM Test Method D 4318-93. The results of these tests are presented on Plate B-2A and Plate B-2A, "Plasticity Chart".

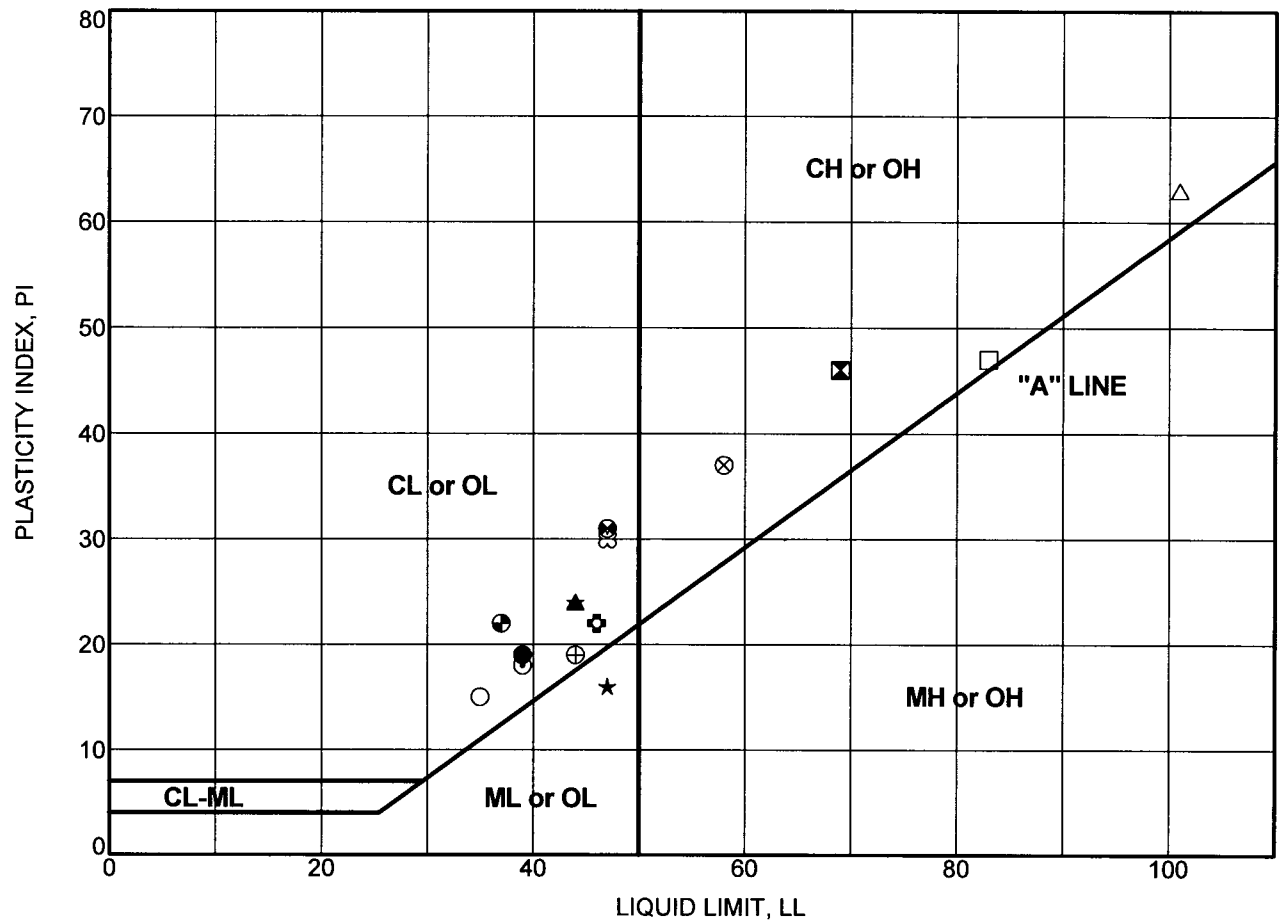
Grain Size Classification
Grain size classification tests (ASTM Test Method D422-63) were performed on selected samples of granular soil to aid in the classification. The results are presented on Plates B-3A thru B-3F, "Grain Size Distribution Curves".

Unconfined Compression Test
Strength tests were performed on selected undisturbed samples using unconfined compression machine. Unconfined compression tests were performed in general accordance with ASTM Test Method D 2166-91. The results are presented on "Log of Test Borings"

R-value Tests
R-value tests were performed on representative bulk samples for pavement design. The tests were performed according to California Test Method 301. The test results are presented on Plates B-5A thru B-5W.

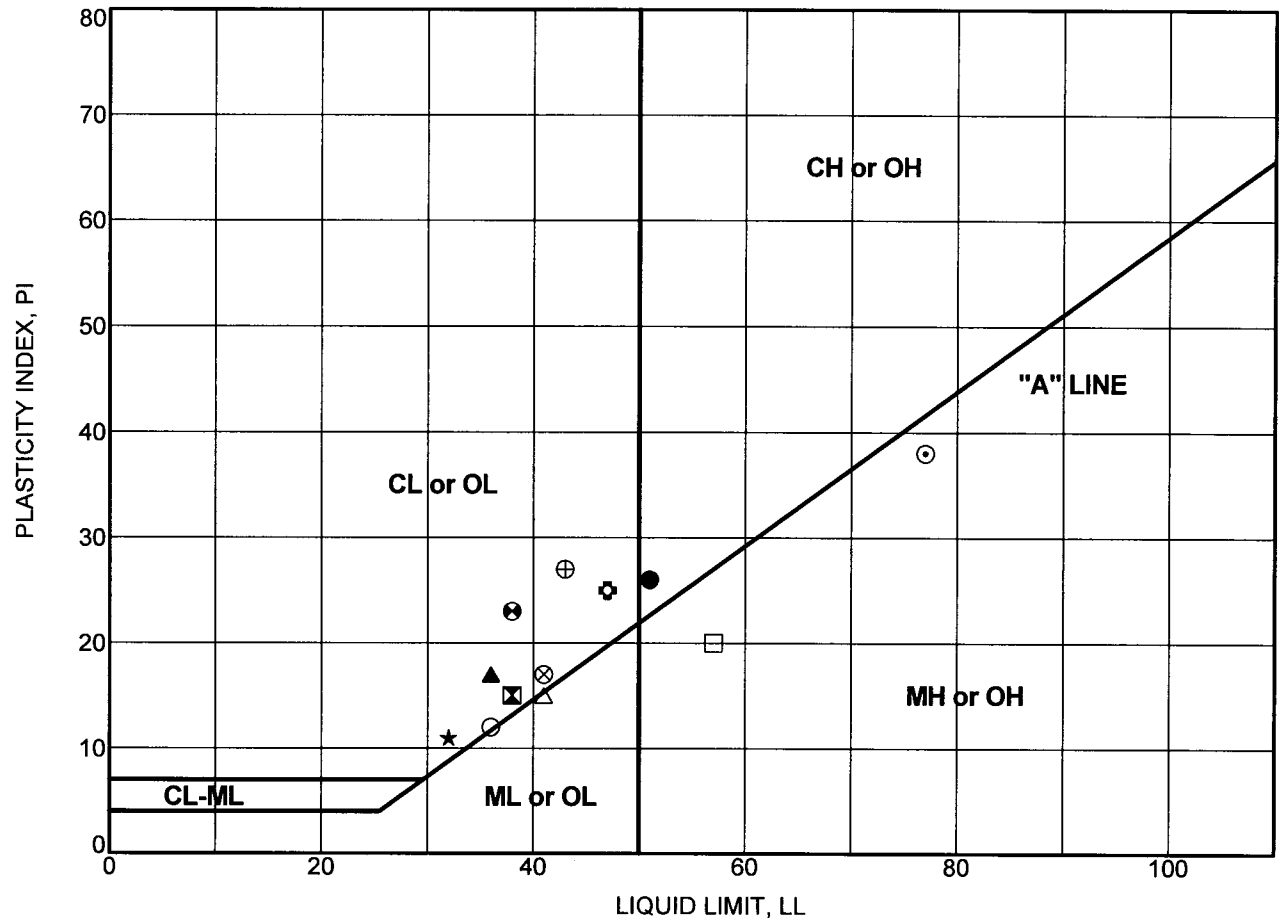
Lime Treated R-value Tests

R-value tests were performed on representative bulk samples with 9% lime (SS lime) by dry weight of soil. The tests were performed according to California Test Method 301. The test results are presented on Plates B-5A thru B-5W.



PLASTICITY CHART

Boring Number	Sample Number	Depth (feet)	Test Symbol	Moisture Content (%)	LL	PL	PI	Description
A-08-219	MC-1	2.5	●	20	39	20	19	LEAN CLAY (CL)
A-08-230	MC-2	4.5	⊠	33	69	23	46	FAT CLAY (CH)
A-08-232	SPT-4	15.0	▲	25	44	20	24	SILT (ML)
A-08-232	SPT-6	25.0	★	31	47	31	16	SILT (ML)
A-08-234	MC-2	4.5	⊙	20	39	21	18	LEAN CLAY (CL)
A-08-234	MC-9	39.5	✿	26	46	24	22	LEAN CLAY (CL)
A-08-234	MC-12	54.5	○	23	35	20	15	LEAN CLAY (CL)
A-08-235	MC-6	24.5	△	84	101	38	63	ORGANIC CLAY (OH)
A-08-236	MC-2	4.5	⊗	26	58	21	37	FAT CLAY (CH)
A-08-240	MC-7	29.5	⊕	28	44	25	19	LEAN CLAY (CL)
A-08-241	MC-3	9.5	□	43	83	36	47	FAT CLAY (CH)
A-08-248	MC-2	5.0	⊛	17	47	16	31	LEAN CLAY (CL)
A-08-277	MC-2	4.5	◔	17	37	15	22	FAT CLAY (CH)
A-09-195	SPT-3	10.0	☆	23	44	20	24	LEAN CLAY (CL)
A-09-200	MC-2	4.5	⊠	15	47	17	30	LEAN CLAY (CL)



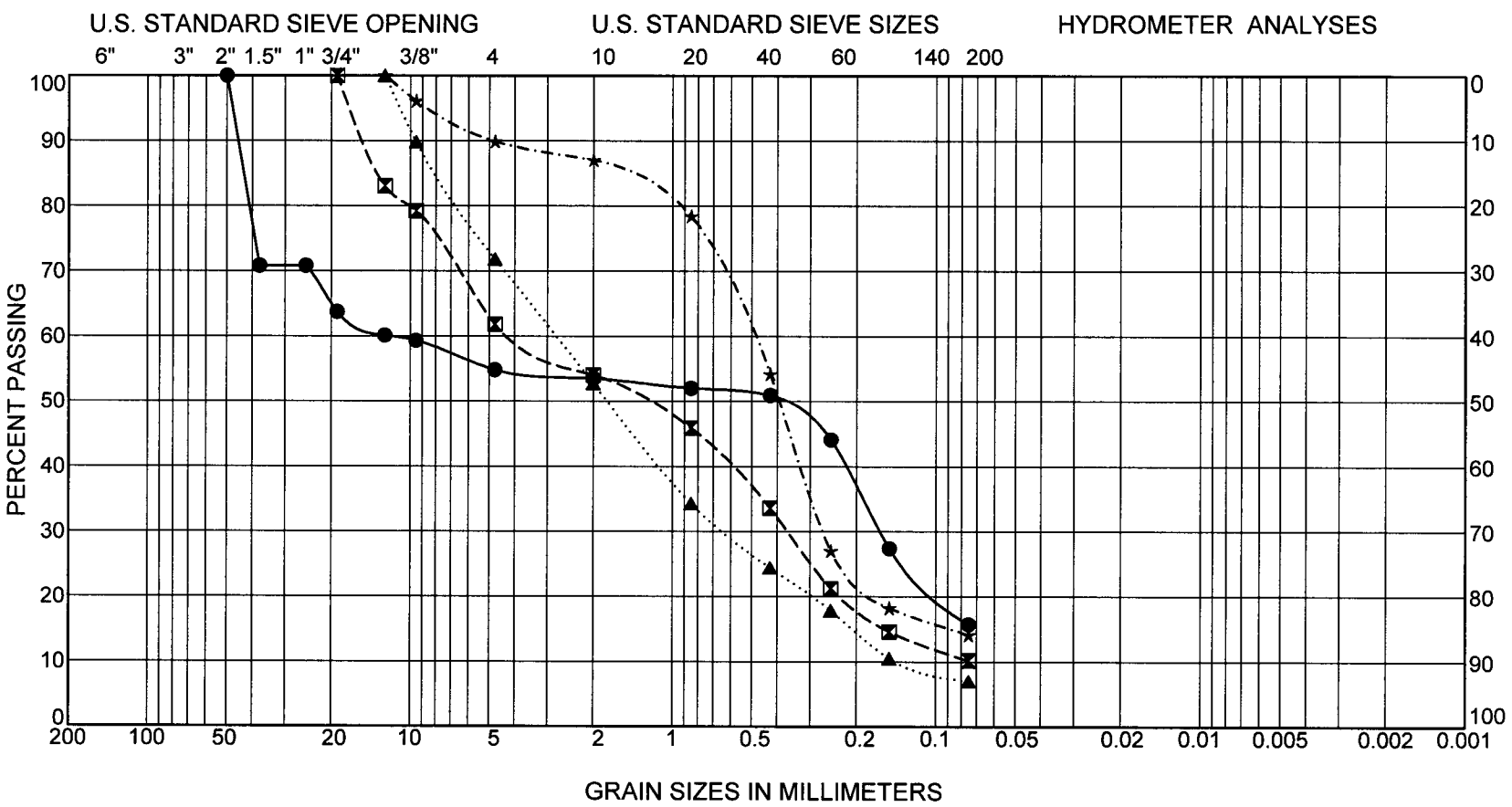
PLASTICITY CHART

Boring Number	Sample Number	Depth (feet)	Test Symbol	Moisture Content (%)	LL	PL	PI	Description
A-09-201	SPT-4	15.0	●	26	51	25	26	FAT CLAY (CH)
A-09-202	SPT-6	15.0	⊠	23	38	23	15	SILTY CLAY (CL-ML)
A-09-203	SPT-4	15.0	▲	23	36	19	17	LEAN CLAY (CL)
A-09-205	MC-4	14.5	★	38	32	21	11	LEAN CLAY (CL)
A-09-213	SPT-3	10.0	⊙	19	77	39	38	FAT CLAY (CH)
A-09-224	SPT-4	15.0	✿	27	47	22	25	LEAN CLAY (CL)
A-09-226	SPT-4	15.0	○	20	36	24	12	SILTY CLAY (CL-ML)
A-09-238	MC-3	10.0	△	25	41	26	15	SANDY LEAN CLAY (CL)
A-09-250	MC-3	10.0	⊗	20	41	24	17	LEAN CLAY (CL)
A-09-253	MC-3	3.0	⊕	8	43	16	27	LEAN CLAY (CL)
A-09-261	MC-2	4.5	□	28	57	37	20	ELASTIC SILT (MH)
A-09-300	SPT-3	6.5	⊛	20	38	15	23	LEAN CLAY (CL)

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS ENGINEERING

GRAIN SIZE DISTRIBUTION CURVES

COBBLES	GRAVEL		SAND			SILT AND CLAY
	coarse	fine	coarse	medium	fine	



Boring Number	Sample Number	Depth (feet)	Symbol	LL	PI	Description
A-08-234	MC-5	19.5	●			SILTY GRAVEL WITH SAND (SM)
A-08-245	SPT-6	24.5	⊠			POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM)
A-08-275	MC-4	14.5	▲			WELL GRADED SAND WITH SILT AND GRAVEL (SW)
A-08-276	MC-4	14.5	★			SILTY SAND (SM)

ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT
ALAMEDA COUNTY, CALIFORNIA

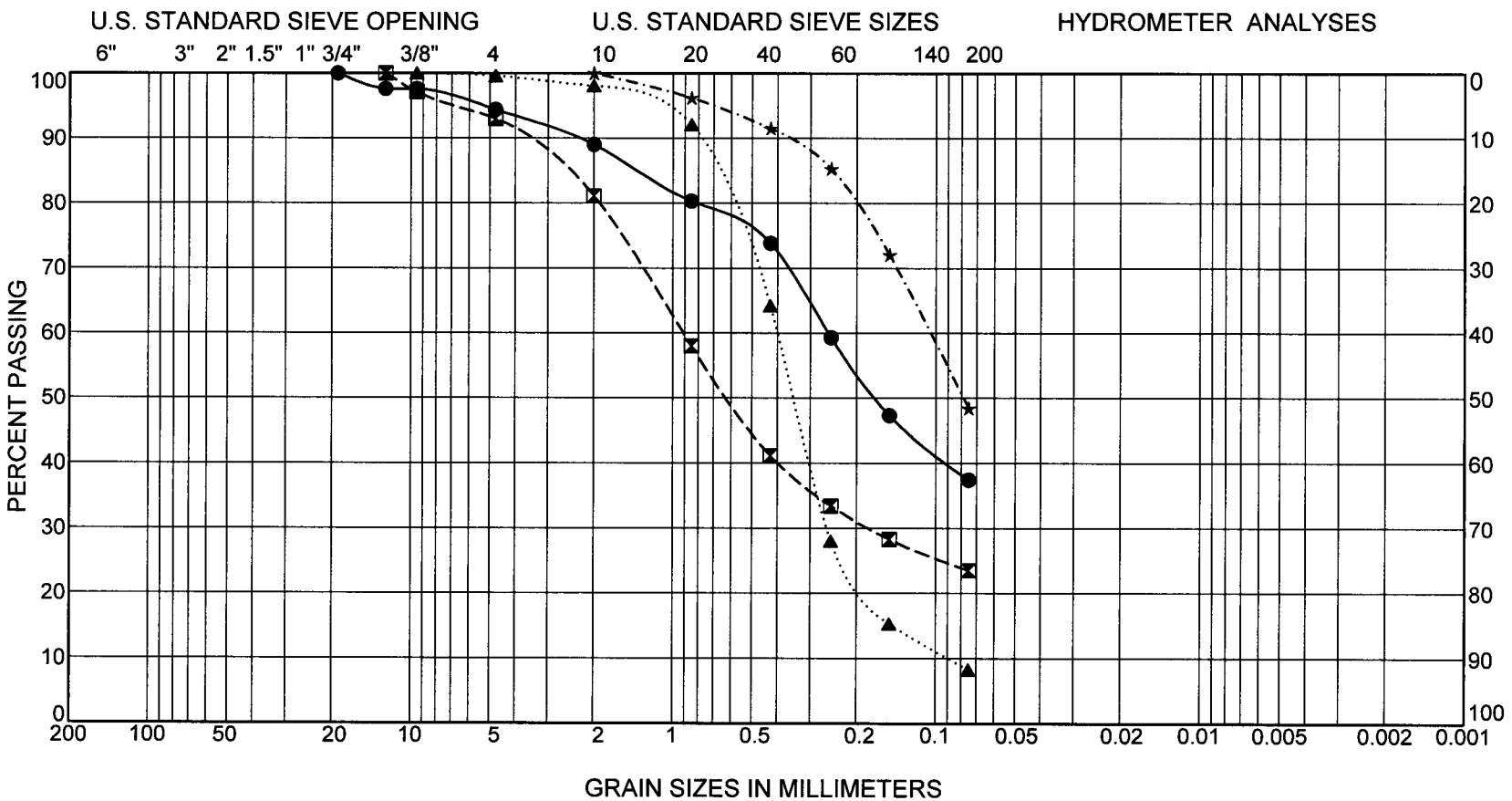
JOB NO: 208102.GDR

PLATE NO: B-3A

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS ENGINEERING

GRAIN SIZE DISTRIBUTION CURVES

COBBLES	GRAVEL		SAND			SILT AND CLAY
	coarse	fine	coarse	medium	fine	



Boring Number	Sample Number	Depth (feet)	Symbol	LL	PI	Description
A-08-295	MC-7	29.5	●			CLAYEY SAND (SC)
A-09-206	MC-3	9.5	⊠			SILTY SAND (SM)
A-09-207	MC-3	3.0	▲			POORLY GRADED SAND WITH SILT (SP-SM)
A-09-223	MC-3	10.0	★			SILTY SAND (SM)

ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT
ALAMEDA COUNTY, CALIFORNIA

JOB NO: 208102.GDR

PLATE NO: B-3B

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS ENGINEERING

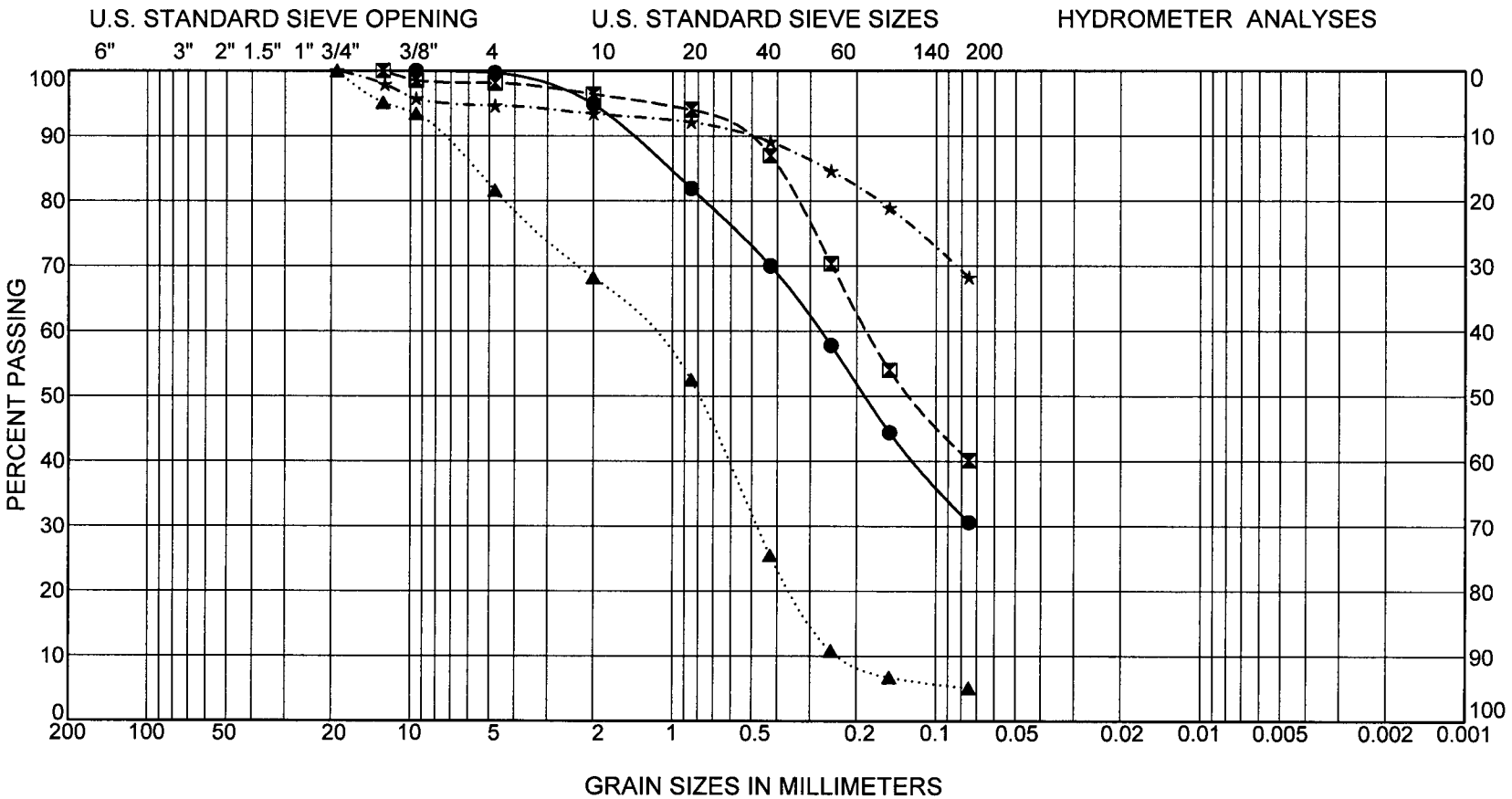
JOB NO: 208102.GDR

PLATE NO: B-3C

ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT
ALAMEDA COUNTY, CALIFORNIA

GRAIN SIZE DISTRIBUTION CURVES

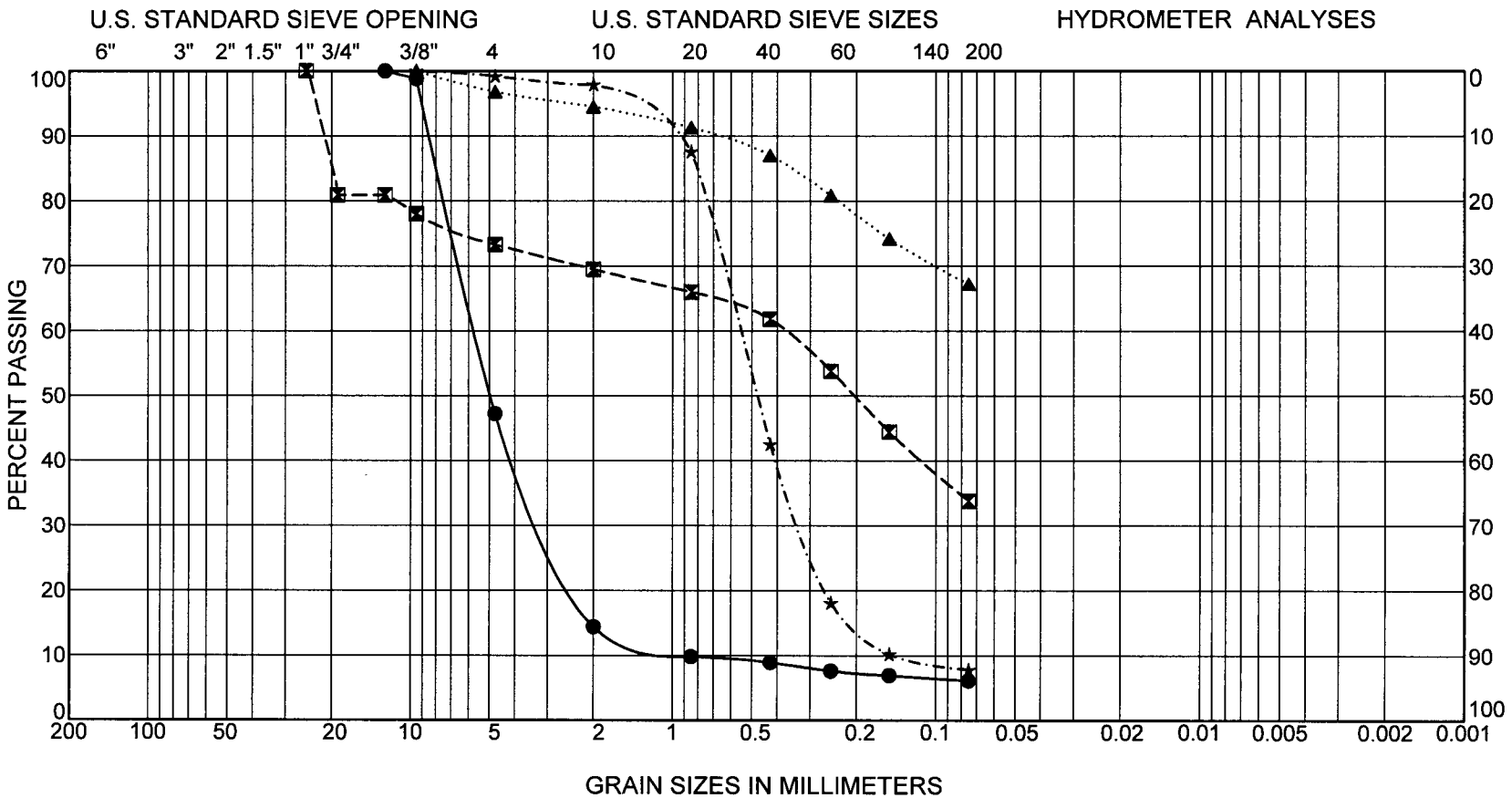
COBBLES	GRAVEL		SAND			SILT AND CLAY
	coarse	fine	coarse	medium	fine	



Boring Number	Sample Number	Depth (feet)	Symbol	LL	PI	Description
A-09-249	MC-3	10.0	●			SILTY SAND (SM)
A-09-260	MC-4	14.5	⊠			SILTY SAND (SM)
A-09-261	MC-5	19.5	▲			POORLY-GRADED SAND WITH SITL AND GRAVEL (SP-SM)
A-09-262	SPT-5	19.5	★			SANDY LEAN CLAY (CL)

GRAIN SIZE DISTRIBUTION CURVES

COBBLES	GRAVEL		SAND			SILT AND CLAY
	coarse	fine	coarse	medium	fine	



Boring Number	Sample Number	Depth (feet)	Symbol	LL	PI	Description
A-09-300	MC-6	10.0	●			WELL GRADED GRAVEL WITH SILT AND SAND (GW-GM)
A-09-301	MC-2	5.0	⊠			SILTY SAND (SM)
A-09-301	MC-5	20.0	▲			SANDY LEAN CLAY (CL)
A-09-308	MC-4	14.5	★			POORLY GRADED SAND WITH SILT (SP)

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS ENGINEERING

ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT
ALAMEDA COUNTY, CALIFORNIA

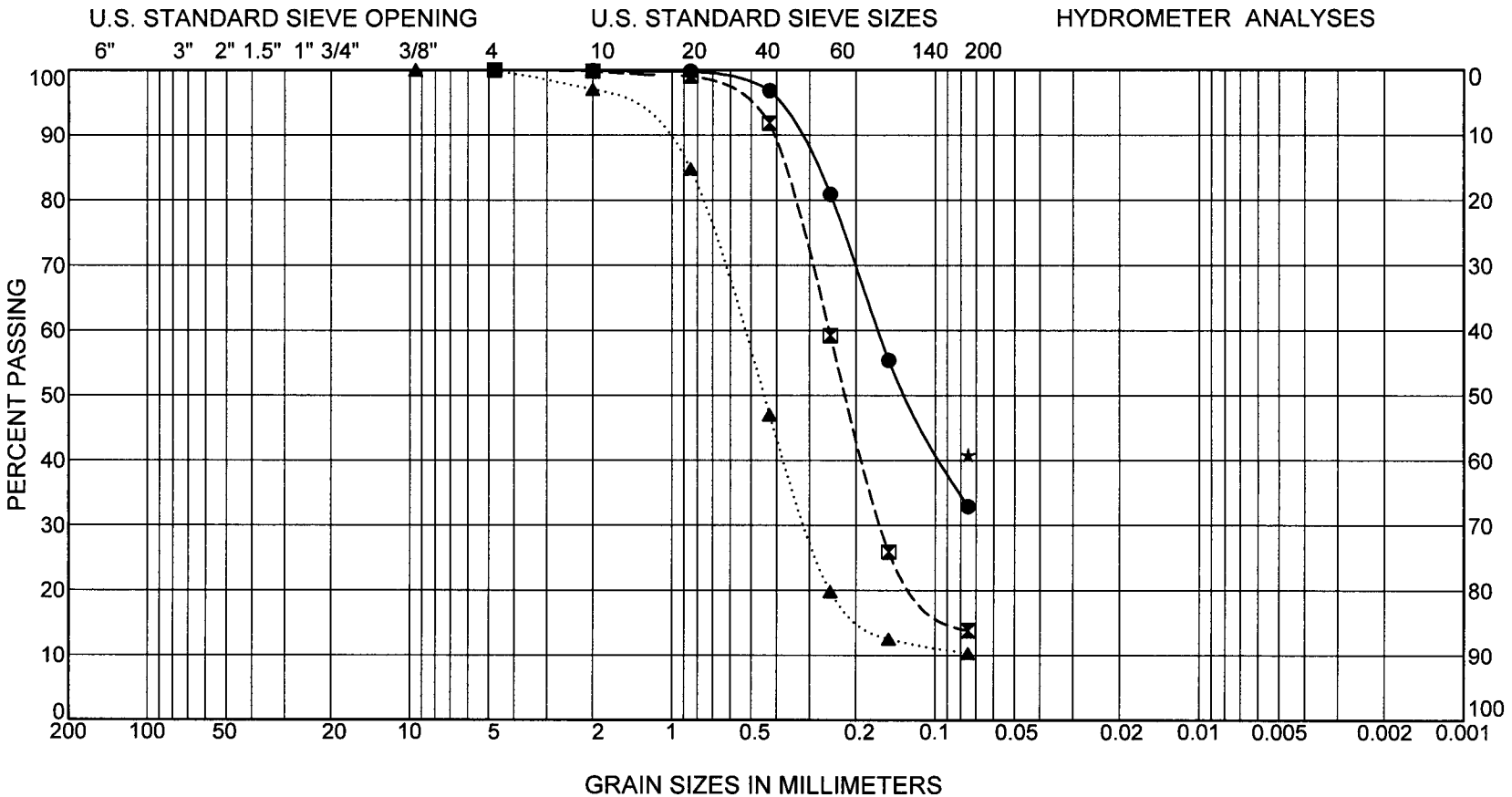
JOB NO: 208102.GDR

PLATE NO: B-3D

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS ENGINEERING

GRAIN SIZE DISTRIBUTION CURVES

COBBLES	GRAVEL		SAND			SILT AND CLAY
	coarse	fine	coarse	medium	fine	



Boring Number	Sample Number	Depth (feet)	Symbol	LL	PI	Description
A-09-308	SPT-7	29.5	●			SILTY SAND (SM)
A-09-309	SPT-7	29.5	⊠			SILTY SAND (SM)
A-09-318	MC-5	19.5	▲			WELL-GRADED SAND WITH SILT (SW-SM)
A-09-318	MC-6	24.5	★			SILTY SAND (SM)

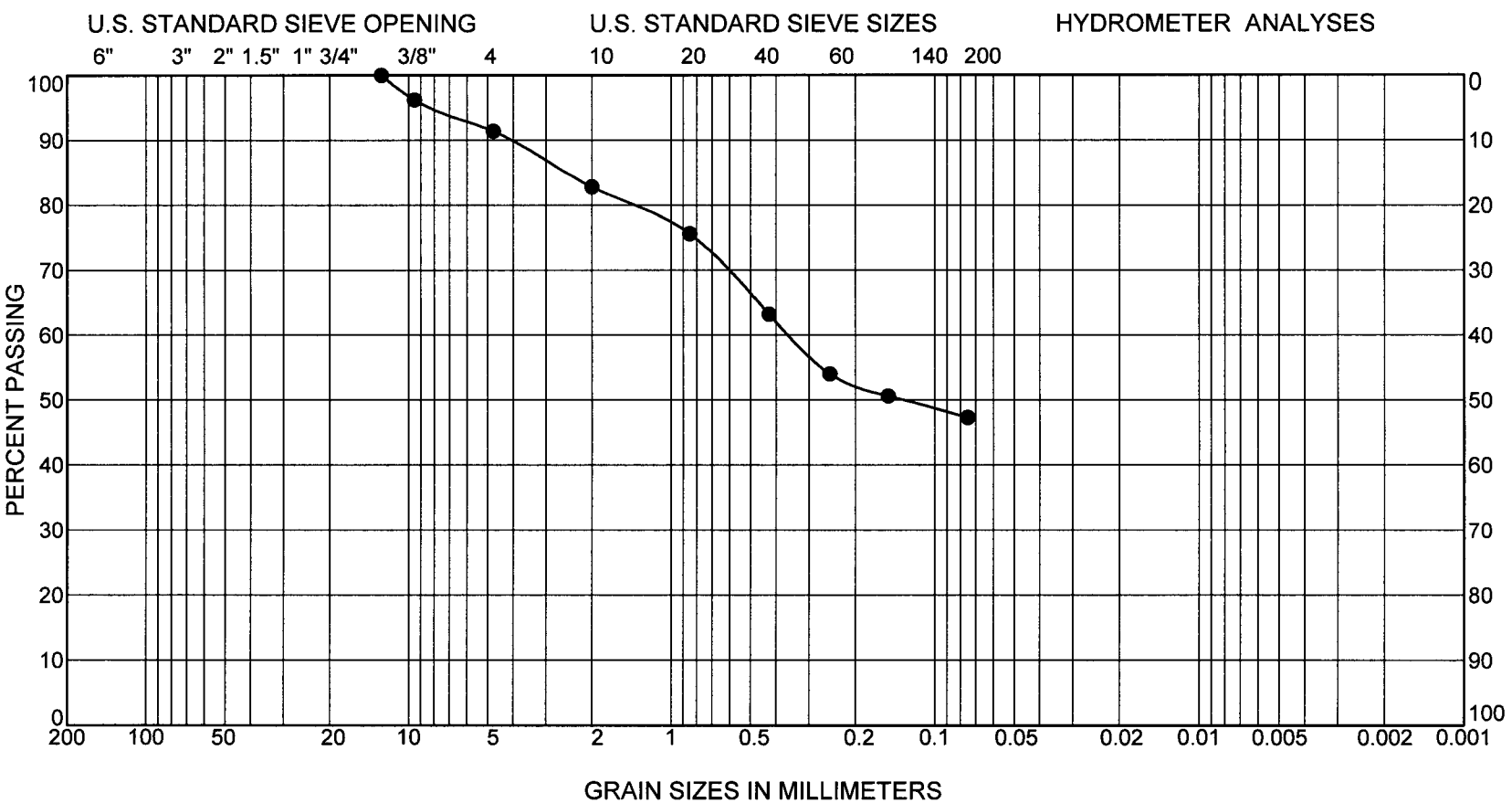
ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT
ALAMEDA COUNTY, CALIFORNIA

JOB NO: 208102.GDR

PLATE NO: B-3E

GRAIN SIZE DISTRIBUTION CURVES

COBBLES	GRAVEL		SAND			SILT AND CLAY
	coarse	fine	coarse	medium	fine	



Boring Number	Sample Number	Depth (feet)	Symbol	LL	PI	Description
LIV-01	MC	44.5	●			SILTY SAND (SM)

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS ENGINEERING

ROUTE 580 WB HOV LANE WIDENING - EASTERN SEGMENT
ALAMEDA COUNTY, CALIFORNIA

JOB NO: 208102.GDR

PLATE NO: B-3F

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 03/04/2009
Date Submitted 02/25/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.GDR Site ID : RW200#1@3'.
Thank you for your business.

* For future reference to this analysis please use SUN # 55160-110846.

EVALUATION FOR SOIL CORROSION

Soil pH	7.85	
Minimum Resistivity	1.58 ohm-cm (x1000)	
Chloride	13.5 ppm	00.00135 %
Sulfate	36.2 ppm	00.00362 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

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By

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 03/04/2009
Date Submitted 02/25/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.GDR Site ID : 202#8@25'.
Thank you for your business.

* For future reference to this analysis please use SUN # 55160-110844.

EVALUATION FOR SOIL CORROSION

Soil pH	7.87	
Minimum Resistivity	0.96 ohm-cm (x1000)	
Chloride	15.8 ppm	00.00158 %
Sulfate	8.7 ppm	00.00087 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

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Date Reported 03/11/2009
Date Submitted 03/06/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.10 I-580 Site ID : RW-208#4@14.5'.
Thank you for your business.

* For future reference to this analysis please use SUN # 55195-110916.

EVALUATION FOR SOIL CORROSION

Soil pH	7.45	
Minimum Resistivity	0.99 ohm-cm (x1000)	
Chloride	15.5 ppm	00.00155 %
Sulfate	17.4 ppm	00.00174 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

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By

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 01/23/2009
Date Submitted 01/20/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.GDR I-580 Site ID : RW216#2@4..
Thank you for your business.

* For future reference to this analysis please use SUN # 55022-110552.

EVALUATION FOR SOIL CORROSION

Soil pH	7.07	
Minimum Resistivity	2.65 ohm-cm (x1000)	
Chloride	15.8 ppm	00.00158 %
Sulfate	21.9 ppm	00.00219 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 02/04/2009
Date Submitted 01/29/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.GDR/I-580 Site ID : RW218#1 @ 2.5'.
Thank you for your business.

* For future reference to this analysis please use SUN # 55068-110646.

EVALUATION FOR SOIL CORROSION

Soil pH	7.72	
Minimum Resistivity	1.98 ohm-cm (x1000)	
Chloride	9.4 ppm	00.00094 %
Sulfate	11.1 ppm	00.00111 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

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Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 01/23/2009
Date Submitted 01/20/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102 GDR I-580 Site ID : RW219#2@9.5'.
Thank you for your business.

* For future reference to this analysis please use SUN # 55022-110553.

EVALUATION FOR SOIL CORROSION

Soil pH	7.74	
Minimum Resistivity	1.42 ohm-cm (x1000)	
Chloride	28.7 ppm	00.00287 %
Sulfate	32.8 ppm	00.00328 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 03/04/2009
Date Submitted 02/25/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.GDR Site ID : RW227#1@3'.
Thank you for your business.

* For future reference to this analysis please use SUN # 55160-110847.

EVALUATION FOR SOIL CORROSION

Soil pH	7.88	
Minimum Resistivity	1.66 ohm-cm (x1000)	
Chloride	9.5 ppm	00.00095 %
Sulfate	43.4 ppm	00.00434 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

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11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 03/11/2009
Date Submitted 03/06/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.10 I-580 Site ID : RW-229#2@4.5'.
Thank you for your business.

* For future reference to this analysis please use SUN # 55195-110917.

EVALUATION FOR SOIL CORROSION

Soil pH	7.98	
Minimum Resistivity	1.05 ohm-cm (x1000)	
Chloride	21.0 ppm	00.00210 %
Sulfate	31.2 ppm	00.00312 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 05/13/2009
Date Submitted 05/06/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.GDR I-580 Site ID : RW234 #3@9.5'.
Thank you for your business.

* For future reference to this analysis please use SUN # 55639-112106.

EVALUATION FOR SOIL CORROSION

Soil pH	7.98	
Minimum Resistivity	0.67 ohm-cm (x1000)	
Chloride	87.7 ppm	00.00877 %
Sulfate	136.9 ppm	00.01369 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

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By

B-4

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 05/13/2009
Date Submitted 05/06/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.GDR I-580 Site ID : RW234 #7@29.5'.
Thank you for your business.

* For future reference to this analysis please use SUN # 55639-112107.

EVALUATION FOR SOIL CORROSION

Soil pH	8.14		
Minimum Resistivity	0.91 ohm-cm (x1000)		
Chloride	81.2 ppm	00.00812	%
Sulfate	34.6 ppm	00.00346	%

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

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By

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 03/11/2009
Date Submitted 03/06/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney R.H
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.10 I-580 Site ID : RW-235#2@4.5'.
Thank you for your business.

* For future reference to this analysis please use SUN # 55195-110915.

EVALUATION FOR SOIL CORROSION

Soil pH	7.47	
Minimum Resistivity	1.31 ohm-cm (x1000)	
Chloride	10.5 ppm	00.00105 %
Sulfate	53.4 ppm	00.00534 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

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By

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 02/04/2009
Date Submitted 01/29/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.GDR/I-580 Site ID : RW243#2 @ 4.5'.
Thank you for your business.

* For future reference to this analysis please use SUN # 55068-110648.

EVALUATION FOR SOIL CORROSION

Soil pH	8.18		
Minimum Resistivity	1.47 ohm-cm (x1000)		
Chloride	17.0 ppm	00.00170	%
Sulfate	27.0 ppm	00.00270	%

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

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By B-4L

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 02/04/2009
Date Submitted 01/29/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.GDR/I-580 Site ID : RW247#2 @ 4.5'.
Thank you for your business.

* For future reference to this analysis please use SUN # 55068-110647.

EVALUATION FOR SOIL CORROSION

Soil pH	8.12		
Minimum Resistivity	1.05 ohm-cm (x1000)		
Chloride	37.1 ppm	00.00371	%
Sulfate	105.7 ppm	00.01057	%

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

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By

B-4M

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 03/18/2009
Date Submitted 03/13/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.GDR I-580 Site ID : RW254#2@4.5'.
Thank you for your business.

* For future reference to this analysis please use SUN # 55241-110997.

EVALUATION FOR SOIL CORROSION

Soil pH	7.97	
Minimum Resistivity	3.22 ohm-cm (x1000)	
Chloride	14.0 ppm	00.00140 %
Sulfate	26.3 ppm	00.00263 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 04/03/2009
Date Submitted 03/30/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.GDR/I-580 Site ID : RW261#3 @ 9.5'.
Thank you for your business.

* For future reference to this analysis please use SUN # 55328-111179.

EVALUATION FOR SOIL CORROSION

Soil pH	7.71	
Minimum Resistivity	0.75 ohm-cm (x1000)	
Chloride	27.1 ppm	00.00271 %
Sulfate	62.7 ppm	00.00627 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

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By

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 03/11/2009
Date Submitted 03/06/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.10 I-580 Site ID : RW276#3@9..
Thank you for your business.

* For future reference to this analysis please use SUN # 55195-110912.

EVALUATION FOR SOIL CORROSION

Soil pH	7.94	
Minimum Resistivity	0.91 ohm-cm (x1000)	
Chloride	24.3 ppm	00.00243 %
Sulfate	39.0 ppm	00.00390 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

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By

B-4

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 03/11/2009
Date Submitted 03/06/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.10 I-580 Site ID : RW77#5@19.5".
Thank you for your business.

* For future reference to this analysis please use SUN # 55195-110911.

EVALUATION FOR SOIL CORROSION

Soil pH	7.48		
Minimum Resistivity	0.94 ohm-cm (x1000)		
Chloride	38.5 ppm	00.00385	%
Sulfate	24.0 ppm	00.00240	%

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

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Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 03/18/2009
Date Submitted 03/13/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.GDR I-580 Site ID : RW301#3@10'.
Thank you for your business.

* For future reference to this analysis please use SUN # 55241-110998.

EVALUATION FOR SOIL CORROSION

Soil pH	8.01	
Minimum Resistivity	2.30 ohm-cm (x1000)	
Chloride	26.9 ppm	00.00269 %
Sulfate	4.4 ppm	00.00044 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 02/04/2009
Date Submitted 01/29/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.LIV/I-580 Site ID : LN01#1 @ 3'.
Thank you for your business.

* For future reference to this analysis please use SUN # 55070-110651.

EVALUATION FOR SOIL CORROSION

Soil pH	7.85	
Minimum Resistivity	1.37 ohm-cm (x1000)	
Chloride	40.1 ppm	00.00401 %
Sulfate	8.5 ppm	00.00085 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 03/04/2009
Date Submitted 02/25/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.GDR Site ID : AL201#2@4.5'.
Thank you for your business.

* For future reference to this analysis please use SUN # 55160-110843.

EVALUATION FOR SOIL CORROSION

Soil pH	7.67	
Minimum Resistivity	1.74 ohm-cm (x1000)	
Chloride	7.4 ppm	00.00074 %
Sulfate	10.2 ppm	00.00102 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

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By

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 03/04/2009
Date Submitted 02/25/2009

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 208102.GDR Site ID : AL2-01 .
Thank you for your business.

* For future reference to this analysis please use SUN # 55160-110845.

EVALUATION FOR SOIL CORROSION

Soil pH	8.02	
Minimum Resistivity	1.07 ohm-cm (x1000)	
Chloride	27.6 ppm	00.00276 %
Sulfate	27.8 ppm	00.00278 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

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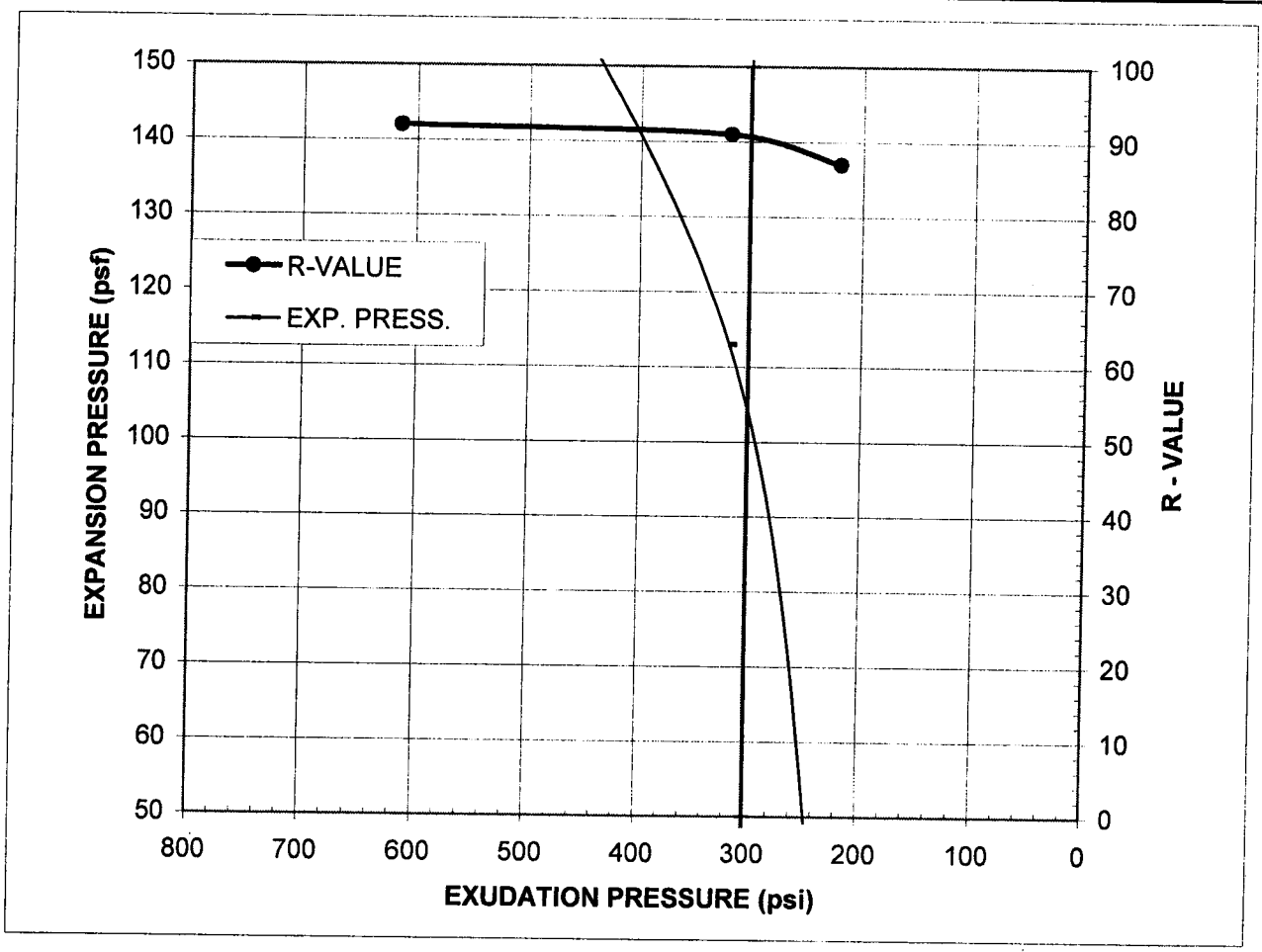
MAR 06 2009
By

B-4U

LIME TREATED R-VALUE REPORT

Parikh Consultants, Inc. | ASTM D2844 or CTM 301 | (408) 452-9000

Project Name:	West Bound Route 580	Date:	2/21/09
Client:	BKF Engineerins	Project #:	208102.GDR
Sample #:	R-186 Depth: 0' - 5'	Lab #:	M741
Location / Source:	Native / Route 580	Sample Date:	
Material :	Lean clay, brown + 5% Lime (SS)	Sampled By:	



Specimen No.	A	B	C
Exudation Pressure, psi	220	318	614
Expansion Pressure, psf	17	113	195
R-Value	87	91	92
Moisture Content at Test, %	20.3	18.9	17.1
Dry Density at Test, pcf	108.9	109.7	114.0

R-Value @ 300 psi Exudation Pressure = 91

Expansion Pressure @300 psi Exudation, psf = **105**

The minimum percent of lime to use in the trial batch was 5%, this was established using pH values as described in the appendix of ASTM Designation : C 977

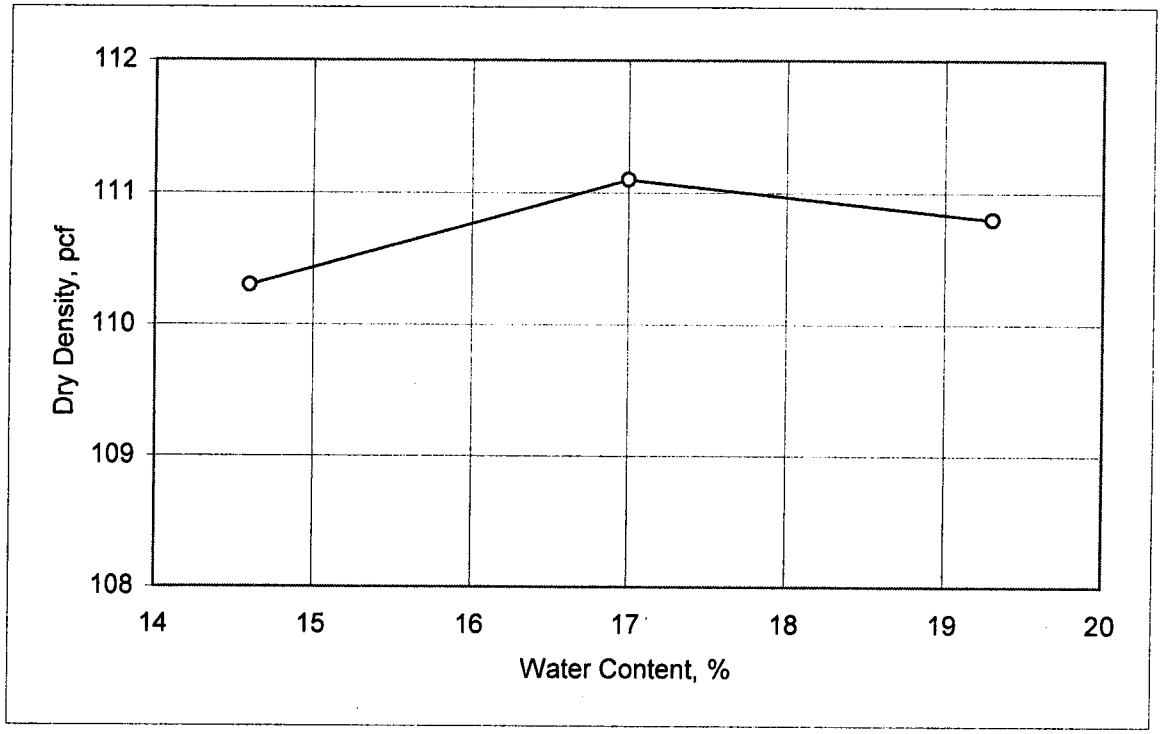
Report By: Prav Dayah

RVALUE with calcs pdp

UNCONFINED COMPRESSIVE STRENGTH REPORT

Parikh Consultants, Inc. **California Test 373** (408) 452-9000

Project Name:	West Bound Route 580	Date:	2/28/09
Client:	BKF Enginners	Project #:	208102.GDR
Sample #:	R-186 Depth: 0'-5'	Lab #:	M741
Location / Source:	Native / Route 580	Sample Date:	
Material :	Lean clay, brown + 5% lime (SS)	Sampled By:	



Moisture - Density Relationship

Trial #	1	2	3	4
Water Content,%		14.6	17	19.3
Dry Density, pcf		110.3	111.1	110.8
MAX. DRY DENSITY, pcf:	**111.1**	**OPTIMUM MOISTUR**		**17**

UNCONFINED COMPRESSION TEST RESULTS

Specimen Number	Cast Date	Test Date	Age Days	Total Load lbs.	Compressive Strength, psi
1	2/18/2009	2/25/2009	7	8,278	659
2	2/18/2009	2/25/2009	7	7,535	599
AVERAGE				**7,907**	**629**

Comments:

The minimum percent of lime to use in the trial batch was 5%, this was established using pH values as described in the appendix of ASTM Designation : C 977

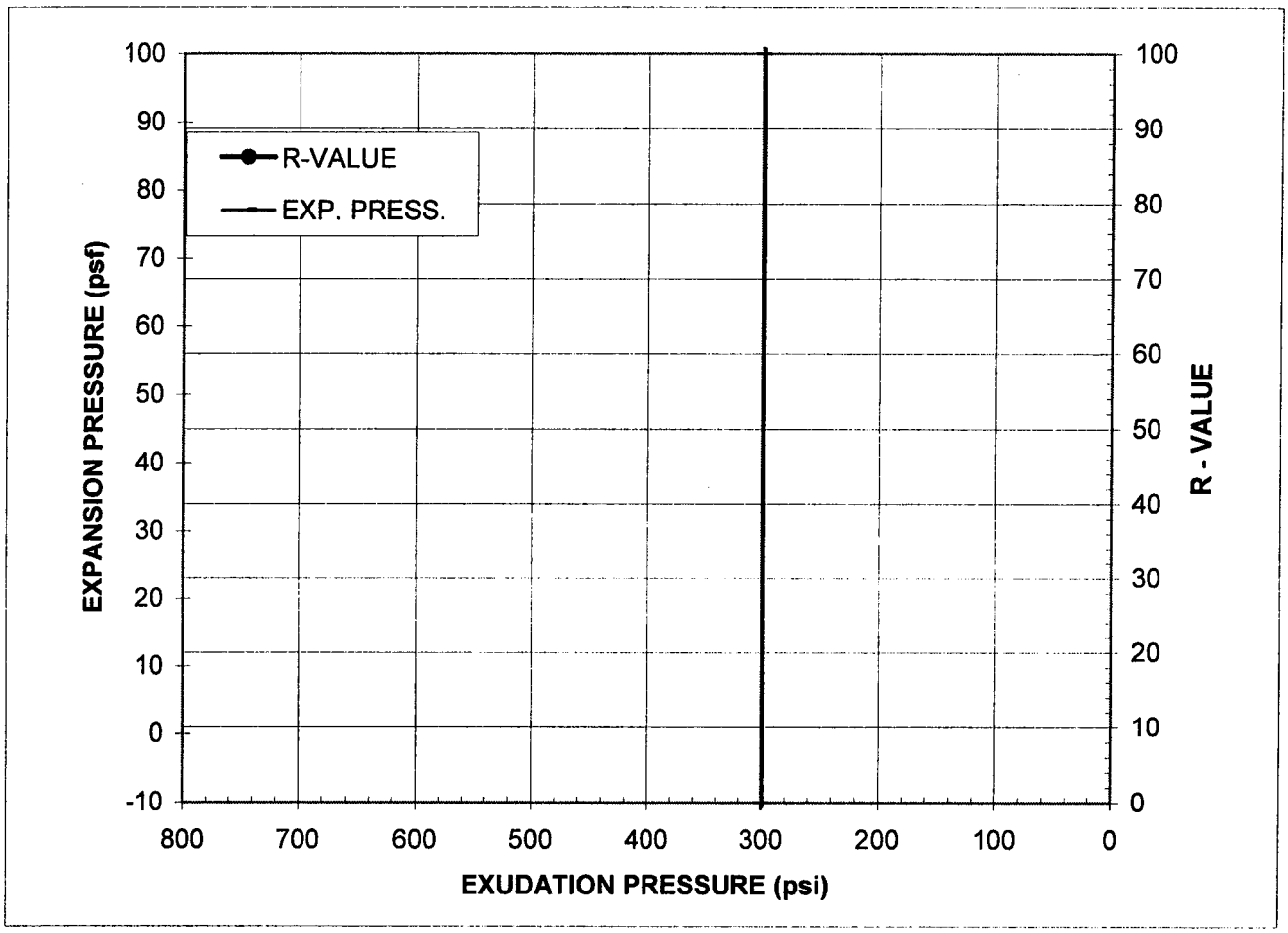
Reported By: Prav D Dayah

pdp 12/01/01

R-VALUE REPORT

Parikh Consultants, Inc. | ASTM D2844 or CTM 301 | (408) 452-9000

Project Name:	Westbound RTE 580			Date:	3/20/09
Client:	BKF Engineers			Project #:	28102.GDR
Sample #:	187	Depth:	0' - 5'	Lab #:	M741
Location / Source:		Onsite / Native		Sample Date:	
Material :	Lean Clay, dark brown			Sampled By:	



	Specimen No.	A	B	C
	Exudation Pressure, psi			
	Expansion Pressure, psf			
	R-Value			
	Moisture Content at Test, %			
	Dry Density at Test, pcf			

R-Value @ 300 psi Exudation Pressure = **< 5**	Expansion Pressure @300 psi Exudation, psf =
Minimum R-Value Requirement:	

Comments:

Test sample extruded from under the mold and around the follower ram during Exudation Test.
Test terminated - R-Valve = < 5

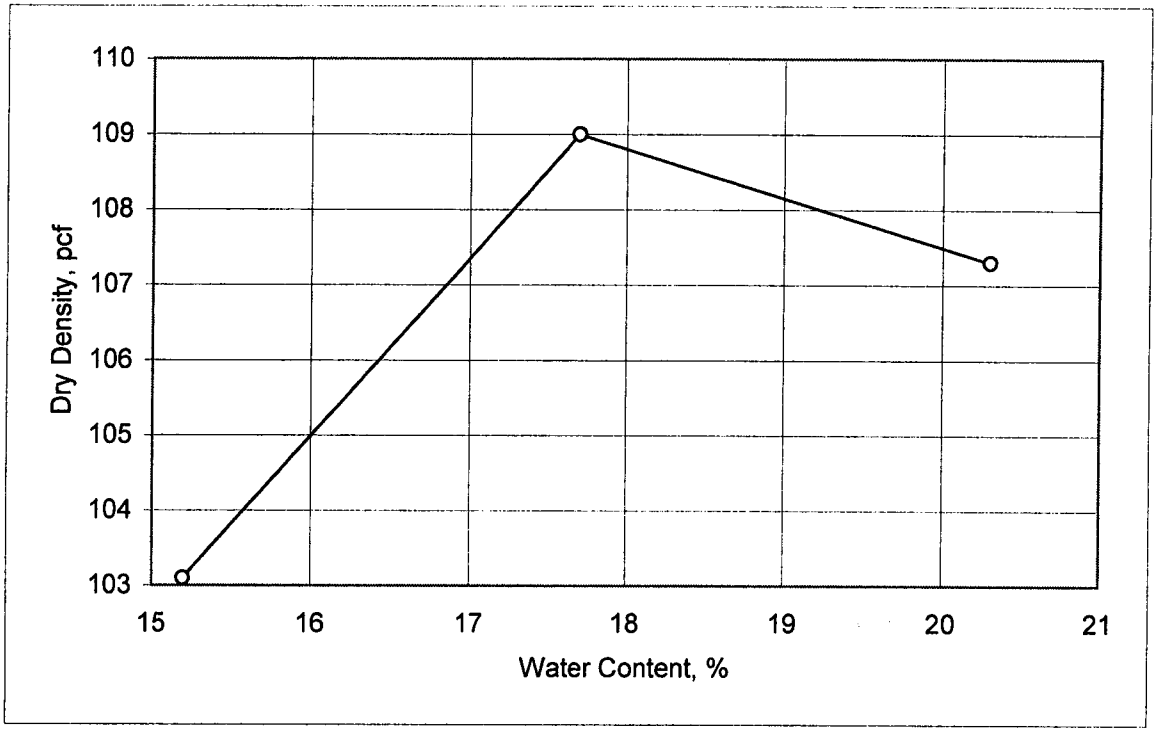
Report By: Dharmesh Dayah

RVALUE with calcs pdp

UNCONFINED COMPRESSIVE STRENGTH REPORT

Parikh Consultants, Inc. **California Test 373** (408) 452-9000

Project Name:	West Bound Route 580	Date:	3/27/09
Client:	BKF Enginners	Project #:	208102.GDR
Sample #:	190 Depth: 0'-5'	Lab #:	M741
Location / Source:	Native / Route 580	Sample Date:	
Material :	Lean clay, black + 5% lime (SS)	Sampled By:	



Moisture - Density Relationship

Trial #	1	2	3	4
Water Content,%		15.2	17.7	20.3
Dry Density, pcf		103.1	109	107.3
MAX. DRY DENSITY, pcf:	**109**	**OPTIMUM MOISTUR**		**17.7**

UNCONFINED COMPRESSION TEST RESULTS

Specimen Number	Cast Date	Test Date	Age Days	Total Load lbs.	Compressive Strength, psi
1	3/19/2009	3/26/2009	7	3,901	310
2	3/19/2009	3/26/2009	7	3,914	311
AVERAGE				**3,908**	**311**

Comments:

The minimum percent of lime to use in the trial batch was 5%, this was established using pH values as described in the appendix of ASTM Designation : C 977

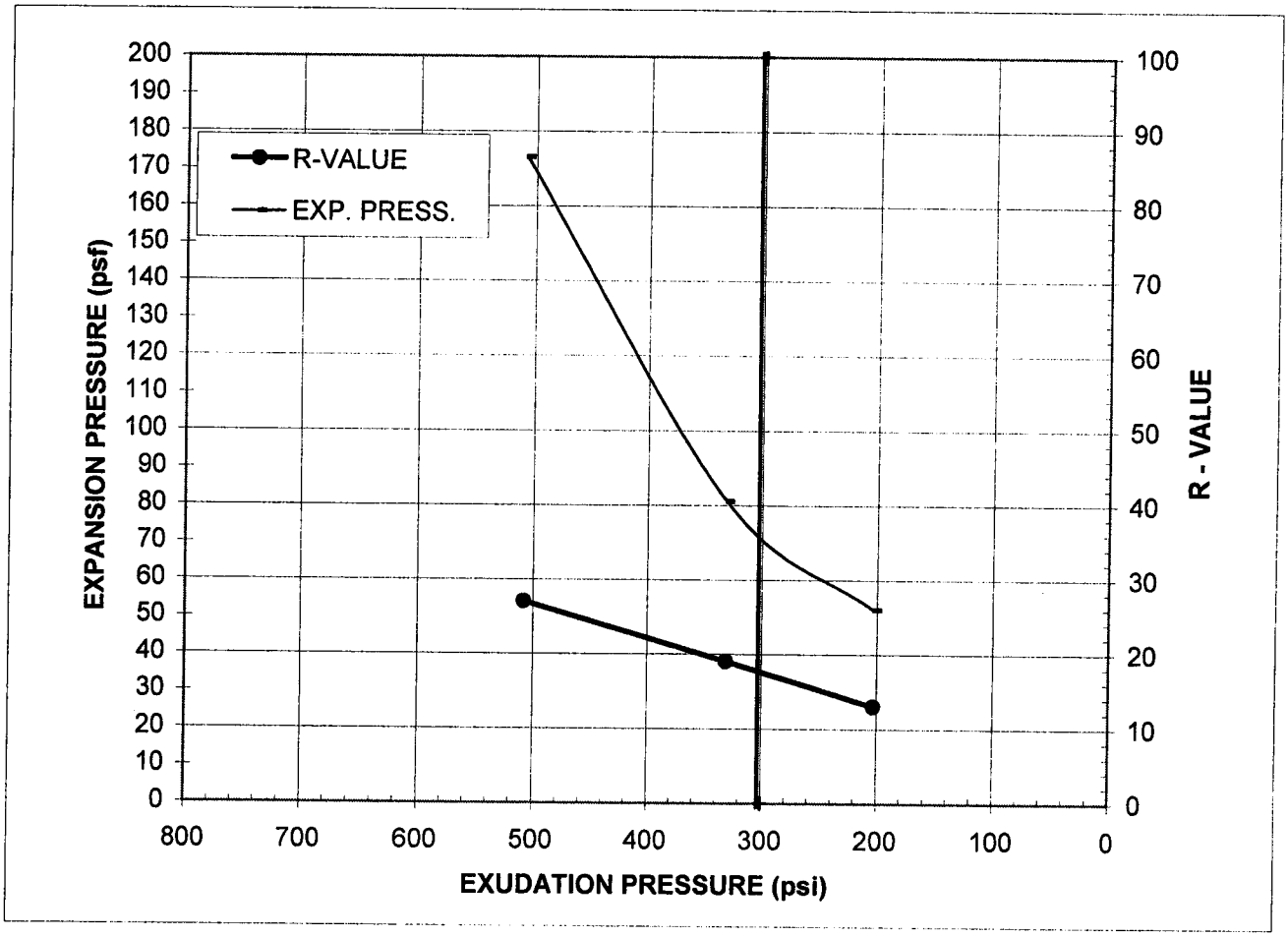
Reported By: Dharmesh Dayah

pdp 12/01/01

R-VALUE REPORT

Parikh Consultants, Inc. **ASTM D2844 or CTM 301** (408) 452-9000

Project Name:	Westbound Rte 580			Date:	2/9/09
Client:	BKF Engineering			Project #:	208102.GDR
Sample #:	R-197	Depth:	0' - 5'	Lab #:	M741
Location / Source:		Onsite / Native		Sample Date:	
Material :	sandy clay with grsvel, yellowish brown			Sampled By:	



Specimen No.	A	B	C
Exudation Pressure, psi	203	331	508
Expansion Pressure, psf	52	81	173
R-Value	13	19	27
Moisture Content at Test, %	15.0	14.0	13.1
Dry Density at Test, pcf	115.9	118.7	121.2

R-Value @ 300 psi Exudation Pressure = **18**

Expansion Pressure @300 psi Exudation, psf = **70**

Minimum R-Value Requirement:

Comments:

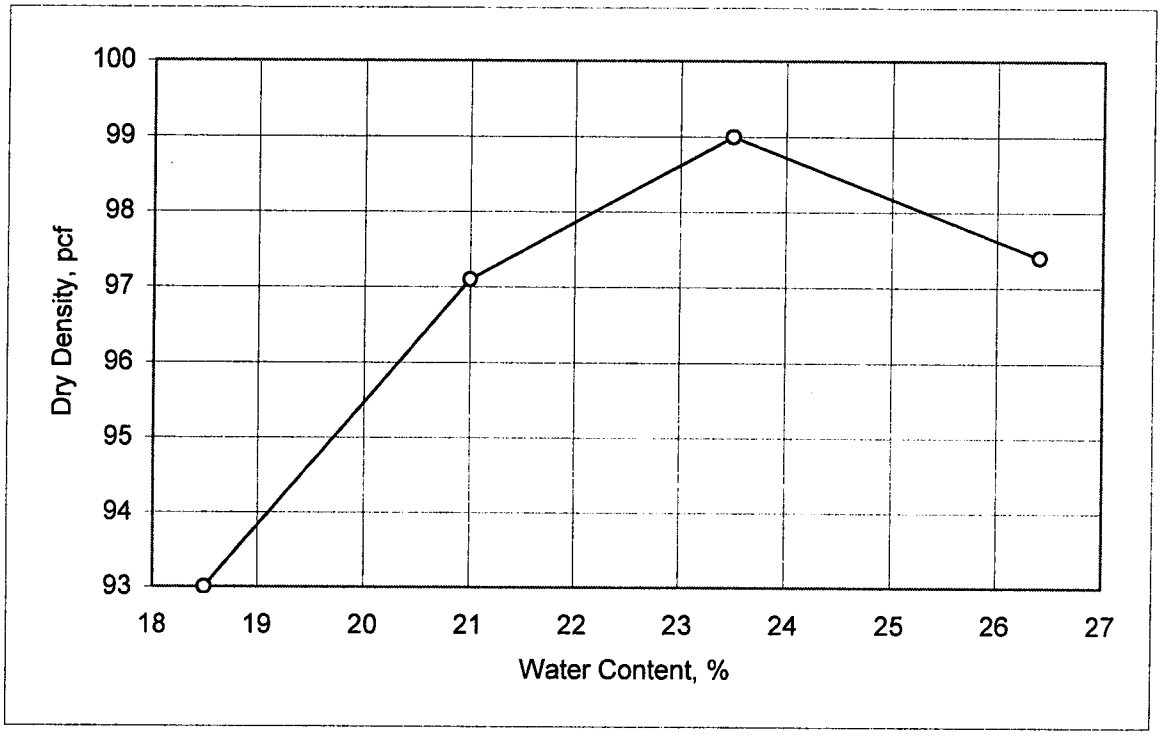
Report By: Prav Dayah

RVALUE with calcs pdp

UNCONFINED COMPRESSIVE STRENGTH REPORT

Parikh Consultants, Inc. **California Test 373** (408) 452-9000

Project Name:	West Bound Route 580	Date:	3/26/09
Client:	BKF Enginners	Project #:	208102.GDR
Sample #:	205 Depth: 0'-5'	Lab #:	M741
Location / Source:	Native / Route 580	Sample Date:	
Material :	Lean clay with some roots, brown + 5% lime (SS)	Sampled By:	



Moisture - Density Relationship

Trial #	1	2	3	4
Water Content,%	18.5	21	23.5	26.4
Dry Density, pcf	93	97.1	99	97.4
MAX. DRY DENSITY, pcf:	**99**	**OPTIMUM MOISTUR**		**23.5**

UNCONFINED COMPRESSION TEST RESULTS

Specimen Number	Cast Date	Test Date	Age Days	Total Load lbs.	Compressive Strength, psi
1	3/19/2009	3/26/2009	7	4,343	346
2	3/19/2009	3/26/2009	7	4,149	330
AVERAGE				**4,246**	**338**

Comments:

The minimum percent of lime to use in the trial batch was 5%, this was established using pH values as described in the appendix of ASTM Designation : C 977

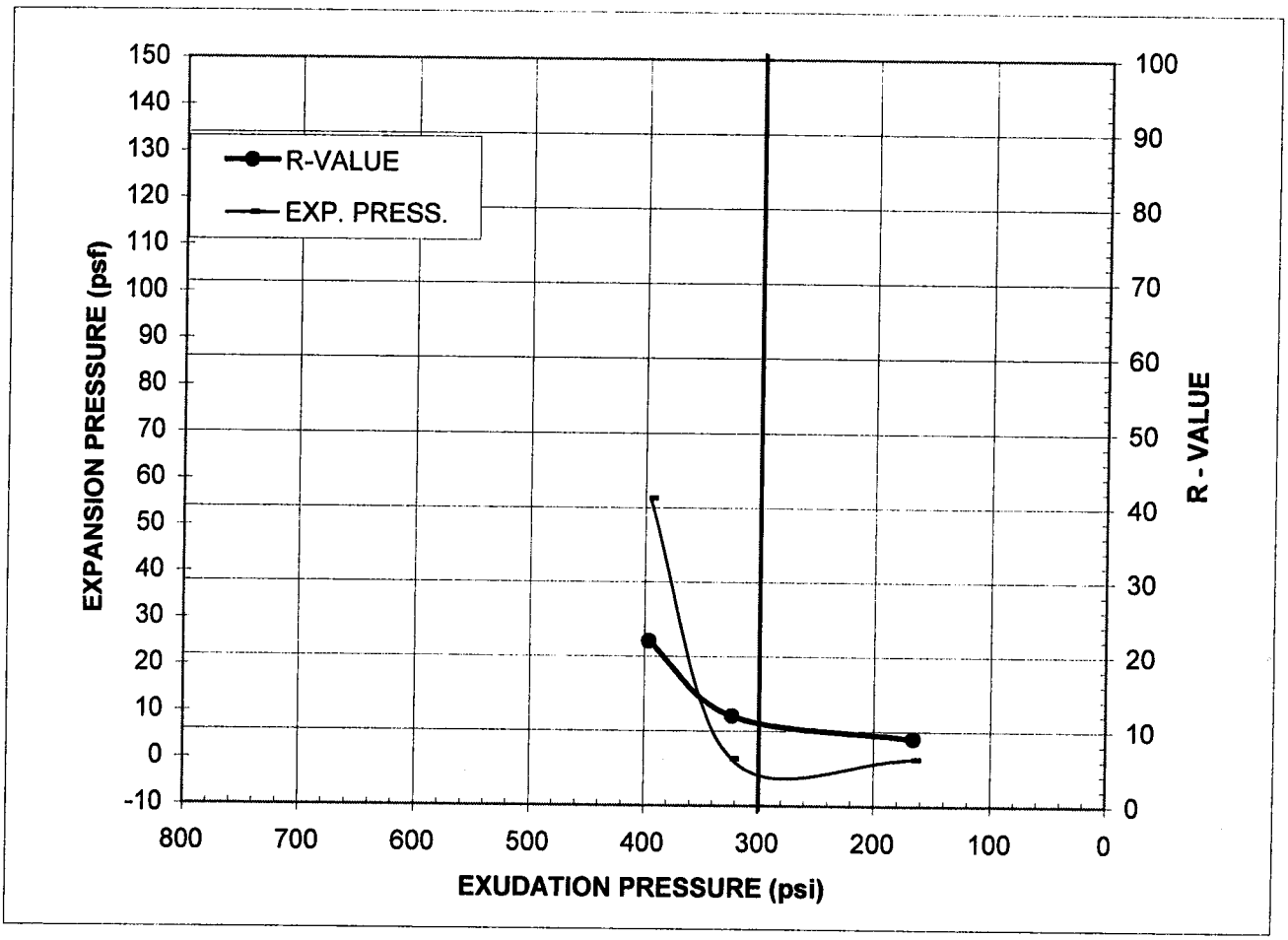
Reported By: Dharmesh Dayah

pdp 12/01/01

R-VALUE REPORT

Parikh Consultants, Inc. — ASTM D2844 or CTM 301 — (408) 452-9000

Project Name:	Westbound Rte 580			Date:	2/4/09
Client:	BKF Engineering			Project #:	208102.GDR
Sample #:	R209	Depth:	0' - 5'	Lab #:	M741
Location / Source:		Onsite / Native		Sample Date:	
Material :	Clay with roots and some gravel, brown			Sampled By:	



Specimen No.	A	B	C
Exudation Pressure, psi	166	323	396
Expansion Pressure, psf	0	0	56
R-Value	9	12	22
Moisture Content at Test, %	19.5	17.6	15.7
Dry Density at Test, pcf	104.3	108.3	113.4

R-Value @ 300 psi Exudation Pressure = **11**

Expansion Pressure @300 psi Exudation, psf = **0**

Minimum R-Value Requirement:

Comments:

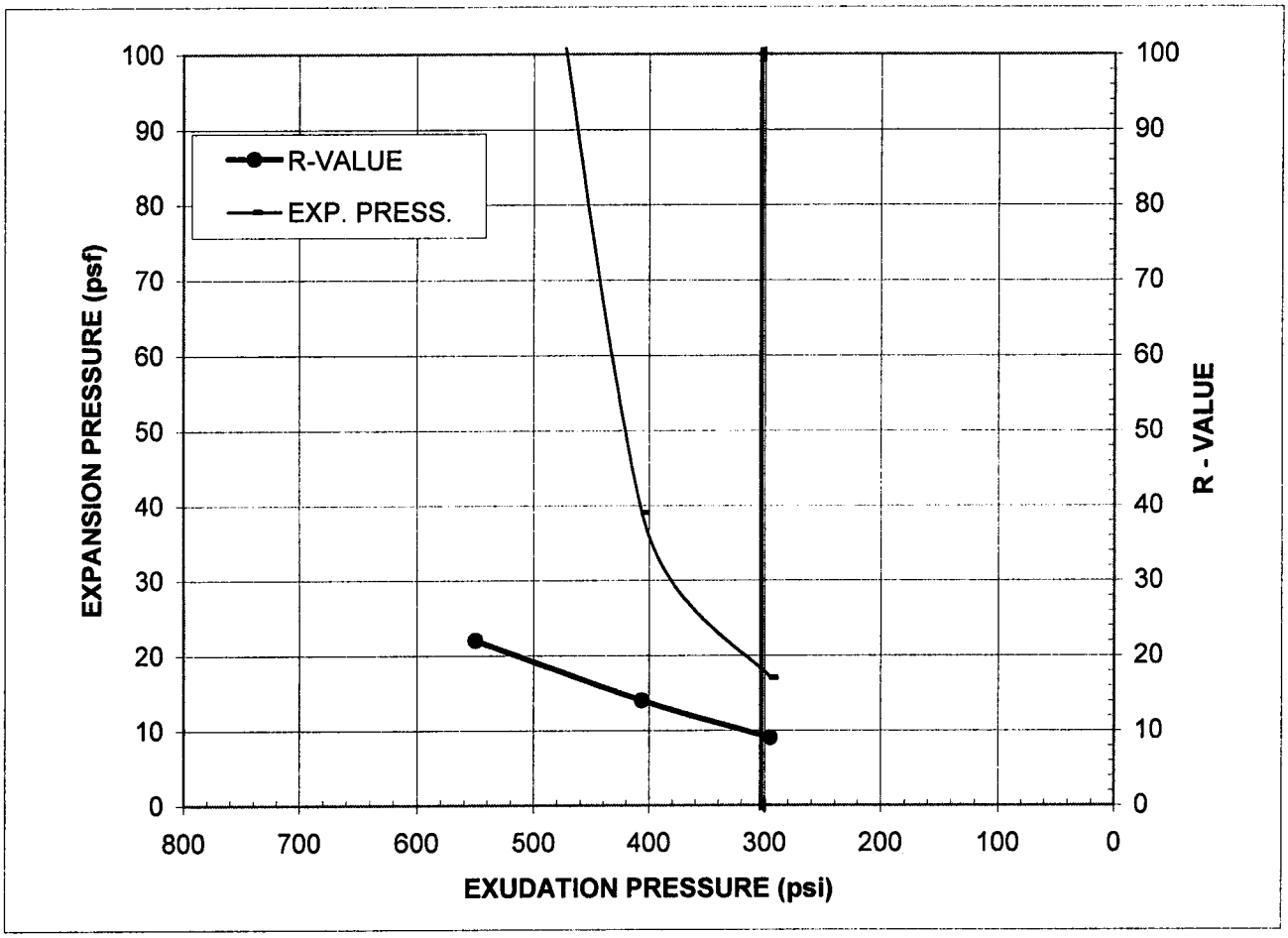
Report By: Prav Dayah

RVALUE with calcs pdp

R-VALUE REPORT

Parikh Consultants, Inc. | ASTM D2844 or CTM 301 | (408) 452-9000

Project Name:	Westbound Rte 580			Date:	3/7/09
Client:	BKF Engineering			Project #:	208102.GDR
Sample #:	221	Depth:	0' - 5'	Lab #:	M741
Location / Source:		Onsite / Native		Sample Date:	
Material :	Lean Clay, yellowish brown			Sampled By:	



Specimen No.	A	B	C
Exudation Pressure, psi	295	406	550
Expansion Pressure, psf	17	39	186
R-Value	9	14	22
Moisture Content at Test, %	24.4	22.4	21.1
Dry Density at Test, pcf	99.0	103.2	105.8

R-Value @ 300 psi Exudation Pressure = **9**

Expansion Pressure @300 psi Exudation, psf = **18**

Minimum R-Value Requirement:

Comments:

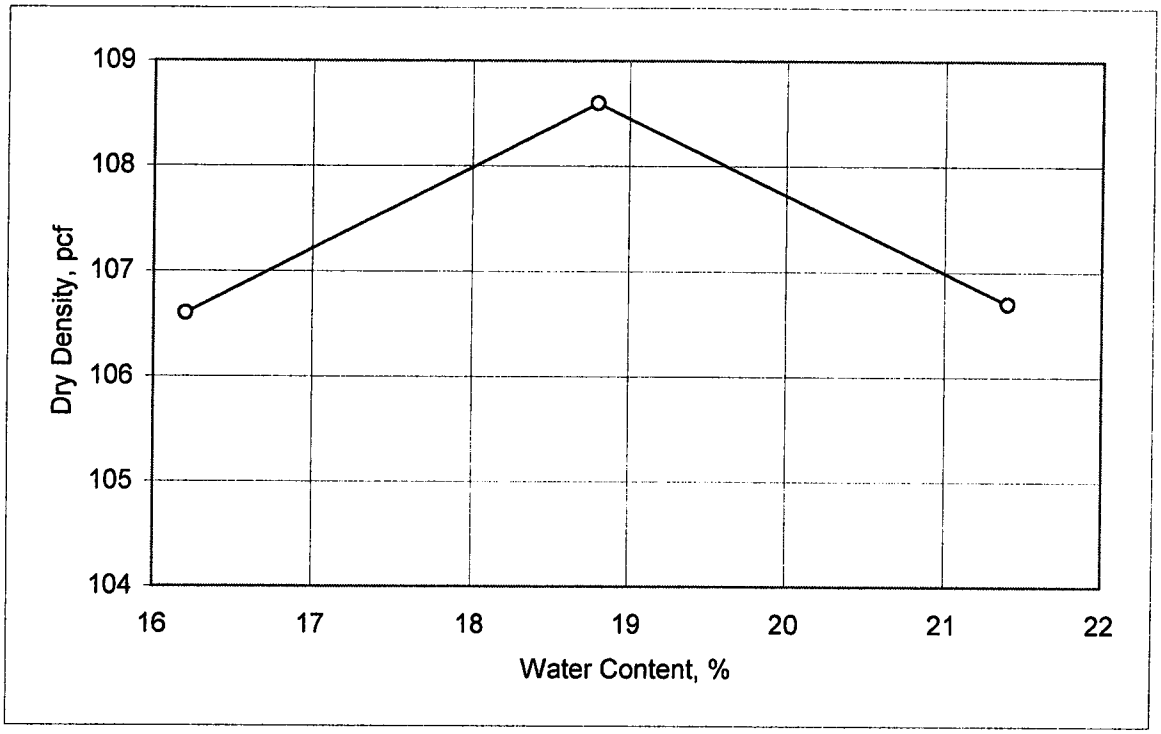
Report By: Prav Dayah

RVALUE with calcs pdp

UNCONFINED COMPRESSIVE STRENGTH REPORT

Parikh Consultants, Inc. **California Test 373** (408) 452-9000

Project Name:	West Bound Route 580	Date:	2/20/09
Client:	BKF Enginners	Project #:	208102.GDR
Sample #:	R-221 Depth: 0'-5'	Lab #:	M741
Location / Source:	Native / Route 580	Sample Date:	
Material :	Lean clay, brown + 5% lime (SS)	Sampled By:	



Moisture - Density Relationship

Trial #	1	2	3	4
Water Content,%		16.2	18.8	21.4
Dry Density, pcf		106.6	108.6	106.7

MAX. DRY DENSITY, pcf:	**108.6**	**OPTIMUM MOISTUR**	**18.8**

UNCONFINED COMPRESSION TEST RESULTS

Specimen Number	Cast Date	Test Date	Age Days	Total Load lbs.	Compressive Strength, psi
1	2/12/2009	2/19/2009	7	5,906	470
2	2/12/2009	2/19/2009	7	5,763	458
AVERAGE				**5,835**	**464**

Comments:

The minimum percent of lime to use in the trial batch was 5%, this was established using pH values as described in the appendix of ASTM Designation : C 977

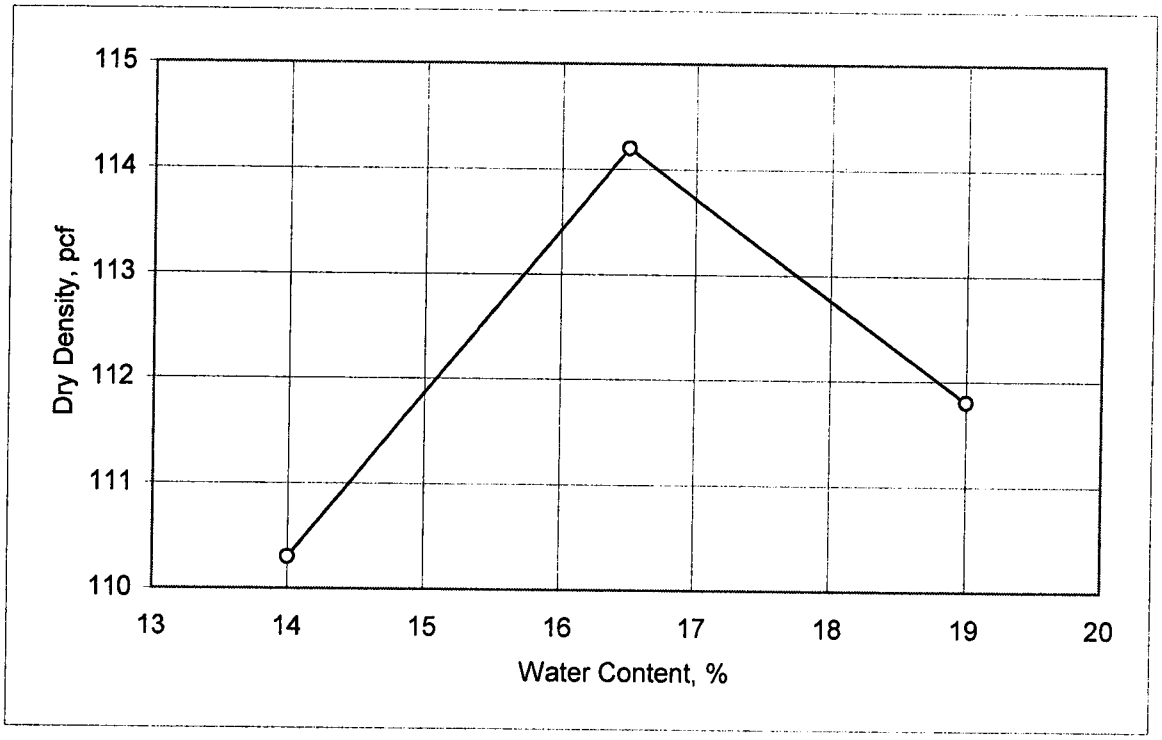
Reported By: Prav D Dayah

pdp 12/01/01

UNCONFINED COMPRESSIVE STRENGTH REPORT

Parikh Consultants, Inc. **California Test 373** (408) 452-9000

Project Name:	West Bound Route 580	Date:	2/28/09
Client:	BKF Enginners	Project #:	208102.GDR
Sample #:	R-256 Depth: 0'-5'	Lab #:	M741
Location / Source:	Native / Route 580	Sample Date:	
Material :	Lean clay, brown + 5% lime (SS)	Sampled By:	



Moisture - Density Relationship

Trial #	1	2	3	4
Water Content,%		14	16.5	19
Dry Density, pcf		110.3	114.2	111.8

MAX. DRY DENSITY, pcf:	**114.2**	**OPTIMUM MOISTUR**	**16.5**

UNCONFINED COMPRESSION TEST RESULTS

Specimen Number	Cast Date	Test Date	Age Days	Total Load lbs.	Compressive Strength, psi
1	2/19/2009	2/26/2009	7	5,673	451
2	2/19/2009	2/26/2009	7	6,224	495
AVERAGE				**5,949**	473

Comments:

The minimum percent of lime to use in the trial batch was 5%, this was established using pH values as described in the appendix of ASTM Designation : C 977

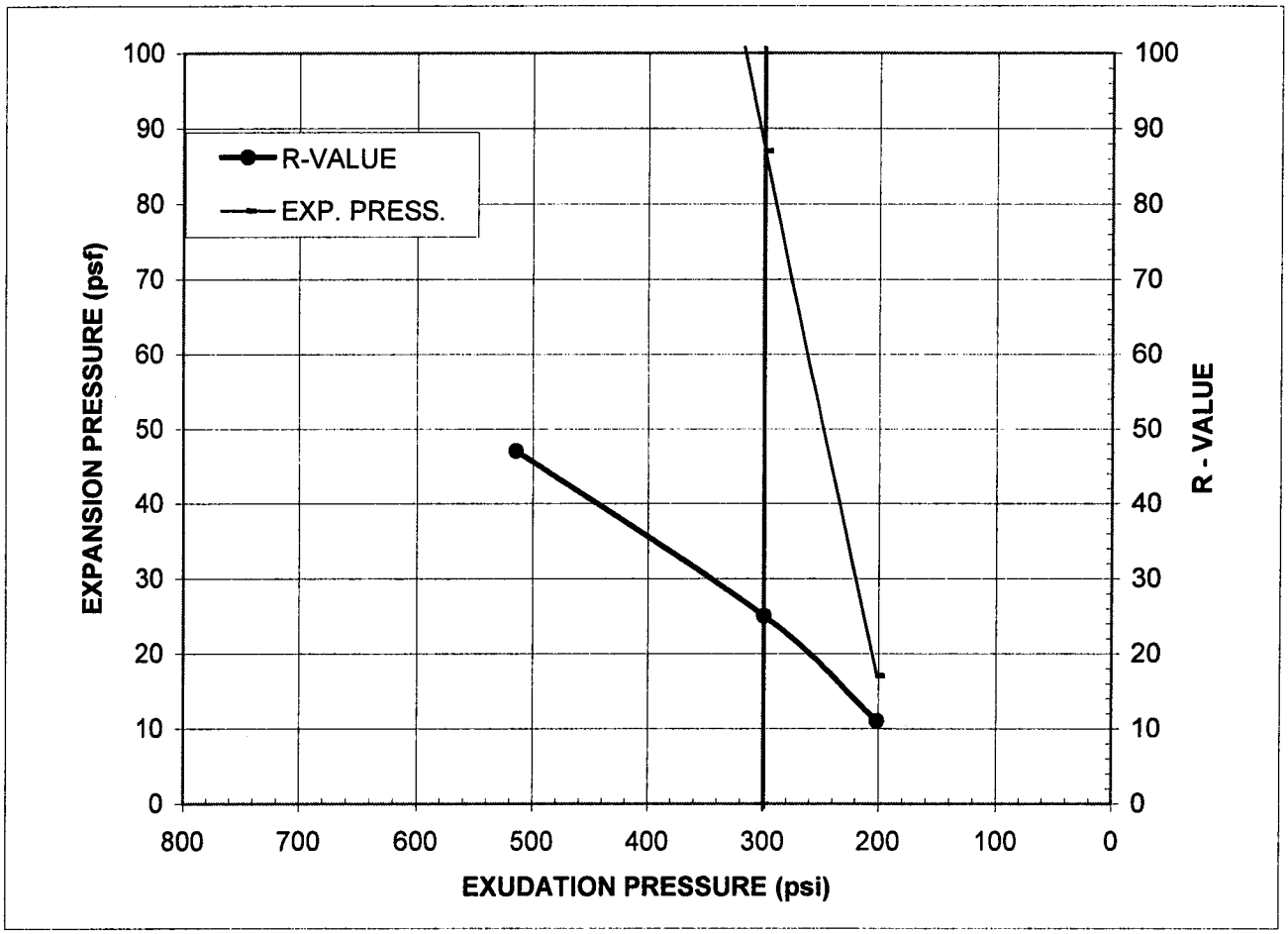
Reported By: Prav D Dayah

pdp 12/01/01

R-VALUE REPORT

Parikh Consultants, Inc. **ASTM D2844 or CTM 301** (408) 452-9000

Project Name:	Westbound RTE 580			Date:	3/20/09
Client:	BKF Engineers			Project #:	28102.GDR
Sample #:	257	Depth:	0' - 5'	Lab #:	M741
Location / Source:		Onsite / Native		Sample Date:	
Material :	Lean Clay with Gravel, brown			Sampled By:	



Specimen No.	A	B	C
Exudation Pressure, psi	201.38	299.25	514.17
Expansion Pressure, psf	17	87	251
R-Value	11	25	47
Moisture Content at Test, %	14.9	13.0	12.0
Dry Density at Test, pcf	118.0	121.1	123.8

R-Value @ 300 psi Exudation Pressure = **25**

Expansion Pressure @300 psi Exudation, psf = **86**

Minimum R-Value Requirement:

Comments:

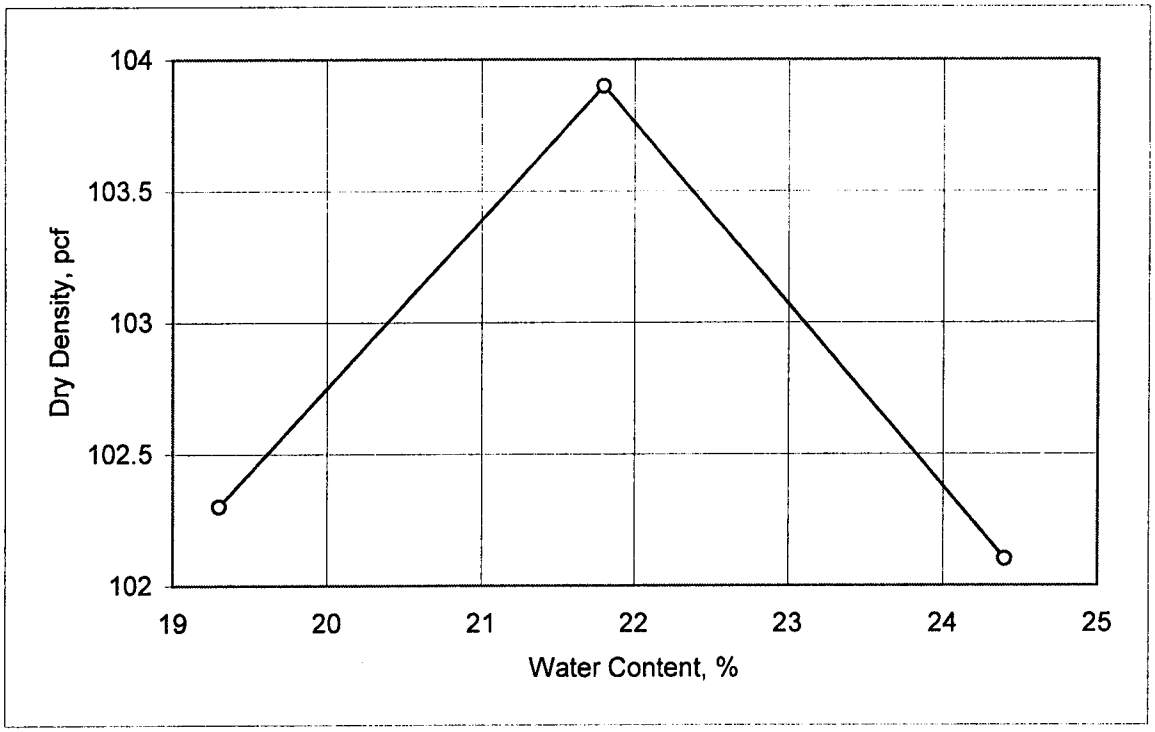
Report By: Dharmesh Dayah

RVALUE with calcs pdp

UNCONFINED COMPRESSIVE STRENGTH REPORT

Parikh Consultants, Inc. **California Test 373** (408) 452-9000

Project Name:	West Bound Route 580	Date:	3/26/09
Client:	BKF Enginners	Project #:	208102.GDR
Sample #:	265 Depth: 0'-5'	Lab #:	M741
Location / Source:	Native / Route 580	Sample Date:	
Material :	Lean clay, dark brown + 5% lime (SS)	Sampled By:	



Moisture - Density Relationship

Trial #	1	2	3	4
Water Content,%		19.3	21.8	24.4
Dry Density, pcf		102.3	103.9	102.1
MAX. DRY DENSITY, pcf:	**103.9**	**OPTIMUM MOISTUR**		**21.8**

UNCONFINED COMPRESSION TEST RESULTS

Specimen Number	Cast Date	Test Date	Age Days	Total Load lbs.	Compressive Strength, psi
1	3/19/2009	3/26/2009	7	5,385	428
2	3/19/2009	3/26/2009	7	5,721	455
AVERAGE				**5,553**	**442**

Comments:

The minimum percent of lime to use in the trial batch was 5%, this was established using pH values as described in the appendix of ASTM Designation : C 977

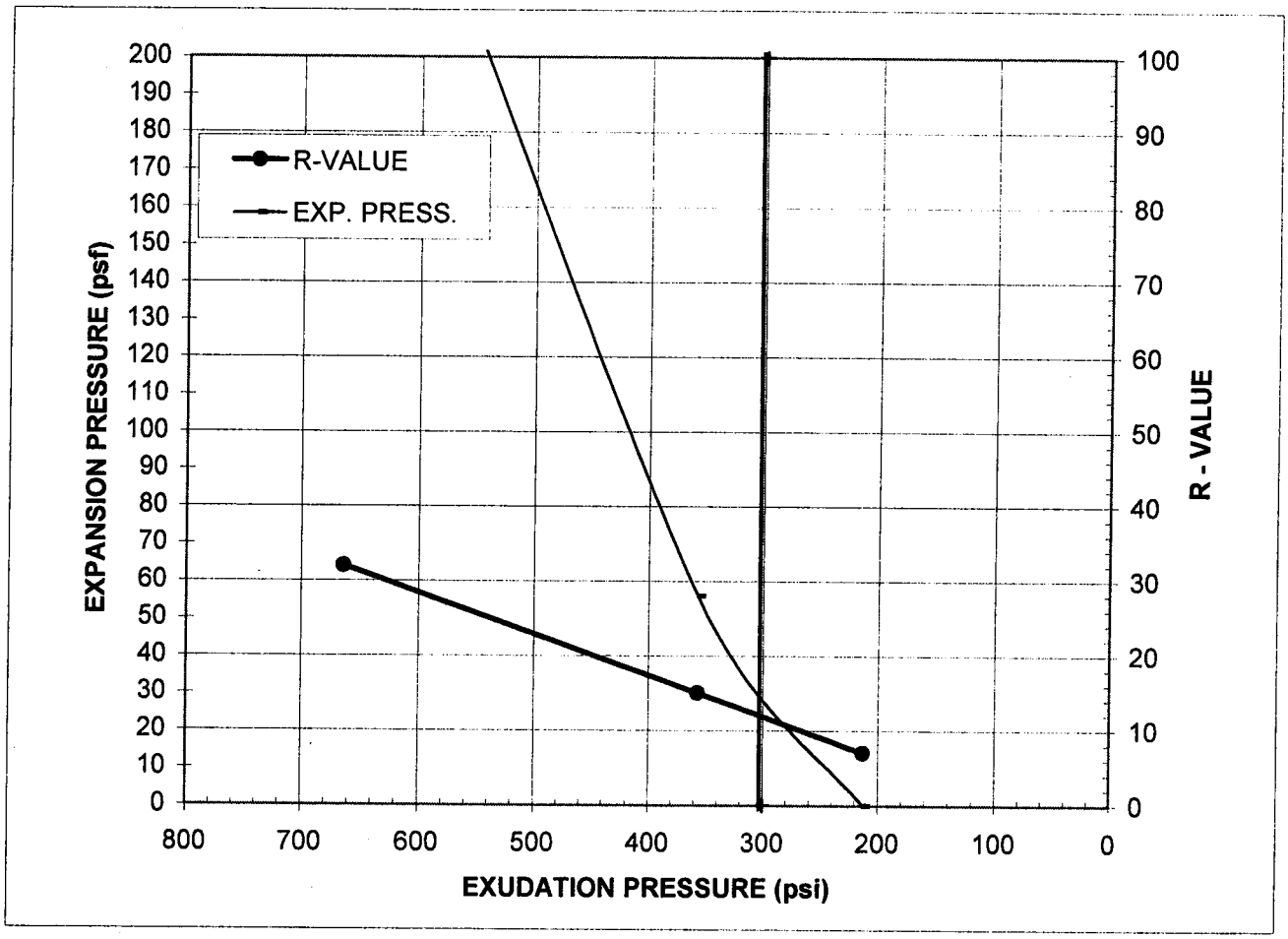
Reported By: Dharmesh Dayah

pdp 12/01/01

R-VALUE REPORT

Parikh Consultants, Inc. | ASTM D2844 or CTM 301 | (408) 452-9000

Project Name:	Westbound Rte 580			Date:	2/9/09
Client:	BKF Engineering			Project #:	208102.GDR
Sample #:	R-268	Depth:	0' - 5'	Lab #:	M741
Location / Source:	Onsite / Native			Sample Date:	
Material :	Sandy clay with gravel, yellowish brown			Sampled By:	



	Specimen No.	A	B	C
	Exudation Pressure, psi	213	357	664
	Expansion Pressure, psf	0	56	298
	R-Value	7	15	32
	Moisture Content at Test, %	20.1	18.2	16.3
	Dry Density at Test, pcf	105.9	110.0	114.6

R-Value @ 300 psi Exudation Pressure =	**12**	Expansion Pressure @300 psi Exudation, psf =	**30**
Minimum R-Value Requirement:			

Comments:

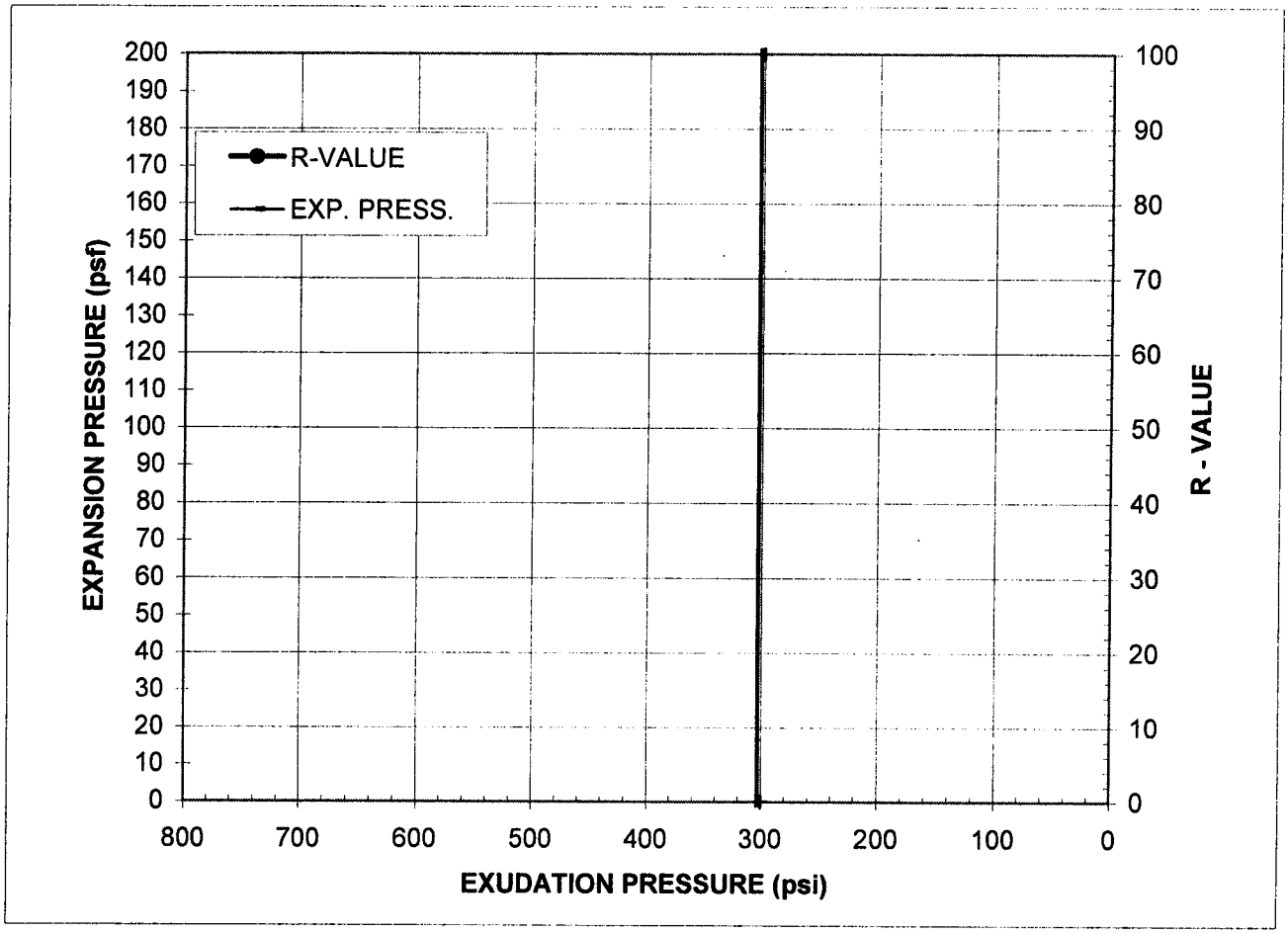
Report By: Prav Dayah

RVALUE with calcs pdp

R-VALUE REPORT

Parikh Consultants, Inc. | ASTM D2844 or CTM 301 | (408) 452-9000

Project Name:	Westbound Rte 580			Date:	2/9/09
Client:	BKF Engineering			Project #:	208102.GDR
Sample #:	R-269	Depth:	0' - 5'	Lab #:	M741
Location / Source:		Onsite / Native		Sample Date:	
Material :	Lean clay, brown			Sampled By:	



Specimen No.	A	B	C
Exudation Pressure, psi			
Expansion Pressure, psf			
R-Value			
Moisture Content at Test, %			
Dry Density at Test, pcf			

R-Value @ 300 psi Exudation Pressure = **< 5**	Expansion Pressure @300 psi Exudation, psf =
Minimum R-Value Requirement:	

Comments:

Test sample extruded from under the mold and around the follower ram during Exudation Test.
Test terminated - R-Valve = < 5

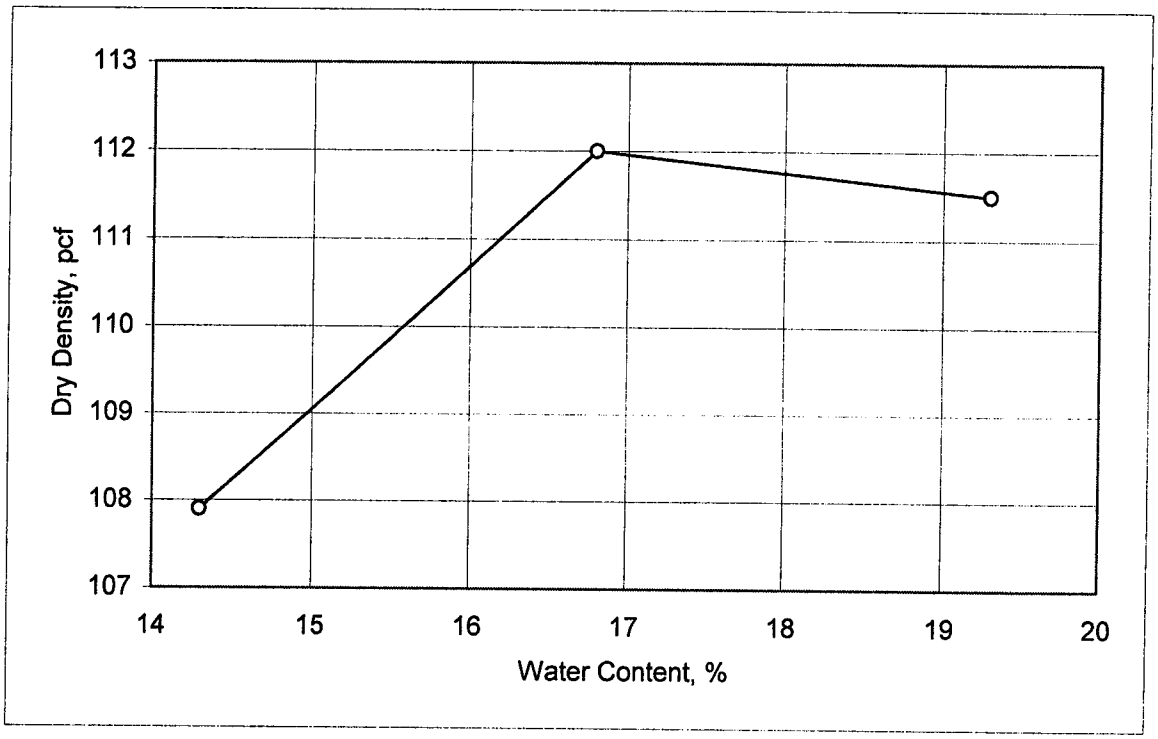
Report By: Prav Dayah

RVALUE with calcs pdp

UNCONFINED COMPRESSIVE STRENGTH REPORT

Parikh Consultants, Inc. **California Test 373** (408) 452-9000

Project Name:	West Bound Route 580	Date:	2/28/09
Client:	BKF Enginners	Project #:	208102.GDR
Sample #:	R-269 Depth: 0'-5'	Lab #:	M741
Location / Source:	Native / Route 580	Sample Date:	
Material :	Lean clay, brown + 5% lime (SS)	Sampled By:	



Moisture - Density Relationship

Trial #	1	2	3	4
Water Content,%		14.3	16.8	19.3
Dry Density, pcf		107.9	112	111.5

MAX. DRY DENSITY, pcf:	**112**	**OPTIMUM MOISTUR**	**16.8**

UNCONFINED COMPRESSION TEST RESULTS

Specimen Number	Cast Date	Test Date	Age Days	Total Load lbs.	Compressive Strength, psi
1	2/20/2009	2/27/2009	7	6,068	483
2	2/20/2009	2/27/2009	7	5,464	435
AVERAGE				**5,766**	**459**

Comments:

The minimum percent of lime to use in the trial batch was 5%, this was established using pH values as described in the appendix of ASTM Designation : C 977

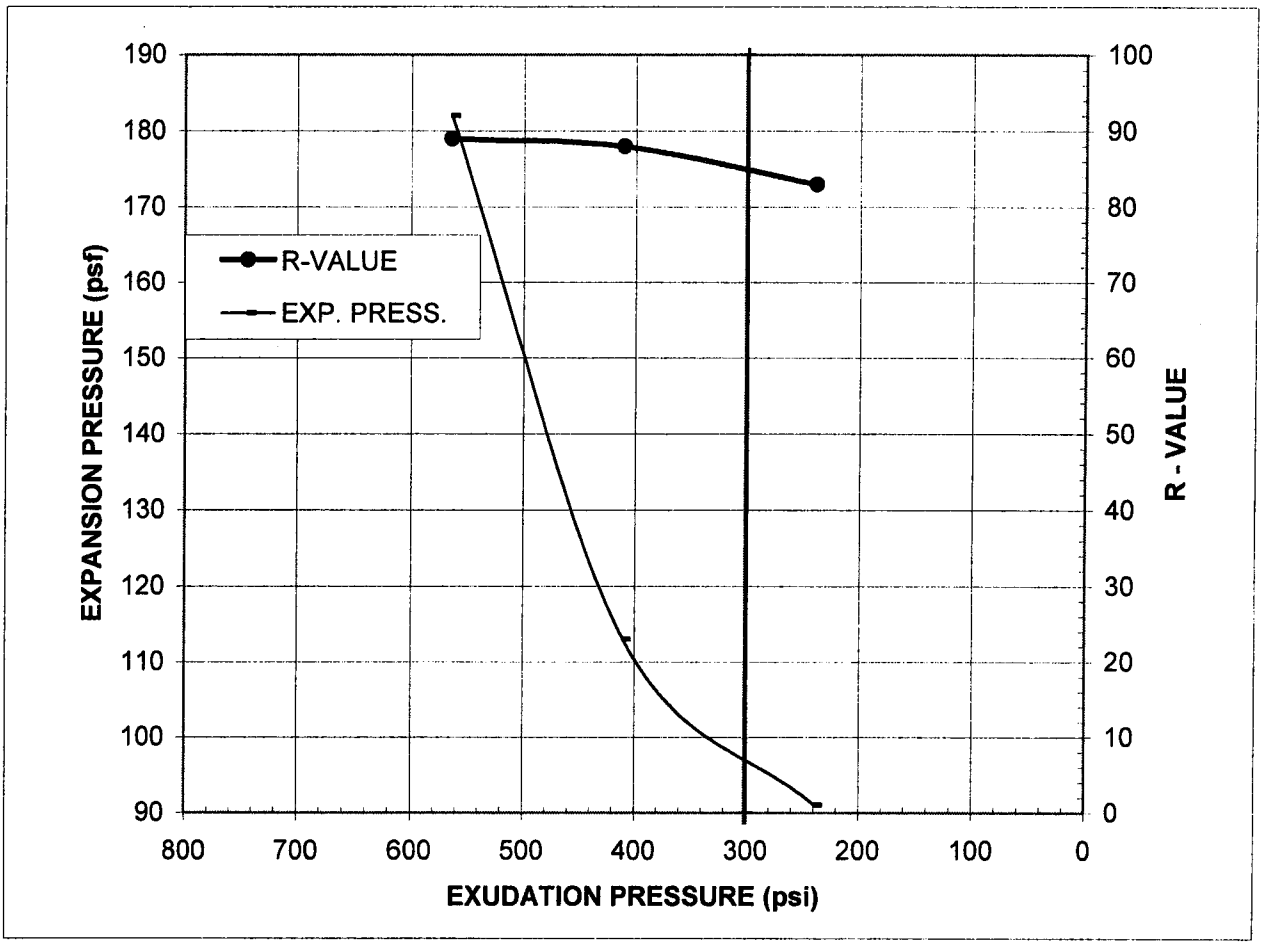
Reported By: Dharmesh Dayah

pdp 12/01/01

LIME TREATED R-VALUE REPORT

Parikh Consultants, Inc. **ASTM D2844 or CTM 301** (408) 452-9000

Project Name:	West Bound Route 580	Date:	3/14/09
Client:	BKF Engineerins	Project #:	208102.GDR
Sample #:	R-272 Depth: 0' - 5'	Lab #:	M741
Location / Source:	Native / Route 580	Sample Date:	
Material :	Lean clay, brown + 5% Lime (SS)	Sampled By:	



Specimen No.	A	B	C
Exudation Pressure, psi	239	410	564
Expansion Pressure, psf	91	113	182
R-Value	83	88	89
Moisture Content at Test, %	19.0	17.6	16.4
Dry Density at Test, pcf	110.9	113.9	115.7

R-Value @ 300 psi Exudation Pressure = 85 | Expansion Pressure @300 psi Exudation, psf = **98**

The minimum percent of lime to use in the trial batch was 5%, this was established using pH values as described in the appendix of ASTM Designation : C 977

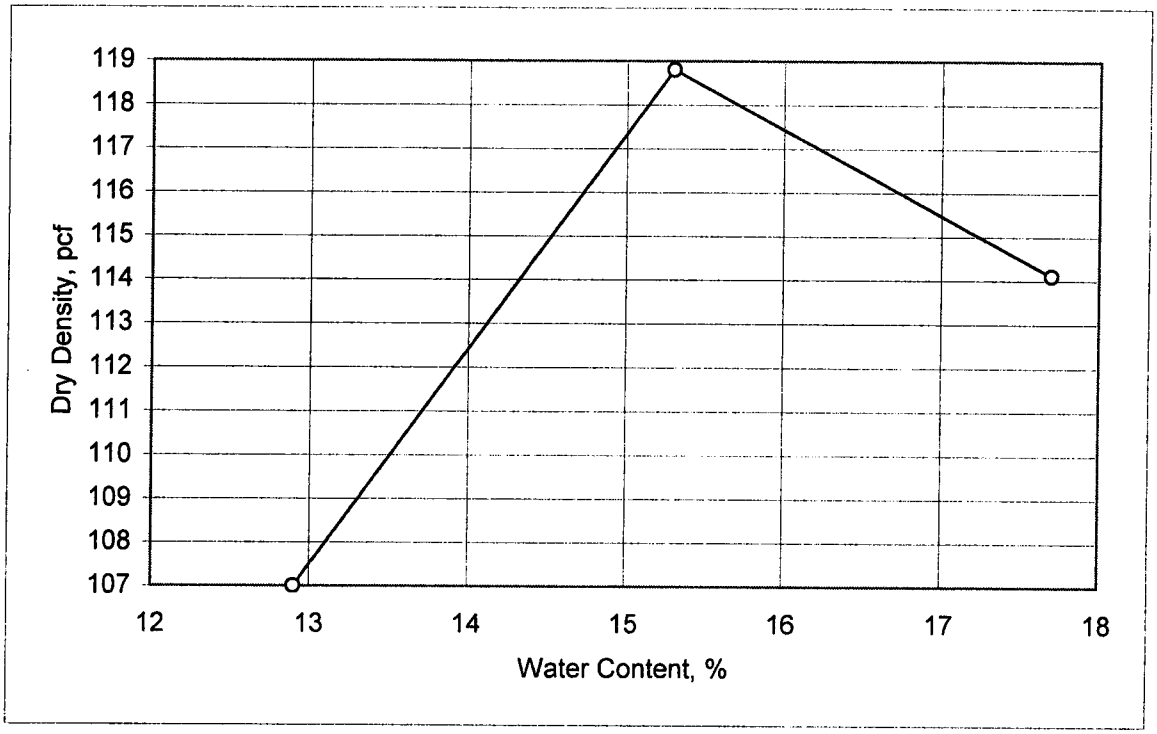
Report By: Prav Dayah

RVALUE with calcs pdp

UNCONFINED COMPRESSIVE STRENGTH REPORT

Parikh Consultants, Inc. **California Test 373** (408) 452-9000

Project Name:	West Bound Route 580	Date:	3/4/09
Client:	BKF Enginners	Project #:	208102.GDR
Sample #:	R-272 Depth: 0'-5'	Lab #:	M741
Location / Source:	Native / Route 580	Sample Date:	
Material :	Lean clay, brown + 5% lime (SS)	Sampled By:	



Moisture - Density Relationship

Trial #	1	2	3	4
Water Content,%		12.9	15.3	17.7
Dry Density, pcf		107	118.8	114.1

MAX. DRY DENSITY, pcf:	**118.8**	**OPTIMUM MOISTUR**	**15.3**

UNCONFINED COMPRESSION TEST RESULTS

Specimen Number	Cast Date	Test Date	Age Days	Total Load lbs.	Compressive Strength, psi
1	2/25/2009	3/4/2009	7	5,701	454
2	2/25/2009	3/4/2009	7	6,308	502
AVERAGE				**6,005**	**478**

Comments:

The minimum percent of lime to use in the trial batch was 5%, this was established using pH values as described in the appendix of ASTM Designation : C 977

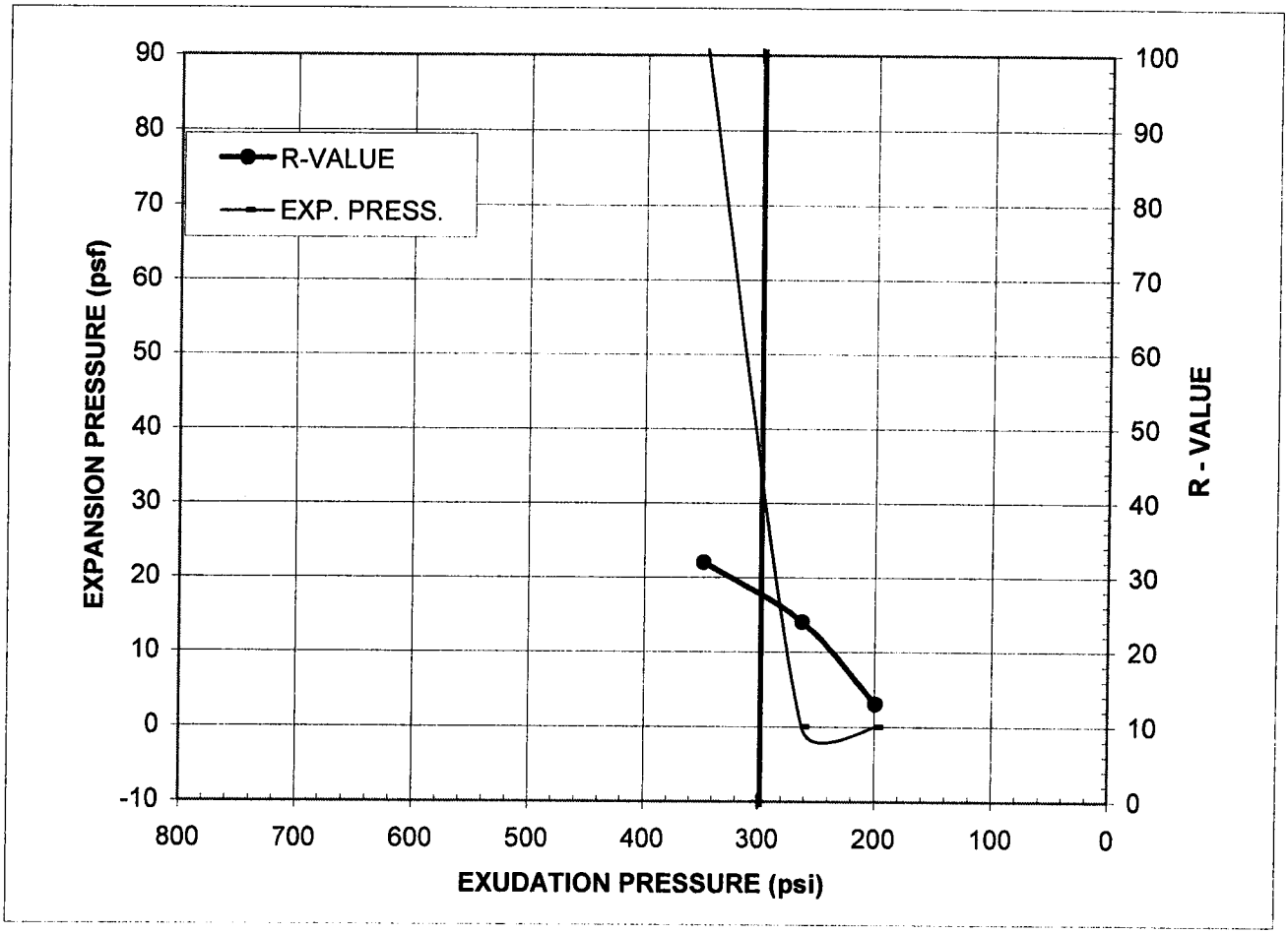
Reported By: Prav D Dayah

pdp 12/01/01

R-VALUE REPORT

Parikh Consultants, Inc. **ASTM D2844 or CTM 301** (408) 452-9000

Project Name:	Westbound Rte 580			Date:	3/17/09
Client:	BKF Engineering			Project #:	208102.GDR
Sample #:	R280 & R281	Depth:	0' - 5'	Lab #:	M741
Location / Source:		Onsite / Native		Sample Date:	
Material :	Clayey sand, dark brown			Sampled By:	



Specimen No.	A	B	C
Exudation Pressure, psi	199	262	348
Expansion Pressure, psf	0	0	91
R-Value	13	24	32
Moisture Content at Test, %	11.3	10.7	10.2
Dry Density at Test, pcf	125.5	126.9	127.9

R-Value @ 300 psi Exudation Pressure = **28**

Expansion Pressure @300 psi Exudation, psf = **32**

Minimum R-Value Requirement:

Comments:

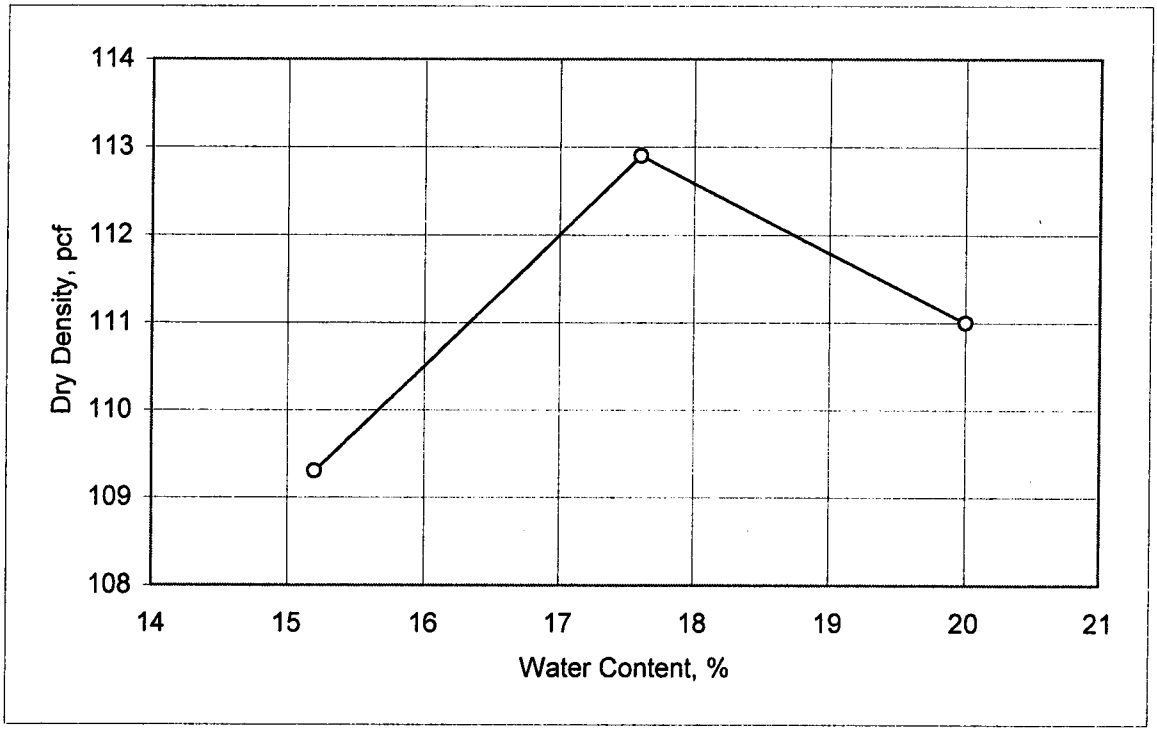
Report By: Prav Dayah

RVALUE with calcs pdp

UNCONFINED COMPRESSIVE STRENGTH REPORT

Parikh Consultants, Inc. **California Test 373** (408) 452-9000

Project Name:	West Bound Route 580	Date:	2/21/09
Client:	BKF Enginners	Project #:	208102.GDR
Sample #:	R-286 Depth: 0'-5'	Lab #:	M741
Location / Source:	Native / Route 580	Sample Date:	
Material :	Lean clay, brown + 5% lime (SS)	Sampled By:	



Moisture - Density Relationship

Trial #	1	2	3	4
Water Content,%		15.2	17.6	20
Dry Density, pcf		109.3	112.9	111

MAX. DRY DENSITY, pcf:	**112.9**	**OPTIMUM MOISTUR**	**17.6**

UNCONFINED COMPRESSION TEST RESULTS

Specimen Number	Cast Date	Test Date	Age Days	Total Load lbs.	Compressive Strength, psi
1	2/13/2009	2/20/2009	7	8,045	640
2	2/13/2009	2/20/2009	7	8,545	670
AVERAGE				**8,295**	**655**

Comments:

The minimum percent of lime to use in the trial batch was 5%, this was established using pH values as described in the appendix of ASTM Designation : C 977

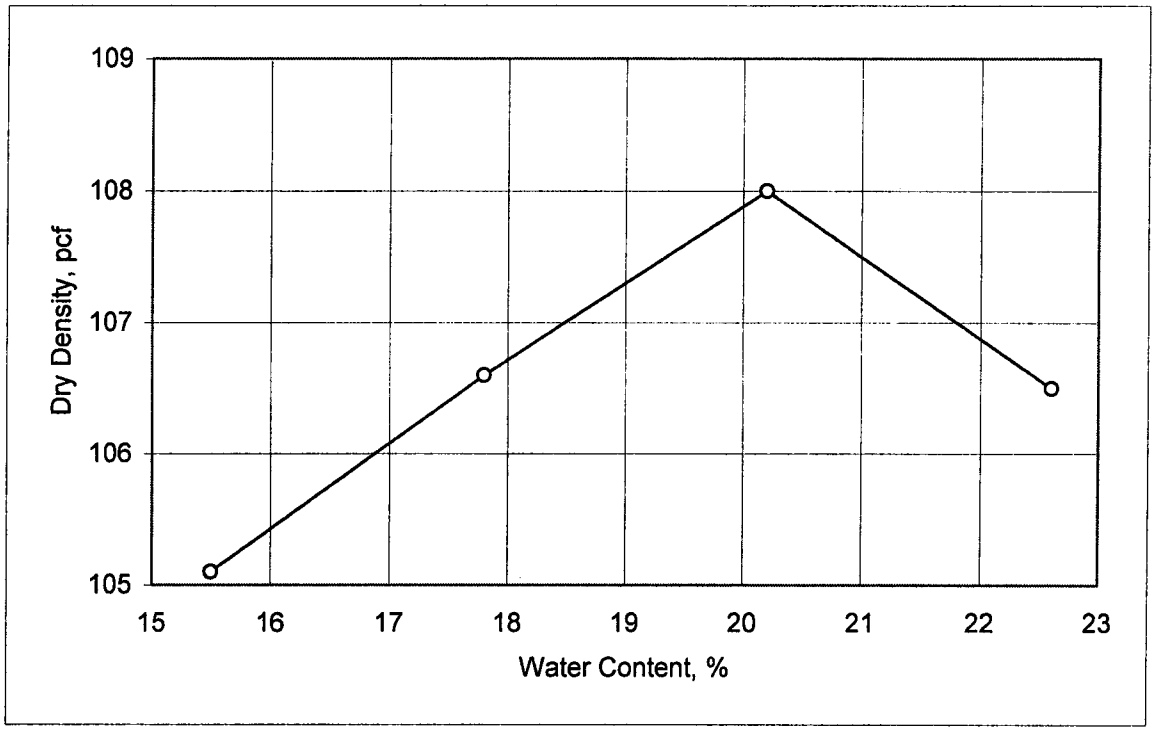
Reported By: Prav D Dayah

pdp 12/01/01

UNCONFINED COMPRESSIVE STRENGTH REPORT

Parikh Consultants, Inc. **California Test 373** (408) 452-9000

Project Name:	West Bound Route 580	Date:	3/26/09
Client:	BKF Enginners	Project #:	208102.GDR
Sample #:	294 Depth: 0'-5'	Lab #:	M741
Location / Source:	Native / Route 580	Sample Date:	
Material :	Lean clay, brown + 5% lime (SS)	Sampled By:	



Moisture - Density Relationship

Trial #	1	2	3	4
Water Content,%	15.5	17.8	20.2	22.6
Dry Density, pcf	105.1	106.6	108	106.5
MAX. DRY DENSITY, pcf:	**108**	**OPTIMUM MOISTUR**		**20.2**

UNCONFINED COMPRESSION TEST RESULTS

Specimen Number	Cast Date	Test Date	Age Days	Total Load lbs.	Compressive Strength, psi
1	3/19/2009	3/26/2009	7	3,935	313
2	3/19/2009	3/26/2009	7	3,961	315
AVERAGE				**3,948**	**314**

Comments:

The minimum percent of lime to use in the trial batch was 5%, this was established using pH values as described in the appendix of ASTM Designation : C 977

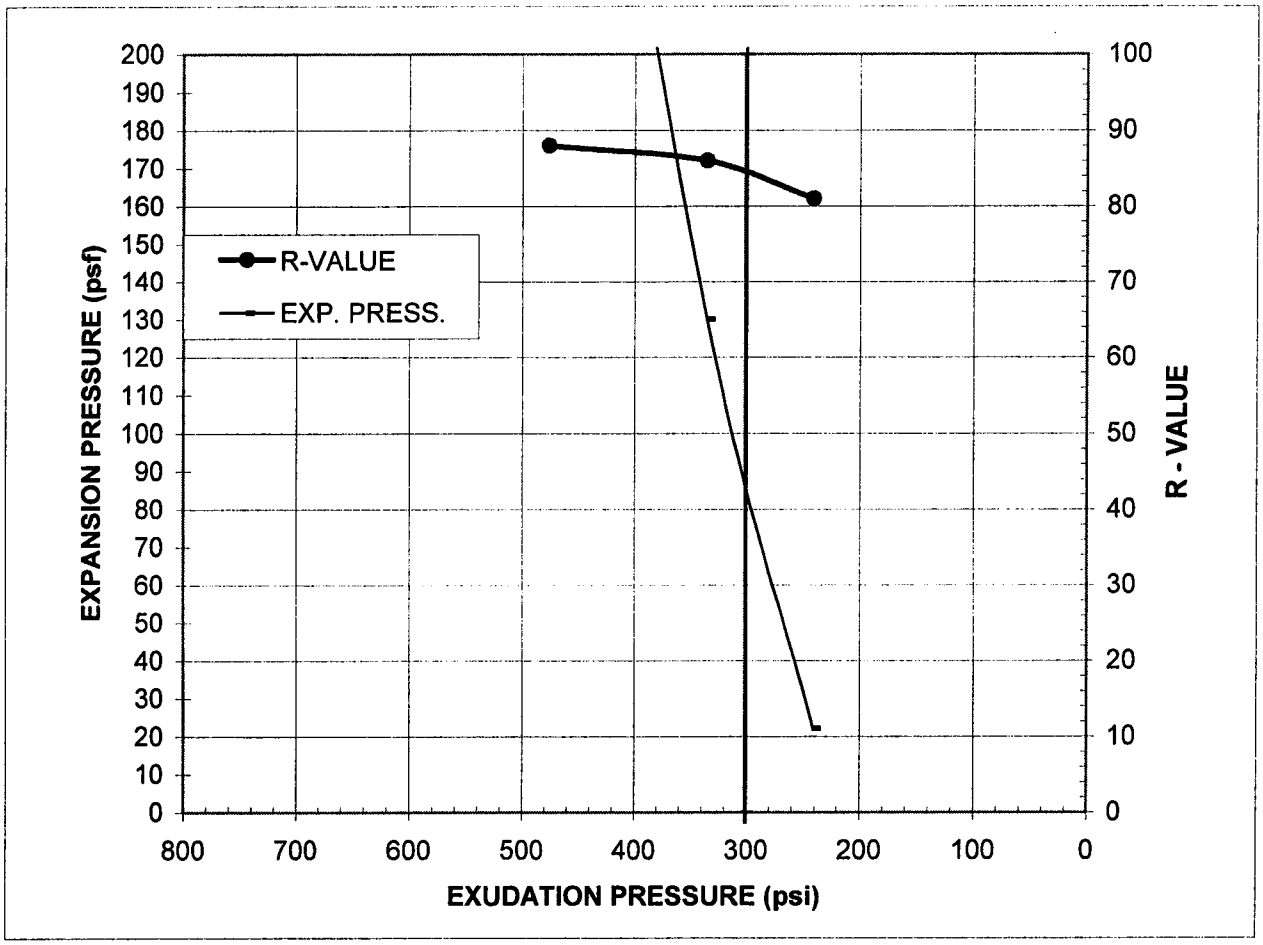
Reported By: Dharmesh Dayah

pdp 12/01/01

LIME TREATED R-VALUE REPORT

Parikh Consultants, Inc. | ASTM D2844 or CTM 301 | (408) 452-9000

Project Name:	West Bound Route 580	Date:	2/28/09
Client:	BKF Engineerins	Project #:	208102.GDR
Sample #:	R-296 Depth: 0' - 5'	Lab #:	M741
Location / Source:	Native / Route 580	Sample Date:	
Material :	Lean clay, brown + 5% Lime (SS)	Sampled By:	



Specimen No.	A	B	C
Exudation Pressure, psi	241	335	476
Expansion Pressure, psf	22	130	364
R-Value	81	86	88
Moisture Content at Test, %	20.3	18.4	17.3
Dry Density at Test, pcf	107.6	110.4	111.7

R-Value @ 300 psi Exudation Pressure = 85

Expansion Pressure @300 psi Exudation, psf = **86**

The minimum percent of lime to use in the trial batch was 5%, this was established using pH values as described in the appendix of ASTM Designation : C 977

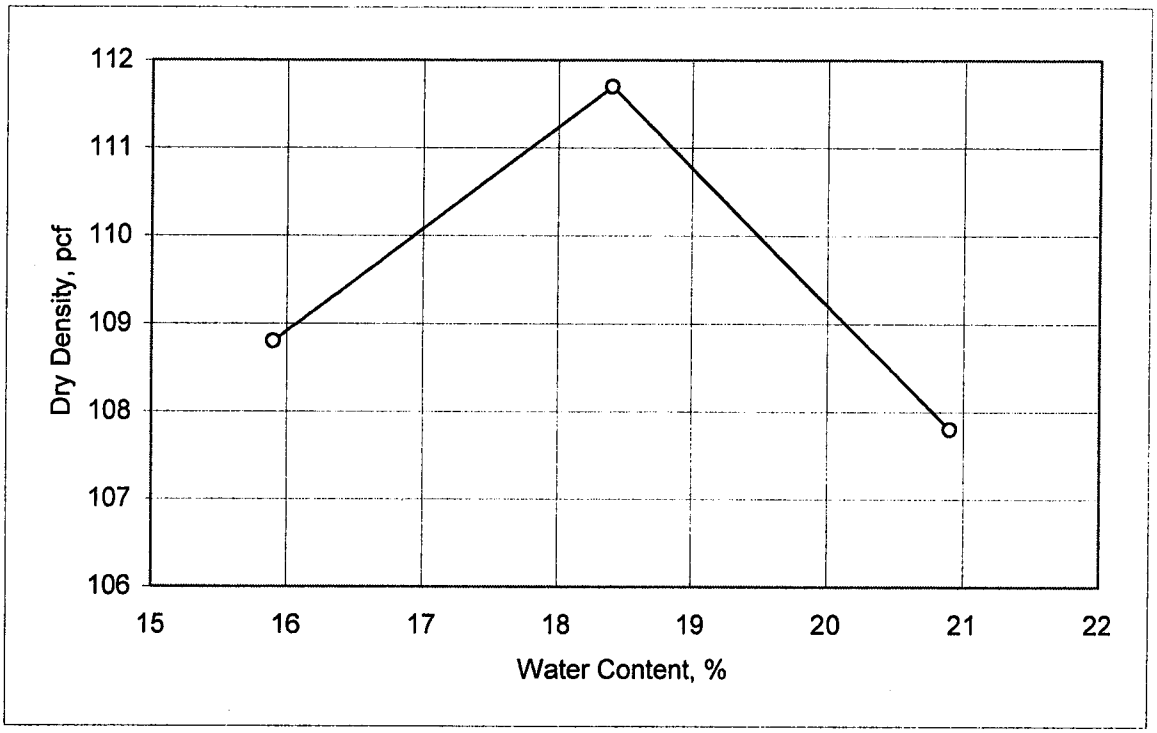
Report By: Prav Dayah

RVALUE with calcs pdp

UNCONFINED COMPRESSIVE STRENGTH REPORT

Parikh Consultants, Inc. **California Test 373** (408) 452-9000

Project Name:	West Bound Route 580	Date:	2/28/09
Client:	BKF Enginners	Project #:	208102.GDR
Sample #:	R-296 Depth: 0'-5'	Lab #:	M741
Location / Source:	Native / Route 580	Sample Date:	
Material :	Lean clay, brown + 5% lime (SS)	Sampled By:	



Moisture - Density Relationship

Trial #	1	2	3	4
Water Content,%		15.9	18.4	20.9
Dry Density, pcf		108.8	111.7	107.8

MAX. DRY DENSITY, pcf:	**111.7**	**OPTIMUM MOISTUR**	**18.4**

UNCONFINED COMPRESSION TEST RESULTS

Specimen Number	Cast Date	Test Date	Age Days	Total Load lbs.	Compressive Strength, psi
1	2/18/2009	2/25/2009	7	5,523	439
2	2/18/2009	2/25/2009	7	6,069	483
AVERAGE				**5,796**	**461**

Comments:

The minimum percent of lime to use in the trial batch was 5%, this was established using pH values as described in the appendix of ASTM Designation : C 977

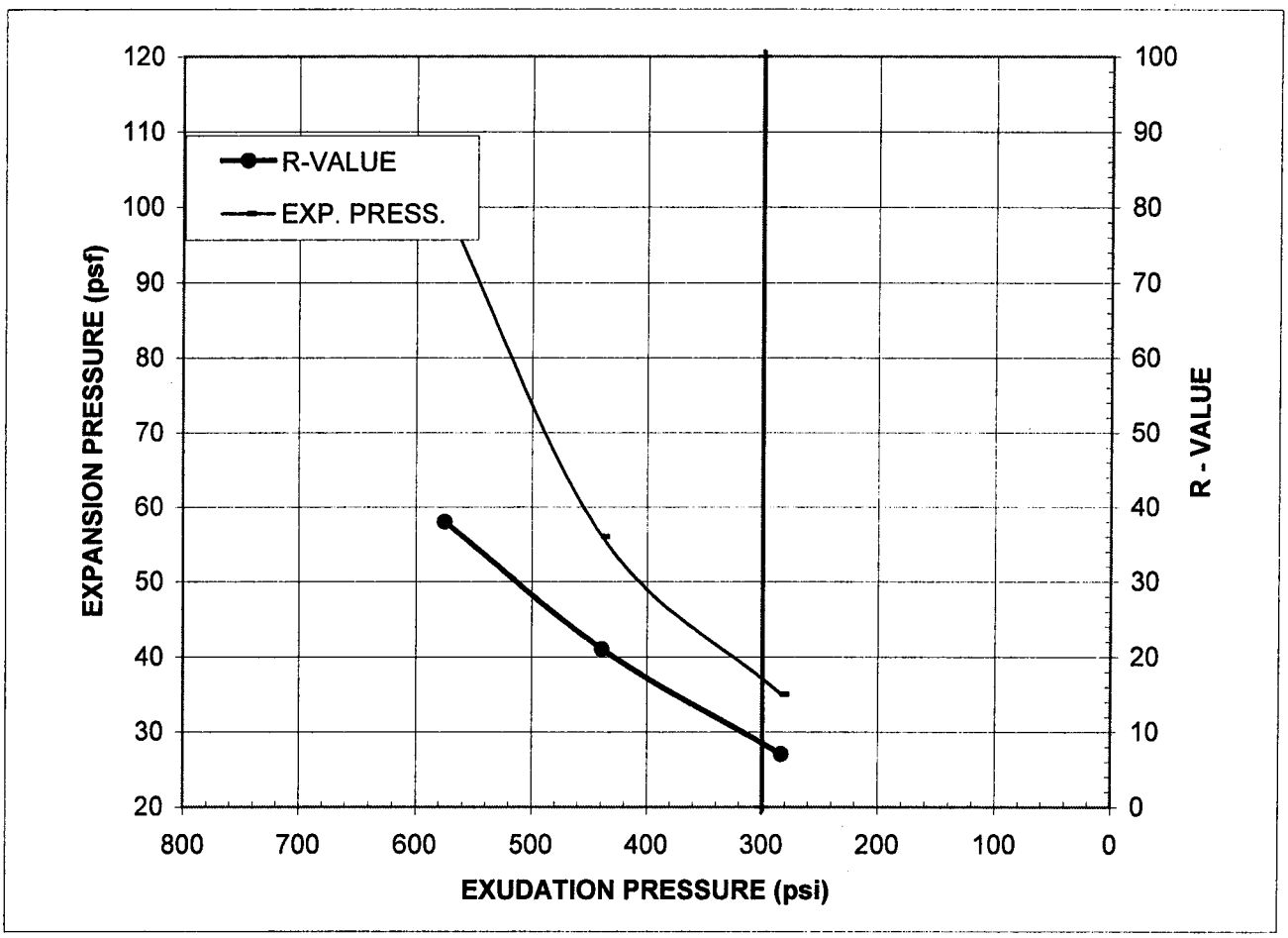
Reported By: Prav D Dayah

pdp 12/01/01

R-VALUE REPORT

Parikh Consultants, Inc. **ASTM D2844 or CTM 301** (408) 452-9000

Project Name:	Westbound Rte 580			Date:	3/10/09
Client:	BKF Engineering			Project #:	208102.GDR
Sample #:	299	Depth:	0' - 5'	Lab #:	M741
Location / Source:		Onsite / Native		Sample Date:	
Material :	Lean clay, brown			Sampled By:	



Specimen No.	A	B	C
Exudation Pressure, psi	283	439	575
Expansion Pressure, psf	35	56	100
R-Value	7	21	38
Moisture Content at Test, %	18.4	16.6	14.7
Dry Density at Test, pcf	107.4	108.5	116.9

R-Value @ 300 psi Exudation Pressure = **8**

Expansion Pressure @300 psi Exudation, psf = **36**

Minimum R-Value Requirement:

Comments:

Report By: Prav Dayah

RVALUE with calcs pdp

APPENDIX C

SOIL NAIL CALCULATIONS

Wall Nos. 3, 4, 5, 8, 10 and 15

(SNAILZ Output from BCA)

Note: Subsequent to these calculations, wall numbers have changed.

- **Wall No. 8 in these calculations is Wall No. 7 in the Report**
- **Wall No. 15 in these calculations is Wall No. 14 in the Report**

Hatem Bedair

From: Partha Sircar [psircar@parikhnet.com]
Sent: Thursday, January 21, 2010 1:56 PM
To: Hatem Bedair
Cc: David Wang
Subject: Re: EAST SEGMENT SOIL PARAMETERS

Hatem:

Here are the confirmed (revised) parameters:

Soil Parameters

Wall No. 3 Sta 623+00 to Sta 628+00
0 to 8 ' Depth:
Unit Weight: **120** pcf
Friction Angle: **36** degrees
Cohesion: **0.0** psf

Below 8' Depth:
Unit Weight: 125 pcf
Friction Angle: 28 degrees
Cohesion: 500 psf

Ultimate Bond Strength: **7** psi for top row, **10** psi for following rows

Wall No. 3 Sta 628+00 to Sta 636+00
Unit Weight: **125** pcf
Friction Angle: **30** degrees
Cohesion: **500** psf
Ultimate Bond Strength: **8** psi for top row, **10** psi for following rows

Wall No. 3 Sta 636+00 to Sta 643+00
Unit Weight: **130** pcf
Friction Angle: **40** degrees
Cohesion: **0.0** psf
Ultimate Bond Strength: **8** psi for top row, **12** psi for following rows

Wall No. 3 Sta 643+00 to Sta 648+30
0 to 8 ' Depth:
Unit Weight: **130** pcf
Friction Angle: **35** degrees
Cohesion: **0.0** psf

Below 8' Depth:
Unit Weight: 125 pcf
Friction Angle: 28 degrees
Cohesion: 500 psf

Ultimate Bond Strength: **6** psi for top row, **8** psi **for 2nd row, and 10 psi for following rows**

Wall No. 4 Sta. 659+50 to Sta: 662+50:

Above El. 482:
Stiff to Very Stiff Clay - Friction Angle = 28 degrees; cohesion = 250 psf

El. 482 to El. 478
Hard Clay - Friction Angle = 30 degrees; cohesion = 500 psf

El. 478 to El. 473
Medium Dense Silty Sand - Friction Angle = 30 degrees; cohesion = 50 psf

Below El. 473
Dense well graded Sand with Gravel- Friction Angle = 37 degrees; cohesion = 0 psf

Recommended Ultimate Bond Strengths: 6 psi- top layer; 10 psi thereafter (assuming 4-6 feet vertical spacing

Wall No. 4 Sta: 662+50 to Sta. 663+90
Very Stiff ti Hard Clay - Friction Angle = **28** degrees; cohesion = 500 psf

Recommended Ultimate Bond Strengths: 6 psi- top layer; 8 psi thereafter
(assuming 4-6 feet vertical spacing)

Wall No. 5 Sta 665+75 to Sta 667+50
Unit Weight: **130** pcf
Friction Angle **38** degrees
Cohesion: **0.0** psf
Ultimate Bond Strength: **8** psi for top row, **10** psi for following rows

Wall No. 5 Sta 667+50 to Sta 671+90
Unit Weight: **120** pcf (0 to 5 feet)' **125** pcf (below 5 feet)
Friction Angle **25** degrees (0 to 5 feet)' **28** degrees (below 5 feet)
Cohesion: **200** psf (0 to 5 feet)' **500** psf (below 5 feet)

Ultimate Bond Strength: **6** psi for the top row, 10 psi for next row,

Wall No. 8 Sta 685+30 to Sta 688+50
Unit Weight: **120** pcf
Friction Angle **28** degrees
Cohesion: **300** psf
Ultimate Bond Strength: **6** psi for top row, **8** psi for following rows

Wall No. 10 Sta 703+00 to Sta 604+50
Unit Weight: **125** pcf
Friction Angle **28** degrees
Cohesion: **300 psf** (same as in report)

Ultimate Bond Strength: **6** psi for the top row, **8** psi for next row,

Wall No. 15 Sta 733+50 to Sta 738+00
Unit Weight: **120** pcf (0 to 5 feet)' **125** pcf (below 5 feet)
Friction Angle **30** degrees (0 to 5 feet)' **40** degrees (below 5 feet)
Cohesion: **50** psf (0 to 5 feet)' **0** psf (below 5 feet)

Ultimate Bond Strength: 8 psi for the top row, 10 psi for next row,

Wall No. 15 Sta 738+00 to Sta 742+75
Above Elev 527 feet:
Unit Weight: **120** pcf
Friction Angle **28** degrees
Cohesion: **300** psf

Below Elev 527 feet:
Unit Weight: 125 pcf
Friction Angle 28 degrees

Cohesion: 500 psf

Ultimate Bond Strength: 6 psi for the top row, 8 psi for next row, 10 for subsequent layers

I hope they help you. I will put them in the report.

Thank you
Partha

PROJECT TITLE: I-580_RW#3_Seg 1_H=16ft_STA 14+00

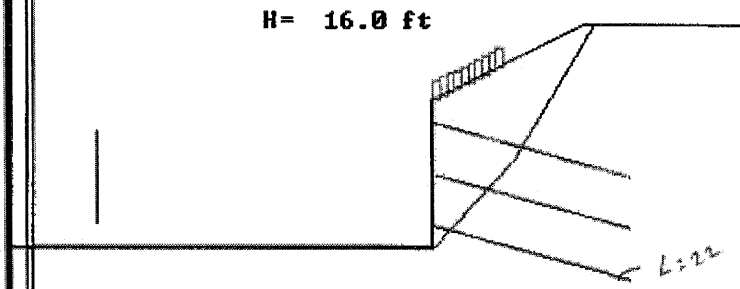
Date: 02-02-2010

SnailWin 3.10

File: SEG_1_H_16ft_STA_14+00

Minimum Factor of Safety = 1.51

17.4 ft Behind Wall Crest
0.0 ft Below Wall Toe



LEGEND:
PS= 300.0 Kips
FY= 60.0 Ksi
Sh= 5.0 ft
Sv= 5.5 ft

	GAM pcf	PHI deg	COH psf	SIG psi
1	120.0	36	0	5.3
2	125.0	28	500	5.3

Scale = 10 ft

Soil Bound.(1)
Surcharge

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**************************************************
*    CALIFORNIA DEPARTMENT OF TRANSPORTATION     *
*          ENGINEERING SERVICE CENTER            *
*     DIVISION OF MATERIALS AND FOUNDATIONS      *
*   Office of Roadway Geotechnical Engineering   *
*    Date: 02-02-2010          Time: 16:11:39    *
**************************************************
```

Project Identification - I-580_RW#3_Seg 1_H=16ft_STA 14+00

--------- WALL GEOMETRY ---------

Vertical Wall Height	=	16.0 ft	
Wall Batter	=	0.0 degree	
		Angle (Deg)	Length (Feet)
First Slope from Wallcrest.	=	26.6	18.0
Second Slope from 1st slope.	=	0.0	40.0
Third Slope from 2nd slope.	=	0.0	0.0
Fourth Slope from 3rd slope.	=	0.0	0.0
Fifth Slope from 3rd slope.	=	0.0	0.0
Sixth Slope from 3rd slope.	=	0.0	0.0
Seventh Slope Angle.	=	0.0	

--------- SLOPE BELOW THE WALL ---------

First Slope Angle below Toe.	=	0.0 degrees
First Slope Distance from Toe.	=	0.0 ft
Second Slope Angle.	=	0.0 degrees
Second Slope Distance from Toe.	=	0.0 ft
Vertical Depth of Search.	=	8.0 ft
Number of Searches below wall Toe.	=	4

--------- SURCHARGE ---------

THE SURCHARGES IMPOSED ON THE SYSTEM ARE:

Begin Surcharge - Distance from toe	=	0.0 ft
End Surcharge - Distance from toe	=	8.0 ft
Loading Intensity - Begin	=	240.0 psf/ft
Loading Intensity - End	=	240.0 psf/ft

--------- OPTION #1 ---------

Ultimate Punching shear, Bond & Yield Stress are used.

--------- SOIL PARAMETERS ---------

Soil Layer	Unit Weight (Pcf)	Friction Angle (Degree)	Cohesion Intercept (Psf)	Bond* Stress (Psi)	Coordinates of Boundary XS1 (ft)	YS1 (ft)	XS2 (ft)	YS2 (ft)
1	120.0	36.0	0.0	5.3	0.0	0.0	0.0	0.0
2	125.0	28.0	500.0	5.3	0.0	8.0	100.0	8.0

* Ultimate bond Stress values also depend on BSF (Bond Stress Factor.)

--------- WATER SURFACE ---------

NO Water Table defined for this problem.

--------- SEARCH LIMIT ---------

The Search Limit is from 0.0 to 58.0 ft

You have chosen NOT TO LIMIT the search of failure planes to specific nodes.

--------- REINFORCEMENT PARAMETERS ---------

Number of Reinforcement Levels	= 3
Horizontal Spacing	= 5.0 ft
Yield Stress of Reinforcement	= 60.0 ksi
Diameter of Grouted Hole	= 6.0 in
Punching Shear	= 300.0 kips

---------- (Varying Reinforcement Parameters) ---------

Level	Length (ft)	Inclination (degrees)	Vertical Spacing (ft)	Bar Diameter (in)	Bond Stress Factor
1	22.0	15.0	2.5	1.00	1.00
2	22.0	15.0	5.5	1.00	1.43
3	22.0	15.0	5.5	1.00	1.43

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
Toe	1.51	17.4	47.9	13.0	58.9	16.9

Reinf. Stress at Level 1 = 12.182 Ksi (Pullout controls...)
2 = 22.844 Ksi (Pullout controls...)
3 = 28.770 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
2.00	1.61	23.2	41.9	15.6	53.4	19.5

Reinf. Stress at Level 1 = 8.210 Ksi (Pullout controls...)
2 = 17.627 Ksi (Pullout controls...)
3 = 24.182 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
4.00	1.72	23.2	42.2	12.5	54.7	24.1

Reinf. Stress at Level 1 = 7.306 Ksi (Pullout controls...)
2 = 14.683 Ksi (Pullout controls...)
3 = 20.393 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
6.00	1.84	29.0	46.0	41.8	89.9	0.0

Reinf. Stress at Level 1 = 5.368 Ksi (Pullout controls...)
2 = 12.795 Ksi (Pullout controls...)
3 = 17.923 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
8.00	1.95	34.8	42.7	47.3	89.9	0.0

Reinf. Stress at Level 1 = 2.548 Ksi (Pullout controls...)
2 = 8.946 Ksi (Pullout controls...)
3 = 14.254 Ksi (Pullout controls...)

****
* For Factor of Safety = 1.0 *
* Maximum Average Reinforcement Working Force: *
* 6.742 Kips/level *
****

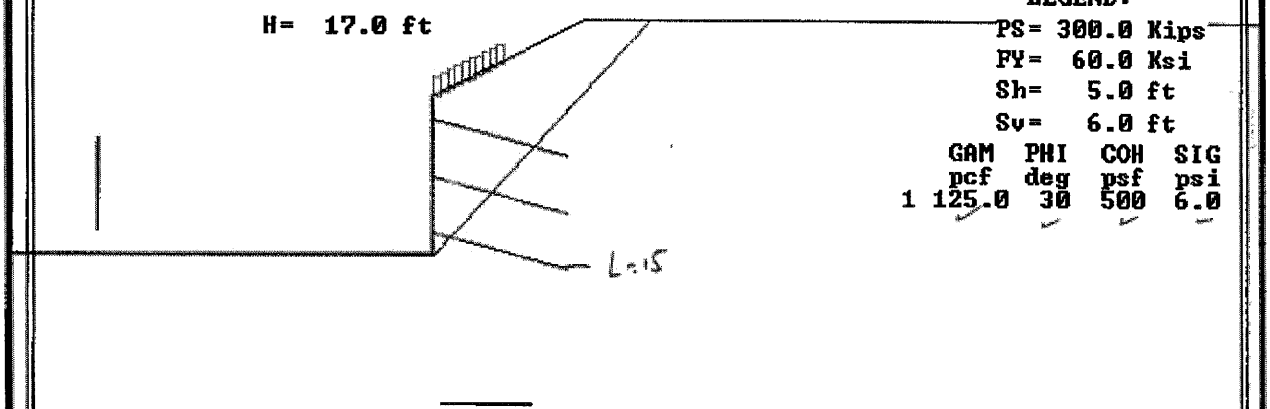
PROJECT TITLE: I-580_RW#3_Seg 2_H=17ft_STA 18+00

Date: 01-25-2010

SnailWin 3.10 File: SEG_2_H_17ft_STA_18+00

Minimum Factor of Safety = 1.60

23.2 ft Behind Wall Crest
0.0 ft Below Wall Toe



LEGEND:
PS= 300.0 Kips
FY= 60.0 Ksi
Sh= 5.0 ft
Sv= 6.0 ft

	GAM pcf	PHI deg	COH psf	SIG psi
1	125.0	30	500	6.0

Scale = 10 ft Surcharge

```
**************************************************
*    CALIFORNIA DEPARTMENT OF TRANSPORTATION     *
*          ENGINEERING SERVICE CENTER            *
*     DIVISION OF MATERIALS AND FOUNDATIONS      *
*   Office of Roadway Geotechnical Engineering   *
*    Date: 01-25-2010          Time: 13:19:45    *
**************************************************
```

Project Identification - I-580_RW#3_Seg 2_H=17ft_STA 18+00

--------- WALL GEOMETRY ---------

Vertical Wall Height	=	17.0 ft	
Wall Batter	=	0.0 degree	
		Angle (Deg)	Length (Feet)
First Slope from Wallcrest.	=	26.6	18.0
Second Slope from 1st slope.	=	0.0	40.0
Third Slope from 2nd slope.	=	0.0	0.0
Fourth Slope from 3rd slope.	=	0.0	0.0
Fifth Slope from 3rd slope.	=	0.0	0.0
Sixth Slope from 3rd slope.	=	0.0	0.0
Seventh Slope Angle.	=	0.0	

--------- SLOPE BELOW THE WALL ---------

First Slope Angle below Toe.	=	0.0 degrees
First Slope Distance from Toe.	=	0.0 ft
Second Slope Angle.	=	0.0 degrees
Second Slope Distance from Toe.	=	0.0 ft
Vertical Depth of Search.	=	8.0 ft
Number of Searches below wall Toe.	=	4

--------- SURCHARGE ---------

THE SURCHARGES IMPOSED ON THE SYSTEM ARE:

Begin Surcharge - Distance from toe	=	0.0 ft
End Surcharge - Distance from toe	=	8.0 ft
Loading Intensity - Begin	=	240.0 psf/ft
Loading Intensity - End	=	240.0 psf/ft

--------- OPTION #1 ---------

Ultimate Punching shear, Bond & Yield Stress are used.

--------- SOIL PARAMETERS ---------

Soil Layer	Unit Weight (Pcf)	Friction Angle (Degree)	Cohesion Intercept (Psf)	Bond* Stress (Psi)	Coordinates of Boundary XS1 (ft)	YS1 (ft)	XS2 (ft)	YS2 (ft)
1	125.0	30.0	500.0	6.0	0.0	0.0	0.0	0.0

* Ultimate bond Stress values also depend on BSF (Bond Stress Factor.)

--------- WATER SURFACE ---------

NO Water Table defined for this problem.

--------- SEARCH LIMIT ---------

The Search Limit is from 0.0 to 58.0 ft

You have chosen NOT TO LIMIT the search of failure planes to specific nodes.

--------- REINFORCEMENT PARAMETERS ---------

Number of Reinforcement Levels	=	3
Horizontal Spacing	=	5.0 ft
Yield Stress of Reinforcement	=	60.0 ksi
Diameter of Grouted Hole	=	6.0 in
Punching Shear	=	300.0 kips

---------- (Varying Reinforcement Parameters) ---------

Level	Length (ft)	Inclination (degrees)	Vertical Spacing (ft)	Bar Diameter (in)	Bond Stress Factor
1	15.0	15.0	2.5	1.00	1.00 = 8 * 0.7 * 1
2	15.0	15.0	6.0	1.00	1.25 = 10 * 0.75 * 1.25
3	15.0	15.0	6.0	1.00	1.25

File: SEG_2_H_17ft_STA_18+00

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
Toe	1.60	23.2	47.2	34.2	89.9	0.0

Reinf. Stress at Level 1 = 4.168 Ksi (Pullout controls...)
2 = 11.420 Ksi (Pullout controls...)
3 = 17.631 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
2.00	1.69	23.2	49.4	35.6	89.9	0.0

Reinf. Stress at Level 1 = 3.152 Ksi (Pullout controls...)
2 = 9.460 Ksi (Pullout controls...)
3 = 14.980 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
4.00	1.80	29.0	45.1	41.1	89.9	0.0

Reinf. Stress at Level 1 = 0.000 Ksi
2 = 5.777 Ksi (Pullout controls...)
3 = 11.650 Ksi (Pullout controls...)

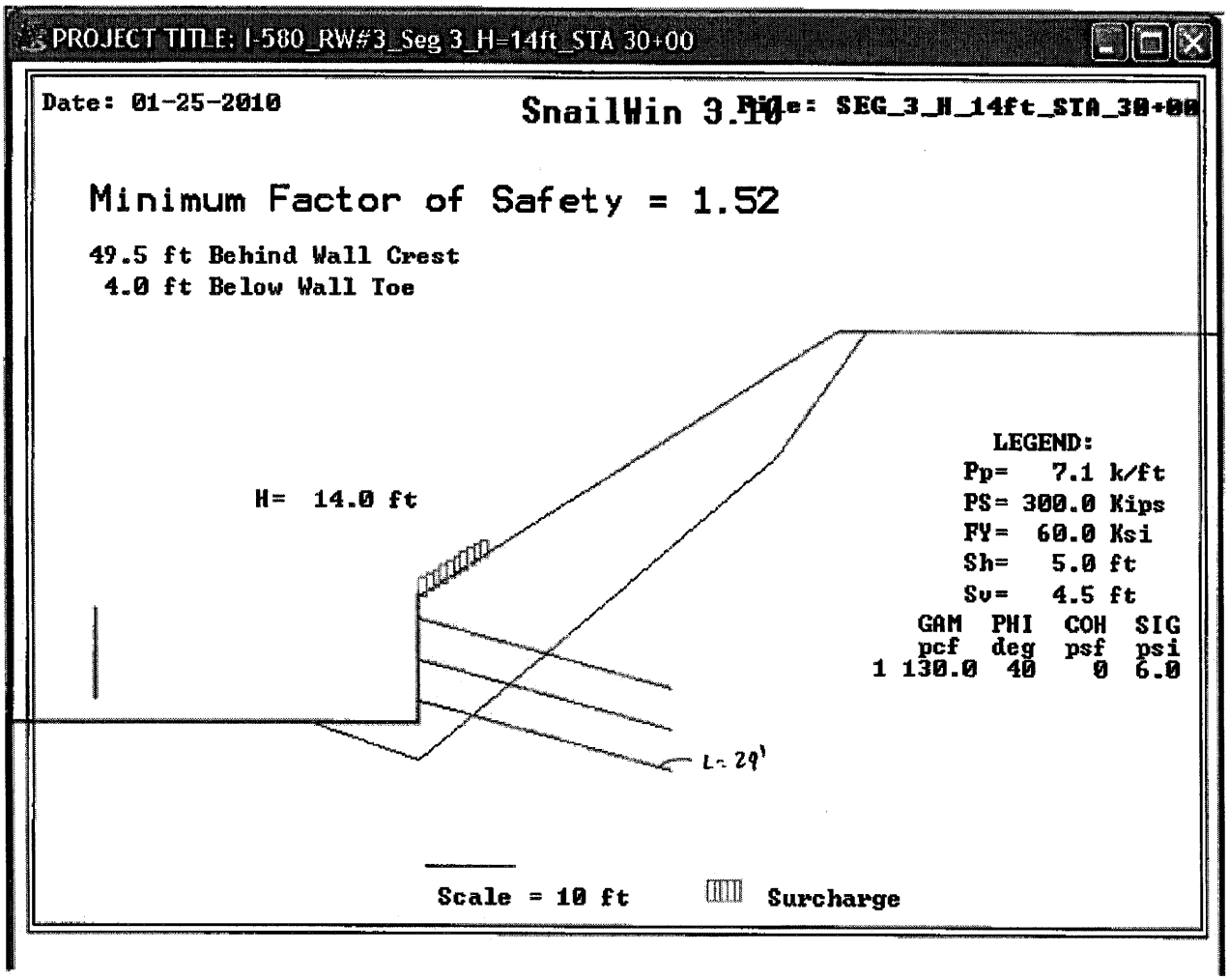
DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
6.00	1.91	29.0	47.0	42.5	89.9	0.0

Reinf. Stress at Level 1 = 0.000 Ksi
2 = 4.280 Ksi (Pullout controls...)
3 = 9.520 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
8.00	2.03	29.0	48.7	44.0	89.9	0.0

Reinf. Stress at Level 1 = 0.000 Ksi
2 = 3.044 Ksi (Pullout controls...)
3 = 7.728 Ksi (Pullout controls...)

****
* For Factor of Safety = 1.0 *
* Maximum Average Reinforcement Working Force: *
* 0.000 Kips/level *
****


PROJECT TITLE: I-580_RW#3_Seg 3_H=14ft_STA 30+00
Date: 01-25-2010
SnailWin 3.10
File: SEG_3_H_14ft_STA_30+00
Minimum Factor of Safety = 1.52
49.5 ft Behind Wall Crest
4.0 ft Below Wall Toe
H= 14.0 ft
L= 29'
LEGEND:
Pp= 7.1 k/ft
PS= 300.0 Kips
FY= 60.0 Ksi
Sh= 5.0 ft
Sv= 4.5 ft
GAM PHI COH SIG
pcf deg psf psi
1 130.0 40 0 6.0
Scale = 10 ft
Surcharge

```
**************************************************
*    CALIFORNIA DEPARTMENT OF TRANSPORTATION     *
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*   Office of Roadway Geotechnical Engineering   *
*    Date: 01-25-2010          Time: 13:40:06    *
**************************************************
```

Project Identification - I-580_RW#3_Seg 3_H=14ft_STA 30+00

--------- WALL GEOMETRY ---------

Vertical Wall Height	= 14.0 ft	
Wall Batter	= 0.0 degree	
	Angle (Deg)	Length (Feet)
First Slope from Wallcrest.	= 32.2	55.0
Second Slope from 1st slope.	= 0.0	40.0
Third Slope from 2nd slope.	= 0.0	0.0
Fourth Slope from 3rd slope.	= 0.0	0.0
Fifth Slope from 3rd slope.	= 0.0	0.0
Sixth Slope from 3rd slope.	= 0.0	0.0
Seventh Slope Angle.	= 0.0	

--------- SLOPE BELOW THE WALL ---------

First Slope Angle below Toe.	= 0.0 degrees
First Slope Distance from Toe.	= 0.0 ft
Second Slope Angle.	= 0.0 degrees
Second Slope Distance from Toe.	= 0.0 ft
Vertical Depth of Search.	= 8.0 ft
Number of Searches below wall Toe.	= 4

--------- SURCHARGE ---------

THE SURCHARGES IMPOSED ON THE SYSTEM ARE:

Begin Surcharge - Distance from toe	= 0.0 ft
End Surcharge - Distance from toe	= 8.0 ft
Loading Intensity - Begin	= 240.0 psf/ft
Loading Intensity - End	= 240.0 psf/ft

--------- OPTION #1 ---------

Ultimate Punching shear, Bond & Yield Stress are used.

--------- SOIL PARAMETERS ---------

Soil Layer	Unit Weight (Pcf)	Friction Angle (Degree)	Cohesion Intercept (Psf)	Bond* Stress (Psi)	Coordinates of Boundary XS1 (ft)	YS1 (ft)	XS2 (ft)	YS2 (ft)
1	130.0	40.0	0.0	6.0	0.0	0.0	0.0	0.0

* Ultimate bond Stress values also depend on BSF (Bond Stress Factor.)

--------- WATER SURFACE ---------

NO Water Table defined for this problem.

--------- SEARCH LIMIT ---------

The Search Limit is from 0.0 to 55.0 ft

You have chosen NOT TO LIMIT the search of failure planes to specific nodes.

--------- REINFORCEMENT PARAMETERS ---------

Number of Reinforcement Levels	=	3
Horizontal Spacing	=	5.0 ft
Yield Stress of Reinforcement	=	60.0 ksi
Diameter of Grouted Hole	=	6.0 in
Punching Shear	=	300.0 kips

---------- (Varying Reinforcement Parameters) ---------

Level	Length (ft)	Inclination (degrees)	Vertical Spacing (ft)	Bar Diameter (in)	Bond Stress Factor
1	29.0	15.0	2.5	1.00	1.00
2	29.0	15.0	4.5	1.00	1.50
3	29.0	15.0	4.5	1.00	1.50

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
Toe	1.61	49.5	37.4	49.9	52.7	16.3

Reinf. Stress at Level 1 = 18.725 Ksi (Pullout controls...)
2 = 35.331 Ksi (Pullout controls...)
3 = 37.195 Ksi (Yield Stress controls.)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
2.00	1.53	49.5	38.7	50.7	53.9	16.8

Reinf. Stress at Level 1 = 18.008 Ksi (Pullout controls...)
2 = 34.405 Ksi (Pullout controls...)
3 = 39.266 Ksi (Yield Stress controls.)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
4.00	1.52	49.5	39.9	51.6	55.1	17.3

Reinf. Stress at Level 1 = 16.435 Ksi (Pullout controls...)
2 = 31.843 Ksi (Pullout controls...)
3 = 39.032 Ksi (Pullout controls...)

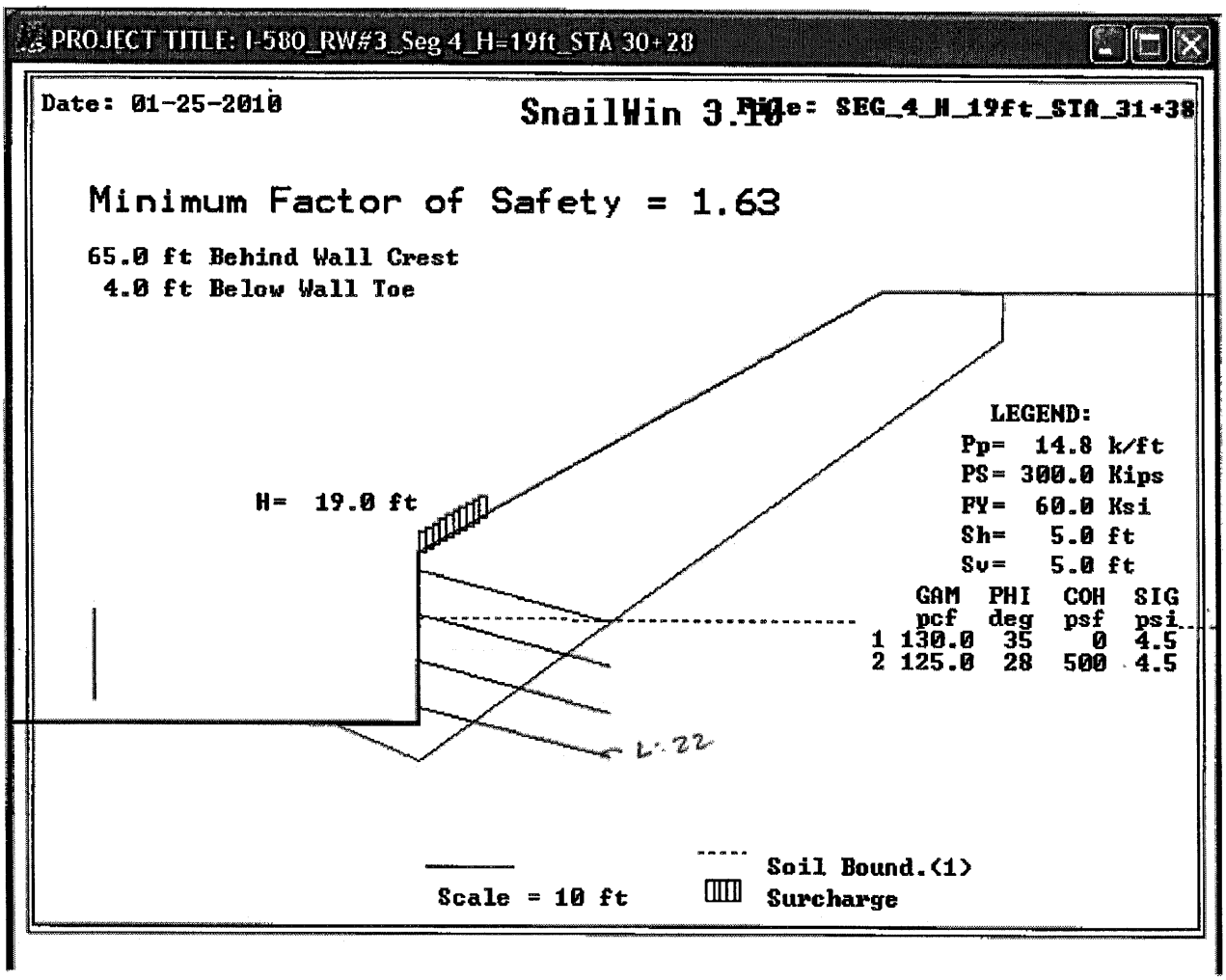
DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
6.00	1.56	55.0	35.6	33.8	47.1	40.4

Reinf. Stress at Level 1 = 11.740 Ksi (Pullout controls...)
2 = 25.459 Ksi (Pullout controls...)
3 = 33.308 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
8.00	1.63	55.0	37.9	41.8	49.4	33.8

Reinf. Stress at Level 1 = 10.250 Ksi (Pullout controls...)
2 = 22.449 Ksi (Pullout controls...)
3 = 29.522 Ksi (Pullout controls...)

****
* For Factor of Safety = 1.0 *
* Maximum Average Reinforcement Working Force: *
* 9.470 Kips/level *
****


PROJECT TITLE: I-580_RW#3_Seg 4_H=19ft_STA 30+28
Date: 01-25-2010
SnailWin 3.10
File: SEG_4_H_19ft_STA_31+38
Minimum Factor of Safety = 1.63
65.0 ft Behind Wall Crest
4.0 ft Below Wall Toe
H= 19.0 ft
LEGEND:
Pp= 14.8 k/ft
PS= 300.0 Kips
FY= 60.0 Ksi
Sh= 5.0 ft
Sv= 5.0 ft
GAM pcf PHI deg COH psf SIG psi
1 130.0 35 0 4.5
2 125.0 28 500 4.5
L=22
Scale = 10 ft
Soil Bound.(1)
Surcharge

```
**************************************************
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*    Date: 01-25-2010          Time: 14:49:58    *
**************************************************
```

Project Identification - I-580_RW#3_Seg 4_H=19ft_STA 30+28

--------- WALL GEOMETRY ---------

Vertical Wall Height	=	19.0 ft	
Wall Batter	=	0.0 degree	
		Angle (Deg)	Length (Feet)
First Slope from Wallcrest.	=	29.2	59.0
Second Slope from 1st slope.	=	0.0	40.0
Third Slope from 2nd slope.	=	0.0	0.0
Fourth Slope from 3rd slope.	=	0.0	0.0
Fifth Slope from 3rd slope.	=	0.0	0.0
Sixth Slope from 3rd slope.	=	0.0	0.0
Seventh Slope Angle.	=	0.0	

--------- SLOPE BELOW THE WALL ---------

First Slope Angle below Toe.	=	0.0 degrees
First Slope Distance from Toe.	=	0.0 ft
Second Slope Angle.	=	0.0 degrees
Second Slope Distance from Toe.	=	0.0 ft
Vertical Depth of Search.	=	8.0 ft
Number of Searches below wall Toe.	=	4

--------- SURCHARGE ---------

THE SURCHARGES IMPOSED ON THE SYSTEM ARE:

Begin Surcharge - Distance from toe	=	0.0 ft
End Surcharge - Distance from toe	=	8.0 ft
Loading Intensity - Begin	=	240.0 psf/ft
Loading Intensity - End	=	240.0 psf/ft

--------- OPTION #1 ---------

Ultimate Punching shear, Bond & Yield Stress are used.

--------- SOIL PARAMETERS ---------

Soil Layer	Unit Weight (Pcf)	Friction Angle (Degree)	Cohesion Intercept (Psf)	Bond* Stress (Psi)	Coordinates of Boundary XS1 (ft)	YS1 (ft)	XS2 (ft)	YS2 (ft)
1	130.0	35.0	0.0	4.5	0.0	0.0	0.0	0.0
2	125.0	28.0	500.0	4.5	0.0	11.0	0.0	11.0

* Ultimate bond Stress values also depend on BSF (Bond Stress Factor.)

--------- WATER SURFACE ---------

NO Water Table defined for this problem.

--------- SEARCH LIMIT ---------

The Search Limit is from 0.0 to 65.0 ft

You have chosen NOT TO LIMIT the search of failure planes to specific nodes.

--------- REINFORCEMENT PARAMETERS ---------

Number of Reinforcement Levels	= 4
Horizontal Spacing	= 5.0 ft
Yield Stress of Reinforcement	= 60.0 ksi
Diameter of Grouted Hole	= 6.0 in
Punching Shear	= 300.0 kips

---------- (Varying Reinforcement Parameters) ---------

Level	Length (ft)	Inclination (degrees)	Vertical Spacing (ft)	Bar Diameter (in)	Bond Stress Factor
1	22.0	15.0	2.0	1.00	1.00
2	22.0	15.0	5.0	1.00	1.33
3	22.0	15.0	5.0	1.00	1.67
4	22.0	15.0	5.0	0.00	1.67

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
Toe	1.72	65.0	33.5	77.9	89.9	4.8

Reinf. Stress at Level 1 = 2.309 Ksi (Pullout controls...)
2 = 8.646 Ksi (Pullout controls...)
3 = 17.856 Ksi (Pullout controls...)
4 = 0.000 Ksi

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
2.00	1.66	65.0	34.6	78.9	89.9	5.0

Reinf. Stress at Level 1 = 1.133 Ksi (Pullout controls...)
2 = 7.122 Ksi (Pullout controls...)
3 = 15.993 Ksi (Pullout controls...)
4 = 0.000 Ksi

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
4.00	1.63	65.0	35.6	80.0	89.9	5.2

Reinf. Stress at Level 1 = 0.000 Ksi
2 = 5.477 Ksi (Pullout controls...)
3 = 13.852 Ksi (Pullout controls...)
4 = 0.000 Ksi

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
6.00	1.63	65.0	36.7	81.0	89.9	5.4

Reinf. Stress at Level 1 = 0.000 Ksi
2 = 3.799 Ksi (Pullout controls...)
3 = 11.548 Ksi (Pullout controls...)
4 = 0.000 Ksi

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
8.00	1.67	65.0	40.6	85.7	89.9	0.0

Reinf. Stress at Level 1 = 0.000 Ksi
2 = 3.733 Ksi (Pullout controls...)
3 = 10.648 Ksi (Pullout controls...)
4 = 0.000 Ksi

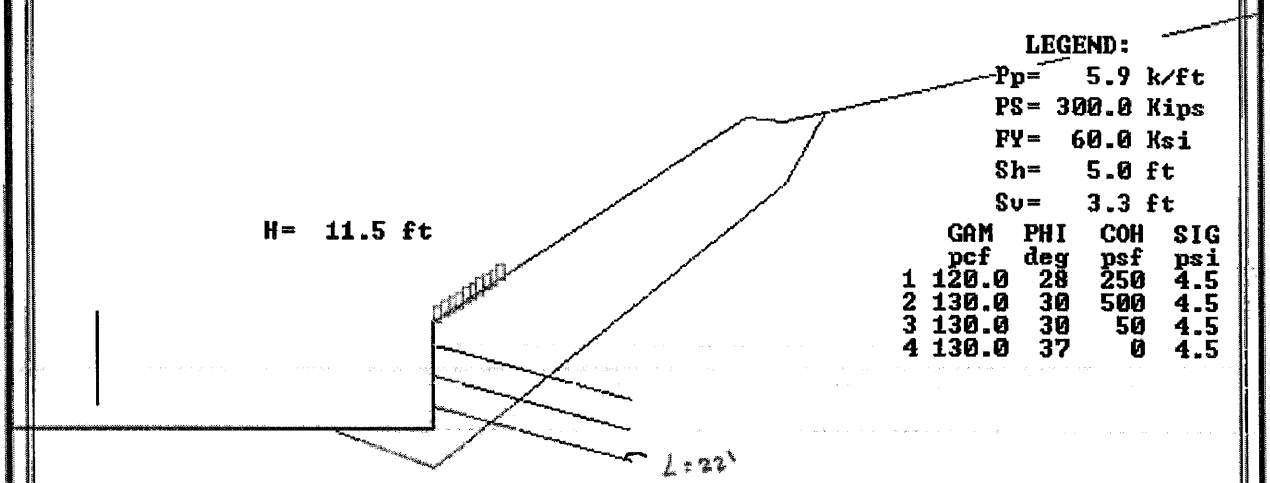
****
* For Factor of Safety = 1.0 *
* Maximum Average Reinforcement Working Force: *
* 0.000 Kips/level *
****

PROJECT TITLE: RW#4_SEG 1_H=11.5ft_RIGHT OF STA 11.25_3 rows

Date: 01-26-2010 File: RW#4_SEG 1_H=11.5ft-STA11+25_RIGHT_3 rows

Minimum Factor of Safety = 1.50

42.0 ft Behind Wall Crest
4.0 ft Below Wall Toe



	GAM pcf	PHI deg	COH psf	SIG psi
1	120.0	28	250	4.5
2	130.0	30	500	4.5
3	130.0	30	50	4.5
4	130.0	37	0	4.5

at STA 11+25 3 Rows check.

use 22' nails between STA 10+50 & STA 11+25

4-16

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*************************************************
*    CALIFORNIA DEPARTMENT OF TRANSPORTATION    *
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*     DIVISION OF MATERIALS AND FOUNDATIONS     *
*   Office of Roadway Geotechnical Engineering  *
*    Date: 01-26-2010          Time: 07:45:36   *
*************************************************
```

Project Identification - RW#4_SEG 1_H=11.5ft_RIGHT OF STA 11.25_3 rows

--------- WALL GEOMETRY ---------

Vertical Wall Height	=	11.5 ft	
Wall Batter	=	0.0 degree	
		Angle (Deg)	Length (Feet)
First Slope from Wallcrest.	=	33.0	40.0
Second Slope from 1st slope.	=	-5.0	4.0
Third Slope from 2nd slope.	=	12.8	100.0
Fourth Slope from 3rd slope.	=	0.0	0.0
Fifth Slope from 3rd slope.	=	0.0	0.0
Sixth Slope from 3rd slope.	=	0.0	0.0
Seventh Slope Angle.	=	0.0	

--------- SLOPE BELOW THE WALL ---------

First Slope Angle below Toe.	=	0.0 degrees
First Slope Distance from Toe.	=	0.0 ft
Second Slope Angle.	=	0.0 degrees
Second Slope Distance from Toe.	=	0.0 ft
Vertical Depth of Search.	=	8.0 ft
Number of Searches below wall Toe.	=	4

--------- SURCHARGE ---------

THE SURCHARGES IMPOSED ON THE SYSTEM ARE:

Begin Surcharge - Distance from toe	=	0.0 ft
End Surcharge - Distance from toe	=	8.0 ft
Loading Intensity - Begin	=	240.0 psf/ft
Loading Intensity - End	=	240.0 psf/ft

--------- OPTION #1 ---------

Ultimate Punching shear, Bond & Yield Stress are used.

--------- SOIL PARAMETERS ---------

Soil Layer	Unit Weight (Pcf)	Friction Angle (Degree)	Cohesion Intercept (Psf)	Bond* Stress (Psi)	Coordinates of Boundary XS1 (ft)	YS1 (ft)	XS2 (ft)	YS2 (ft)
1	120.0	28.0	250.0	4.5	0.0	0.0	0.0	0.0
2	130.0	30.0	500.0	4.5	0.0	9.0	100.0	9.0
3	130.0	30.0	50.0	4.5	0.0	5.0	100.0	5.0
4	130.0	37.0	0.0	4.5	0.0	0.0	100.0	0.0

* Ultimate bond Stress values also depend on BSF (Bond Stress Factor.)

File: RW#4_SEG_1_H_11-5ft-STA11+25_RIGHT_3 rows

--------- WATER SURFACE ---------

NO Water Table defined for this problem.

--------- SEARCH LIMIT ---------

The Search Limit is from 0.0 to 42.0 ft

You have chosen NOT TO LIMIT the search of failure planes to specific nodes.

--------- REINFORCEMENT PARAMETERS ---------

Number of Reinforcement Levels	=	3
Horizontal Spacing	=	5.0 ft
Yield Stress of Reinforcement	=	60.0 ksi
Diameter of Grouted Hole	=	6.0 in
Punching Shear	=	300.0 kips

---------- (Varying Reinforcement Parameters) ---------

Level	Length (ft)	Inclination (degrees)	Vertical Spacing (ft)	Bar Diameter (in)	Bond Stress Factor
1	22.0	15.0	2.5	1.00	1.00
2	22.0	15.0	3.3	1.00	1.67
3	22.0	15.0	3.3	1.00	1.67

File: RW#4_SEG_1_H_11-5ft-STA11+25_RIGHT_3 rows

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
Toe	1.68	42.0	35.7	46.5	58.3	8.0

Reinf. Stress at Level 1 = 9.700 Ksi (Pullout controls...)
2 = 20.600 Ksi (Pullout controls...)
3 = 25.000 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
2.00	1.54	42.0	37.3	47.5	59.7	8.3

Reinf. Stress at Level 1 = 9.224 Ksi (Pullout controls...)
2 = 20.012 Ksi (Pullout controls...)
3 = 24.620 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
4.00	1.50	42.0	38.8	48.5	61.0	8.7

Reinf. Stress at Level 1 = 8.144 Ksi (Pullout controls...)
2 = 18.127 Ksi (Pullout controls...)
3 = 22.655 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
6.00	1.54	42.0	40.2	49.5	62.3	9.0

Reinf. Stress at Level 1 = 6.779 Ksi (Pullout controls...)
2 = 15.569 Ksi (Pullout controls...)
3 = 19.816 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
8.00	1.61	42.0	38.6	26.9	50.2	32.8

Reinf. Stress at Level 1 = 4.423 Ksi (Pullout controls...)
2 = 11.616 Ksi (Pullout controls...)
3 = 15.846 Ksi (Pullout controls...)

****
* For Factor of Safety = 1.0 *
* Maximum Average Reinforcement Working Force: *
* 0.577 Kips/level *
****

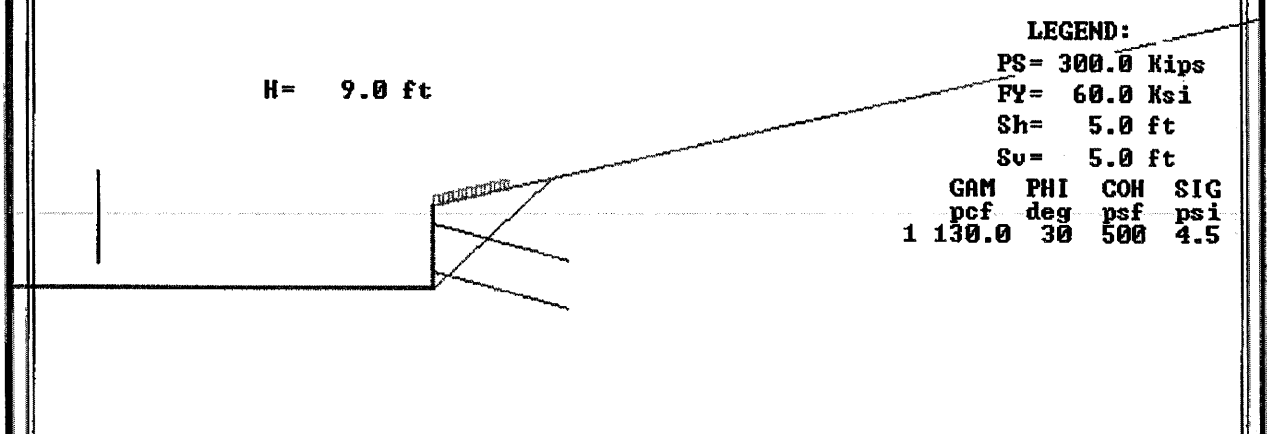
PROJECT TITLE: RW#4_SEG 2_H=9ft_ STA 13+00

Date: 01-26-2010

SnailWin Plot RW#4_SEG_2_H_9ft-STA13+00

Minimum Factor of Safety = 2.67

12.6 ft Behind Wall Crest
0.0 ft Below Wall Toe



File: RW#4_SEG_2_H_9ft-STA13+00

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*     DIVISION OF MATERIALS AND FOUNDATIONS      *
*   Office of Roadway Geotechnical Engineering   *
*    Date: 01-26-2010          Time: 08:27:10    *
**************************************************
```

Project Identification - RW#4_SEG 2_H=9ft_ STA 13+00

--------- WALL GEOMETRY ---------

Vertical Wall Height	=	9.0	ft
Wall Batter	=	0.0	degree

		Angle (Deg)	Length (Feet)
First Slope from Wallcrest.	=	12.8	100.0
Second Slope from 1st slope.	=	0.0	0.0
Third Slope from 2nd slope.	=	0.0	0.0
Fourth Slope from 3rd slope.	=	0.0	0.0
Fifth Slope from 3rd slope.	=	0.0	0.0
Sixth Slope from 3rd slope.	=	0.0	0.0
Seventh Slope Angle.	=	0.0	

--------- SLOPE BELOW THE WALL ---------

First Slope Angle below Toe.	=	0.0 degrees
First Slope Distance from Toe.	=	0.0 ft
Second Slope Angle.	=	0.0 degrees
Second Slope Distance from Toe.	=	0.0 ft
Vertical Depth of Search.	=	8.0 ft
Number of Searches below wall Toe.	=	4

--------- SURCHARGE ---------

THE SURCHARGES IMPOSED ON THE SYSTEM ARE:

Begin Surcharge - Distance from toe	=	0.0 ft
End Surcharge - Distance from toe	=	8.0 ft
Loading Intensity - Begin	=	240.0 psf/ft
Loading Intensity - End	=	240.0 psf/ft

--------- OPTION #1 ---------

Ultimate Punching shear, Bond & Yield Stress are used.

--------- SOIL PARAMETERS ---------

Soil Layer	Unit Weight (Pcf)	Friction Angle (Degree)	Cohesion Intercept (Psf)	Bond* Stress (Psi)	Coordinates of Boundary XS1 (ft)	YS1 (ft)	XS2 (ft)	YS2 (ft)
1	130.0	30.0	500.0	4.5	0.0	0.0	0.0	0.0

* Ultimate bond Stress values also depend on BSF (Bond Stress Factor.)

File: RW#4_SEG_2_H_9ft-STA13+00

--------- WATER SURFACE ---------

NO Water Table defined for this problem.

--------- SEARCH LIMIT ---------

The Search Limit is from 0.0 to 42.0 ft

You have chosen NOT TO LIMIT the search of failure planes to specific nodes.

--------- REINFORCEMENT PARAMETERS ---------

Number of Reinforcement Levels	=	2
Horizontal Spacing	=	5.0 ft
Yield Stress of Reinforcement	=	60.0 ksi
Diameter of Grouted Hole	=	6.0 in
Punching Shear	=	300.0 kips

---------- (Varying Reinforcement Parameters) ---------

Level	Length (ft)	Inclination (degrees)	Vertical Spacing (ft)	Bar Diameter (in)	Bond Stress Factor
1	15.0	15.0	2.0	1.00	1.00
2	15.0	15.0	5.0	1.00	1.67

File: RW#4_SEG_2_H_9ft-STA13+00

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
Toe	2.67	12.6	43.3	17.3	89.9	0.0

Reinf. Stress at Level 1 = 4.367 Ksi (Pullout controls...)
2 = 10.759 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
2.00	2.87	8.4	56.9	15.4	89.9	0.0

Reinf. Stress at Level 1 = 4.450 Ksi (Pullout controls...)
2 = 9.598 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
4.00	3.17	16.8	45.0	23.8	89.9	0.0

Reinf. Stress at Level 1 = 2.462 Ksi (Pullout controls...)
2 = 6.894 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
6.00	3.33	25.2	39.4	32.6	89.9	0.0

Reinf. Stress at Level 1 = 1.035 Ksi (Pullout controls...)
2 = 4.816 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
8.00	3.42	29.4	38.8	37.8	89.9	0.0

Reinf. Stress at Level 1 = 0.202 Ksi (Pullout controls...)
2 = 3.393 Ksi (Pullout controls...)

****
* For Factor of Safety = 1.0 *
* Maximum Average Reinforcement Working Force: *
* 0.000 Kips/level *
****

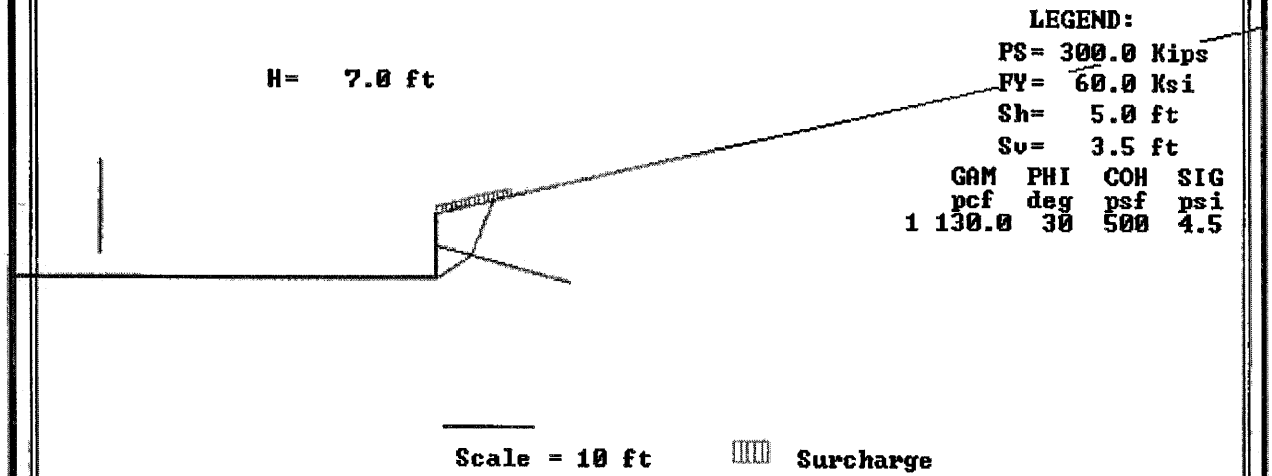
PROJECT TITLE: RW#4_SEG 2_H=7ft_ STA 13+75

Date: 01-26-2010

SnailWin Ver 3.10 RW#4_SEG_2_H_7ft-STA13+75

Minimum Factor of Safety = 2.78

6.0 ft Behind Wall Crest
0.0 ft Below Wall Toe



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*     DIVISION OF MATERIALS AND FOUNDATIONS        *
*   Office of Roadway Geotechnical Engineering     *
*    Date: 01-26-2010          Time: 08:26:06      *
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```

Project Identification - RW#4_SEG 2_H=7ft_ STA 13+75

---------- WALL GEOMETRY ---------

Vertical Wall Height	=	7.0 ft	
Wall Batter	=	0.0 degree	
		Angle (Deg)	Length (Feet)
First Slope from Wallcrest.	=	12.8	100.0
Second Slope from 1st slope.	=	0.0	0.0
Third Slope from 2nd slope.	=	0.0	0.0
Fourth Slope from 3rd slope.	=	0.0	0.0
Fifth Slope from 3rd slope.	=	0.0	0.0
Sixth Slope from 3rd slope.	=	0.0	0.0
Seventh Slope Angle.	=	0.0	

--------- SLOPE BELOW THE WALL ---------

First Slope Angle below Toe.	=	0.0 degrees
First Slope Distance from Toe.	=	0.0 ft
Second Slope Angle.	=	0.0 degrees
Second Slope Distance from Toe.	=	0.0 ft
Vertical Depth of Search.	=	8.0 ft
Number of Searches below wall Toe.	=	4

--------- SURCHARGE ---------

THE SURCHARGES IMPOSED ON THE SYSTEM ARE:

Begin Surcharge - Distance from toe	=	0.0 ft
End Surcharge - Distance from toe	=	8.0 ft
Loading Intensity - Begin	=	240.0 psf/ft
Loading Intensity - End	=	240.0 psf/ft

--------- OPTION #1 ---------

Ultimate Punching shear, Bond & Yield Stress are used.

--------- SOIL PARAMETERS ---------

Soil Layer	Unit Weight (Pcf)	Friction Angle (Degree)	Cohesion Intercept (Psf)	Bond* Stress (Psi)	Coordinates of Boundary XS1 (ft)	YS1 (ft)	XS2 (ft)	YS2 (ft)
1	130.0	30.0	500.0	4.5	0.0	0.0	0.0	0.0

* Ultimate bond Stress values also depend on BSF (Bond Stress Factor.)

NO Water Table defined for this problem.

--------- SEARCH LIMIT ---------

The Search Limit is from 0.0 to 20.0 ft

You have chosen NOT TO LIMIT the search of failure planes to specific nodes.

--------- REINFORCEMENT PARAMETERS ---------

Number of Reinforcement Levels	=	1
Horizontal Spacing	=	5.0 ft
Yield Stress of Reinforcement	=	60.0 ksi
Diameter of Grouted Hole	=	6.0 in
Punching Shear	=	300.0 kips

---------- (Varying Reinforcement Parameters) ---------

Level	Length (ft)	Inclination (degrees)	Vertical Spacing (ft)	Bar Diameter (in)	Bond Stress Factor
1	15.0	15.0	3.5	1.00	1.00

File: RW#4_SEG_2_H_7ft-STA13+75

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
Toe	2.78	6.0	34.9	4.4	67.7	6.3

Reinf. Stress at Level 1 = 5.252 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
2.00	3.11	10.0	48.4	15.1	89.9	0.0

Reinf. Stress at Level 1 = 4.543 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
4.00	3.56	10.0	53.0	16.6	89.9	0.0

Reinf. Stress at Level 1 = 3.691 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
6.00	3.81	18.0	43.5	24.8	89.9	0.0

Reinf. Stress at Level 1 = 2.353 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
8.00	3.97	20.0	44.3	28.0	89.9	0.0

Reinf. Stress at Level 1 = 1.777 Ksi (Pullout controls...)

```
**********************************************************************
*                  For Factor of Safety = 1.0                        *
*          Maximum Average Reinforcement Working Force:              *
*                       0.000 Kips/level                             *
**********************************************************************
```

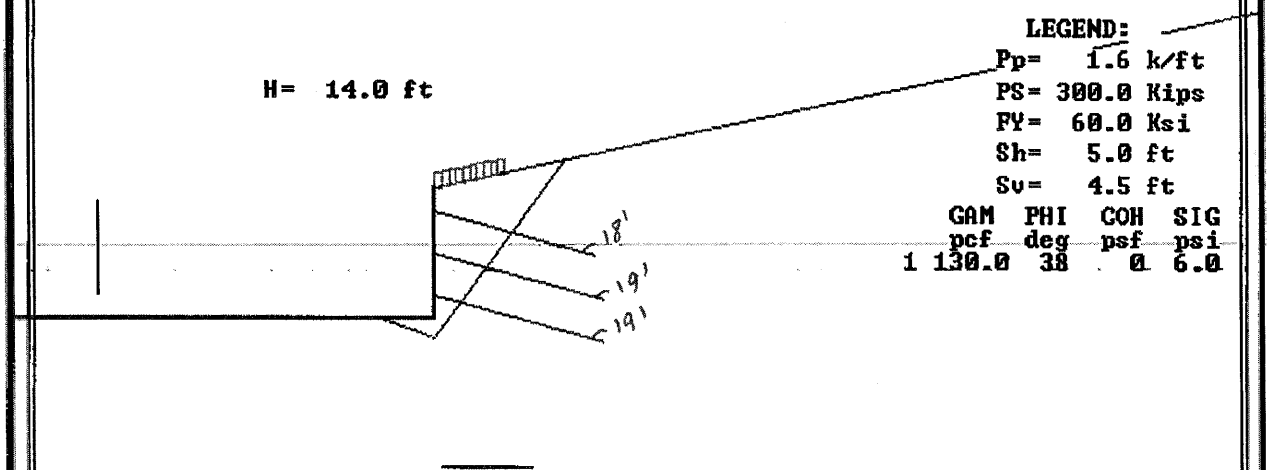
PROJECT TITLE: I-580_RW#5_SEG_1_H=14ft_STA 11+75

Date: 01-26-2010

SnailWin 5.10 File: I-580_RW#5_SEG_1_H_14ft-STA_11+75

Minimum Factor of Safety = 1.51

14.0 ft Behind Wall Crest
2.0 ft Below Wall Toe



LEGEND:
Pp= 1.6 k/ft
PS= 300.0 Kips
FY= 60.0 Ksi
Sh= 5.0 ft
Sv= 4.5 ft

	GAM pcf	PHI deg	COH psf	SIG psi
1	130.0	38	0	6.0

Scale = 10 ft Surcharge

File: RW#5_SEG_1_H_14ft-STA_11+75

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*************************************************
*    CALIFORNIA DEPARTMENT OF TRANSPORTATION    *
*          ENGINEERING SERVICE CENTER           *
*     DIVISION OF MATERIALS AND FOUNDATIONS     *
*   Office of Roadway Geotechnical Engineering  *
*    Date: 01-26-2010          Time: 14:14:10   *
*************************************************
```

Project Identification - I-580_RW#5_SEG_1_H=14ft_STA 11+75

--------- WALL GEOMETRY ---------

Vertical Wall Height	=	14.0 ft	
Wall Batter	=	0.0 degree	
		Angle (Deg)	Length (Feet)
First Slope from Wallcrest.	=	12.0	100.0
Second Slope from 1st slope.	=	0.0	0.0
Third Slope from 2nd slope.	=	0.0	0.0
Fourth Slope from 3rd slope.	=	0.0	0.0
Fifth Slope from 3rd slope.	=	0.0	0.0
Sixth Slope from 3rd slope.	=	0.0	0.0
Seventh Slope Angle.	=	0.0	

--------- SLOPE BELOW THE WALL ---------

First Slope Angle below Toe.	=	0.0 degrees
First Slope Distance from Toe.	=	0.0 ft
Second Slope Angle.	=	0.0 degrees
Second Slope Distance from Toe.	=	0.0 ft
Vertical Depth of Search.	=	8.0 ft
Number of Searches below wall Toe.	=	4

--------- SURCHARGE ---------

THE SURCHARGES IMPOSED ON THE SYSTEM ARE:

Begin Surcharge - Distance from toe	=	0.0 ft
End Surcharge - Distance from toe	=	8.0 ft
Loading Intensity - Begin	=	240.0 psf/ft
Loading Intensity - End	=	240.0 psf/ft

--------- OPTION #1 ---------

Ultimate Punching shear, Bond & Yield Stress are used.

--------- SOIL PARAMETERS ---------

Soil Layer	Unit Weight (Pcf)	Friction Angle (Degree)	Cohesion Intercept (Psf)	Bond* Stress (Psi)	Coordinates of Boundary XS1 (ft)	YS1 (ft)	XS2 (ft)	YS2 (ft)
1	130.0	38.0	0.0	6.0	0.0	0.0	0.0	0.0

* Ultimate bond Stress values also depend on BSF (Bond Stress Factor.)

--------- WATER SURFACE ---------

NO Water Table defined for this problem.

--------- SEARCH LIMIT ---------

The Search Limit is from 0.0 to 70.0 ft

You have chosen NOT TO LIMIT the search of failure planes to specific nodes.

--------- REINFORCEMENT PARAMETERS ---------

Number of Reinforcement Levels	= 3
Horizontal Spacing	= 5.0 ft
Yield Stress of Reinforcement	= 60.0 ksi
Diameter of Grouted Hole	= 6.0 in
Punching Shear	= 300.0 kips

---------- (Varying Reinforcement Parameters) ---------

Level	Length (ft)	Inclination (degrees)	Vertical Spacing (ft)	Bar Diameter (in)	Bond Stress Factor
1	18.0	15.0	2.5	1.00	1.00
2	19.0	15.0	4.5	1.00	1.25
3	19.0	15.0	4.5	1.00	1.25

File: RW#5_SEG_1_H_14ft-STA_11+75

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
Toe	1.64	7.0	61.5	8.8	70.1	8.2

Reinf. Stress at Level 1 = 13.424 Ksi (Pullout controls...)
2 = 20.483 Ksi (Pullout controls...)
3 = 23.385 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
2.00	1.51	14.0	53.6	23.6	89.9	0.0

Reinf. Stress at Level 1 = 10.777 Ksi (Pullout controls...)
2 = 19.023 Ksi (Pullout controls...)
3 = 23.139 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
4.00	1.56	21.0	46.9	30.8	89.9	0.0

Reinf. Stress at Level 1 = 6.663 Ksi (Pullout controls...)
2 = 14.547 Ksi (Pullout controls...)
3 = 19.378 Ksi (Pullout controls...)

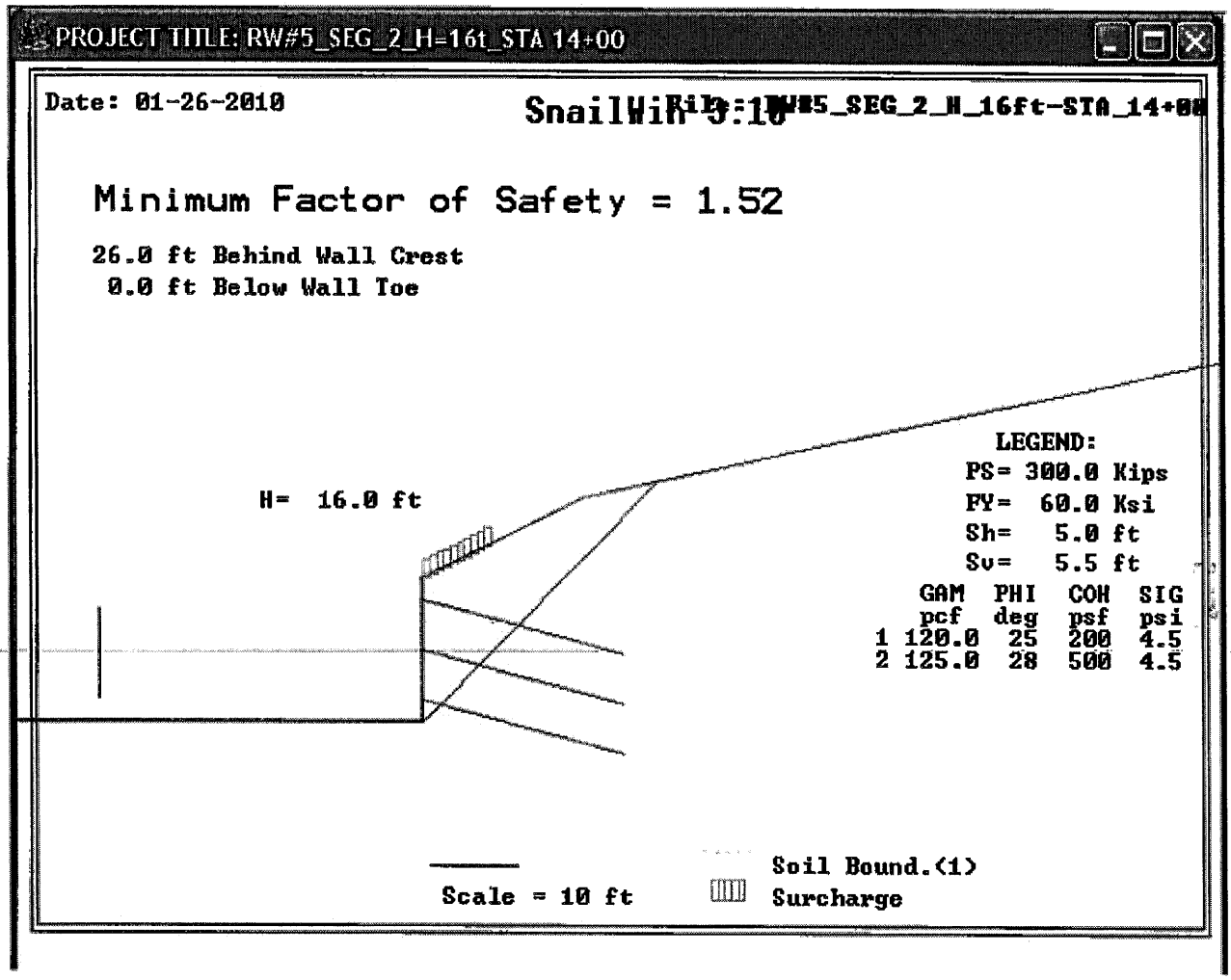
DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
6.00	1.70	28.0	42.8	38.2	89.9	0.0

Reinf. Stress at Level 1 = 2.887 Ksi (Pullout controls...)
2 = 9.840 Ksi (Pullout controls...)
3 = 14.801 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
8.00	1.87	28.0	45.0	39.6	89.9	0.0

Reinf. Stress at Level 1 = 1.900 Ksi (Pullout controls...)
2 = 7.777 Ksi (Pullout controls...)
3 = 12.026 Ksi (Pullout controls...)

****
* For Factor of Safety = 1.0 *
* Maximum Average Reinforcement Working Force: *
* 8.477 Kips/level *
****


PROJECT TITLE: RW#5_SEG_2_H=16t_STA 14+00
Date: 01-26-2010
SnailWin 5.10
Minimum Factor of Safety = 1.52
26.0 ft Behind Wall Crest
0.0 ft Below Wall Toe
H= 16.0 ft
LEGEND:
PS= 300.0 Kips
FY= 60.0 Ksi
Sh= 5.0 ft
Sv= 5.5 ft
GAM PHI COH SIG
pcf deg psf psi
1 120.0 25 200 4.5
2 125.0 28 500 4.5
Scale = 10 ft
Soil Bound.(1)
Surcharge

Project Identification - RW#5_SEG_2_H=16t_STA 14+00

--------- WALL GEOMETRY ---------

Vertical Wall Height	=	16.0 ft	
Wall Batter	=	0.0 degree	
		Angle (Deg)	Length (Feet)
First Slope from Wallcrest.	=	26.6	20.0
Second Slope from 1st slope.	=	12.0	80.0
Third Slope from 2nd slope.	=	0.0	0.0
Fourth Slope from 3rd slope.	=	0.0	0.0
Fifth Slope from 3rd slope.	=	0.0	0.0
Sixth Slope from 3rd slope.	=	0.0	0.0
Seventh Slope Angle.	=	0.0	

--------- SLOPE BELOW THE WALL ---------

First Slope Angle below Toe.	=	0.0 degrees
First Slope Distance from Toe.	=	0.0 ft
Second Slope Angle.	=	0.0 degrees
Second Slope Distance from Toe.	=	0.0 ft
Vertical Depth of Search.	=	8.0 ft
Number of Searches below wall Toe.	=	4

--------- SURCHARGE ---------

THE SURCHARGES IMPOSED ON THE SYSTEM ARE:

Begin Surcharge - Distance from toe	=	0.0 ft
End Surcharge - Distance from toe	=	8.0 ft
Loading Intensity - Begin	=	240.0 psf/ft
Loading Intensity - End	=	240.0 psf/ft

--------- OPTION #1 ---------

Ultimate Punching shear, Bond & Yield Stress are used.

File: RW#5_SEG_2_H_16ft-STA_14+00

--------- SOIL PARAMETERS ---------

Soil Layer	Unit Weight (Pcf)	Friction Angle (Degree)	Cohesion Intercept (Psf)	Bond* Stress (Psi)	Coordinates of Boundary XS1 (ft)	YS1 (ft)	XS2 (ft)	YS2 (ft)
1	120.0	25.0	200.0	4.5	0.0	0.0	0.0	0.0
2	125.0	28.0	500.0	4.5	0.0	11.0	100.0	11.0

* Ultimate bond Stress values also depend on BSF (Bond Stress Factor.)

--------- WATER SURFACE ---------

NO Water Table defined for this problem.

--------- SEARCH LIMIT ---------

The Search Limit is from 0.0 to 65.0 ft

You have chosen NOT TO LIMIT the search of failure planes to specific nodes.

--------- REINFORCEMENT PARAMETERS ---------

Number of Reinforcement Levels	=	3
Horizontal Spacing	=	5.0 ft
Yield Stress of Reinforcement	=	60.0 ksi
Diameter of Grouted Hole	=	6.0 in
Punching Shear	=	300.0 kips

---------- (Varying Reinforcement Parameters) ---------

Level	Length (ft)	Inclination (degrees)	Vertical Spacing (ft)	Bar Diameter (in)	Bond Stress Factor
1	23.0	15.0	2.5	1.00	1.00
2	23.0	15.0	5.5	1.00	1.33
3	23.0	15.0	5.5	1.00	1.33

File: RW#5_SEG_2_H_16ft-STA_14+00

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
Toe	1.52	26.0	45.7	37.3	89.9	0.0

Reinf. Stress at Level 1 = 10.369 Ksi (Pullout controls...)
2 = 18.764 Ksi (Pullout controls...)
3 = 23.738 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
2.00	1.60	32.5	42.8	44.3	89.9	0.0

Reinf. Stress at Level 1 = 7.736 Ksi (Pullout controls...)
2 = 15.432 Ksi (Pullout controls...)
3 = 20.575 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
4.00	1.68	39.0	40.6	51.4	89.9	0.0

Reinf. Stress at Level 1 = 5.318 Ksi (Pullout controls...)
2 = 12.257 Ksi (Pullout controls...)
3 = 17.442 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
6.00	1.76	45.5	39.0	58.5	89.9	0.0

Reinf. Stress at Level 1 = 3.131 Ksi (Pullout controls...)
2 = 9.331 Ksi (Pullout controls...)
3 = 14.497 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
8.00	1.84	52.0	37.7	65.7	89.9	0.0

Reinf. Stress at Level 1 = 1.142 Ksi (Pullout controls...)
2 = 6.641 Ksi (Pullout controls...)
3 = 11.764 Ksi (Pullout controls...)

```
**********************************************************************
*                  For Factor of Safety = 1.0                        *
*          Maximum Average Reinforcement Working Force:              *
*                       0.000 Kips/level                             *
**********************************************************************
```

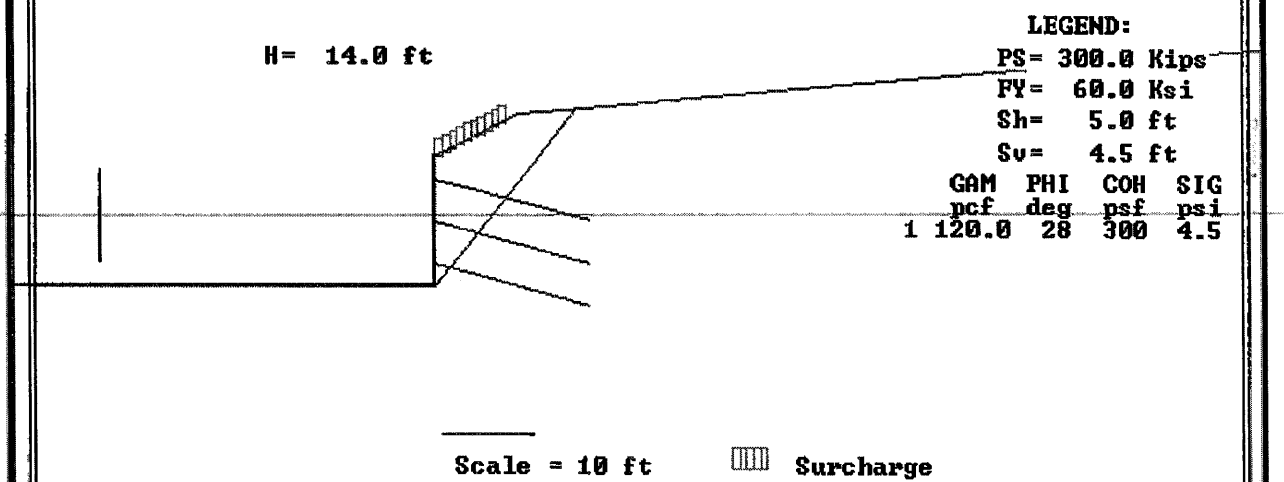
PROJECT TITLE: RW#8_H=14t_STA 11+00

Date: 01-26-2010

SnailWin 3.10 File: RW#8_H_14ft-STA_11+00

Minimum Factor of Safety = 1.54

15.0 ft Behind Wall Crest
0.0 ft Below Wall Toe



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*************************************************
*    CALIFORNIA DEPARTMENT OF TRANSPORTATION    *
*         ENGINEERING SERVICE CENTER            *
*     DIVISION OF MATERIALS AND FOUNDATIONS     *
*   Office of Roadway Geotechnical Engineering  *
*    Date: 01-26-2010          Time: 17:28:25   *
*************************************************
```

Project Identification - RW#8_H=14t_STA 11+00

--------- WALL GEOMETRY ---------

Vertical Wall Height	=	14.0 ft	
Wall Batter	=	0.0 degree	
		Angle (Deg)	Length (Feet)
First Slope from Wallcrest.	=	26.6	10.0
Second Slope from 1st slope.	=	5.0	100.0
Third Slope from 2nd slope.	=	0.0	0.0
Fourth Slope from 3rd slope.	=	0.0	0.0
Fifth Slope from 3rd slope.	=	0.0	0.0
Sixth Slope from 3rd slope.	=	0.0	0.0
Seventh Slope Angle.	=	0.0	

--------- SLOPE BELOW THE WALL ---------

First Slope Angle below Toe.	=	0.0 degrees
First Slope Distance from Toe.	=	0.0 ft
Second Slope Angle.	=	0.0 degrees
Second Slope Distance from Toe.	=	0.0 ft
Vertical Depth of Search.	=	8.0 ft
Number of Searches below wall Toe.	=	4

--------- SURCHARGE ---------

THE SURCHARGES IMPOSED ON THE SYSTEM ARE:

Begin Surcharge - Distance from toe	=	0.0 ft
End Surcharge - Distance from toe	=	8.0 ft
Loading Intensity - Begin	=	240.0 psf/ft
Loading Intensity - End	=	240.0 psf/ft

--------- OPTION #1 ---------

Ultimate Punching shear, Bond & Yield Stress are used.

--------- SOIL PARAMETERS ---------

Soil Layer	Unit Weight (Pcf)	Friction Angle (Degree)	Cohesion Intercept (Psf)	Bond* Stress (Psi)	Coordinates of Boundary XS1 (ft)	YS1 (ft)	XS2 (ft)	YS2 (ft)
1	120.0	28.0	300.0	4.5	0.0	0.0	0.0	0.0

* Ultimate bond Stress values also depend on BSF (Bond Stress Factor.)

--------- WATER SURFACE ---------

NO Water Table defined for this problem.

--------- SEARCH LIMIT ---------

The Search Limit is from 0.0 to 50.0 ft

You have chosen NOT TO LIMIT the search of failure planes to specific nodes.

--------- REINFORCEMENT PARAMETERS ---------

Number of Reinforcement Levels	= 3
Horizontal Spacing	= 5.0 ft
Yield Stress of Reinforcement	= 60.0 ksi
Diameter of Grouted Hole	= 6.0 in
Punching Shear	= 300.0 kips

---------- (Varying Reinforcement Parameters) ---------

Level	Length (ft)	Inclination (degrees)	Vertical Spacing (ft)	Bar Diameter (in)	Bond Stress Factor
1	17.0	15.0	2.5	1.00	1.00
2	17.0	15.0	4.5	1.00	1.33
3	17.0	15.0	4.5	1.00	1.33

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
Toe	1.54	15.0	51.7	24.2	89.9	0.0

Reinf. Stress at Level 1 = 7.790 Ksi (Pullout controls...)
2 = 13.762 Ksi (Pullout controls...)
3 = 17.163 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
2.00	1.59	20.0	47.0	29.3	89.9	0.0

Reinf. Stress at Level 1 = 5.352 Ksi (Pullout controls...)
2 = 10.883 Ksi (Pullout controls...)
3 = 14.649 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
4.00	1.67	20.0	49.5	30.8	89.9	0.0

Reinf. Stress at Level 1 = 4.557 Ksi (Pullout controls...)
2 = 9.407 Ksi (Pullout controls...)
3 = 12.754 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
6.00	1.76	25.0	46.0	36.0	89.9	0.0

Reinf. Stress at Level 1 = 2.278 Ksi (Pullout controls...)
2 = 6.526 Ksi (Pullout controls...)
3 = 10.021 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
8.00	1.86	30.0	43.3	41.3	89.9	0.0

Reinf. Stress at Level 1 = 0.238 Ksi (Pullout controls...)
2 = 3.870 Ksi (Pullout controls...)
3 = 7.424 Ksi (Pullout controls...)

****
* For Factor of Safety = 1.0 *
* Maximum Average Reinforcement Working Force: *
* 0.679 Kips/level *
****

PROJECT TITLE: RW#8_H=7t_STA 12+50

Date: 01-26-2010

SnailWin 3.10

File: RW#8_H_7ft-STA_12+50

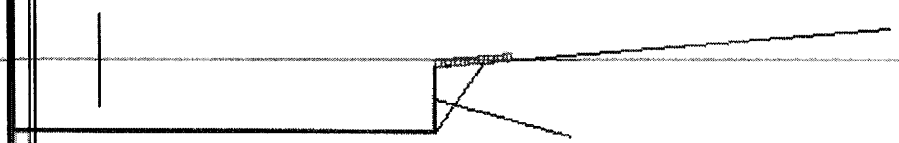
Minimum Factor of Safety = 1.90

5.0 ft Behind Wall Crest
0.0 ft Below Wall Toe

H= 7.0 ft

LEGEND:
PS= 300.0 Kips
FY= 60.0 Ksi
Sh= 5.0 ft
Sv= 3.5 ft

	GAM pcf	PHI deg	COH psf	SIG psi
1	120.0	28	300	4.5



Scale = 10 ft

Surcharge

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*    Date: 01-26-2010          Time: 17:35:49    *
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```

Project Identification - RW#8_H=7t_STA 12+50

--------- WALL GEOMETRY ---------

Vertical Wall Height	=	7.0 ft	
Wall Batter	=	0.0 degree	
		Angle (Deg)	Length (Feet)
First Slope from Wallcrest.	=	5.0	100.0
Second Slope from 1st slope.	=	0.0	0.0
Third Slope from 2nd slope.	=	0.0	0.0
Fourth Slope from 3rd slope.	=	0.0	0.0
Fifth Slope from 3rd slope.	=	0.0	0.0
Sixth Slope from 3rd slope.	=	0.0	0.0
Seventh Slope Angle.	=	0.0	

--------- SLOPE BELOW THE WALL ---------

First Slope Angle below Toe.	=	0.0 degrees
First Slope Distance from Toe.	=	0.0 ft
Second Slope Angle.	=	0.0 degrees
Second Slope Distance from Toe.	=	0.0 ft
Vertical Depth of Search.	=	8.0 ft
Number of Searches below wall Toe.	=	4

--------- SURCHARGE ---------

THE SURCHARGES IMPOSED ON THE SYSTEM ARE:

Begin Surcharge - Distance from toe	=	0.0 ft
End Surcharge - Distance from toe	=	8.0 ft
Loading Intensity - Begin	=	240.0 psf/ft
Loading Intensity - End	=	240.0 psf/ft

--------- OPTION #1 ---------

Ultimate Punching shear, Bond & Yield Stress are used.

--------- SOIL PARAMETERS ---------

Soil Layer	Unit Weight (Pcf)	Friction Angle (Degree)	Cohesion Intercept (Psf)	Bond* Stress (Psi)	Coordinates of Boundary XS1 (ft)	YS1 (ft)	XS2 (ft)	YS2 (ft)
1	120.0	28.0	300.0	4.5	0.0	0.0	0.0	0.0

* Ultimate bond Stress values also depend on BSF (Bond Stress Factor.)

NO Water Table defined for this problem.

--------- SEARCH LIMIT ---------

The Search Limit is from 0.0 to 50.0 ft

You have chosen NOT TO LIMIT the search of failure planes to specific nodes.

--------- REINFORCEMENT PARAMETERS ---------

Number of Reinforcement Levels	=	1
Horizontal Spacing	=	5.0 ft
Yield Stress of Reinforcement	=	60.0 ksi
Diameter of Grouted Hole	=	6.0 in
Punching Shear	=	300.0 kips

---------- (Varying Reinforcement Parameters) ---------

Level	Length (ft)	Inclination (degrees)	Vertical Spacing (ft)	Bar Diameter (in)	Bond Stress Factor
1	15.0	15.0	3.5	1.00	1.00

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
Toe	1.90	5.0	56.1	9.0	89.9	0.0

Reinf. Stress at Level 1 = 8.814 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
2.00	2.41	10.0	44.6	14.1	89.9	0.0

Reinf. Stress at Level 1 = 5.617 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
4.00	2.70	10.0	49.9	15.5	89.9	0.0

Reinf. Stress at Level 1 = 4.647 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
6.00	2.98	10.0	54.2	17.1	89.9	0.0

Reinf. Stress at Level 1 = 3.939 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
8.00	3.21	15.0	47.4	22.2	89.9	0.0

Reinf. Stress at Level 1 = 2.512 Ksi (Pullout controls...)

****
* For Factor of Safety = 1.0 *
* Maximum Average Reinforcement Working Force: *
* 0.000 Kips/level *
****

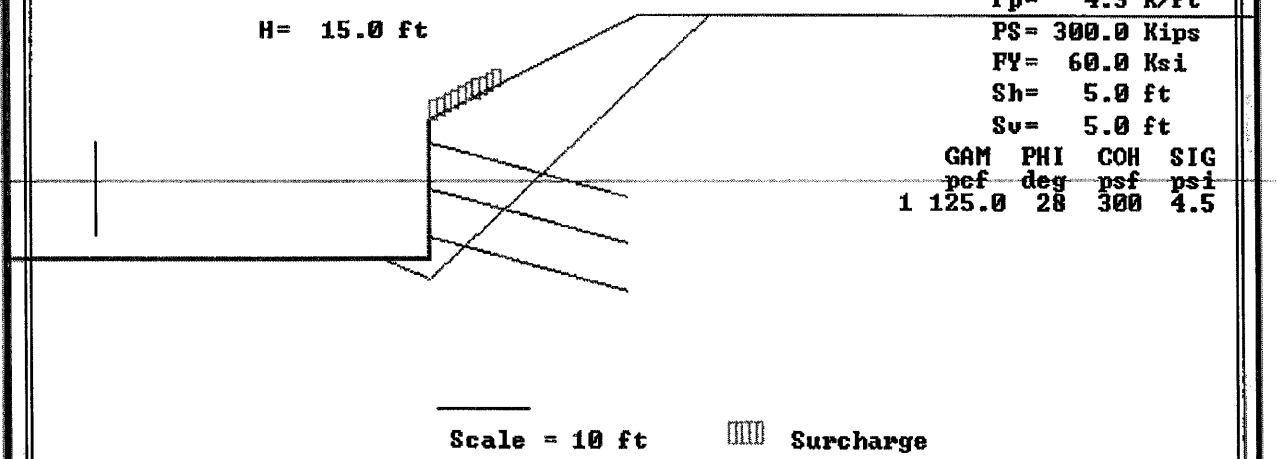
PROJECT TITLE: I-580_RW#10_Soil nail Section H=14ft STA 10+60

Date: 01-27-2010

SnailWin 3.10 File: I-580_RW#10_H_15ft-STA 10+60

Minimum Factor of Safety = 1.52

30.0 ft Behind Wall Crest
2.0 ft Below Wall Toe



File: I-580_RW#10_H_15ft-STA 10+60

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```

Project Identification - I-580_RW#10_Soil nail Section H=14ft STA 10+60

--------- WALL GEOMETRY ---------

Vertical Wall Height	=	15.0 ft	
Wall Batter	=	0.0 degree	
		Angle (Deg)	Length (Feet)
First Slope from Wallcrest.	=	26.6	25.0
Second Slope from 1st slope.	=	0.0	0.0
Third Slope from 2nd slope.	=	0.0	0.0
Fourth Slope from 3rd slope.	=	0.0	0.0
Fifth Slope from 3rd slope.	=	0.0	0.0
Sixth Slope from 3rd slope.	=	0.0	0.0
Seventh Slope Angle.	=	0.0	

--------- SLOPE BELOW THE WALL ---------

First Slope Angle below Toe.	=	0.0 degrees
First Slope Distance from Toe.	=	0.0 ft
Second Slope Angle.	=	0.0 degrees
Second Slope Distance from Toe.	=	0.0 ft
Vertical Depth of Search.	=	8.0 ft
Number of Searches below wall Toe.	=	4

--------- SURCHARGE ---------

THE SURCHARGES IMPOSED ON THE SYSTEM ARE:

Begin Surcharge - Distance from toe	=	0.0 ft
End Surcharge - Distance from toe	=	8.0 ft
Loading Intensity - Begin	=	240.0 psf/ft
Loading Intensity - End	=	240.0 psf/ft

--------- OPTION #1 ---------

Ultimate Punching shear, Bond & Yield Stress are used.

--------- SOIL PARAMETERS ---------

Soil Layer	Unit Weight (Pcf)	Friction Angle (Degree)	Cohesion Intercept (Psf)	Bond* Stress (Psi)	Coordinates of Boundary XS1 (ft)	YS1 (ft)	XS2 (ft)	YS2 (ft)
1	125.0	28.0	300.0	4.5	0.0	0.0	0.0	0.0

* Ultimate bond Stress values also depend on BSF (Bond Stress Factor.)

File: I-580_RW#10_H_15ft-STA 10+60

--------- WATER SURFACE ---------

NO Water Table defined for this problem.

--------- SEARCH LIMIT ---------

The Search Limit is from 0.0 to 50.0 ft

You have chosen NOT TO LIMIT the search of failure planes to specific nodes.

--------- REINFORCEMENT PARAMETERS ---------

Number of Reinforcement Levels	=	3
Horizontal Spacing	=	5.0 ft
Yield Stress of Reinforcement	=	60.0 ksi
Diameter of Grouted Hole	=	6.0 in
Punching Shear	=	300.0 kips

---------- (Varying Reinforcement Parameters) ---------

Level	Length (ft)	Inclination (degrees)	Vertical Spacing (ft)	Bar Diameter (in)	Bond Stress Factor
1	22.0	15.0	2.5	1.00	1.00
2	22.0	15.0	5.0	1.00	1.33
3	22.0	15.0	5.0	1.00	1.33

File: I-580_RW#10_H_15ft-STA 10+60

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
Toe	1.54	25.0	42.5	27.1	57.5	9.3

Reinf. Stress at Level 1 = 9.325 Ksi (Pullout controls...)
2 = 17.295 Ksi (Pullout controls...)
3 = 22.187 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
2.00	1.52	30.0	43.2	41.2	89.9	0.0

Reinf. Stress at Level 1 = 8.183 Ksi (Pullout controls...)
2 = 15.757 Ksi (Pullout controls...)
3 = 20.631 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
4.00	1.54	30.0	45.2	42.6	89.9	0.0

Reinf. Stress at Level 1 = 7.230 Ksi (Pullout controls...)
2 = 14.159 Ksi (Pullout controls...)
3 = 18.703 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
6.00	1.59	35.0	42.6	47.6	89.9	0.0

Reinf. Stress at Level 1 = 4.783 Ksi (Pullout controls...)
2 = 11.080 Ksi (Pullout controls...)
3 = 15.798 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
8.00	1.66	35.0	44.3	48.9	89.9	0.0

Reinf. Stress at Level 1 = 3.874 Ksi (Pullout controls...)
2 = 9.478 Ksi (Pullout controls...)
3 = 13.804 Ksi (Pullout controls...)

****
* For Factor of Safety = 1.0 *
* Maximum Average Reinforcement Working Force: *
* 1.636 Kips/level *
****

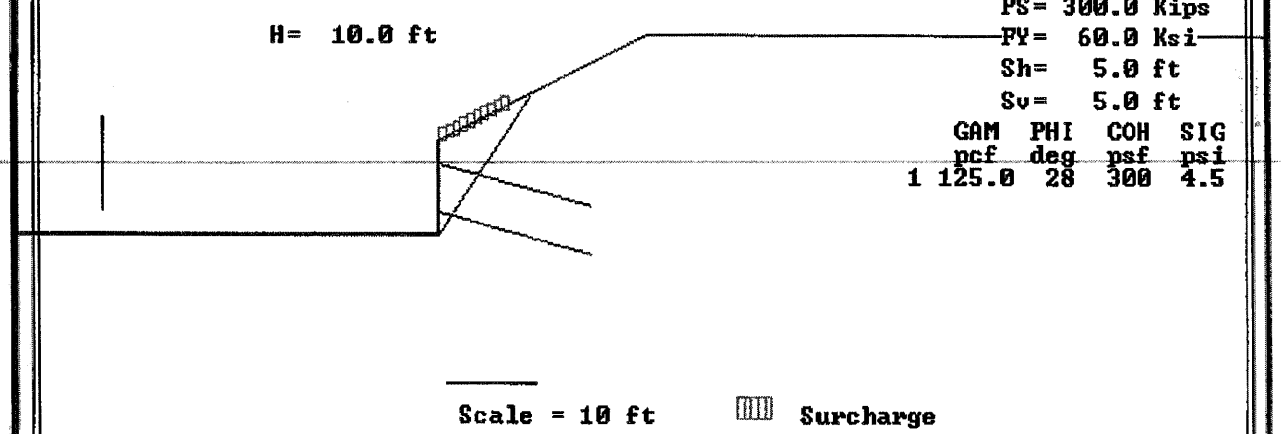
PROJECT TITLE: I-580_RW#10_Soil nail Section H=10ft STA 10+20

Date: 01-27-2010

SnailWin 3.10 File: I-580_RW#10_H_10ft-STA 10+20

Minimum Factor of Safety = 1.75

10.0 ft Behind Wall Crest
0.0 ft Below Wall Toe



File: I-580_RW#10_H_10ft-STA 10+20

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*    Date: 01-27-2010          Time: 12:11:55     *
**************************************************
```

Project Identification - I-580_RW#10_Soil nail Section H=10ft STA 10+20

--------- WALL GEOMETRY ---------

Vertical Wall Height	=	10.0 ft	
Wall Batter	=	0.0 degree	
		Angle (Deg)	Length (Feet)
First Slope from Wallcrest.	=	26.6	25.0
Second Slope from 1st slope.	=	0.0	0.0
Third Slope from 2nd slope.	=	0.0	0.0
Fourth Slope from 3rd slope.	=	0.0	0.0
Fifth Slope from 3rd slope.	=	0.0	0.0
Sixth Slope from 3rd slope.	=	0.0	0.0
Seventh Slope Angle.	=	0.0	

--------- SLOPE BELOW THE WALL ---------

First Slope Angle below Toe.	=	0.0 degrees
First Slope Distance from Toe.	=	0.0 ft
Second Slope Angle.	=	0.0 degrees
Second Slope Distance from Toe.	=	0.0 ft
Vertical Depth of Search.	=	8.0 ft
Number of Searches below wall Toe.	=	4

--------- SURCHARGE ---------

THE SURCHARGES IMPOSED ON THE SYSTEM ARE:

Begin Surcharge - Distance from toe	=	0.0 ft
End Surcharge - Distance from toe	=	8.0 ft
Loading Intensity - Begin	=	240.0 psf/ft
Loading Intensity - End	=	240.0 psf/ft

--------- OPTION #1 ---------

Ultimate Punching shear, Bond & Yield Stress are used.

--------- SOIL PARAMETERS ---------

Soil Layer	Unit Weight (Pcf)	Friction Angle (Degree)	Cohesion Intercept (Psf)	Bond* Stress (Psi)	Coordinates of Boundary XS1 (ft)	YS1 (ft)	XS2 (ft)	YS2 (ft)
1	125.0	28.0	300.0	4.5	0.0	0.0	0.0	0.0

* Ultimate bond Stress values also depend on BSF (Bond Stress Factor.)

File: I-580_RW#10_H_10ft-STA 10+20

--------- WATER SURFACE ---------

NO Water Table defined for this problem.

--------- SEARCH LIMIT ---------

The Search Limit is from 0.0 to 50.0 ft

You have chosen NOT TO LIMIT the search of failure planes to specific nodes.

--------- REINFORCEMENT PARAMETERS ---------

Number of Reinforcement Levels	=	2
Horizontal Spacing	=	5.0 ft
Yield Stress of Reinforcement	=	60.0 ksi
Diameter of Grouted Hole	=	6.0 in
Punching Shear	=	300.0 kips

---------- (Varying Reinforcement Parameters) ---------

Level	Length (ft)	Inclination (degrees)	Vertical Spacing (ft)	Bar Diameter (in)	Bond Stress Factor
1	17.0	15.0	2.5	1.00	1.00
2	17.0	15.0	5.0	1.00	1.33

File: I-580_RW#10_H_10ft-STA 10+20

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
Toe	1.75	10.0	56.3	18.0	89.9	0.0

Reinf. Stress at Level 1 = 9.318 Ksi (Pullout controls...)
2 = 15.270 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
2.00	1.78	30.0	37.7	37.9	89.9	0.0

Reinf. Stress at Level 1 = 5.498 Ksi (Pullout controls...)
2 = 12.126 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
4.00	1.82	30.0	40.0	39.2	89.9	0.0

Reinf. Stress at Level 1 = 4.462 Ksi (Pullout controls...)
2 = 10.369 Ksi (Pullout controls...)

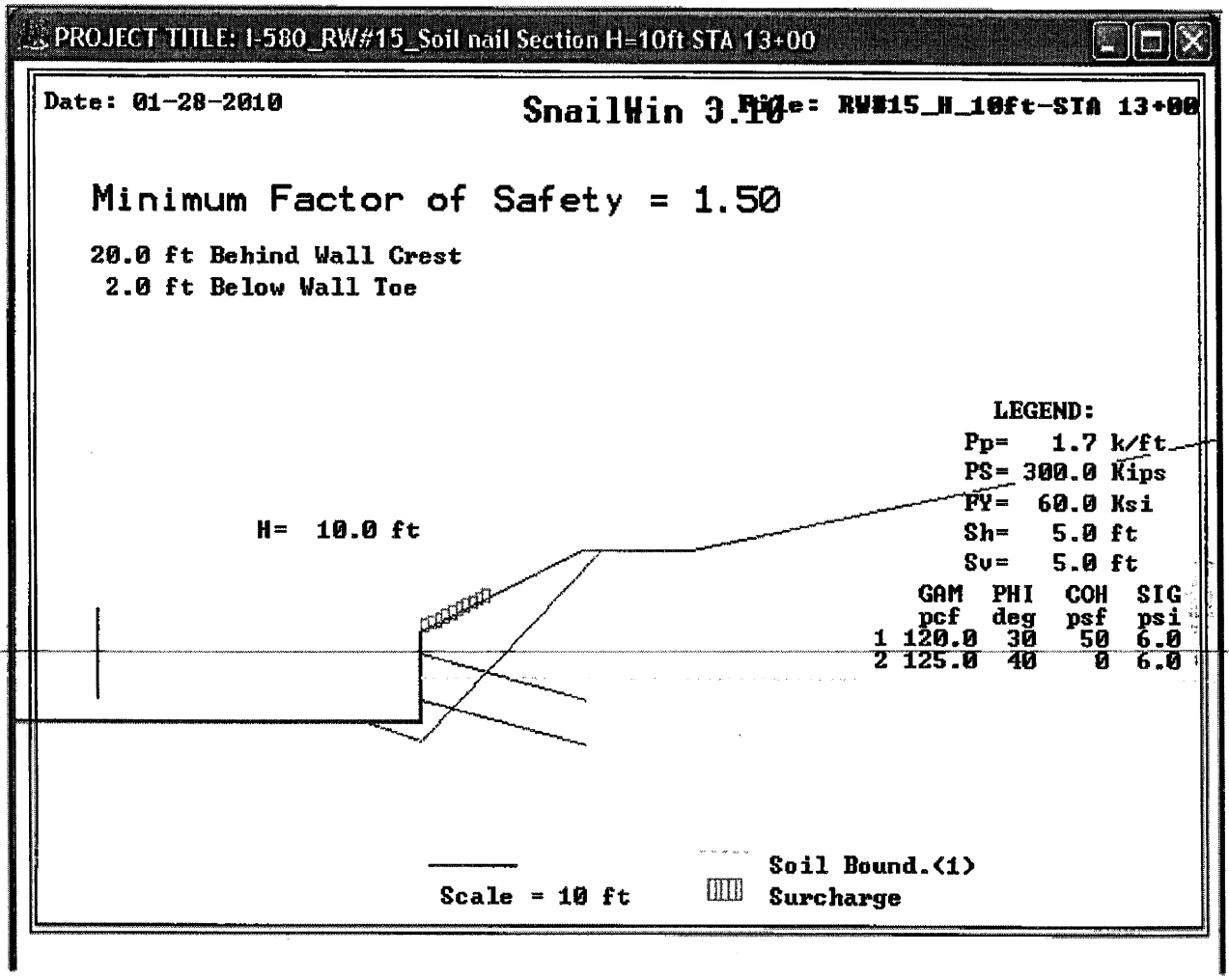
DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
6.00	1.89	30.0	42.2	40.5	89.9	0.0

Reinf. Stress at Level 1 = 3.495 Ksi (Pullout controls...)
2 = 8.665 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
8.00	1.97	35.0	39.8	45.6	89.9	0.0

Reinf. Stress at Level 1 = 1.606 Ksi (Pullout controls...)
2 = 6.247 Ksi (Pullout controls...)

```
**********************************************************************
*                  For Factor of Safety = 1.0                        *
*          Maximum Average Reinforcement Working Force:              *
*                       0.000 Kips/level                             *
**********************************************************************
```


PROJECT TITLE: I-580_RW#15_Soil nail Section H=10ft STA 13+00
Date: 01-28-2010
SnailWin 3.10
File: RW#15_H_10ft-STA 13+00
Minimum Factor of Safety = 1.50
20.0 ft Behind Wall Crest
2.0 ft Below Wall Toe
LEGEND:
Pp= 1.7 k/ft
PS= 300.0 Kips
FY= 60.0 Ksi
Sh= 5.0 ft
Sv= 5.0 ft
H= 10.0 ft
GAM PHI COH SIG
pcf deg psf psi
1 120.0 30 50 6.0
2 125.0 40 0 6.0
Scale = 10 ft
Soil Bound.(1)
Surcharge

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*    Date: 01-28-2010          Time: 15:01:22    *
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Project Identification - I-580_RW#15_Soil nail Section H=10ft STA 13+00

--------- WALL GEOMETRY ---------

Vertical Wall Height	=	10.0 ft	
Wall Batter	=	0.0 degree	
		Angle (Deg)	Length (Feet)
First Slope from Wallcrest.	=	26.6	20.0
Second Slope from 1st slope.	=	0.0	12.0
Third Slope from 2nd slope.	=	12.0	100.0
Fourth Slope from 3rd slope.	=	0.0	0.0
Fifth Slope from 3rd slope.	=	0.0	0.0
Sixth Slope from 3rd slope.	=	0.0	0.0
Seventh Slope Angle.	=	0.0	

--------- SLOPE BELOW THE WALL ---------

First Slope Angle below Toe.	=	0.0 degrees
First Slope Distance from Toe.	=	0.0 ft
Second Slope Angle.	=	0.0 degrees
Second Slope Distance from Toe.	=	0.0 ft
Vertical Depth of Search.	=	8.0 ft
Number of Searches below wall Toe.	=	4

--------- SURCHARGE ---------

THE SURCHARGES IMPOSED ON THE SYSTEM ARE:

Begin Surcharge - Distance from toe	=	0.0 ft
End Surcharge - Distance from toe	=	8.0 ft
Loading Intensity - Begin	=	240.0 psf/ft
Loading Intensity - End	=	240.0 psf/ft

--------- OPTION #1 ---------

Ultimate Punching shear, Bond & Yield Stress are used.

--------- SOIL PARAMETERS ---------

Soil Layer	Unit Weight (Pcf)	Friction Angle (Degree)	Cohesion Intercept (Psf)	Bond* Stress (Psi)	Coordinates of Boundary XS1 (ft)	YS1 (ft)	XS2 (ft)	YS2 (ft)
1	120.0	30.0	50.0	6.0	0.0	0.0	0.0	0.0
2	125.0	40.0	0.0	6.0	0.0	5.0	100.0	5.0

* Ultimate bond Stress values also depend on BSF (Bond Stress Factor.)

--------- WATER SURFACE ---------

NO Water Table defined for this problem.

--------- SEARCH LIMIT ---------

The Search Limit is from 0.0 to 50.0 ft

You have chosen NOT TO LIMIT the search of failure planes to specific nodes.

--------- REINFORCEMENT PARAMETERS ---------

Number of Reinforcement Levels	=	2
Horizontal Spacing	=	5.0 ft
Yield Stress of Reinforcement	=	60.0 ksi
Diameter of Grouted Hole	=	6.0 in
Punching Shear	=	300.0 kips

---------- (Varying Reinforcement Parameters) ---------

Level	Length (ft)	Inclination (degrees)	Vertical Spacing (ft)	Bar Diameter (in)	Bond Stress Factor
1	19.0	15.0	2.5	1.00	1.00
2	19.0	15.0	5.0	1.00	1.25

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
Toe	1.61	20.0	43.5	27.6	89.9	0.0

Reinf. Stress at Level 1 = 13.578 Ksi (Pullout controls...)
2 = 22.702 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
2.00	1.50	20.0	46.3	29.0	89.9	0.0

Reinf. Stress at Level 1 = 13.300 Ksi (Pullout controls...)
2 = 22.300 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
4.00	1.60	25.0	42.6	33.9	89.9	0.0

Reinf. Stress at Level 1 = 9.650 Ksi (Pullout controls...)
2 = 17.935 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
6.00	1.81	25.0	44.9	35.3	89.9	0.0

Reinf. Stress at Level 1 = 7.614 Ksi (Pullout controls...)
2 = 14.404 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
8.00	2.06	30.0	42.0	40.3	89.9	0.0

Reinf. Stress at Level 1 = 4.417 Ksi (Pullout controls...)
2 = 10.181 Ksi (Pullout controls...)

****
* For Factor of Safety = 1.0 *
* Maximum Average Reinforcement Working Force: *
* 7.036 Kips/level *
****

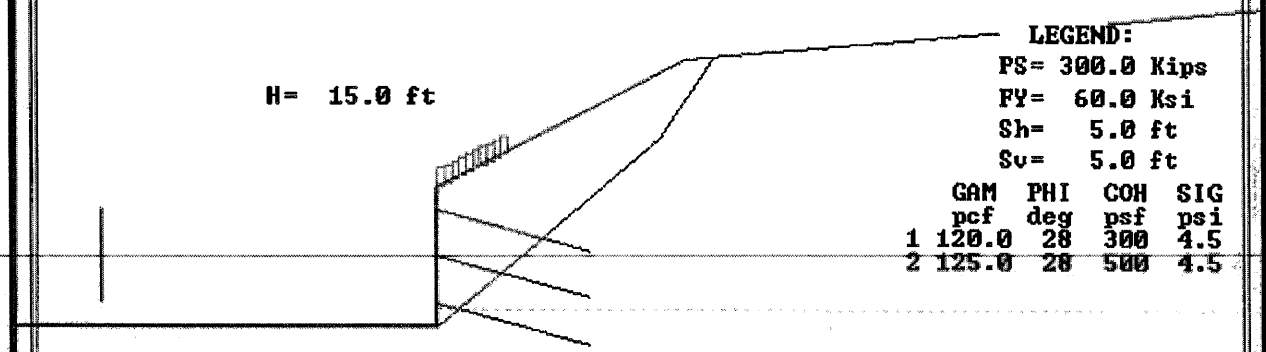
PROJECT TITLE: I-580_RW#15_Soil nail Section H=15ft STA 17+50

Date: 01-27-2010

SnailWin 3.10 File: RW#15_H_15ft-STA 17+50

Minimum Factor of Safety = 1.50

30.0 ft Behind Wall Crest
0.0 ft Below Wall Toe



LEGEND:
PS= 300.0 Kips
FY= 60.0 Ksi
Sh= 5.0 ft
Sv= 5.0 ft

	GAM pcf	PHI deg	COH psf	SIG psi
1	120.0	28	300	4.5
2	125.0	28	500	4.5

Scale = 10 ft

Soil Bound.(1)
Surcharge

```
**************************************************
*    CALIFORNIA DEPARTMENT OF TRANSPORTATION     *
*          ENGINEERING SERVICE CENTER            *
*     DIVISION OF MATERIALS AND FOUNDATIONS      *
*   Office of Roadway Geotechnical Engineering   *
*    Date: 01-27-2010          Time: 11:58:15    *
**************************************************
```

Project Identification - I-580_RW#15_Soil nail Section H=15ft STA 17+50

--------- WALL GEOMETRY ---------

Vertical Wall Height	=	15.0 ft	
Wall Batter	=	0.0 degree	
		Angle (Deg)	Length (Feet)
First Slope from Wallcrest.	=	26.6	30.0
Second Slope from 1st slope.	=	5.0	100.0
Third Slope from 2nd slope.	=	0.0	0.0
Fourth Slope from 3rd slope.	=	0.0	0.0
Fifth Slope from 3rd slope.	=	0.0	0.0
Sixth Slope from 3rd slope.	=	0.0	0.0
Seventh Slope Angle.	=	0.0	

--------- SLOPE BELOW THE WALL ---------

First Slope Angle below Toe.	=	0.0 degrees
First Slope Distance from Toe.	=	0.0 ft
Second Slope Angle.	=	0.0 degrees
Second Slope Distance from Toe.	=	0.0 ft
Vertical Depth of Search.	=	8.0 ft
Number of Searches below wall Toe.	=	4

--------- SURCHARGE ---------

THE SURCHARGES IMPOSED ON THE SYSTEM ARE:

Begin Surcharge - Distance from toe	=	0.0 ft
End Surcharge - Distance from toe	=	8.0 ft
Loading Intensity - Begin	=	240.0 psf/ft
Loading Intensity - End	=	240.0 psf/ft

--------- OPTION #1 ---------

Ultimate Punching shear, Bond & Yield Stress are used.

--------- SOIL PARAMETERS ---------

Soil Layer	Unit Weight (Pcf)	Friction Angle (Degree)	Cohesion Intercept (Psf)	Bond* Stress (Psi)	Coordinates of Boundary XS1 (ft)	YS1 (ft)	XS2 (ft)	YS2 (ft)
1	120.0	28.0	300.0	4.5	0.0	0.0	0.0	0.0
2	125.0	28.0	500.0	4.5	0.0	2.0	100.0	2.0

* Ultimate bond Stress values also depend on BSF (Bond Stress Factor.)

--------- WATER SURFACE ---------

NO Water Table defined for this problem.

--------- SEARCH LIMIT ---------

The Search Limit is from 0.0 to 50.0 ft

You have chosen NOT TO LIMIT the search of failure planes to specific nodes.

--------- REINFORCEMENT PARAMETERS ---------

Number of Reinforcement Levels	= 3
Horizontal Spacing	= 5.0 ft
Yield Stress of Reinforcement	= 60.0 ksi
Diameter of Grouted Hole	= 6.0 in
Punching Shear	= 300.0 kips

---------- (Varying Reinforcement Parameters) ---------

Level	Length (ft)	Inclination (degrees)	Vertical Spacing (ft)	Bar Diameter (in)	Bond Stress Factor
1	17.0	15.0	2.5	1.00	1.00
2	17.0	15.0	5.0	1.00	1.33
3	17.0	15.0	5.0	1.00	1.67

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
Toe	1.50	30.0	39.9	31.3	55.1	10.5

Reinf. Stress at Level 1 = 4.563 Ksi (Pullout controls...)
2 = 11.439 Ksi (Pullout controls...)
3 = 21.106 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
2.00	1.58	35.0	37.9	35.5	53.2	11.7

Reinf. Stress at Level 1 = 2.179 Ksi (Pullout controls...)
2 = 8.289 Ksi (Pullout controls...)
3 = 17.179 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
4.00	1.67	40.0	40.0	52.2	89.9	0.0

Reinf. Stress at Level 1 = 1.228 Ksi (Pullout controls...)
2 = 6.470 Ksi (Pullout controls...)
3 = 14.199 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
6.00	1.75	40.0	41.7	53.5	89.9	0.0

Reinf. Stress at Level 1 = 0.336 Ksi (Pullout controls...)
2 = 4.846 Ksi (Pullout controls...)
3 = 11.607 Ksi (Pullout controls...)

DEPTH BELOW WALL TOE (ft)	MINIMUM SAFETY FACTOR	DISTANCE BEHIND WALL TOE (ft)	LOWER FAILURE PLANE ANGLE (deg)	LOWER FAILURE PLANE LENGTH (ft)	UPPER FAILURE PLANE ANGLE (deg)	UPPER FAILURE PLANE LENGTH (ft)
8.00	1.84	45.0	40.2	58.9	89.9	0.0

Reinf. Stress at Level 1 = 0.000 Ksi
2 = 2.414 Ksi (Pullout controls...)
3 = 8.493 Ksi (Pullout controls...)

****
* For Factor of Safety = 1.0 *
* Maximum Average Reinforcement Working Force: *
* 0.041 Kips/level *
****

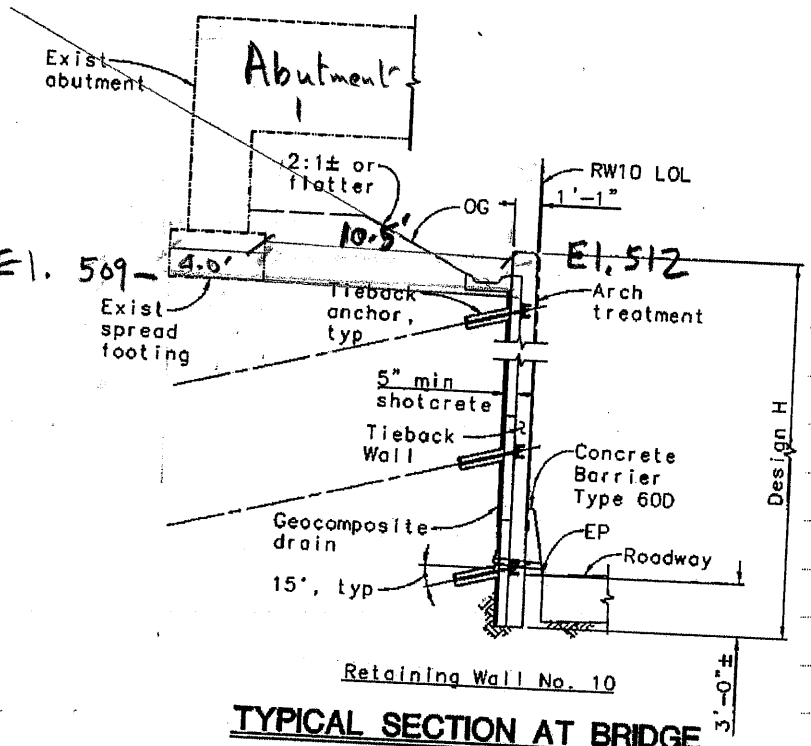
TIEBACK CALCULATIONS

Wall No. 10

I-580 Westbound HOV Lane Project

Retaining Wall No. 10 – Tieback Wall in front of Abutment 1 of Los Colinas Road Overcrossing over I-580, from 703+60 to 704+20

(Design Height = 16.0 ft)



Retaining Wall No. 10

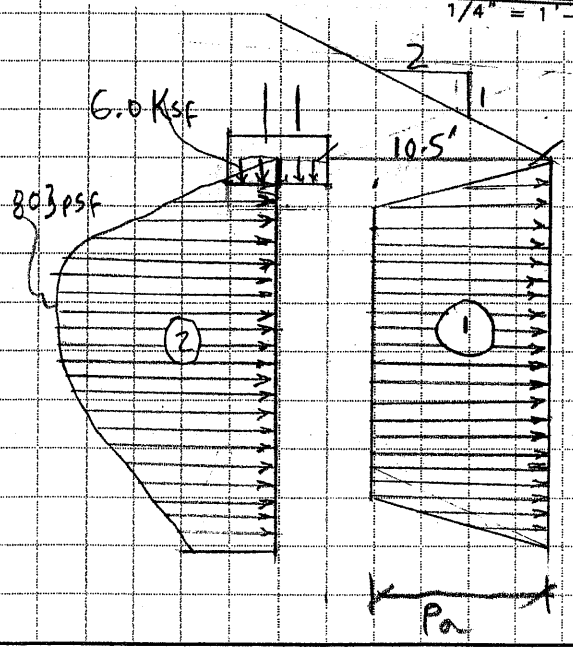
TYPICAL SECTION AT BRIDGE

1/4" = 1'-0"

(As-Built Footing Pressure (q_v) = 3 tsf = 6 ksf)

① Apparent lateral earth pressure per BDS Section 5.5.5.7.1 (see Pg 2 for calcs.)

② Lateral pressure due to Abutment 1 footing per Elastic Solution (see Pg 4 for calcs.)



① The Apparent Lateral Pressure should be determined by using P_{total} per BDS Section 5.5.5.7. The minimum P_{total} should be $1.44 P_{active}$

The soils encountered by the tiebacks will be predominantly very stiff clays per boring A-09-237

Using a shear strength of 2.5 Ksf,

$$N_s = \frac{\gamma_s H}{S_u} = \frac{0.125 \times 16}{2.5} = 0.8, \text{ e.g. } \leq 4$$

Using $\phi = 28°$ and $c = 300$ psf

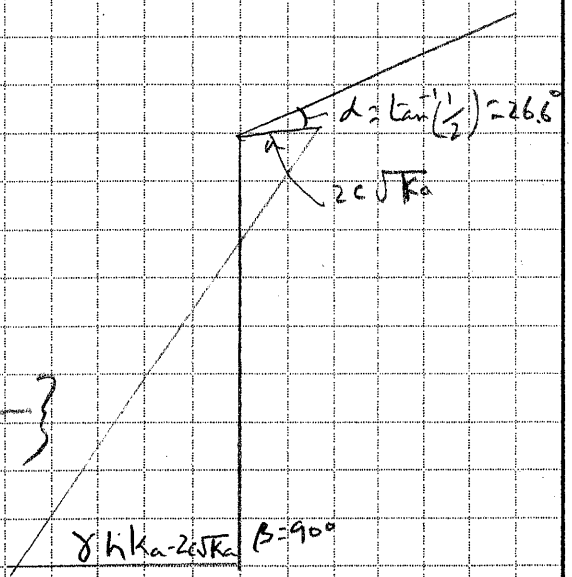
Using Rankine's Theory

$$K_a = \cos\alpha \left\{ \frac{\cos\alpha - \sqrt{\cos^2\alpha - \cos^2\phi}}{\cos\alpha + \sqrt{\cos^2\alpha - \cos^2\phi}} \right\}$$

$$= \cos 26.6° \left\{ \frac{\cos 26.6° - \sqrt{\cos^2 26.6° - \cos^2 28°}}{\cos 26.6° + \sqrt{\cos^2 26.6° + \cos^2 28°}} \right\}$$

$$= 0.894 \left\{ \frac{0.894 - \sqrt{(0.894)^2 - (0.882)^2}}{0.894 + \sqrt{(0.894)^2 - (0.882)^2}} \right\}$$

$$= 0.894 \left\{ \frac{0.894 - 0.146}{0.894 + 0.146} \right\} = 0.894 \left\{ \frac{0.748}{1.04} \right\} = 0.64$$



$$\gamma h K_a - 2c\sqrt{K_a} = 125 \times 16 \times 0.64 - 2(300)\sqrt{0.64}$$
$$= 1280 - 384 = 896$$

Backcalculating Equivalent K_a^*

$$125 \times 16 \times K_a^* = 896$$
$$\therefore K_a^* = 0.448 \simeq 0.45$$

It is reasonable to use $K_a = 0.45$ for design

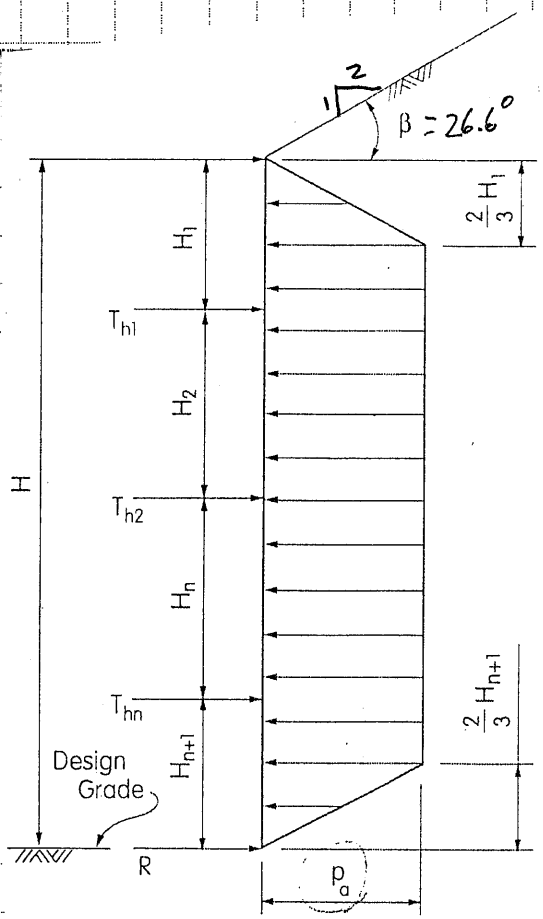
∴ Equivalent Fluid Pressure $= 0.45 \times 125 = 56$ pcf $= 0.056$ Kcf

For $H = 16'$ (max.)

$$P_{active} = \frac{1}{2}(16)^2 \times 0.056 = 7.17 \text{ K/ft}$$

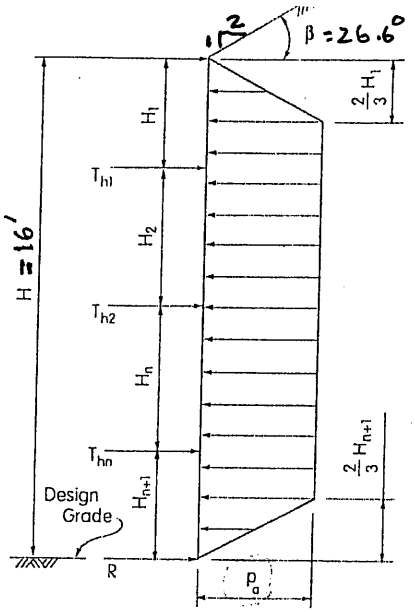
$$P_{total} = 1.44\, P_{active} = 1.44 \times 7.17 = 10.32 \text{ K/ft}$$ for determination of Apparent Lateral Pressure (1) per BDS.

$$P_a = \frac{P_{total}}{\left(H - \frac{1}{3}H_1 - \frac{1}{3}H_{n+1}\right)} = \frac{10.32}{\left(16 - \frac{1}{3}H_1 - \frac{1}{3}H_{n+1}\right)}$$



b) Wall with multiple levels of anchors

Apparent Lateral Pressure (per BDS Section 5.5.5.7.1)



b) Wall with multiple levels of anchors

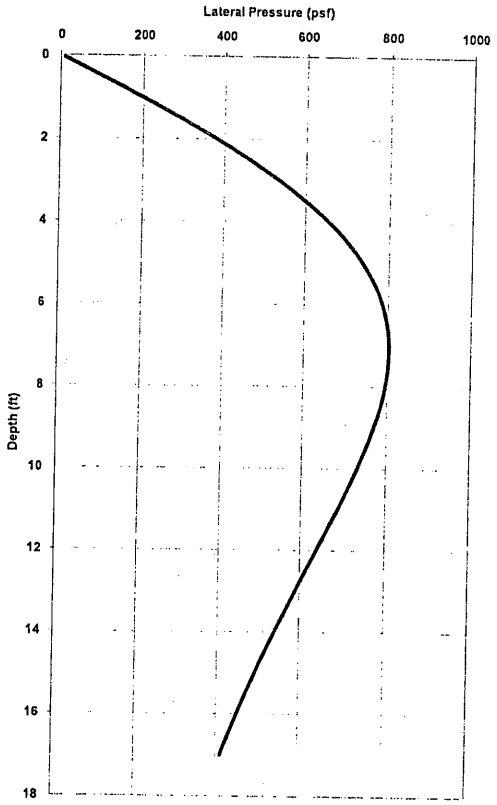
$$P_a \text{ (in psf)} = \frac{10320}{(16 - 1/3\,H_1 - 1/3\,H_{n+1})}$$

Lateral Pressure due to Abutment 1 footing per Elastic Solution

h (ft)	α	β	σ_h (psf)	Segmental Load (kips)
0.05	1.567	0.001	10.04	
0.10	1.563	0.003	20.07	0.001
0.20	1.555	0.005	40.12	0.003
0.30	1.547	0.008	60.14	0.005
0.40	1.539	0.010	80.11	0.007
0.50	1.531	0.013	100.02	0.009
0.60	1.523	0.016	119.85	0.011
0.70	1.515	0.018	139.59	0.013
0.80	1.507	0.021	159.21	0.015
0.90	1.499	0.024	178.71	0.017
1.00	1.491	0.026	198.07	0.019
1.20	1.475	0.031	236.32	0.043
1.40	1.459	0.036	273.83	0.051
1.60	1.443	0.041	310.51	0.058
1.80	1.428	0.046	346.25	0.066
2.00	1.412	0.051	380.96	0.073
2.50	1.373	0.063	462.69	0.211
3.00	1.335	0.074	536.33	0.250
3.50	1.298	0.085	601.12	0.284
4.00	1.261	0.095	656.59	0.314
4.50	1.225	0.104	702.60	0.340
5.00	1.190	0.112	739.32	0.360
5.50	1.156	0.120	767.10	0.377
6.00	1.123	0.127	786.52	0.388
6.50	1.091	0.133	798.25	0.396
7.00	1.060	0.138	803.09	0.400
7.50	1.030	0.143	801.85	0.401
8.00	1.001	0.147	795.35	0.399
8.50	0.974	0.150	784.39	0.395
9.00	0.947	0.153	769.72	0.389
9.50	0.921	0.155	752.06	0.380
10.00	0.896	0.157	732.02	0.371
10.50	0.872	0.159	710.18	0.361
11.00	0.849	0.160	687.04	0.349
12.00	0.806	0.161	638.48	0.663
13.00	0.766	0.160	589.05	0.614
14.00	0.729	0.159	540.58	0.565
15.00	0.695	0.158	494.27	0.517
16.00	0.663	0.156	450.83	0.473
17.00	0.634	0.153	410.60	0.431

p= 10.02 kips/ft of wall

Point of Action = 6.635 ft below top



Recommended Pressure Diagrams

BKF Engineers
1650 Technology Drive, Suite 650
San Jose, CA 95110

November 20, 2009
Job No.: 208102.GDR

Attn.: Ms. Natalina Bernardi

Sub: Design Recommendations for Tieback Wall (Part of Wall No. 10)
I-580 HOV Lane Widening Project – East Segment
Alameda County, California

Dear Ms. Bernardi:

The purpose of this memorandum is to provide design recommendations from a geotechnical standpoint for the proposed tieback wall below the Los Colinas Road Overcrossing, approximately 12 feet south of the north abutment of the overcrossing.

Per the project plans, the tieback wall will be part of Retaining Wall No. 10, located on the northern side of westbound I-580, constructed as part of the widening of westbound I-580. The tieback wall will cut into the existing slope in front of the abutment. The wall will be 60 feet long (from Sta. 703+60 to Sta. 704+20 ("B" Line)) and the planned wall height is 16 feet. The tieback wall will be flanked by soil nail walls on both sides as parts of Wall No. 10.

Based on information provided by the designer, a section of the proposed tieback wall with existing abutment footing and end slope are shown with the calculation attached in Appendix C. The proposed tieback wall is approximately 10.5 feet from the existing shallow foundation at the north abutment of the overcrossing. Per the as-built plans, the existing footing is at Elev. 509.0 feet and designed for footing pressure of 3 Tons per sq. ft. (6 ksf). The existing end slope is at 2H:1V.

The design of tieback wall should follow Section 5 (Retaining Walls) of Caltrans Bridge Design Specifications (BDS). Due to proximity of the tieback wall and existing abutment footing, the effect of the load from the footing should be accounted for in design. The as-built abutment footing may be viewed as a uniformly loaded strip parallel to the wall (Section 5.5.5.10.2 of BDS) for determining the surcharge using elastic solution.

The load contributions on the wall design consist of two components as described below:

(1) ***Apparent Lateral Pressure*** – The apparent pressure is the trapezoidal earth pressure diagram per BDS behind the tieback wall. The load intensity is determined from P_{total} per BDS, and the Ptotal should be minimal 1.44 P_{active} (BDS). The P_{active} is determined for the 16 feet high wall with

2H:1V end slope. The evaluation of K_a and P_{active} considers the embankment (compacted fill). The calculation is shown in Appendix C.

(2) ***Footing Surcharge*** – The existing footing is viewed as a uniformly loaded strip parallel to the wall. The surcharge is calculated using elastic solution per BDS. The as-built footing pressure is 3 Tons per S.F. (6 ksf). A spread sheet was developed to calculate the lateral surcharge based on the design condition. The spread sheet is attached in Appendix C.

The tiebacks are anticipated to be anchored into the existing embankment and the underlying native soil. It should be noted that changes in the subsurface conditions during construction may be expected. Caltrans standard performance specifications for tieback systems should be utilized for attaining the required design capacity. The contractor should develop their design and construction criteria.

The recommended pressure diagrams are attached.

The bond strength for design of tieback bond length depends on factors such as installation technique, diameter of the holes etc. For preliminary design estimate, the estimated ultimate bond strength is 20 psi, and the work bond strength for design may be assumed at 10 psi (FS = 2). Note that tieback is a design-build system, and the contractor should determine the bond length, drilling and grouting method, etc. For vertical design, an allowable bearing capacity of 3 ksf may be used for wall facing bearing in native stiff clay. The tiebacks should be constructed and tested as per Caltrans standard performance specifications for tieback systems. All tiebacks should be either performance tested or proof tested. We recommend that at least 5% of the total number of tiebacks be performance tested. The remaining tiebacks should be proof tested. If the design tieback capacity is not achieved during the initial test program, post-grouting technique, large diameter tieback holes etc. may be considered for the tieback installation.

Because of the variability in the materials in nature and the limitations in the exploration program, it is recommended that several cost control measures be implemented in the specifications for the tieback system. The contractor should be advised to verify the field conditions and verify the tieback capacity through his own efforts. It would be advisable for the contractor to have capability to perform post-grouting for the tieback installation. He should also verify the drilling conditions into the existing material (such as by horizontal drilling). This is to see if the operation will require special drilling tools and equipment. We cannot verify the as-built conditions. Contingencies should therefore be included to modify the tieback angle, should obstructions be encountered.

The top tier tiebacks will pass within a few feet below the abutment footing. To avoid adverse effects of tieback grouting on the footing above, it is recommended that the unbounded length of the top tier tiebacks be 20 feet (e.g. extending 5 feet beyond the outer edge of the footing). For the other tiebacks, a minimum unbonded length of 15 feet is recommended. The designer has indicated that a typical inclination of 15 degrees is planned for tieback installation. Geocomposite drain should be

installed to provide drainage of the wall. The drainage should be connected to PVC pipes near the toe and properly daylighted.

Please be advised that we are performing a professional service and that our conclusions are professional opinions only. All work done and all recommendations made are in accordance with generally accepted geotechnical engineering principles and practices. No warranty, expressed or implied, of merchantability or fitness, is made or intended in connection with our work.

Very truly yours,
PARIKH CONSULTANTS, INC.

Partha Sircar, Ph.D., P.E., C54619
Senior Engineer

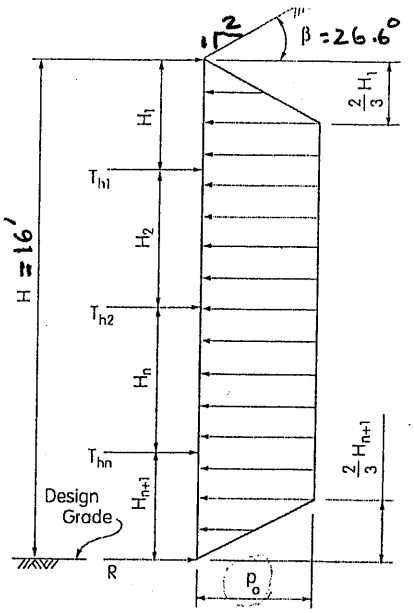
Gary Parikh, P.E., G.E., 666
Project Manager

Attachments: Recommended Pressure Diagrams

cc: Ms. Ines Li, Biggs Cardosa Associates

FW Tieback Design Recommendations (Wall No. 10) – I-580 Westbound Widening{ S:\Ongoing Projects\208102.GDR}

Apparent Lateral Pressure (per BDS Section 5.5.5.7.1)

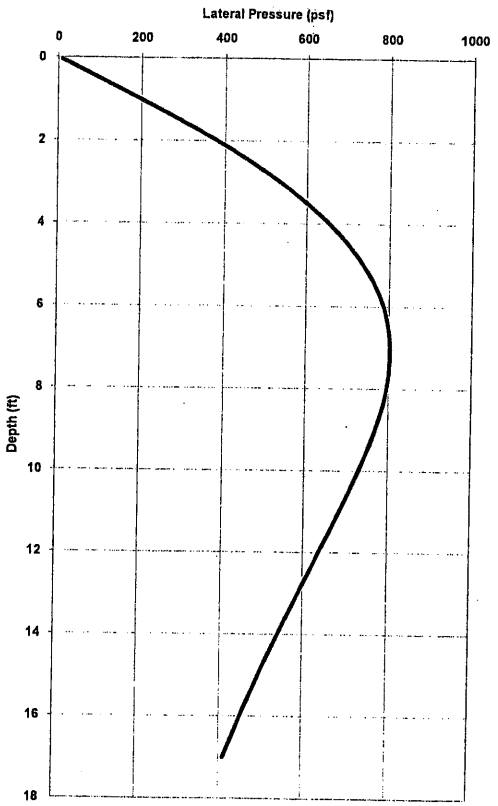


b) Wall with multiple levels of anchors

$$P_a \text{ (in psf)} = \frac{10320}{(16 - 1/3\,H_1 - 1/3\,H_{n+1})}$$

Lateral Pressure due to Abutment 1 footing per Elastic Solution

h (ft)	α	β	σ_h (psf)	Segmental Load (kips)
0.05	1.567	0.001	10.04	
0.10	1.563	0.003	20.07	0.001
0.20	1.555	0.005	40.12	0.003
0.30	1.547	0.008	60.14	0.005
0.40	1.539	0.010	80.11	0.007
0.50	1.531	0.013	100.02	0.009
0.60	1.523	0.016	119.85	0.011
0.70	1.515	0.018	139.59	0.013
0.80	1.507	0.021	159.21	0.015
0.90	1.499	0.024	178.71	0.017
1.00	1.491	0.026	198.07	0.019
1.20	1.475	0.031	236.32	0.043
1.40	1.459	0.036	273.83	0.051
1.60	1.443	0.041	310.51	0.058
1.80	1.428	0.046	346.25	0.066
2.00	1.412	0.051	380.96	0.073
2.50	1.373	0.063	462.69	0.211
3.00	1.335	0.074	536.33	0.250
3.50	1.298	0.085	601.12	0.284
4.00	1.261	0.095	656.59	0.314
4.50	1.225	0.104	702.60	0.340
5.00	1.190	0.112	739.32	0.360
5.50	1.156	0.120	767.10	0.377
6.00	1.123	0.127	786.52	0.388
6.50	1.091	0.133	798.25	0.396
7.00	1.060	0.138	803.09	0.400
7.50	1.030	0.143	801.85	0.401
8.00	1.001	0.147	795.35	0.399
8.50	0.974	0.150	784.39	0.395
9.00	0.947	0.153	769.72	0.389
9.50	0.921	0.155	752.06	0.380
10.00	0.896	0.157	732.02	0.371
10.50	0.872	0.159	710.18	0.361
11.00	0.849	0.160	687.04	0.349
12.00	0.806	0.161	638.48	0.663
13.00	0.766	0.160	589.05	0.614
14.00	0.729	0.159	540.58	0.565
15.00	0.695	0.158	494.27	0.517
16.00	0.663	0.156	450.83	0.473
17.00	0.634	0.153	410.60	0.431



p= 10.02 kips/ft of wall

Point of Action = 6.635 ft below top

Recommended Pressure Diagrams

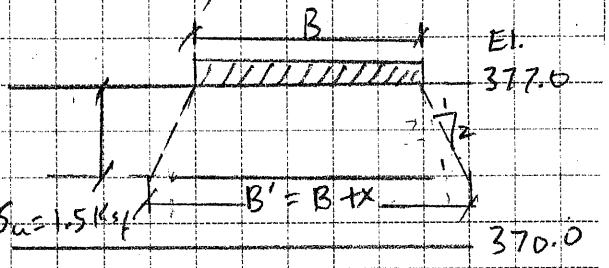
BEARING CAPACITY OF 22-FT SEGMENT

(RETAINING WALL NO. 9)

PARIKH
Practicing in the Geosciences

JOB 208102.GDR
SHEET NO ____ OF ____
CALCULATED BY Partha Sircar DATE 10/30/2011
CHECKED BY ____ DATE ____
SUBJECT Bearing Capacity for 22' wall segment (Wall #9)

Based on Boring A-11-327



$c_1 = S_u = 1.5$ ksf

$c_2 = S_u = 3.0$ ksf

$c_2/c_1 = \frac{3.0}{1.5} = 2.0$

$q_{ult}' = cN_c$ (N_c from attached table for long rectangular footing)

$q_{ult} = q_{ult}' \times \frac{B'}{B}$

TABLE 3.6. MODIFIED BEARING CAPACITY FACTOR N_m

Long Rectangular Footing ($L/B \leq 5$)

c_2/c_1 \ B/H	2	4	6	8	10	20	∞
1.0	5.14	5.14	5.14	5.14	5.14	5.14	5.14
1.5	5.14	5.31	5.45	5.59	5.70	6.14	7.71
2	5.14	5.43	5.69	5.92	6.13	6.95	10.28
3	5.14	5.59	6.00	6.38	6.74	8.16	15.42
4	5.14	5.69	6.21	6.69	7.14	9.02	20.56
5	5.14	5.76	6.35	6.90	7.42	9.66	25.70
10	5.14	5.93	6.69	7.43	8.14	11.40	51.40
∞	5.14	6.14	7.14	8.14	9.14	14.14	∞

Square or Circular Footing ($L/B = 1$)

c_2/c_1 \ B/H	4	8	12	16	20	40	∞
1	6.17	6.17	6.17	6.17	6.17	6.17	6.17
1.5	6.17	6.34	6.49	6.63	6.76	7.25	9.25
2	6.17	6.46	6.73	6.98	7.20	8.10	12.34
3	6.17	6.63	7.05	7.45	7.82	9.36	18.51
4	6.17	6.73	7.26	7.75	8.23	10.24	24.68
5	6.17	6.80	7.40	7.97	8.51	10.88	30.85
10	6.17	6.96	7.74	8.49	9.22	12.58	61.70
∞	6.17	7.17	8.17	9.17	10.17	15.17	∞

(From Winterkorn & Fang, 1975)

B	X	H	B'	B'/H	Nc'	qult'	qult	qall
12	4	3	16	5.33	5.60	8.41	11.2	3.74
14	4	3	18	6.00	5.69	8.54	11.0	3.66
16	4	3	20	6.67	5.77	8.65	10.8	3.60
12	5	2	17	8.50	5.97	8.96	12.7	4.23
14	5	2	19	9.50	6.08	9.12	12.4	4.12
16	5	2	21	10.50	6.18	9.27	12.2	4.06
16	3	4	19	4.75	5.53	8.29	9.8	3.28

$c_1 =$ 1.5 ksf $c_2 =$ 3.0 ksf

PIPE/CULVERT DESIGN

(AltPipe Output)

AltPipe

Project EA: **04000212491**
Project Engineer: **DAVE DICKINSON**
Location: **04-ALA**
Description: **580 WB HOV (East)**

Steel Pipes

DSN/U		1b	1d	1f	1h	2b	2d	2f	3d	4c	5b	9b
Pipe Diameter (in)		24	24	18	18	18	18	18	18	18	18	24
Pipe Type	Coat	Minimum Thickness (in)										
Corrugated Steel Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	BC	0.079	0.079									0.079
	BCI	0.064	0.064	0.064	0.064	0.064	0.064		0.064	0.064	0.064	0.064
	PA	0.052	0.052	0.052	0.052	0.052	0.052		0.052	0.052	0.052	0.052
	PS	0.052	0.052	0.052	0.052	0.052	0.052		0.052	0.052	0.052	0.052
Corrugated Steel Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	BC	0.079	0.079									0.079
	BCI	0.064	0.064	0.064	0.064	0.064	0.064		0.064	0.064	0.064	0.064
	PA	0.064	0.064	0.064	0.064	0.064	0.064		0.064	0.064	0.064	0.064
	PS	0.064	0.064	0.064	0.064	0.064	0.064		0.064	0.064	0.064	0.064
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch	GAL	0.109	0.109									0.109
	AL2	0.109	0.109									0.109
	BC	0.079	0.079									0.079
	BCI	0.064	0.064									0.064
	PA	0.064	0.064									0.064
	PS	0.064	0.064									0.064
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 8½" Pitch	GAL	0.109	0.109									0.109
	AL2	0.109	0.109									0.109
	BC	0.079	0.079									0.079
	BCI	0.064	0.064									0.064
	PA	0.064	0.064									0.064
	PS	0.064	0.064									0.064
Steel Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch	GAL	0.109	0.109									0.109
	AL2	0.109	0.109									0.109
	BC	0.079	0.079									0.079
	BCI	0.064	0.064									0.064
	PA	0.064	0.064									0.064
	PS	0.064	0.064									0.064

Aluminum Pipes

DSN/U	1b	1d	1f	1h	2b	2d	2f	3d	4c	5b	9b
Pipe Diameter (in)	**24**	**24**	**18**	**18**	**18**	**18**	**18**	**18**	**18**	**18**	**24**
Pipe Type	**Minimum Thickness (in)**										
Corrugated Aluminum Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Corrugated Aluminum Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Aluminum Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch	0.060	0.060									0.060
Aluminum Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch	0.060	0.060									0.060

Plastic Pipes

DSN/U	1b	1d	1f	1h	2b	2d	2f	3d	4c	5b	9b
Pipe Diameter (in)	**24**	**24**	**18**	**18**	**18**	**18**	**18**	**18**	**18**	**18**	**24**
Pipe Type	**Availability**										
PVC Corrugated	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
PVC Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type S	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type C	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable

Reinforced Concrete Pipes

DSN/U	1b	1d	1f	1h	2b	2d	2f	3d	4c	5b	9b
Pipe Diameter (in)	**24**	**24**	**18**	**18**	**18**	**18**	**18**	**18**	**18**	**18**	**24**
Steel Cover (in)	1	1	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	1
Sacks of Cement	5	5	5	5	5	5	5	5	5	5	5
Percentage Water	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

Other Information

DSN/U	1b	1d	1f	1h	2b	2d	2f	3d	4c	5b	9b
Soil pH	7.67	7.67	7.67	7.67	7.67	7.67	7.67	7.67	7.67	7.67	7.67
Minimum Soil Resistivity (ohm-cm)	1740	1740	1740	1740	1740	1740	1740	1740	1740	1740	1740
Sulfate Concentration (ppm)	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
Chloride Concentration (ppm)	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
Abrasion Level	3	3	3	3	3	3	3	3	3	3	3
2–5 Year Flow Velocity (ft/sec)	3	3	3	3	3	3	8	3	3	3	5
Design Service Life (years)	50	50	50	50	50	50	50	50	50	50	50
Height of Cover (ft)	4.6	5	5.6	5.5	3	3.1	3.7	4.4	5.6	6.7	4.2

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AltPipe

Project EA: **04000212491**
Project Engineer: **DAVE DICKINSON**
Location: **04-ALA**
Description: **580 WB HOV (EAST)**

Steel Pipes

DSN/U		11d	12b	12d	12f	12k	14b	14d	16b
Pipe Diameter (in)		18	24	24	24	18	24	24	24
Pipe Type	Coat	Minimum Thickness (in)							
Corrugated Steel Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	BC		0.079	0.079			0.079	0.079	
	BCI	0.064	0.064	0.064	0.079	0.064	0.064	0.064	
	PA	0.052	0.052	0.052	0.079	0.052	0.052	0.052	0.079
	PS	0.052	0.052	0.052	0.079	0.052	0.052	0.052	0.079
Corrugated Steel Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	BC		0.079	0.079			0.079	0.079	
	BCI	0.064	0.064	0.064	0.079	0.064	0.064	0.064	
	PA	0.064	0.064	0.064	0.079	0.064	0.064	0.064	0.079
	PS	0.064	0.064	0.064	0.079	0.064	0.064	0.064	0.079
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch	GAL		0.109	0.109	0.109		0.109	0.109	
	AL2		0.109	0.109	0.109		0.109	0.109	
	BC		0.079	0.079	0.109		0.079	0.079	0.109
	BCI		0.064	0.064	0.079		0.064	0.064	0.109
	PA		0.064	0.064	0.079		0.064	0.064	0.079
	PS		0.064	0.064	0.079		0.064	0.064	0.079
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 8½" Pitch	GAL		0.109	0.109	0.109		0.109	0.109	
	AL2		0.109	0.109	0.109		0.109	0.109	
	BC		0.079	0.079	0.109		0.079	0.079	0.109
	BCI		0.064	0.064	0.079		0.064	0.064	0.109
	PA		0.064	0.064	0.079		0.064	0.064	0.079
	PS		0.064	0.064	0.079		0.064	0.064	0.079
Steel Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch	GAL		0.109	0.109	0.109		0.109	0.109	
	AL2		0.109	0.109	0.109		0.109	0.109	
	BC		0.079	0.079	0.109		0.079	0.079	0.109
	BCI		0.064	0.064	0.079		0.064	0.064	0.109
	PA		0.064	0.064	0.079		0.064	0.064	0.079
	PS		0.064	0.064	0.079		0.064	0.064	0.079

Aluminum Pipes

DSN/U	11d	12b	12d	12f	12k	14b	14d	16b
Pipe Diameter (in)	18	24	24	24	18	24	24	24
Pipe Type	Minimum Thickness (in)							
Corrugated Aluminum Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Corrugated Aluminum Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Aluminum Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch		0.060	0.060	0.060		0.060	0.060	0.060
Aluminum Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch		0.060	0.060	0.060		0.060	0.060	0.060

Plastic Pipes

DSN/U	11d	12b	12d	12f	12k	14b	14d	16b
Pipe Diameter (in)	18	24	24	24	18	24	24	24
Pipe Type	Availability							
PVC Corrugated	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
PVC Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type S	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type C	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable

Reinforced Concrete Pipes

DSN/U	11d	12b	12d	12f	12k	14b	14d	16b
Pipe Diameter (in)	**18**	**24**	**24**	**24**	**18**	**24**	**24**	**24**
Steel Cover (in)	0.75	1	1	1	0.75	1	1	1
Sacks of Cement	5	5	5	5	5	5	5	5
Percentage Water	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

Other Information

DSN/U	11d	12b	12d	12f	12k	14b	14d	16b
Soil pH	7.67	7.85	7.85	7.85	7.85	7.87	7.87	7.07
Minimum Soil Resistivity (ohm-cm)	1740	1740	1740	1740	1740	1740	1740	1740
Sulfate Concentration (ppm)	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
Chloride Concentration (ppm)	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
Abrasion Level	3	3	3	3	3	3	3	3
2–5 Year Flow Velocity (ft/sec)	5	5	5	8	5	5	5	5
Design Service Life (years)	50	50	50	50	50	50	50	50
Height of Cover (ft)	6.8	3.7	6.2	3	4.2	14.8	4	3.9

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AltPipe

Project EA: **04000212491**
Project Engineer: **DAVE DICKINSON**
Location: **04-ALA**
Description: **580 WB HOV (EAST)**

Steel Pipes

DSN/U		53d	53f	53h	53j	54a	55b	57b
Pipe Diameter (in)		18	24	18	24	18	18	18
Pipe Type	Coat	Minimum Thickness (in)						
Corrugated Steel Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	BC		0.079		0.079			
	BCI	0.064	0.064		0.064	0.064		0.064
	PA	0.052	0.052		0.052	0.052		0.052
	PS	0.052	0.052		0.052	0.052		0.052
Corrugated Steel Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	BC		0.079		0.079			
	BCI	0.064	0.064		0.064	0.064		0.064
	PA	0.064	0.064		0.064	0.064		0.064
	PS	0.064	0.064		0.064	0.064		0.064
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch	GAL		0.109		0.109			
	AL2		0.109		0.109			
	BC		0.079		0.079			
	BCI		0.064		0.064			
	PA		0.064		0.064			
	PS		0.064		0.064			
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 8½" Pitch	GAL		0.109		0.109			
	AL2		0.109		0.109			
	BC		0.079		0.079			
	BCI		0.064		0.064			
	PA		0.064		0.064			
	PS		0.064		0.064			
Steel Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch	GAL		0.109		0.109			
	AL2		0.109		0.109			
	BC		0.079		0.079			
	BCI		0.064		0.064			
	PA		0.064		0.064			
	PS		0.064		0.064			

Aluminum Pipes

DSN/U	53d	53f	53h	53j	54a	55b	57b
Pipe Diameter (in)	18	24	18	24	18	18	18
Pipe Type	Minimum Thickness (in)						
Corrugated Aluminum Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Corrugated Aluminum Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Aluminum Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch		0.060		0.060			
Aluminum Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch		0.060		0.060			

Plastic Pipes

DSN/U	53d	53f	53h	53j	54a	55b	57b
Pipe Diameter (in)	18	24	18	24	18	18	18
Pipe Type	Availability						
PVC Corrugated	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
PVC Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type S	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type C	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable

Reinforced Concrete Pipes

DSN/U	53d	53f	53h	53j	54a	55b	57b
Pipe Diameter (in)	**18**	**24**	**18**	**24**	**18**	**18**	**18**
Steel Cover (in)	0.75	1	0.75	1	0.75	0.75	0.75
Sacks of Cement	5	5	5	5	5	5	5
Percentage Water	10.0	10.0	10.0	10.0	10.0	10.0	10.0

Other Information

DSN/U	53d	53f	53h	53j	54a	55b	57b
Soil pH	8.01	8.01	8.01	8.01	8.01	8.01	7.48
Minimum Soil Resistivity (ohm-cm)	1740	1740	1740	1740	1740	1740	1740
Sulfate Concentration (ppm)	10.2	10.2	10.2	10.2	10.2	10.2	10.2
Chloride Concentration (ppm)	7.4	7.4	7.4	7.4	7.4	7.4	7.4
Abrasion Level	3	3	3	3	3	3	3
2–5 Year Flow Velocity (ft/sec)	3	3	8	3	5	8	3
Design Service Life (years)	50	50	50	50	50	50	50
Height of Cover (ft)	2.4	3.4	3.3	2	4.3	4	2

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AltPipe

Project EA: 04000212491
Project Engineer: DAVE DICKINSON
Location: 04-ALA
Description: 580 WB HOV (EAST)

Steel Pipes

DSN/U		16d	16f	20b	24b	25b	25d	25f	25h
Pipe Diameter (in)		24	24	18	18	24	24	24	24
Pipe Type	Coat	Minimum Thickness (in)							
Corrugated Steel Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	BC					0.079	0.079	0.079	0.079
	BCI				0.064	0.064	0.064	0.064	0.064
	PA	0.079	0.079		0.052	0.052	0.052	0.052	0.052
	PS	0.079	0.079		0.052	0.052	0.052	0.052	0.052
Corrugated Steel Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	BC					0.079	0.079	0.079	0.079
	BCI				0.064	0.064	0.064	0.064	0.064
	PA	0.079	0.079		0.064	0.064	0.064	0.064	0.064
	PS	0.079	0.079		0.064	0.064	0.064	0.064	0.064
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch	GAL					0.109	0.109	0.109	0.109
	AL2					0.109	0.109	0.109	0.109
	BC	0.109	0.109			0.079	0.079	0.079	0.079
	BCI	0.109	0.109			0.064	0.064	0.064	0.064
	PA	0.079	0.079			0.064	0.064	0.064	0.064
	PS	0.079	0.079			0.064	0.064	0.064	0.064
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 8½" Pitch	GAL					0.109	0.109	0.109	0.109
	AL2					0.109	0.109	0.109	0.109
	BC	0.109	0.109			0.079	0.079	0.079	0.079
	BCI	0.109	0.109			0.064	0.064	0.064	0.064
	PA	0.079	0.079			0.064	0.064	0.064	0.064
	PS	0.079	0.079			0.064	0.064	0.064	0.064
Steel Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch	GAL					0.109	0.109	0.109	0.109
	AL2					0.109	0.109	0.109	0.109
	BC	0.109	0.109			0.079	0.079	0.079	0.079
	BCI	0.109	0.109			0.064	0.064	0.064	0.064
	PA	0.079	0.079			0.064	0.064	0.064	0.064
	PS	0.079	0.079			0.064	0.064	0.064	0.064

Aluminum Pipes

DSN/U	16d	16f	20b	24b	25b	25d	25f	25h
Pipe Diameter (in)	24	24	18	18	24	24	24	24
Pipe Type	Minimum Thickness (in)							
Corrugated Aluminum Pipe - Annular Corrugations - 2¾" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Corrugated Aluminum Pipe - Helical Corrugations - 2¾" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Aluminum Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch	0.060	0.060			0.060	0.060	0.060	0.060
Aluminum Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch	0.060	0.060			0.060	0.060	0.060	0.060

Plastic Pipes

DSN/U	16d	16f	20b	24b	25b	25d	25f	25h
Pipe Diameter (in)	24	24	18	18	24	24	24	24
Pipe Type	Availability							
PVC Corrugated	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
PVC Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type S	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type C	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable

Reinforced Concrete Pipes

DSN/U	16d	16f	20b	24b	25b	25d	25f	25h
Pipe Diameter (in)	**24**	**24**	**18**	**18**	**24**	**24**	**24**	**24**
Steel Cover (in)	1	1	0.75	0.75	1	1	1	1
Sacks of Cement	5	5	5	5	5	5	5	5
Percentage Water	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

Other Information

DSN/U	16d	16f	20b	24b	25b	25d	25f	25h
Soil pH	7.07	7.07	7.45	7.85	7.97	7.97	7.97	7.97
Minimum Soil Resistivity (ohm-cm)	1740	1740	1740	1740	1740	1740	1740	1740
Sulfate Concentration (ppm)	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
Chloride Concentration (ppm)	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
Abrasion Level	3	3	3	3	3	3	3	3
2–5 Year Flow Velocity (ft/sec)	5	5	8	3	5	3	3	3
Design Service Life (years)	50	50	50	50	50	50	50	50
Height of Cover (ft)	3.3	2.6	4.6	6.6	4.6	3.7	4.3	4.3

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AltPipe

Project EA: 04000212491
Project Engineer: DAVE DICKINSON
Location: 04-ALA
Description: 580 WB HOV (EAST)

Steel Pipes

DSN/U		25j	25l	27d	28b	28d	28h	29b	29d
Pipe Diameter (In)		24	18	18	18	24	24	24	24
Pipe Type	Coat	Minimum Thickness (In)							
Corrugated Steel Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	BC	0.079				0.079	0.079	0.079	0.079
	BCl	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
	PA	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052
	PS	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052
Corrugated Steel Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	BC	0.079				0.079	0.079	0.079	0.079
	BCl	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
	PA	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
	PS	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch	GAL	0.109				0.109	0.109	0.109	0.109
	AL2	0.109				0.109	0.109	0.109	0.109
	BC	0.079				0.079	0.079	0.079	0.079
	BCl	0.064				0.064	0.064	0.064	0.064
	PA	0.064				0.064	0.064	0.064	0.064
	PS	0.064				0.064	0.064	0.064	0.064
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 8½" Pitch	GAL	0.109				0.109	0.109	0.109	0.109
	AL2	0.109				0.109	0.109	0.109	0.109
	BC	0.079				0.079	0.079	0.079	0.079
	BCl	0.064				0.064	0.064	0.064	0.064
	PA	0.064				0.064	0.064	0.064	0.064
	PS	0.064				0.064	0.064	0.064	0.064
Steel Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch	GAL	0.109				0.109	0.109	0.109	0.109
	AL2	0.109				0.109	0.109	0.109	0.109
	BC	0.079				0.079	0.079	0.079	0.079
	BCl	0.064				0.064	0.064	0.064	0.064
	PA	0.064				0.064	0.064	0.064	0.064
	PS	0.064				0.064	0.064	0.064	0.064

Aluminum Pipes

DSN/U	25j	25l	27d	28b	28d	28h	29b	29d
Pipe Diameter (in)	24	18	18	18	24	24	24	24
Pipe Type	Minimum Thickness (in)							
Corrugated Aluminum Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Corrugated Aluminum Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Aluminum Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch	0.060				0.060	0.060	0.060	0.060
Aluminum Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch	0.060				0.060	0.060	0.060	0.060

Plastic Pipes

DSN/U	25j	25l	27d	28b	28d	28h	29b	29d
Pipe Diameter (in)	24	18	18	18	24	24	24	24
Pipe Type	Availability							
PVC Corrugated	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
PVC Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type S	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type C	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable

Reinforced Concrete Pipes

DSN/U	25j	25l	27d	28b	28d	28h	29b	29d
Pipe Diameter (in)	24	18	18	18	24	24	24	24
Steel Cover (in)	1	0.75	0.75	0.75	1	1	1	1
Sacks of Cement	5	5	5	5	5	5	5	5
Percentage Water	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

Other Information

DSN/U	25j	25l	27d	28b	28d	28h	29b	29d
Soil pH	7.97	7.97	7.97	7.97	7.97	7.88	7.47	7.47
Minimum Soil Resistivity (ohm-cm)	1740	1740	1740	1740	1740	1740	1740	1740
Sulfate Concentration (ppm)	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
Chloride Concentration (ppm)	7.4	7.4	7.4	7.4	7.4	26.9	7.4	7.4
Abrasion Level	3	3	3	3	3	3	3	3
2–5 Year Flow Velocity (ft/sec)	5	5	3	3	3	3	5	3
Design Service Life (years)	50	50	50	50	50	50	50	50
Height of Cover (ft)	3.7	5.6	4.3	5.7	5.9	2	3.8	5

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AltPipe

Project EA: **04000212491**
Project Engineer: **DAVE DICKINSON**
Location: **04-ALA**
Description: **580 WB HOV (EAST)**

Steel Pipes

DSN/U		29f	31b	31d	33b	33d	33f	33h	33j	34b	35b	35d	35f	35h	35j	35l	35p
Pipe Diameter (in)		24	24	18	24	24	24	36	36	24	24	24	24	24	24	24	24
Pipe Type	Coat	Minimum Thickness (in)															
Corrugated Steel Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	GAL							0.109	0.109								
	AL2							0.109	0.109								
	BC	0.079	0.079		0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	
	BCI	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079
	PA	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.079
	PS	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.079
Corrugated Steel Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	GAL							0.109	0.109								
	AL2							0.109	0.109								
	BC	0.079	0.079		0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	
	BCI	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079
	PA	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079
	PS	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch	GAL	0.109	0.109		0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109
	AL2	0.109	0.109		0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109
	BC	0.079	0.079		0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.109
	BCI	0.064	0.064		0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079
	PA	0.064	0.064		0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079
	PS	0.064	0.064		0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 8½" Pitch	GAL	0.109	0.109		0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109
	AL2	0.109	0.109		0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109
	BC	0.079	0.079		0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.109
	BCI	0.064	0.064		0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079
	PA	0.064	0.064		0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079
	PS	0.064	0.064		0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079
Steel Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch	GAL	0.109	0.109		0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109
	AL2	0.109	0.109		0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109	0.109
	BC	0.079	0.079		0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.109
	BCI	0.064	0.064		0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079
	PA	0.064	0.064		0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079

DSN/U		29f	31b	31d	33b	33d	33f	33h	33j	34b	35b	35d	35f	35h	35j	35l	35p
Pipe Diameter (in)		24	24	18	24	24	24	36	36	24	24	24	24	24	24	24	24
Pipe Type	Coat	Minimum Thickness (in)															
	PS	0.064	0.064		0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.079
	CSS							0.064	0.064								

Aluminum Pipes

DSN/U	29f	31b	31d	33b	33d	33f	33h	33j	34b	35b	35d	35f	35h	35j	35l	35p
Pipe Diameter (in)	24	24	18	24	24	24	36	36	24	24	24	24	24	24	24	24
Pipe Type	Minimum Thickness (in)															
Corrugated Aluminum Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.075	0.075	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Corrugated Aluminum Pipe - Annular Corrugations - 3" X 1" Corrugations							0.060	0.060								
Corrugated Aluminum Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.075	0.075	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Corrugated Aluminum Pipe - Helical Corrugations - 3" X 1" Corrugations							0.060	0.060								
Aluminum Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch	0.060	0.060		0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Aluminum Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch	0.060	0.060		0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060

Plastic Pipes

DSN/U	29f	31b	31d	33b	33d	33f	33h	33j	34b	35b	35d	35f	35h	35j	35l	35p
Pipe Diameter (in)	24	24	18	24	24	24	36	36	24	24	24	24	24	24	24	24
Pipe Type	**Availability**															
PVC Corrugated	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
PVC Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type S	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable			Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type C	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable			Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable

Reinforced Concrete Pipes

DSN/U	29f	31b	31d	33b	33d	33f	33h	33j	34b	35b	35d	35f	35h	35j	35l	35p
Pipe Diameter (in)	24	24	18	24	24	24	36	36	24	24	24	24	24	24	24	24
Steel Cover (in)	1	1	0.75	1	1	1	1	1	1	1	1	1	1	1	1	1
Sacks of Cement	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Percentage Water	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

Other Information

DSN/U	29f	31b	31d	33b	33d	33f	33h	33j	34b	35b	35d	35f	35h	35j	35l	35p
Soil pH	7.47	7.47	7.47	8.18	8.18	7.47	7.47	7.47	8.12	8.12	8.12	8.12	8.12	8.12	8.18	8.18
Minimum Soil Resistivity (ohm-cm)	1740	1740	1740	1740	1740	1740	1740	1740	1740	1740	1740	1740	1740	1740	1740	1740
Sulfate Concentration (ppm)	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
Chloride Concentration (ppm)	7.4	7.4	7.4	7.4	7.4	7.4	26.9	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
Abrasion Level	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2–5 Year Flow Velocity (ft/sec)	5	3	3	3	3	3	3	3	3	5	5	3	3	3	5	8

DSN/U	29f	31b	31d	33b	33d	33f	33h	33j	34b	35b	35d	35f	35h	35j	35l	35p
Design Service Life (years)	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Height of Cover (ft)	5.6	6.9	4	2.7	2.6	4.3	2	6.3	2.8	4.8	7	7.4	5.3	3.8	2.8	3.2

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AltPipe

Project EA: **04000212491**
Project Engineer: **DAVE DICKINSON**
Location: **04-ALA**
Description: **580 WB HOV (EAST)**

Steel Pipes

DSN/U		37b	37d	39b	39e	41b	41d	41f	41h
Pipe Diameter (in)		18	18	18	18	24	24	24	24
Pipe Type	Coat	Minimum Thickness (in)							
Corrugated Steel Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	BC					0.079	0.079	0.079	0.079
	BCI	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
	PA	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052
	PS	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052
Corrugated Steel Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	BC					0.079	0.079	0.079	0.079
	BCI	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
	PA	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
	PS	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch	GAL					0.109	0.109	0.109	0.109
	AL2					0.109	0.109	0.109	0.109
	BC					0.079	0.079	0.079	0.079
	BCI					0.064	0.064	0.064	0.064
	PA					0.064	0.064	0.064	0.064
	PS					0.064	0.064	0.064	0.064
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 8½" Pitch	GAL					0.109	0.109	0.109	0.109
	AL2					0.109	0.109	0.109	0.109
	BC					0.079	0.079	0.079	0.079
	BCI					0.064	0.064	0.064	0.064
	PA					0.064	0.064	0.064	0.064
	PS					0.064	0.064	0.064	0.064
Steel Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch	GAL					0.109	0.109	0.109	0.109
	AL2					0.109	0.109	0.109	0.109
	BC					0.079	0.079	0.079	0.079
	BCI					0.064	0.064	0.064	0.064
	PA					0.064	0.064	0.064	0.064
	PS					0.064	0.064	0.064	0.064

Aluminum Pipes

DSN/U	37b	37d	39b	39e	41b	41d	41f	41h
Pipe Diameter (in)	18	18	18	18	24	24	24	24
Pipe Type	Minimum Thickness (in)							
Corrugated Aluminum Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Corrugated Aluminum Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Aluminum Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch					0.060	0.060	0.060	0.060
Aluminum Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch					0.060	0.060	0.060	0.060

Plastic Pipes

DSN/U	37b	37d	39b	39e	41b	41d	41f	41h
Pipe Diameter (in)	18	18	18	18	24	24	24	24
Pipe Type	Availability							
PVC Corrugated	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
PVC Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type S	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type C	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable

Reinforced Concrete Pipes

DSN/U	37b	37d	39b	39e	41b	41d	41f	41h
Pipe Diameter (in)	**18**	**18**	**18**	**18**	**24**	**24**	**24**	**24**
Steel Cover (in)	0.75	0.75	0.75	0.75	1	1	1	1
Sacks of Cement	5	5	5	5	5	5	5	5
Percentage Water	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

Other Information

DSN/U	37b	37d	39b	39e	41b	41d	41f	41h
Soil pH	8.12	8.12	8.12	8.12	7.48	7.48	7.48	7.94
Minimum Soil Resistivity (ohm-cm)	1740	1740	1740	1740	1740	1740	1740	1740
Sulfate Concentration (ppm)	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
Chloride Concentration (ppm)	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
Abrasion Level	3	3	3	3	3	3	3	3
2–5 Year Flow Velocity (ft/sec)	3	3	3	3	5	3	3	3
Design Service Life (years)	50	50	50	50	50	50	50	50
Height of Cover (ft)	2.2	2	2.8	2.8	3.7	4.2	3.9	3.8

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AltPipe

Project EA: **04000212491**
Project Engineer: **DAVE DICKINSON**
Location: **04-ALA**
Description: **580 WB HOV (EAST)**

Steel Pipes

DSN/U		41j	41l	41n	41u	43b	43d	43f	43h
Pipe Diameter (in)		24	24	24	18	24	24	24	24
Pipe Type	Coat	Minimum Thickness (in)							
Corrugated Steel Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	BC	0.079	0.079	0.079		0.079	0.079	0.079	0.079
	BCI	0.064	0.064	0.064		0.064	0.064	0.064	0.064
	PA	0.052	0.052	0.052		0.052	0.052	0.052	0.052
	PS	0.052	0.052	0.052		0.052	0.052	0.052	0.052
Corrugated Steel Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	BC	0.079	0.079	0.079		0.079	0.079	0.079	0.079
	BCI	0.064	0.064	0.064		0.064	0.064	0.064	0.064
	PA	0.064	0.064	0.064		0.064	0.064	0.064	0.064
	PS	0.064	0.064	0.064		0.064	0.064	0.064	0.064
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch	GAL	0.109	0.109	0.109		0.109	0.109	0.109	0.109
	AL2	0.109	0.109	0.109		0.109	0.109	0.109	0.109
	BC	0.079	0.079	0.079		0.079	0.079	0.079	0.079
	BCI	0.064	0.064	0.064		0.064	0.064	0.064	0.064
	PA	0.064	0.064	0.064		0.064	0.064	0.064	0.064
	PS	0.064	0.064	0.064		0.064	0.064	0.064	0.064
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 8½" Pitch	GAL	0.109	0.109	0.109		0.109	0.109	0.109	0.109
	AL2	0.109	0.109	0.109		0.109	0.109	0.109	0.109
	BC	0.079	0.079	0.079		0.079	0.079	0.079	0.079
	BCI	0.064	0.064	0.064		0.064	0.064	0.064	0.064
	PA	0.064	0.064	0.064		0.064	0.064	0.064	0.064
	PS	0.064	0.064	0.064		0.064	0.064	0.064	0.064
Steel Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch	GAL	0.109	0.109	0.109		0.109	0.109	0.109	0.109
	AL2	0.109	0.109	0.109		0.109	0.109	0.109	0.109
	BC	0.079	0.079	0.079		0.079	0.079	0.079	0.079
	BCI	0.064	0.064	0.064		0.064	0.064	0.064	0.064
	PA	0.064	0.064	0.064		0.064	0.064	0.064	0.064
	PS	0.064	0.064	0.064		0.064	0.064	0.064	0.064

Aluminum Pipes

DSN/U	41j	41l	41n	41u	43b	43d	43f	43h
Pipe Diameter (in)	24	24	24	18	24	24	24	24
Pipe Type	Minimum Thickness (in)							
Corrugated Aluminum Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Corrugated Aluminum Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Aluminum Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch	0.060	0.060	0.060		0.060	0.060	0.060	0.060
Aluminum Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch	0.060	0.060	0.060		0.060	0.060	0.060	0.060

Plastic Pipes

DSN/U	41j	41l	41n	41u	43b	43d	43f	43h
Pipe Diameter (in)	24	24	24	18	24	24	24	24
Pipe Type	Availability							
PVC Corrugated	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
PVC Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type S	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type C	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable

Reinforced Concrete Pipes

Alternate Pipe

DSN/U	41j	41l	41n	41u	43b	43d	43f	43h
Pipe Diameter (in)	24	24	24	18	24	24	24	24
Steel Cover (in)	1	1	1	0.75	1	1	1	1
Sacks of Cement	5	5	5	5	5	5	5	5
Percentage Water	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

Other Information

DSN/U	41j	41l	41n	41u	43b	43d	43f	43h
Soil pH	7.94	8.12	8.12	7.48	7.48	7.48	7.48	7.48
Minimum Soil Resistivity (ohm-cm)	1740	1740	1740	1740	1740	1740	1740	1740
Sulfate Concentration (ppm)	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
Chloride Concentration (ppm)	7.4	7.4	7.4	26.9	7.4	7.4	7.4	7.4
Abrasion Level	3	3	3	3	3	3	3	3
2–5 Year Flow Velocity (ft/sec)	3	3	3	8	3	3	3	3
Design Service Life (years)	50	50	50	50	50	50	50	50
Height of Cover (ft)	3.5	3.1	3	2	2.3	2.5	2.5	2

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Alternate Pipe

AltPipe

Project EA: **04000212491**
Project Engineer: **DAVE DICKINSON**
Location: **04-ALA**
Description: **580 WB HOV (EAST)**

Steel Pipes

DSN/U		44b	45b	46b	48b	48d	48f	48h	49c
Pipe Diameter (in)		18	24	24	24	24	24	24	18
Pipe Type	Coat	Minimum Thickness (in)							
Corrugated Steel Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	BC		0.079	0.079		0.079	0.079	0.079	
	BCI	0.064	0.064	0.064	0.079	0.064	0.064	0.064	0.064
	PA	0.052	0.052	0.052	0.079	0.052	0.052	0.052	0.052
	PS	0.052	0.052	0.052	0.079	0.052	0.052	0.052	0.052
Corrugated Steel Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	BC		0.079	0.079		0.079	0.079	0.079	
	BCI	0.064	0.064	0.064	0.079	0.064	0.064	0.064	0.064
	PA	0.064	0.064	0.064	0.079	0.064	0.064	0.064	0.064
	PS	0.064	0.064	0.064	0.079	0.064	0.064	0.064	0.064
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch	GAL		0.109	0.109	0.109	0.109	0.109	0.109	
	AL2		0.109	0.109	0.109	0.109	0.109	0.109	
	BC		0.079	0.079	0.109	0.079	0.079	0.079	
	BCI		0.064	0.064	0.079	0.064	0.064	0.064	
	PA		0.064	0.064	0.079	0.064	0.064	0.064	
	PS		0.064	0.064	0.079	0.064	0.064	0.064	
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 8½" Pitch	GAL		0.109	0.109	0.109	0.109	0.109	0.109	
	AL2		0.109	0.109	0.109	0.109	0.109	0.109	
	BC		0.079	0.079	0.109	0.079	0.079	0.079	
	BCI		0.064	0.064	0.079	0.064	0.064	0.064	
	PA		0.064	0.064	0.079	0.064	0.064	0.064	
	PS		0.064	0.064	0.079	0.064	0.064	0.064	
Steel Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch	GAL		0.109	0.109	0.109	0.109	0.109	0.109	
	AL2		0.109	0.109	0.109	0.109	0.109	0.109	
	BC		0.079	0.079	0.109	0.079	0.079	0.079	
	BCI		0.064	0.064	0.079	0.064	0.064	0.064	
	PA		0.064	0.064	0.079	0.064	0.064	0.064	
	PS		0.064	0.064	0.079	0.064	0.064	0.064	

Aluminum Pipes

DSN/U	44b	45b	46b	48b	48d	48f	48h	49c
Pipe Diameter (in)	18	24	24	24	24	24	24	18
Pipe Type	Minimum Thickness (in)							
Corrugated Aluminum Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Corrugated Aluminum Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Aluminum Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch		0.060	0.060	0.060	0.060	0.060	0.060	
Aluminum Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch		0.060	0.060	0.060	0.060	0.060	0.060	

Plastic Pipes

DSN/U	44b	45b	46b	48b	48d	48f	48h	49c
Pipe Diameter (in)	18	24	24	24	24	24	24	18
Pipe Type	Availability							
PVC Corrugated	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
PVC Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type S	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type C	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable

Reinforced Concrete Pipes

DSN/U	44b	45b	46b	48b	48d	48f	48h	49c
Pipe Diameter (in)	18	24	24	24	24	24	24	18
Steel Cover (in)	0.75	1	1	1	1	1	1	0.75
Sacks of Cement	5	5	5	5	5	5	5	5
Percentage Water	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

Other Information

DSN/U	44b	45b	46b	48b	48d	48f	48h	49c
Soil pH	7.48	7.48	7.48	7.48	7.48	7.48	7.48	7.48
Minimum Soil Resistivity (ohm-cm)	1740	1740	1740	1740	1740	1740	1740	1740
Sulfate Concentration (ppm)	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
Chloride Concentration (ppm)	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
Abrasion Level	3	3	3	3	3	3	3	3
2–5 Year Flow Velocity (ft/sec)	3	3	3	8	5	5	5	3
Design Service Life (years)	50	50	50	50	50	50	50	50
Height of Cover (ft)	5.4	2.9	2	2.1	2.9	4.7	5.9	2

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Project EA: **04000212491**
Project Engineer: **DAVE DICKINSON**
Location: **04-ALA**
Description: **580 WB HOV (EAST)**

Steel Pipes

DSN/U		50b	50d	50f	50h	50j	51d	51g	53b
Pipe Diameter (in)		18	18	18	18	18	24	24	18
Pipe Type	Coat	Minimum Thickness (in)							
Corrugated Steel Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	BC						0.079	0.079	
	BCI	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
	PA	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052
	PS	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052
Corrugated Steel Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	BC						0.079	0.079	
	BCI	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
	PA	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
	PS	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch	GAL						0.109	0.109	
	AL2						0.109	0.109	
	BC						0.079	0.079	
	BCI						0.064	0.064	
	PA						0.064	0.064	
	PS						0.064	0.064	
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 8½" Pitch	GAL						0.109	0.109	
	AL2						0.109	0.109	
	BC						0.079	0.079	
	BCI						0.064	0.064	
	PA						0.064	0.064	
	PS						0.064	0.064	
Steel Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch	GAL						0.109	0.109	
	AL2						0.109	0.109	
	BC						0.079	0.079	
	BCI						0.064	0.064	
	PA						0.064	0.064	
	PS						0.064	0.064	

Aluminum Pipes

DSN/U	50b	50d	50f	50h	50j	51d	51g	53b
Pipe Diameter (in)	18	18	18	18	18	24	24	18
Pipe Type	Minimum Thickness (in)							
Corrugated Aluminum Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Corrugated Aluminum Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Aluminum Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch						0.060	0.060	
Aluminum Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch						0.060	0.060	

Plastic Pipes

DSN/U	50b	50d	50f	50h	50j	51d	51g	53b
Pipe Diameter (in)	18	18	18	18	18	24	24	18
Pipe Type	Availability							
PVC Corrugated	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
PVC Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type S	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type C	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable

Reinforced Concrete Pipes

DSN/U	50b	50d	50f	50h	50j	51d	51g	53b
Pipe Diameter (In)	**18**	**18**	**18**	**18**	**18**	**24**	**24**	**18**
Steel Cover (in)	0.75	0.75	0.75	0.75	0.75	1	1	0.75
Sacks of Cement	5	5	5	5	5	5	5	5
Percentage Water	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

Other Information

DSN/U	50b	50d	50f	50h	50j	51d	51g	53b
Soil pH	7.48	7.48	7.48	7.48	7.48	8.01	8.01	8.01
Minimum Soil Resistivity (ohm-cm)	1740	1740	1740	1740	1740	1740	1740	1740
Sulfate Concentration (ppm)	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
Chloride Concentration (ppm)	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
Abrasion Level	3	3	3	3	3	3	3	3
2–5 Year Flow Velocity (ft/sec)	3	3	3	3	3	5	5	5
Design Service Life (years)	50	50	50	50	50	50	50	50
Height of Cover (ft)	4	4.4	5	5	4.5	4.3	5.3	2

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Project EA: **04000212491**
Project Engineer: **DAVE DICKINSON**
Location: **04-ALA**
Description: **580 WB HOV (EAST)**

Steel Pipes

DSN/U		53d	53f	53h	53j	54a	55b	57b
Pipe Diameter (in)		**18**	**24**	**18**	**24**	**18**	**18**	**18**
Pipe Type	**Coat**	**Minimum Thickness (in)**						
Corrugated Steel Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	BC		0.079		0.079			
	BCl	0.064	0.064		0.064	0.064		0.064
	PA	0.052	0.052		0.052	0.052		0.052
	PS	0.052	0.052		0.052	0.052		0.052
Corrugated Steel Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	BC		0.079		0.079			
	BCl	0.064	0.064		0.064	0.064		0.064
	PA	0.064	0.064		0.064	0.064		0.064
	PS	0.064	0.064		0.064	0.064		0.064
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch	GAL		0.109		0.109			
	AL2		0.109		0.109			
	BC		0.079		0.079			
	BCl		0.064		0.064			
	PA		0.064		0.064			
	PS		0.064		0.064			
Steel Spiral Rib Pipe - ¾" X 1" Ribs At 8½" Pitch	GAL		0.109		0.109			
	AL2		0.109		0.109			
	BC		0.079		0.079			
	BCl		0.064		0.064			
	PA		0.064		0.064			
	PS		0.064		0.064			
Steel Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch	GAL		0.109		0.109			
	AL2		0.109		0.109			
	BC		0.079		0.079			
	BCl		0.064		0.064			
	PA		0.064		0.064			
	PS		0.064		0.064			

Aluminum Pipes

DSN/U	53d	53f	53h	53j	54a	55b	57b
Pipe Diameter (in)	**18**	**24**	**18**	**24**	**18**	**18**	**18**
Pipe Type	**Minimum Thickness (in)**						
Corrugated Aluminum Pipe - Annular Corrugations - 2⅔" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Corrugated Aluminum Pipe - Helical Corrugations - 2⅔" X ½" Corrugations	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Aluminum Spiral Rib Pipe - ¾" X 1" Ribs At 11½" Pitch		0.060		0.060			
Aluminum Spiral Rib Pipe - ¾" X ¾" Ribs At 7½" Pitch		0.060		0.060			

Plastic Pipes

DSN/U	53d	53f	53h	53j	54a	55b	57b
Pipe Diameter (in)	**18**	**24**	**18**	**24**	**18**	**18**	**18**
Pipe Type	**Availability**						
PVC Corrugated	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
PVC Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type S	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Ribbed	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable
HDPE Corrugated - Type C	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable	Allowable

Reinforced Concrete Pipes

DSN/U	53d	53f	53h	53j	54a	55b	57b
Pipe Diameter (in)	**18**	**24**	**18**	**24**	**18**	**18**	**18**
Steel Cover (in)	0.75	1	0.75	1	0.75	0.75	0.75
Sacks of Cement	5	5	5	5	5	5	5
Percentage Water	10.0	10.0	10.0	10.0	10.0	10.0	10.0

Other Information

DSN/U	53d	53f	53h	53j	54a	55b	57b
Soil pH	8.01	8.01	8.01	8.01	8.01	8.01	7.48
Minimum Soil Resistivity (ohm-cm)	1740	1740	1740	1740	1740	1740	1740
Sulfate Concentration (ppm)	10.2	10.2	10.2	10.2	10.2	10.2	10.2
Chloride Concentration (ppm)	7.4	7.4	7.4	7.4	7.4	7.4	7.4
Abrasion Level	3	3	3	3	3	3	3
2–5 Year Flow Velocity (ft/sec)	3	3	8	3	5	8	3
Design Service Life (years)	50	50	50	50	50	50	50
Height of Cover (ft)	2.4	3.4	3.3	2	4.3	4	2

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STRUCTURAL PAVEMENT CALCULATIONS

PAVEMENT DESIGN

PER HIGHWAY DESIGN MANUAL, CHAP. 600

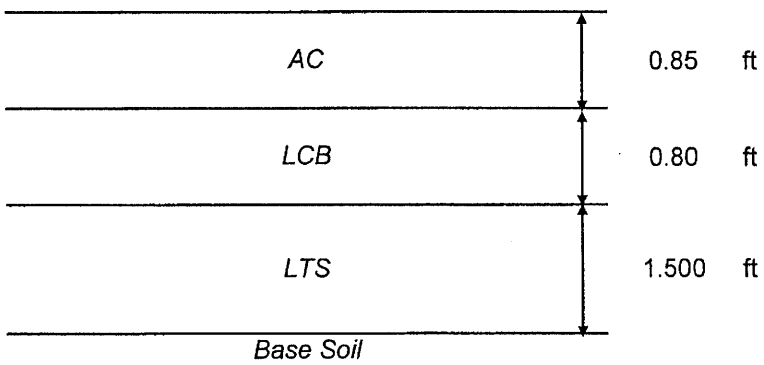
Mainline
Section 1

PROJECT NAME: *I-580 HOV PROJECT*
PROJECT NO.: *205140.GDR*

Design Case: AC over LCB over LTS *(Full Design - Mainline)*

	Design TI=	***15.5***	(20-year Design)		
	R_{BS}=	***5***		R_{AB}=	78
	$GE_{TOTAL} = 0.0032*TI*(100-R_{BS})$ =			4.71	
LTS	Thickness, T =	1.50	ft		
	UCS =	300	psi		
	G_f =	1.2			
	=> $GE_{LTS} = T*G_f$ =			1.80	
	$GE_{AC+LCB} = GE_{TOTAL} - GE_{LTS}$ =			2.91	
AC	$GE_{AC} = (GE_{AC+LTS})*0.4 + 0.2$ ft =			1.36	
	=> AC Thickness =			0.82	ft
	=> AC Thickness =			**0.85**	ft (round up to the nearest 0.05 ft)
	$G_{f,AC}$ =			1.68	
	GE_{AC} =			1.43	
LCB	$GE_{LCB} = GE_{AC+LCB} - GE_{AC}$ =			1.48	
	LCB thickness=			0.78	ft
	=> LCB Thickness=			**0.80**	ft (round up to the nearest 0.05 ft)
	GE_{LCB}=			1.52	

Design Section:



PAVEMENT DESIGN

PER HIGHWAY DESIGN MANUAL, CHAP. 600

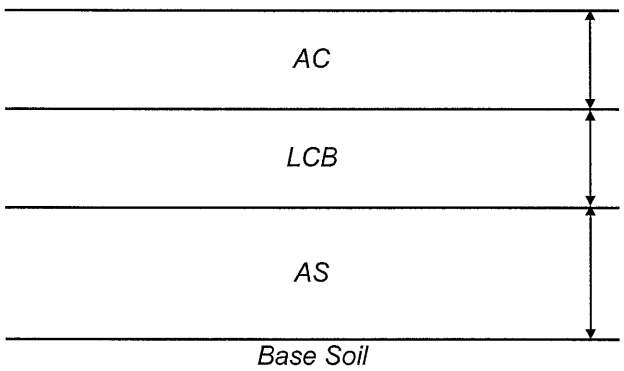
Mainline
Section 18

PROJECT NAME: *I-580 HOV PROJECT*
PROJECT NO.: *208102.GDR*

Design Case: AC over LCB over AS *(Full Design - Mainline)*

	Design TI=	***15.5*** (20-year Design)		
	R_{BS}=	***5***	R_{AB}=	78
			R_{AS}=	50
	$GE_{TOTAL} = 0.0032*TI*(100-R_{BS}) =$		4.71	
	$GE_{AC+LCB} = 0.0032*TI*(100 - R_{AS}) =$		2.48	
AC	$GE_{AC} = (GE_{AC+LCB})*0.4 + 0.20$ ft =		1.19	
	=>	AC Thickness =	0.74	ft
	=>	AC Thickness =	**0.85**	ft (round up to the nearest 0.05 ft)
		$G_{f,AC}$ =	1.68	
		GE_{AC} =	1.43	
LCB	$GE_{LCB} = GE_{AC+LCB} - GE_{AC}$ =		1	
		LCB thickness=	0.55	mm
	=>	LCB Thickness=	**0.80**	ft (round up to the nearest 0.05 ft)
		GE_{LCB}=	1.52	
AS	$GE_{AS} = GE_{TOTAL} - GE_{AC+LCB}$ =		1.76	
	=>	AS Thickness=	**1.80**	
		GE_{AS}=	1.80	

Design Section:



0.85 ft

0.80 ft

1.80 ft

Calculation for Full Depth Asphalt outside Chart

TI = 15.5 R = 5

G_E = 0.0032 (TI) (100-R) = 0.0032 (!5.5) (100-5) = 4.71

Factor of Safety = 0.1

G_E = 4.71 + 0.1 = 4.81

$G_F = 7.00\ (t)^{1/3}/(TI)^{1/2} = 7.00\ (2.10)^{1/3}/(15.5)^{1/2} = (7.00x1.280)/3.937 = 2.276$

$G_E/\ G_F = 4.81/2.276 = 2.113$

$G_F = 7.00\ (t)^{1/3}/(TI)^{1/2} = 7.00\ (2.11)^{1/3}/(15.5)^{1/2} = (7.00x1.282)/3.937 = 2.276$

$G_E/\ G_F = 4.81/2.279 = 2.110$

Use **2.15** ---- the next higher number

Calculation for Concrete Pavement in Narrow Areas

Recommended Mainline Concrete Section (TI = 15.5):

JPCP – 1.20'; LCB-0.35'; AS – 0.70'; LTS – 0.65'

For narrow areas, where JPCP cannot be constructed and LTS cannot be laid:

1. Combine JPCP and LCB for Minor Concrete Section:

   Minor Concrete Thickness = 1.20 + 0.35 = **1.55'**

2. Combine AS and LTS for AS:

   AS Thickness = 0.70 + 0.65 = **1.35'**

MINOR CONCRETE TOPPED BY HMA-A

(For Sections of Full Depth Asphalt too narrow for Conventional Equipment)

Use HMA-A = 0.35-ft; R = 5

TI = 15.5

GE = 0.0032*TI*(100 – R) = 0.0032* 15.5*(100 – 5) = 4.71

$(GF)_{HMA\text{-}A} = (7.0*(t)^{1/3})/(TI)^{(1/2} = (7.0*(0.35)^{1/3})/(15.5)^{(1/2} = 4.935/3.93 = 1.26$

$(GE)_{HMA\text{-}A} = 1.26*0.35 = 0.44$

$(GE)_{Minor\ Concrete} = 4.71\text{-}0.44 = 4.27$

Using GF = 1.9 (same as LCB),

Thickness of Minor Concrete = 4.27/1.9 = 2.25 feet

Total Thickness = 0.35 + 2.25 = 2.60 ft

TI = 12.0

GE = 0.0032*TI*(100 – R) = 0.0032* 12.0*(100 – 5) = 3.65

$(GF)_{HMA\text{-}A} = 0.57$ (from HDM, Table 633.1

($(GE)_{Minor\ Concrete} = 3.65 – 0.57 - = 3.08$

Using GF = 1.9 (same as LCB),

Thickness of Minor Concrete = 3.087/1.9 = 1.62 feet --- Use 1.65 feet

Total Thickness = 0.35 + 1.65 = 2.00 ft

Note:

A GPI should be placed between HMA-A and Minor Concrete to mitigate the effects of cracking in the Minor Concrete propagating upwards into the surface,

SECTION PRIOR TO OVERLAY (Mainline)

(Overlay Section: 0.1' RHMA-O; 0.2' RHMA-G; 0.15' (min.) HMA-A; Pavement Reinf. Fabric; 0.1' HMA-A)

Minimum HMA-A thickness above LCB prior to overlay = 0.5 feet (minimum over LCB)

HMA-A and RHMA-G overlay	= 0.35 feet (excludes RHMA-O)
Total HMA-A/ RHMA-G thickness	= 0.85 feet
GE_{HMA-A} for 0.85 feet (TI = 15.5)	= 1.43
$GE_{HMA-A+LCB}$	= 2.91
GE_{LCB}	= 2.91-1.43=1.48
LCB thickness	= 1.48/1.9=0.78 = 0.66 (Use 0.80 feet)

Section Prior to Overlay: **0.50 feet HMA-A**

0.80 feet LCB

1.50 feet LTS

Ramps TI = 10 & 12
AB

Project: BKF Rte 580 Corridor West Bound
Job No.: 208102.GDR
Flexible pavement Design (I-580 - Ramps))

R-value (soil) = 5
R-value (AB) = 78 (Class 2)
R-value (AS) = 50 (Class 2)

	TI =	10.00	
	Total GE req =	3.04	
Full Depth AC:	Add SF =	0.10	
	GE req(HMA-A) + SF =	3.14	
(table 633.1)	**t(HMA-A)=**	**1.30**	

Depth (AC & AB):	GE req(HMA-A) =	0.70	
	Add SF =	0.20	
	GE req(HMA-A) + SF =	0.90	
(table 633.1)	**t(HMA-A)=**	**0.50**	
(table 633.1)	GE t(HMA-A)=	0.90	
	GE req(AB) =	2.14	
(table 633.1)	**t(AB)=**	**1.95**	
		2.45	

Depth (AC, AB& AS):	GE req(HMA-A) =	0.70	
	Add SF =	0.20	
	GE req(HMA-A) + SF =	0.90	
(table 633.1)	**t(HMA-A)=**	**0.50**	
(table 633.1)	GE t(HMA-A)=	0.90	
	GE req(HMA-A+AB) =	1.60	
	GE req(AB) =	0.70	
	Add SF =	0.20	
	GE req(AB) + SF =	0.90	
(table 633.1)	**t(AB)=**	**0.85**	
	GE t(AB)=	0.94	
	GE t (HMA-A+AB)	1.84	
	GE req(AS) =	1.20	
(table 633.1)	**t(AS)=**	**1.20**	
		2.55	

R-value (soil) = 5
R-value (AB) = 78
R-value (AS) = 50

TI =	12.00	
Total GE req =	3.65	
Add SF =	0.10	
GE req(HMA-A) + SF =	3.75	
t(HMA-A)=	**1.60**	

GE req(HMA-A) =	0.84	
Add SF =	0.20	
GE req(HMA-A) + SF =	1.04	
t(HMA-A)=	**0.65**	
GE t(HMA-A)=	1.14	
GE req(AB) =	2.51	
t(AB)=	**2.30**	
	2.95	

GE req(HMA-A) =	0.84	
Add SF =	0.20	
GE req(HMA-A) + SF =	1.04	
t(HMA-A)=	**0.65**	
GE t(HMA-A)=	1.14	
GE req(HMA-A+AB) =	1.92	
GE req(AB) =	0.78	
Add SF =	0.20	
GE req(AB) + SF =	0.98	
t(AB)=	**0.90**	
GE t(AB)=	0.99	
GE t (HMA-A+AB)	2.13	
GE req(AS) =	1.52	
t(AS)=	**1.55**	
	3.10	

Note: User must input all values in yellow and then reference chapter 600 to get the final values in gray
For full depth of HMA-A section, 0.1 ft satety factor is taken whereas for HMA-A with AB and HMA-A with AB & AS sections, 0.20 ft factor of safery is added.

Ramps
TI = 12
LCB

Project: Westbound I-580 Widening
Job No: 208102.GDR
Ramps with TI = 12

R-value (Soil) = 5
R-value (AS) = 50 (Class 4)

TI =	12.0		
Total GE req (ft) =	3.65		
Full Depth AC:			
Add SF (ft) =	0.10		
GE req(AC) + SF (ft) =	3.75		
(table 633.1) **t(AC) (ft)** =	**1.60**		
Depth (AC & LCB):			
GE req(AC+LCB) (ft) =	3.65		
40% of GE req (AC+LCB) (ft) =	1.46		
Add SF (ft) =	0.20		
GE req(AC) + SF (ft) =	1.66		
(table 633.1) **t(AC) (ft)** =	**0.90**		
(table 633.1) GE t(AC) (ft) =	1.76		
GE req(LCB) (ft) =	1.89		
(table 633.1) **t(LCB) (ft)** =	**1.00**		
Depth (AC, LCB & AS):			
GE req(AC+LCB) (ft) =	1.92		
40% of GE req (AC+LCB) (ft) =	0.77		
Add SF (ft) =	0.20		
GE req(AC) + SF (ft) =	0.97		
(table 633.1) **t(AC) (ft)** =	**0.60**		
(table 633.1) GE t(AC) (ft) =	1.02		
GE req(LCB) (ft) =	0.90		
Add SF (ft) =	0.20		
GE req(LCB) + SF (ft) =	1.10		
(table 633.1) **t(LCB) (ft)** =	**0.60**		
GE t(LCB) (ft) =	1.14		
GE t (AC+LCB) (ft) =	2.16		
GE req(AS) (ft) =	1.49		
(table 633.1) **t(AS) (ft)** =	**1.50**		

Note: User must input all values in yellow and then reference chapter 600 to get the final values in gray
For full depth of AC section, 0.1 ft satety factor is taken whereas for AC with AB and AS, 0.2 ft factor of safery is added.

Adequacy of Mainline Pavement (Widened Section) Prior to Overlay

PAVEMENT DESIGN

PER HIGHWAY DESIGN MANUAL, CHAP. 600

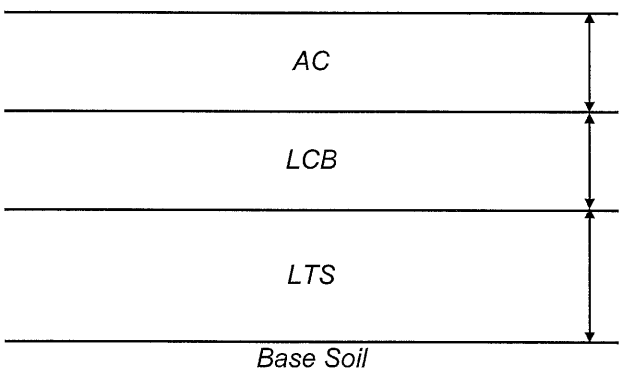
PROJECT NAME: *I-580 HOV PROJECT*
PROJECT NO.: *208102.GDR*

Design Case: AC over LCB over LTS *(Full Design - Mainline)*

	Design TI=	***11***	(20-year Design)		
	R_{BS}=	***5***		R_{AB}=	78
	$GE_{TOTAL} = 0.0032*TI*(100-R_{BS})$ =			3.34	
LTS	Thickness, T =	1.50	ft		
	UCS =	300	psi		
	G_f =	1.2			
	=> $GE_{LTS} = T*G_f$ =			1.80	
	$GE_{AC+LCB} = GE_{TOTAL} - GE_{LTS}$ =			1.54	
AC	$GE_{AC} = (GE_{AC+LTS})*0.4 + 0.2$ ft =			0.82	
	=> AC Thickness =			0.48	ft
	=> AC Thickness =			**0.50**	ft (round up to the nearest 0.05 ft)
	$G_{f, AC}$ =			1.71	
	GE_{AC} =			0.85	
LCB	$GE_{LCB} = GE_{AC+LCB} - GE_{AC}$ =			0.69	
	LCB thickness=			0.36	ft
	=> LCB Thickness=			**0.40**	ft (round up to the nearest 0.05 ft)
	GE_{LCB}=			0.76	

Design Section:

Proposed Section Prior to Overlay



The section is therefore adequate for TI = 11.0, thus for TI = 9.5

Adequacy of Existing Shoulder for Temporary Traffic

East Segment - Mainline

TI = 9.5; R = 5

0.0032*(TI)*(100-R) = 0.0032*9.5*95 = 2.89

Outside Shoulder

550+36 to 555+00 and 563+92 to 587+73:

1. AC – 0.78+ (0.70+ Var.)	GE = 1.59
2. CTB (Cl. A) – Var.	GE = 0.85 (assume 0.5' min. CTB)
3. AS (Cl. 1) – 1.15	GE = 1.15
	Total GE = 3.59 > 2.89 ---- OK

1. AC – 1.08	GE = 2.45
2. LCB – 0.50	GE = 0.95
3. LTS – 1.50	GE = 1.80
	Total GE = 5.20 > 2.89 ---- OK

Temporary Traffic (LCB)

Project: I-580 - West Segment

Temporary AC for Ramps

R-value (soil) = 5
R-value (AS) = 50 (Class 4)

TI =	8.0		
Total GE req (ft) =	2.43		
Full Depth AC:			
Add SF (mm) =	0.1		
GE req(AC) + SF (ft) =	2.53		
(table 633.1) t(AC) (ft) =	1.05		
Depth (AC & LCB):			
GE req(AC+LCB) (ft) =	2.43		
40% of GE req (AC+LCB) (ft) =	0.97		
Add SF (ft) =	0.20		
GE req(AC) + SF (mm) =	1.17		
(table 633.1) t(AC) (ft) =	0.60		
(table 633.1) GE t(AC) (ft) =	1.25		
GE req(LCB) (ft) =	1.18		
(table 633.1) t(LCB) (mm) =	0.65		
	1.25		
Depth (AC, LCB& AS):			
GE req(AC+LCB) (ft) =	1.28		
40% of GE req (AC+LCB) (ft) =	0.51		
Add SF (ft) =	0.2		
GE req(AC) + SF (ft) =	0.71		
(table 633.1) t(AC) (ft) =	0.40		
(table 633.1) GE t(AC) (ft) =	0.80		
GE req(LCB) (ft) =	0.48		
Add SF (ft) =	0.20		
GE req(LCB) + SF (ft) =	0.68		
(table 633.1) t(LCB) (ft) =	0.40		
GE t(LCB) (ft) =	0.76		
GE t (AC+LCB) (ft) =	1.56		
GE req(AS) (ft) =	0.87		
(table 633.1) t(AS) (ft) =	0.90		
	1.70		

total GE of LC

Net GE of LC

Greenville Westbound On-Ramp; Greenville Eastbound On-Ramp;

Vasco Road EB On-Ramp and Off-Ramp.

Final Section (TI = 12)

Min. HMA reqd. 0.4'

Min. HMA above LCB: 0.5

Use 0.5'

Note: User must input all values in yellow and then reference chapter 600 to get the final values in gray
For full depth of AC section, 0.1 ft satety factor is taken whereas for AC with AB and As 0.20 ft factor of safery is added.

Temporary Traffic (AB)

Project: I-580 - West Segment
Job No.: 208102.GDR
Temporary Pavement for Ramps - Section 4

R-value (soil) = 5
R-value (AB) = 78 (Class 2)
R-value (AS) = 50 (Class 2)

	TI =	8.00	
	Total GE req =	2.43	
Full Depth AC:	Add SF =	0.10	
	GE req(HMA-A) + SF =	2.53	
(table 633.1)	t(HMA-A)=	1.20	

Depth (AC & AB):	GE req(HMA-A) =	0.56	
	Add SF =	0.20	
	GE req(HMA-A) + SF =	0.76	
(table 633.1)	t(HMA-A)=	0.50	
(table 633.1)	GE t(HMA-A)=	0.00	
	GE req(AB) =	2.43	
(table 633.1)	t(AB)=	1.70	
		2.20	

Depth (AC, AB& AS):	GE req(HMA-A) =	0.56	
	Add SF =	0.20	
	GE req(HMA-A) + SF =	0.76	
(table 633.1)	t(HMA-A)=	0.40	
(table 633.1)	GE t(HMA-A)=	0.80	
	GE req(HMA-A+AB) =	1.28	
	GE req(AB) =	0.48	
	Add SF =	0.20	
	GE req(AB) + SF =	0.68	
(table 633.1)	t(AB)=	0.65	
	GE t(AB)=	0.72	
	GE t (HMA-A+AB)	1.52	
	GE req(AS) =	0.91	
(table 633.1)	t(AS)=	1.00	
		2.05	

N. Livermore WB On-~~and~~ Off-Ramp

N. Livermore EB On-Ramp
and First Street EB On-Ramp

(TI = 10)
↑
Final Section

Min. HMA Section req'.
= 0.40'

Note: User must input all values in yellow and then reference chapter 600 to get the final values in gray
For full depth of HMA-A section, 0.1 ft satety factor is taken whereas for HMA-A with AB and HMA-A with AB & AS sections, 0.20 ft factor of safery is added.

APPENDIX D

NOTES:

1. DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTIONS) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
2. SUPERELEVATION AS SHOWN OR AS DIRECTED BY THE ENGINEER.
3. FOR LOCATIONS AND LIMITS OF STBB AND DTBB, SEE LAYOUT PLANS AND SUMMARY OF QUANTITIES SHEETS.
4. WHENEVER FILL SLOPE IS STEEPER THAN 4:1 SUBBASE MATERIAL SHALL BE EXTENDED TO THE FILL SLOPE.
5. FOR LOCATIONS, LIMITS AND TYPES OF DIKE, Conc Barr, FENCE, MBGR, SEE LAYOUT PLANS AND SUMMARY OF QUANTITIES SHEETS.
6. FOR LOCATIONS, LIMITS AND DETAILS OF RETAINING WALLS, SEE STRUCTURE PLANS.
7. FOR DRAINAGE IMPROVEMENTS, SEE DRAINAGE PLANS.
8. EXTEND 0.20' OF THE TOP LAYER OF HMA (TYPE A) PLACED ON THE Shld UNDER DIKES WITH NO JOINT AT THE ES. SEE Std PLANS A87B FOR DETAIL.
9. FOR COLD PLANE AND OVERLAY CONFORM DETAIL, SEE CONSTRUCTION DETAILS.
10. FOR UNLINED DITCH LIMITS, SEE DRAINAGE PLANS.
11. EXTEND GPI (PAVING MAT) 2' BEYOND Exist PCC or AC.
12. FOR LIMITS OF REMOVAL OF Conc BARRIER, SEE LAYOUT PLANS.
13. FOR TEXTURED PAVING LIMITS & PAVEMENT SECTION, SEE LAYOUTS & CONSTRUCTION DETAILS.
14. FOR LOCATIONS, LIMITS AND DETAILS OF MVP, SEE LAYOUTS AND CONSTRUCTION DETAILS.
15. Exist OGAC LAYER SHALL BE COLD PLANED PRIOR TO OVERLAY.
16. WHERE WIDENING AT THE EXISTING EDGE OF TRAVELED WAY OR SHOULDER, THE DEPTH OF THE SAWCUT IS TO THE BOTTOM OF THE TREATED BASE.
17. FOR SHOULDER BACKING LOCATION, SEE SUMMARY OF QUANTITIES SHEETS.
18. FOR LIMITS AND LOCATIONS OF COLD PLANE AC Pvmt AND REPLACE AC SURFACING, SEE LAYOUTS AND SUMMARY OF QUANTITIES SHEETS.
19. THE CONTRACTOR SHALL REMOVE ALL EXISTING AGGREGATE SUBBASE AND BACKFILL WITH NATIVE MATERIAL PRIOR TO TREATING AREAS WITH LSTS.
20. FOR PRECAST PRESTRESSED CONCRETE PAVEMENT AND PRECAST CONCRETE PANEL DETAILS, SEE CONSTRUCTION DETAILS.
21. ROADWAY WIDENING ARE TO BE CONSTRUCTED TO AN "INTERIM GRADE (MATCH EXISTING PAVEMENT EDGE ELEVATIONS) DURING STAGE CONSTRUCTION. FINAL GRADE IS TO BE ACCOMPLISHED CONSECUTIVELY WHEN OVERLAYING THE EXISTING PAVEMENT. (SEE SC SHEETS FOR LOCATIONS).
22. FOR CONCRETE MEDIAN PAVING STRUCTURAL SECTION, SEE CONSTRUCTION DETAILS.
23. EXTEND 0.20' OF THE TOP LAYER OF HMA (TYPE A) PLACED UNDER Conc Barr (TYPE 60D) OR 0.20' OF RHMA (GAP GRADED) PLACED UNDER Conc Barr (TYPE 60 Mod) AS SHOWN ON X-3 DETAIL "B".
24. FOR ISRRSC LOCATIONS, SEE LAYOUTS AND SUMMARY OF QUANTITIES SHEETS.
25. PLACEMENT OF PPCP, ISRPCP AND ISRRSC SHALL REQUIRE THE REMOVAL OF THE UNDERLYING BASE TO ITS ENTIRETY.

ABBREVIATIONS:

Barr	BARRIER
C&G	CURB AND GUTTER
CSC	CROSS SLOPE CORRECTION
FC	FACE OF CURB
GB	GRADE BREAK
GPI	GEOSYNTHETIC PAVEMENT INTERLAYER
IBM	IMPORTED BASE MATERIAL
ISRPCP	INDIVIDUAL SLAB REPLACEMENT PRECAST CONCRETE PANEL
ISRRSC	INDIVIDUAL SLAB REPLACEMENT RAPID STRENGTH CONCRETE
LCB	LEAN CONCRETE BASE
LCB-RS	LEAN CONCRETE BASE-RAPID SETTING
LSTS	LIME STABILIZED SOIL
LTS	LIME TREATED SUBBASE (Exist)
MVP	MAINTENANCE VEHICLE PULLOUT
PPCP	PRECAST PRESTRESSED CONCRETE PAVEMENT
PCP	PRECAST CONCRETE PANEL
RAC	RUBBERIZED ASPHALT CONCRETE
Rem	REMOVE
RHMA	RUBBERIZED HOT MIX ASPHALT
RMCTB	ROAD MIXED CEMENT TREATED BASE
TWEF	TEMPORARY FENCE (WILDLIFE EXCLUSION)
TESA	TEMPORARY FENCE (TYPE ESA)

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

5/7/12
REGISTERED CIVIL ENGINEER — DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

BKF ENGINEERS
4670 WILLOW ROAD, SUITE 250
PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612

DESIGN DESIGNATION (ROUTE 580):

MAINLINE	TI=15.5, R-VALUE=5
RAMPS	TI=10.0 & 12.0, R-VALUE=5
VDESIGN	= 70 MILE/HOUR

PAVEMENT STRUCTURAL SECTIONS:

1
- 0.10' HMA (OPEN GRADED)
- 0.20' RHMA (GAP GRADED)
- 0.65' HMA (TYPE A)
- 0.80' LCB
- 1.50' LSTS

2
- 0.10' HMA (OPEN GRADED)
- 0.20' RHMA (GAP GRADED)
- 0.15' Min & Var HMA (TYPE A) (CROSS SLOPE CORRECTION)
- GPI (PAVING MAT) (SEE NOTE 11)

3
- 0.10' HMA (OPEN GRADED)
- 0.20' RHMA (GAP GRADED)
- 0.15' Min & Var HMA (TYPE A) (CROSS SLOPE CORRECTION)
- 0.50' HMA (TYPE A)
- 0.80' LCB
- 1.80' CI 4 AS

4
- Var 0.20' TO 0.50' HMA (TYPE A) (CROSS SLOPE CORRECTION)
- 0.50' HMA (TYPE A)
- 0.60' LCB
- 1.50' CI 4 AS

5
- Var 0.20' TO 0.60' HMA (TYPE A) (CROSS SLOPE CORRECTION)
- 0.40' HMA (TYPE A)
- 0.85' CI 3 AB
- 1.20' CI 4 AS

6
- 0.20' Min TO 1.2' HMA (TYPE A)

7
- 0.20' RHMA (GAP GRADED)
- 0.30' HMA (TYPE A)
- 0.85' AB (CI 3)
- 1.20' CI 4 AS

8
- 0.60' HMA (TYPE A)
- 0.60' LCB
- 1.50' CI 4 AS

9
- 0.20' RHMA (GAP GRADED)
- 1.10' HMA (TYPE A)

10
- 0.45' Min & Var HMA (TYPE A) (CROSS SLOPE CORRECTION)
- GPI (PAVING MAT) (SEE NOTE 11)
- 0.10' HMA (TYPE A)

11
- 0.10' HMA (OPEN GRADED)
- 0.20' RHMA (GAP GRADED)
- 0.15' Min & Var HMA (TYPE A) (CROSS SLOPE CORRECTION)
- GPI (PAVING MAT) (SEE NOTE 11)
- 0.10' HMA (TYPE A)

12
- 0.90' PPCP
- 0.35' LCB-RS
- 1.35' CI 4 AS

13
- 0.10' HMA (OPEN GRADED)
- 0.20' RHMA (GAP GRADED)
- 0.15' Min & Var HMA (TYPE A) (CROSS SLOPE CORRECTION)

14
- 0.10' HMA (OPEN GRADED)
- 0.20' RHMA (GAP GRADED)
- 0.15' Min & Var HMA (TYPE A) (CSC)
- GPI (PAVING MAT) (SEE NOTE 11)
- 0.10' HMA (TYPE A)
- 0.10' COLD PLANE AC Pvmt

15
- 0.90' PPCP
- 0.35' Min & Var LCB-RS

16
- 0.35' HMA (TYPE A)
- GPI (PAVING MAT) (SEE NOTE 11)
- 1.65' MINOR Conc

17
- 0.70' TO 0.80' ISRPCP
- 0.35' Min & Var LCB-RS

18
- 0.10' HMA (OPEN GRADED)
- 0.20' RHMA (GAP GRADED)
- 0.65' HMA (TYPE A)
- 0.80' LCB
- 1.80' CI 4 AS

19
- REPLACE AC SURFACING
- (SEE NOTE 18)

20
- 0.10' HMA (OPEN GRADED)
- 0.20' RHMA (GAP GRADED)
- Var 0.30' TO 1.30' HMA (TYPE A) CSC
- 0.50' HMA (TYPE A)
- 0.80' LCB
- 1.50' LSTS

21
- 0.10' HMA (OPEN GRADED)
- 0.20' RHMA (GAP GRADED)
- 0.15' TO 0.70' HMA (TYPE A) CSC
- 0.50' HMA (TYPE A)
- 0.80' LCB
- 1.50' LSTS

22
- Var 0.60' TO 1.30' HMA (TYPE A) CSC
- 0.50' HMA (TYPE A)
- 0.60' LCB
- 1.50' CI 4 AS

23
- 0.50' HMA (TYPE A)
- 0.85' CI 3 AB
- 1.20' CI 4 AS

24
- Var 0.10' TO 1.10' HMA (TYPE A) CSC
- 0.40' HMA (TYPE A)
- 0.85 CI 3 AB
- 1.20' CI 4 AS

25
- 0.85' HMA (TYPE A)
- 0.80' LCB
- 1.80' CI 4 AS

26
- 1.20' JPCP
- 0.35' LCB
- 0.70' CI 4 AS
- 0.65' LSTS

27
- 0.45' Min & Var HMA (TYPE A) (CROSS SLOPE CORRECTION)
- GPI (PAVING MAT) (SEE NOTE 11)

28
- Var 0.10' TO 0.40' HMA (TYPE A) CSC
- 0.75' HMA (TYPE A)
- 0.80' LCB
- 1.80' CI 4 AS

29
- Var 0.35' TO 0.50' HMA (TYPE A) CSC
- 0.50' HMA (TYPE A)
- 0.80' LCB
- 1.80' CI 4 AS

30
- 0.85' HMA (TYPE A)
- 0.80' LCB
- 1.50' LSTS

31
- Var 0.0' TO 1.00' HMA (TYPE A) CSC
- 0.85' HMA (TYPE A)
- 0.80' LCB
- 1.80' CI 4 AS

32
- 0.70' TO 0.80' ISRRSC
- 0.35' Min & Var LCB-RS

33
- 2.15' HMA (TYPE A)

TYPICAL CROSS SECTIONS

NO SCALE

X-1

LAST REVISION 05-07-12 | DATE PLOTTED =5/8/2012 | TIME PLOTTED =12:25:12 PM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

CALCULATED-DESIGNED BY: INNA ASHUROV | CHECKED BY: LUIS GARCIA

REVISED BY: IA | DATE REVISED: 5/7/12

BORDER LAST REVISED 7/2/2010

USERNAME => ASHU
DGN FILE => 0400021248ca001.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0735

PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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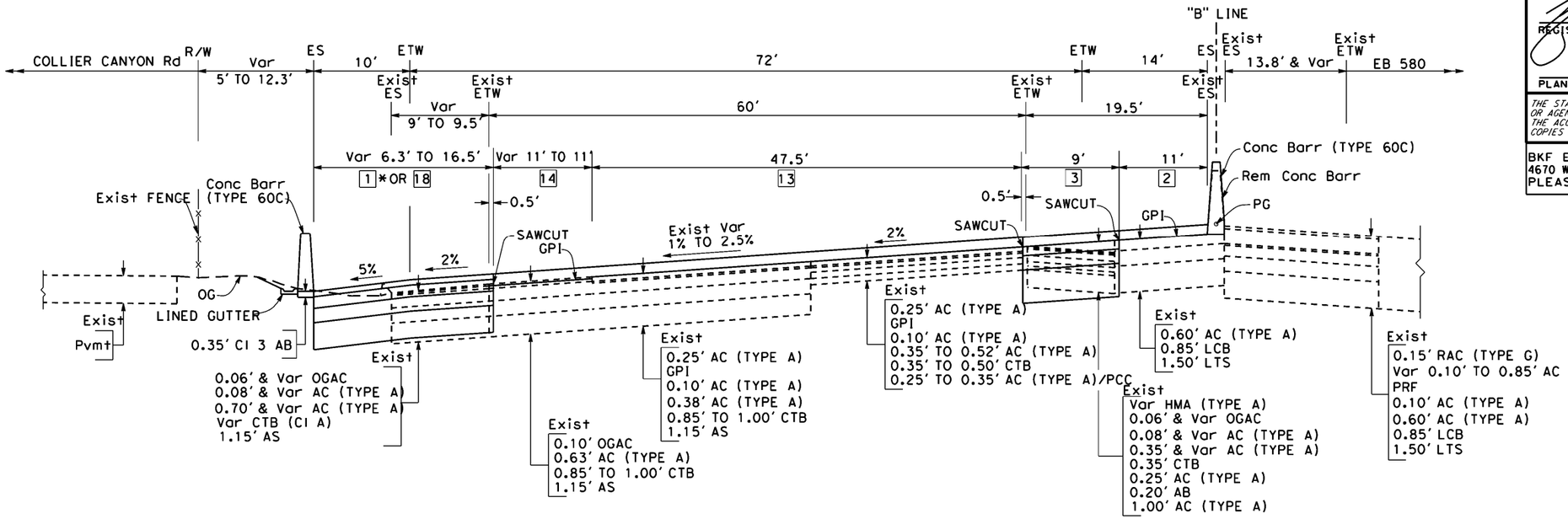
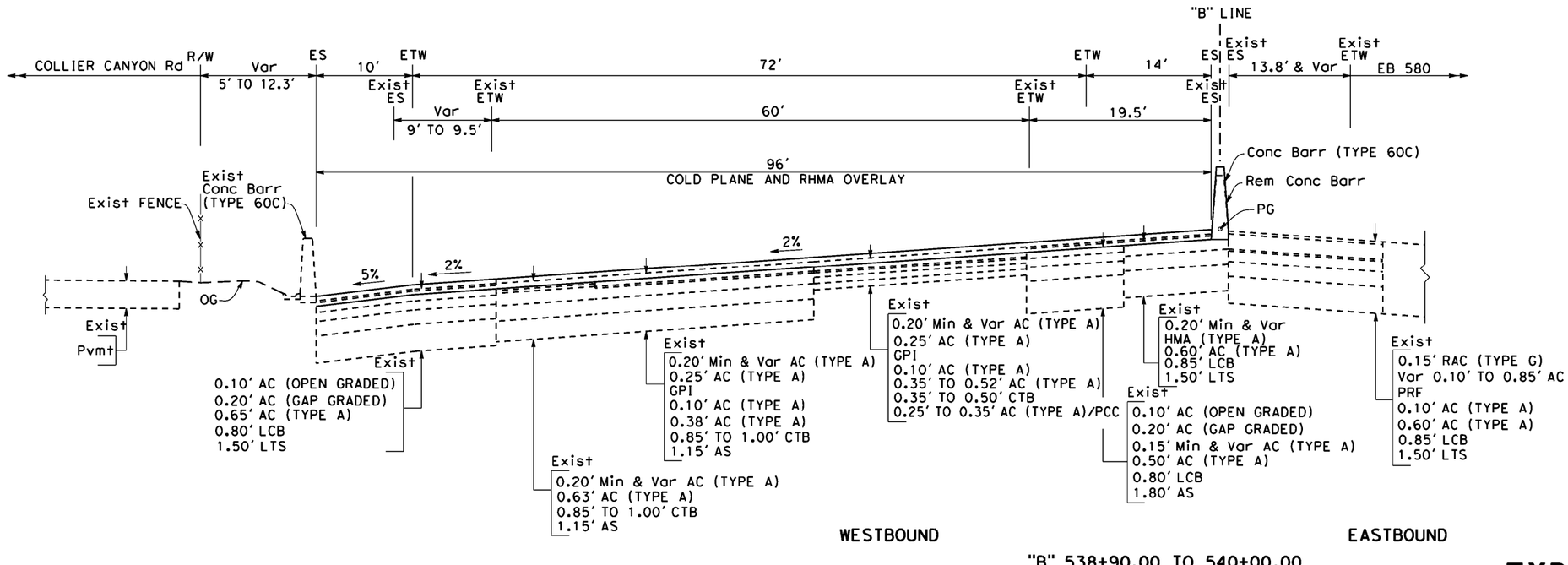
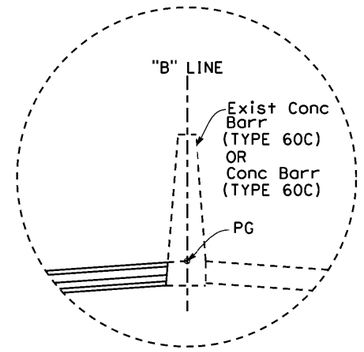


"B" 540+00.00 TO 551+36.99

1 * END @ "B" 550+11





DETAIL "A"

"B" 538+90 TO 854+06.51

"B" 538+90.00 TO 540+00.00

ROUTE 580

TYPICAL CROSS SECTIONS

NO SCALE

X-2

REVISED BY	IA
DATE REVISED	5/7/12
CALCULATED-DESIGNED BY	INNA ASHUROV
CHECKED BY	LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR	NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

LAST REVISION 05-07-12 | DATE PLOTTED =>5/9/2012 | TIME PLOTTED =>9:58:20 AM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ca002.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

PLANS APPROVAL DATE

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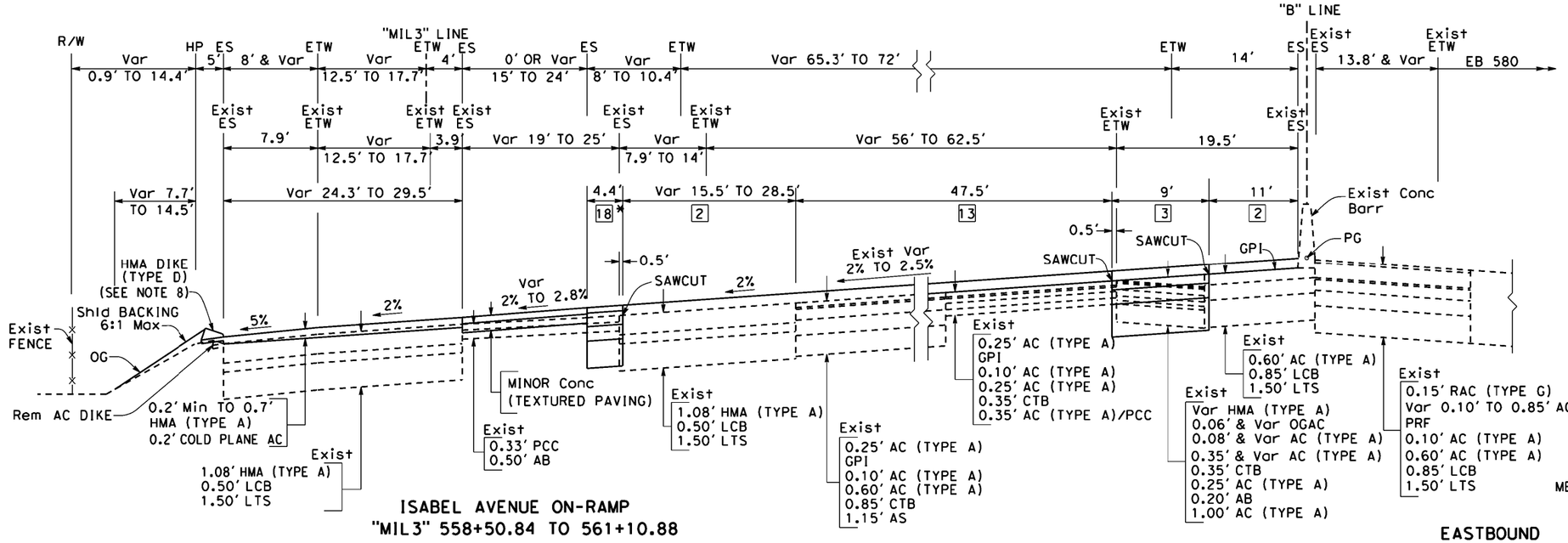
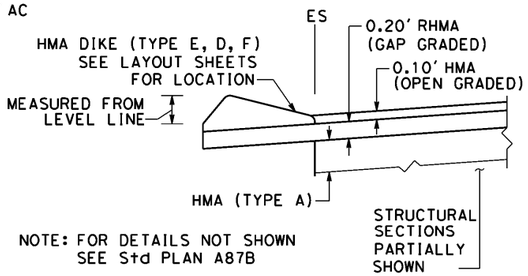


ISABEL AVENUE ON-RAMP
"MIL3" 558+50.84 TO 561+10.88

WESTBOUND

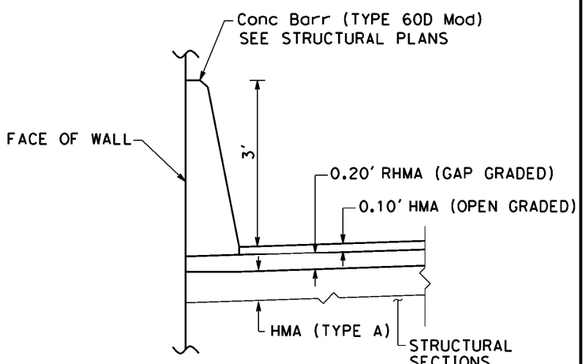
"B" 558+50.98 TO 561+88.28
18* "B" 558+50.98 TO 559+71.74

EASTBOUND

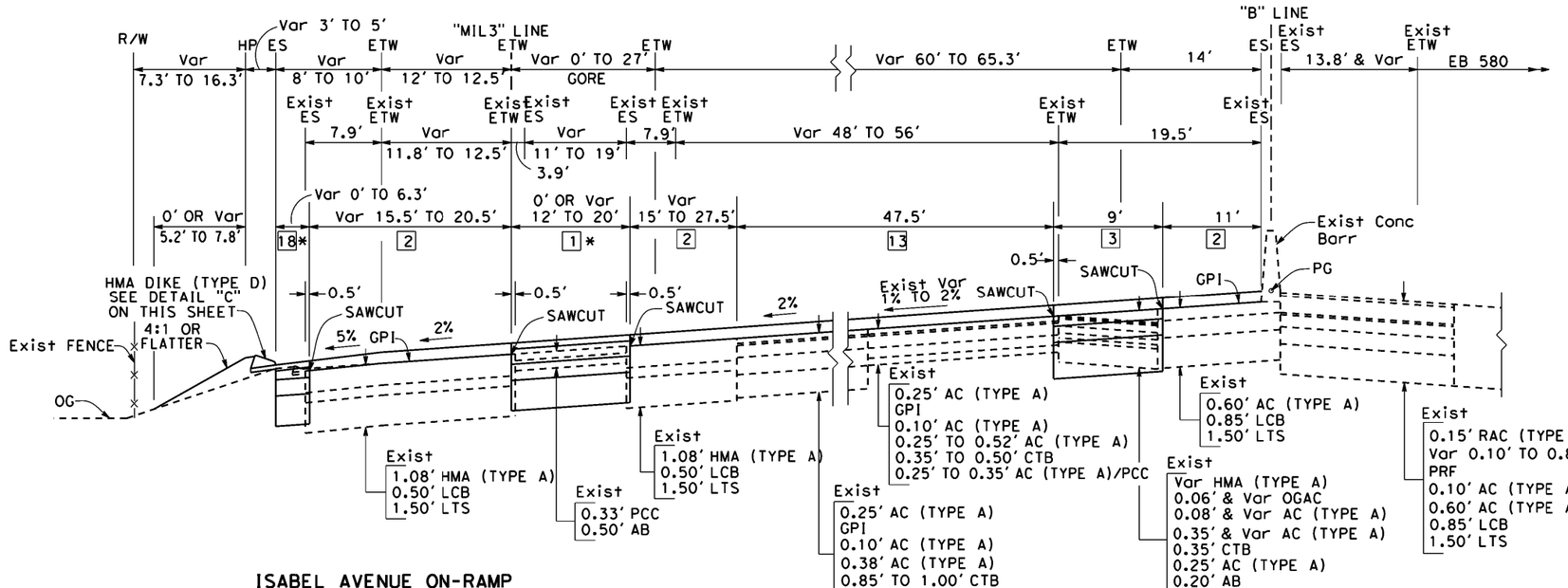


NOTE: FOR DETAILS NOT SHOWN SEE Std PLAN A87B

DETAIL "C"



DETAIL "B"



ISABEL AVENUE ON-RAMP
"MIL3" 551+36.99 TO 558+50.84

1 *"B" 556+94.96 TO 558+50.98
18 *"MIL3" 551+36.99 TO 555+37.40

WESTBOUND

"B" 551+36.99 TO 558+50.98

EASTBOUND

"B" 623+00.00 TO "MKR2" 646+21.14
"B" 659+50.00 TO 664+00.00
"B" 665+50.00 TO 671+90.00
"B" 685+30.00 TO 688+00.00
"B" 703+00.00 TO 704+50.00
"B" 707+20.00 TO 707+80.00
"B" 733+50.00 TO "MXR3" 740+68.34

TYPICAL CROSS SECTIONS

NO SCALE

ROUTE 580

FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

X-3

REVISED BY	DATE REVISED
IA	5/7/12

INNA ASHUROV — CALCULATED-DESIGNED BY
LUIS GARCIA — CHECKED BY
NATALINA V. BERNARDI — CONSULTANT FUNCTIONAL SUPERVISOR
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 05-07-12 — DATE PLOTTED =>5/7/2012 — TIME PLOTTED =>4:51:51 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ca003.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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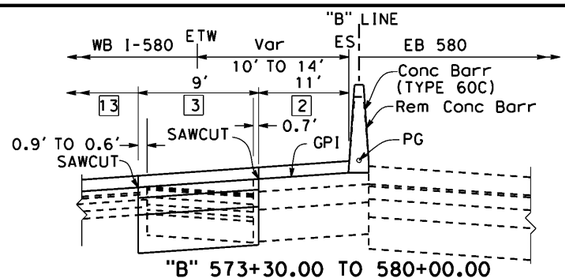
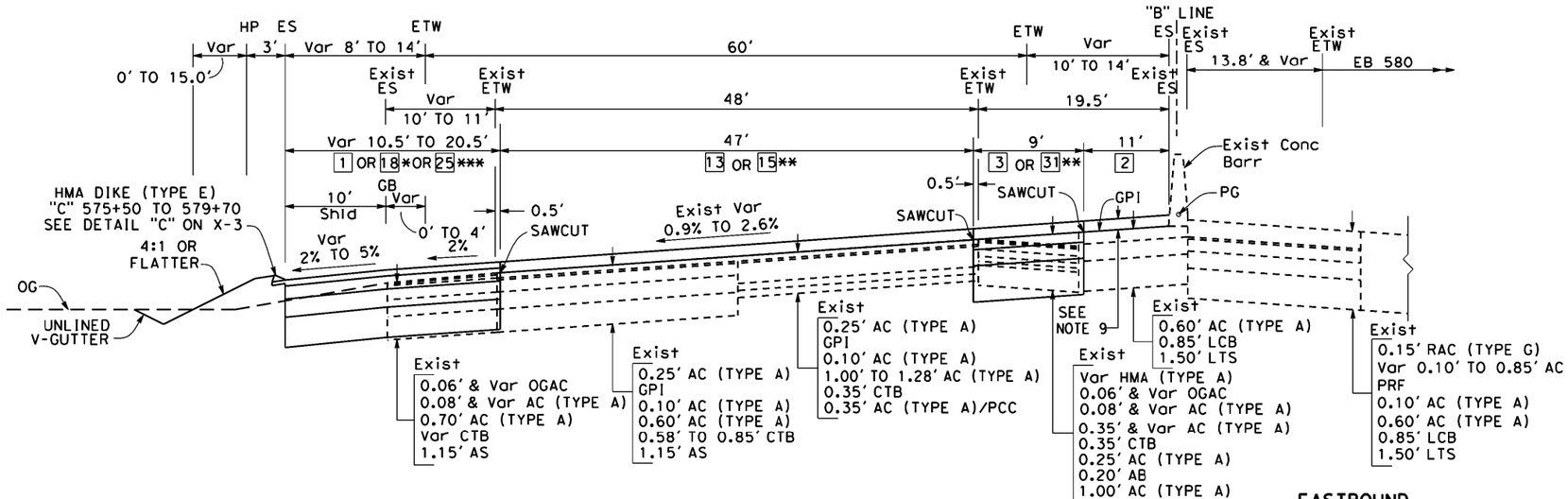
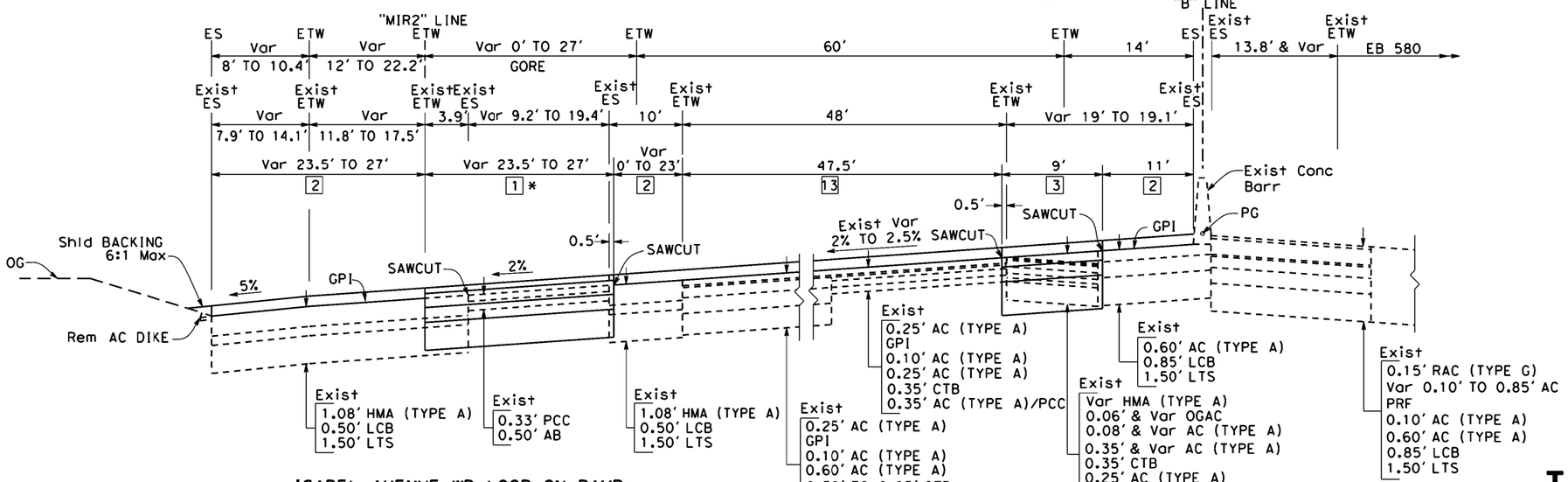


"B" 573+30.00 TO 580+00.00



"B" 568+30.72 TO 581+76.08
"B" 583+49.44 TO 585+03.95
18* "B" 579+20 TO 580+30
15** & 31** "B" 580+30.00 TO 581+76.08
"B" 583+49.44 TO 585+03.95
25*** "B" 580+30.00 TO 582+16.17



ISABEL AVENUE WB LOOP ON-RAMP
"MIR2" 561+88.28 TO 568+31.20
1 * "MIR2" 566+88.04 TO 568+31.20

"B" 561+88.28 TO 568+30.72

ROUTE 580

FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-4

REVISED BY	DATE REVISED
IA	5/7/12

CALCULATED-DESIGNED BY: INNA ASHUROV
CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 05-07-12 | DATE PLOTTED =>5/8/2012 | TIME PLOTTED =>10:00:06 AM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ca004.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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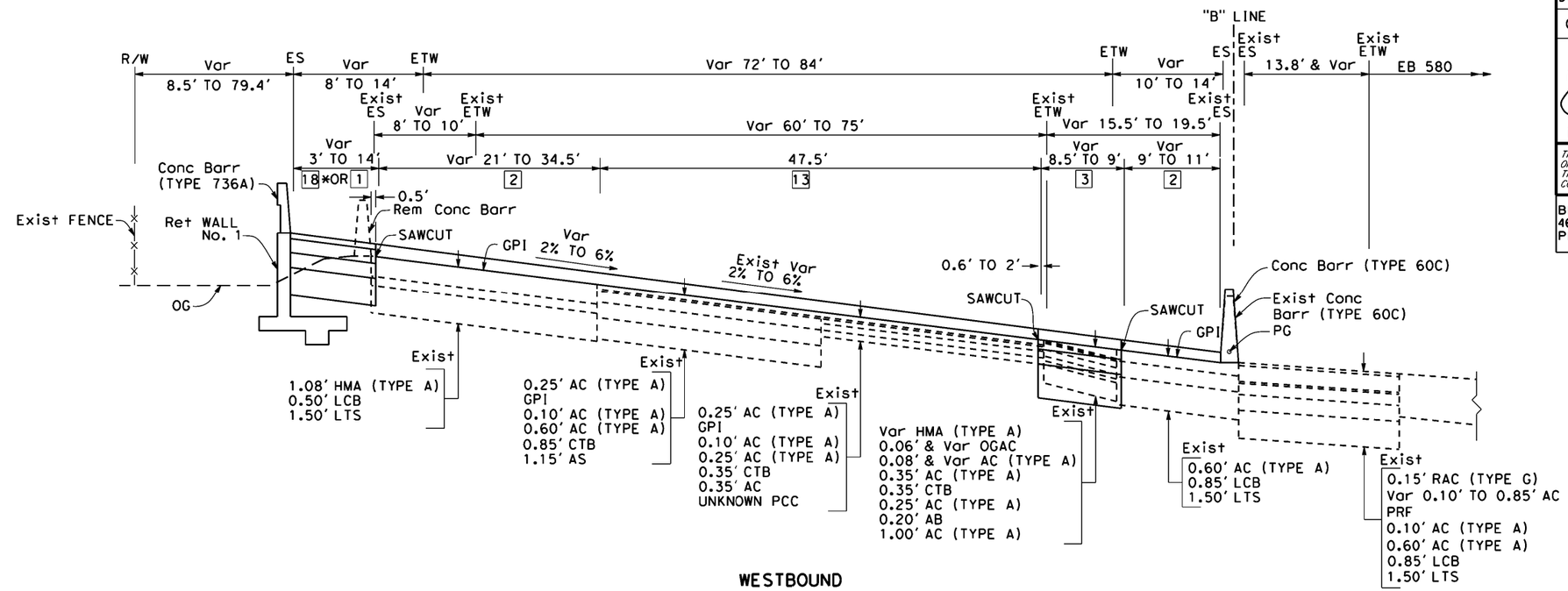
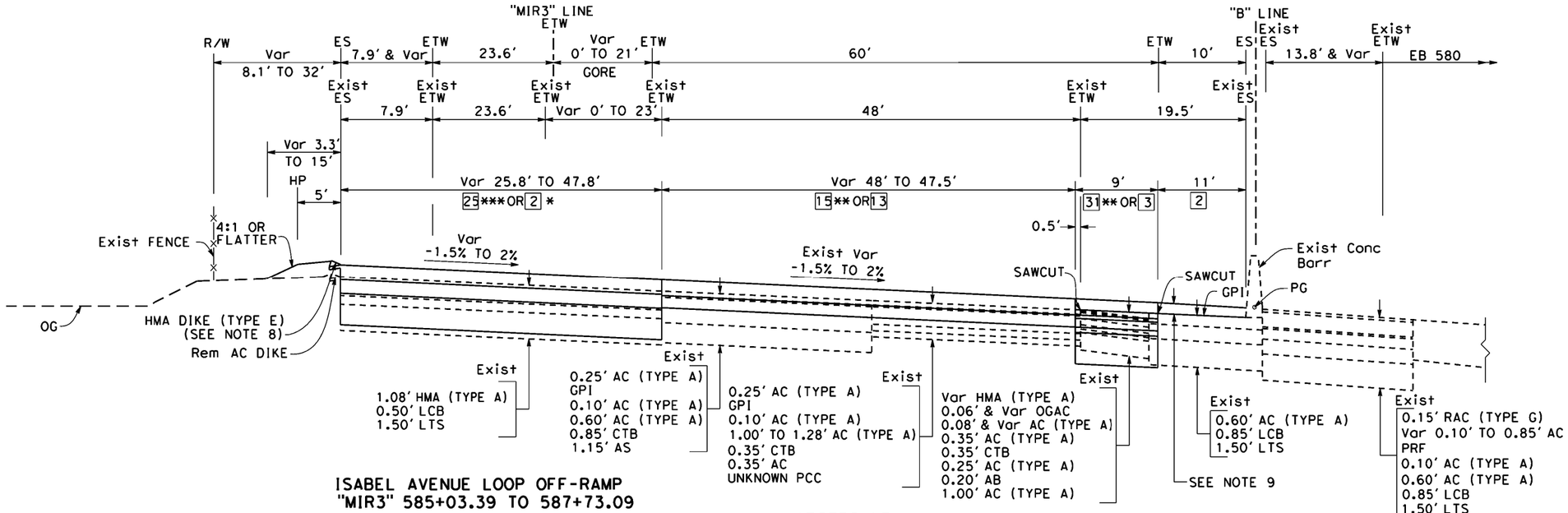


WESTBOUND

"B" 587+73.00 TO 593+89.00

18 *END @ "B" 592+11.50

EASTBOUND



ISABEL AVENUE LOOP OFF-RAMP
"MIR3" 585+03.39 TO 587+73.09

WESTBOUND

"B" 585+03.95 TO 587+73.00

3 * & 2 * "MIR3" 587+00.00

31 ** & 15 ** "MIR3" 583+49.44 TO 587+00.00

25 *** END @ "MIR3" 587+00.00

EASTBOUND

ROUTE 580

FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-5

REVISED BY	DATE REVISED
IA	5/7/12

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CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 05-07-12 | DATE PLOTTED =>5/8/2012 | TIME PLOTTED =>10:10:52 AM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ca005.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — STATE OF CALIFORNIA

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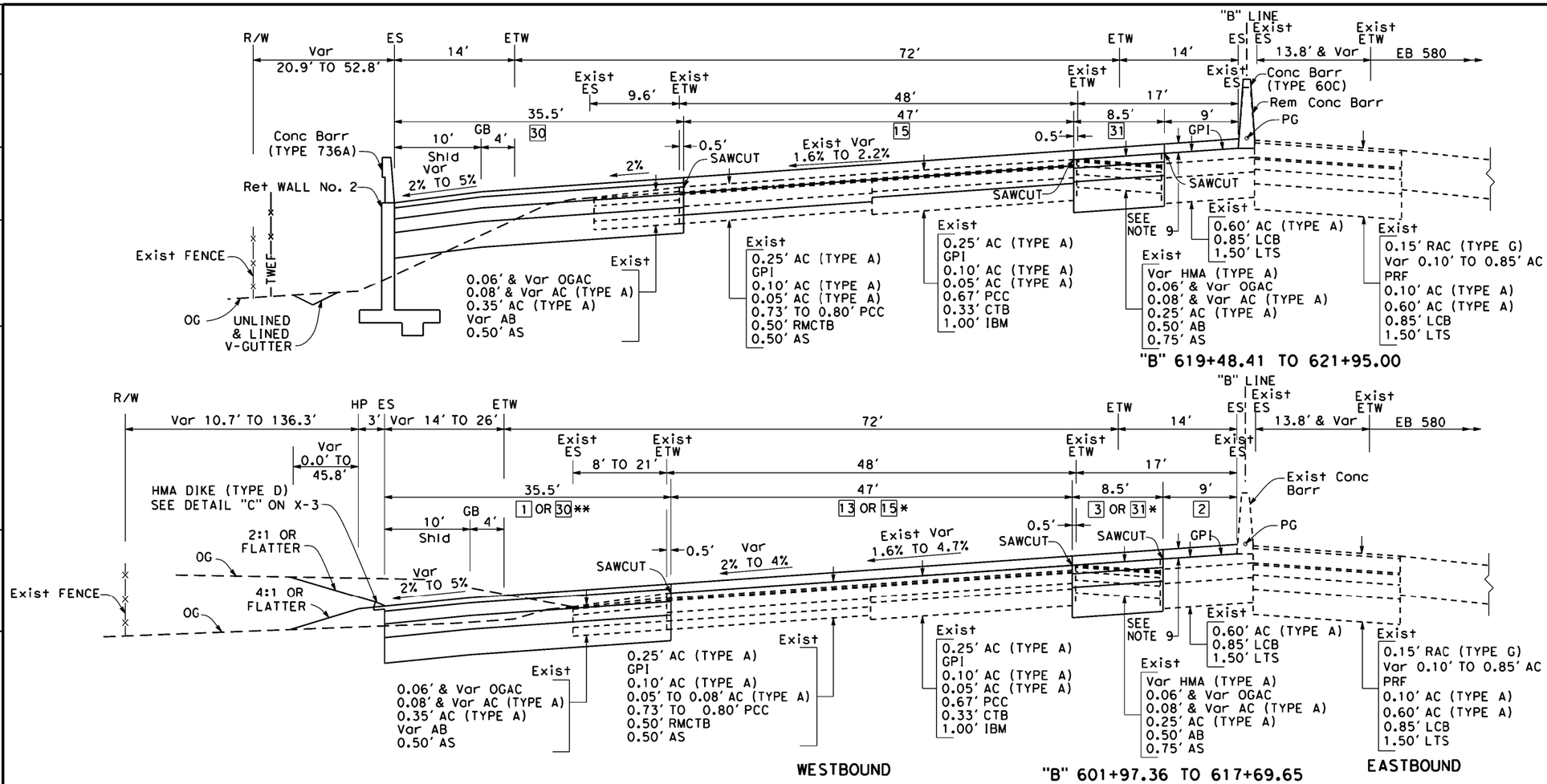


"B" 619+48.41 TO 621+95.00

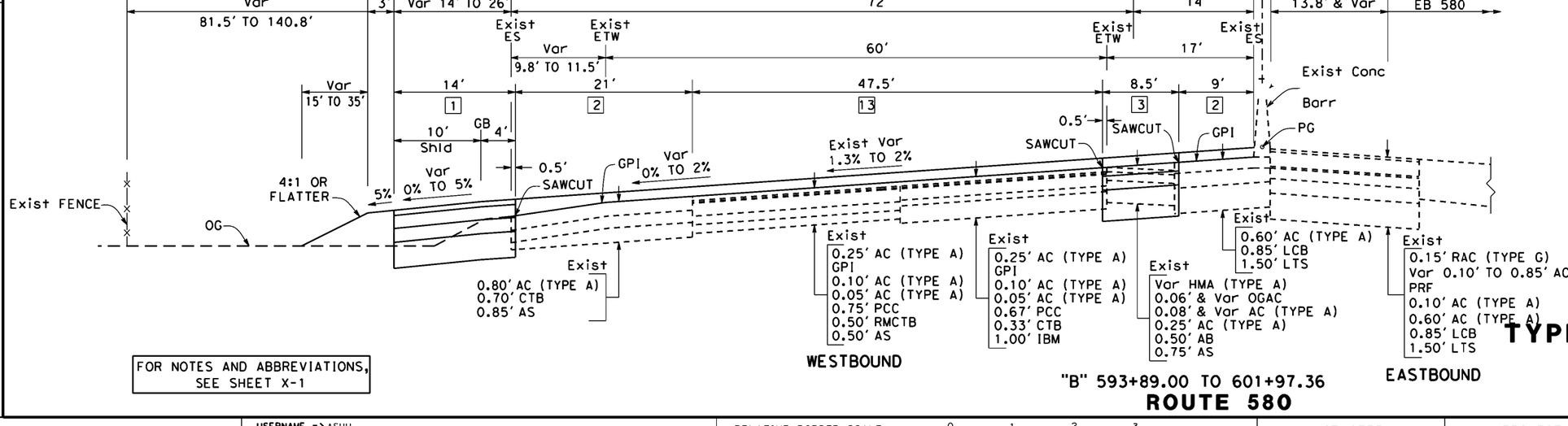
WESTBOUND

"B" 601+97.36 TO 617+69.65

31* & 15* "B" 615+60.00 TO 617+69.85

30** "B" 615+60.00 TO 617+61.24

EASTBOUND



WESTBOUND

"B" 593+89.00 TO 601+97.36

EASTBOUND

FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

ROUTE 580

X-6

REVISED BY	DATE REVISED
IA	5/7/12

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CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

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Caltrans

LAST REVISION 05-07-12
DATE PLOTTED =>5/8/2012
TIME PLOTTED =>8:44:21 AM

BORDER LAST REVISED 7/2/2010
USERNAME => ASHU
DGN FILE => 0400021248ca006.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0735
PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

PLANS APPROVAL DATE

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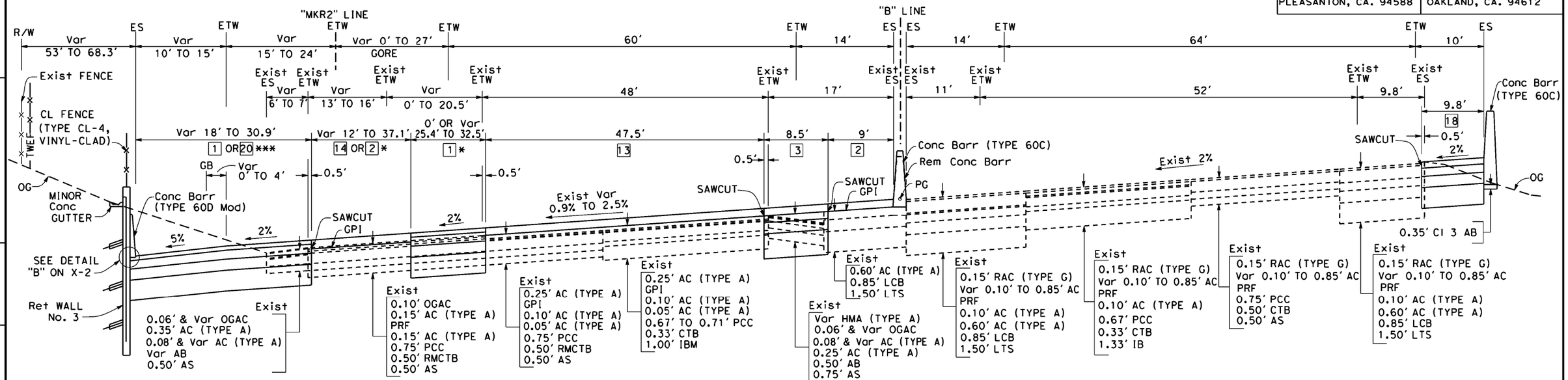
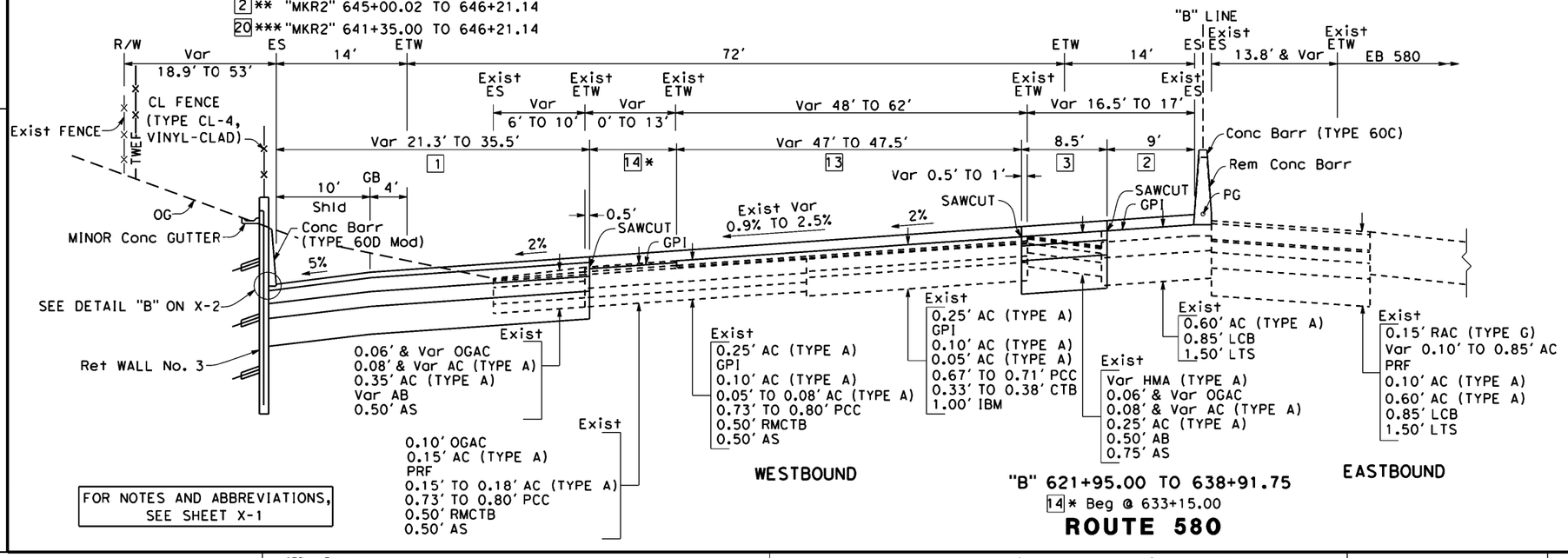


NORTH LIVERMORE AVENUE WB ON-RAMP
"MKR2" 638+91.75 TO 646+21.14

1 * "MKR2" 645+00.02 TO 646+21.14
2 ** "MKR2" 645+00.02 TO 646+21.14
20 *** "MKR2" 641+35.00 TO 646+21.14

WESTBOUND
"B" 638+91.75 TO 646+27.17

EASTBOUND
"B" 640+82.30 TO 645+50.00



WESTBOUND

EASTBOUND

"B" 621+95.00 TO 638+91.75
14 * Beg @ 633+15.00

ROUTE 580

FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-7

REVISED BY	DATE REVISED
IA	5/7/12

INNA ASHUROV — LUIS GARCIA — CALCULATED-DESIGNED BY — CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR — NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

LAST REVISION 05-07-12 — DATE PLOTTED =>5/8/2012 — TIME PLOTTED =>8:54:12 AM

BORDER LAST REVISED 7/2/2010 — USERNAME => ASHU — DGN FILE => 0400021248ca007.dgn — RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 — UNIT 0735 — PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

PLANS APPROVAL DATE

N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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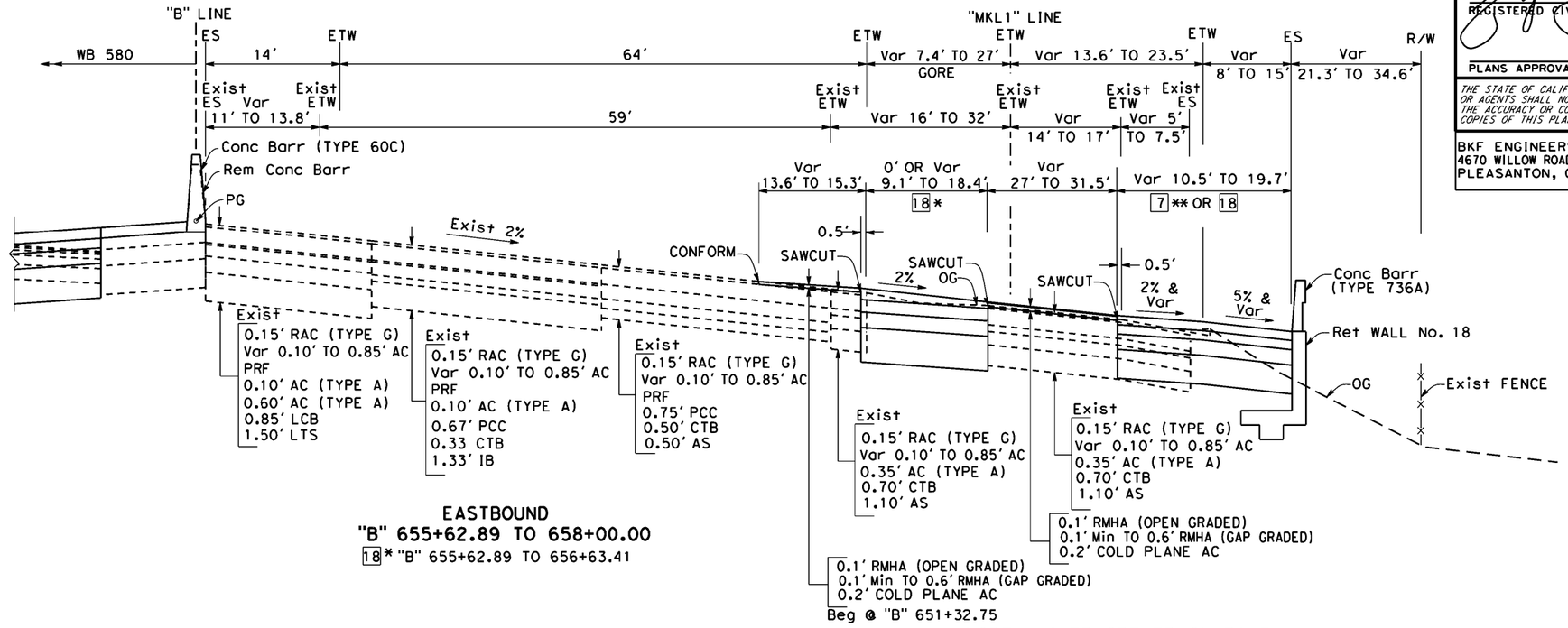
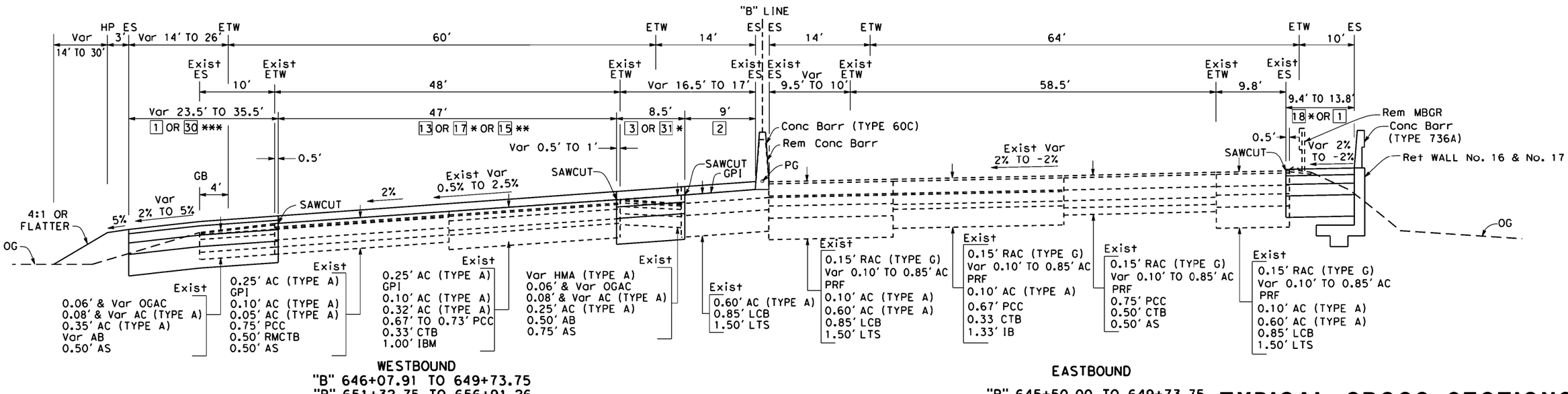


EASTBOUND
"B" 655+62.89 TO 658+00.00
18 * "B" 655+62.89 TO 656+63.41

Beg @ "B" 651+32.75

NORTH LIVERMORE EB ON-RAMP
"MKL1" 655+62.58 TO 658+48.61
7 ** END @ "MKL1" 656+63.38



WESTBOUND
"B" 646+07.91 TO 649+73.75
"B" 651+32.75 TO 656+91.26

31 *& 17 * "B" 647+84.00 TO 649+63.72
31 *& 15 * "B" 651+48.58 TO 653+65.00
30 *** "B" 647+84.00 TO 649+71.10
"B" 651+55.96 TO 653+65.00

EASTBOUND
"B" 645+50.00 TO 649+73.75
"B" 651+32.75 TO 655+62.89
18 * "B" 645+50.00 TO 647+88
"B" 654+17.74 TO 655+62.89

FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

ROUTE 580

TYPICAL CROSS SECTIONS

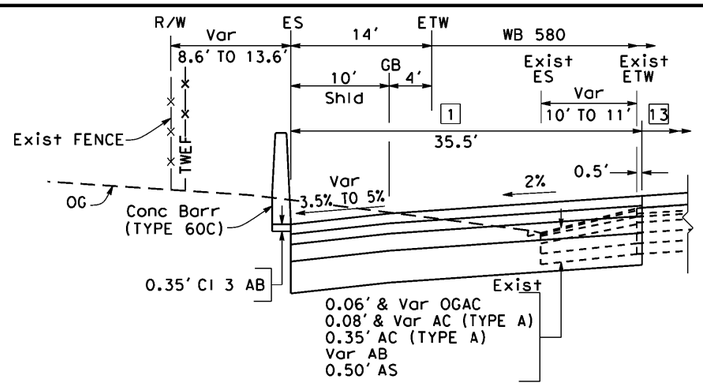
NO SCALE

X-8

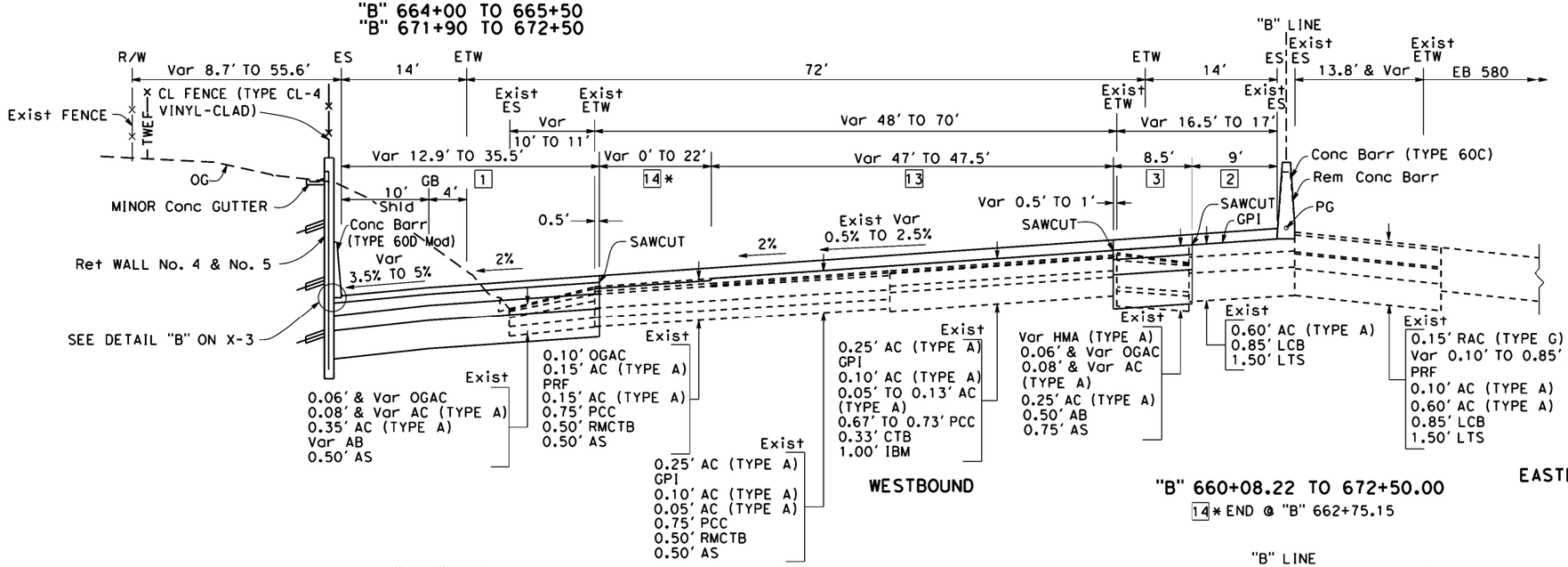
REVISED BY	DATE REVISED
IA	5/7/12

CALCULATED-DESIGNED BY: INNA ASHUROV
CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION DATE PLOTTED = 05/8/2012
TIME PLOTTED = 9:08:14 AM



"B" 664+00 TO 665+50
"B" 671+90 TO 672+50



WESTBOUND

"B" 660+08.22 TO 672+50.00

14* END @ "B" 662+75.15

EASTBOUND

NORTH LIVERMORE WB OFF-RAMP
"MKR1" 656+90.46 TO 660+08.22

1* "MKR1" 656+90.46 TO 658+30.24

18** "MKR1" 659+36.66 TO 660+08.22

WESTBOUND

"B" 656+91.26 TO 660+08.22

FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

ROUTE 580

X-9

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612

REVISED BY: IA — DATE REVISED: 5/7/12
CALCULATED-DESIGNED BY: INNA ASHUROV
CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION: DATE PLOTTED =>5/4/2012 TIME PLOTTED =>8:58:42 AM
05-07-12

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ca009.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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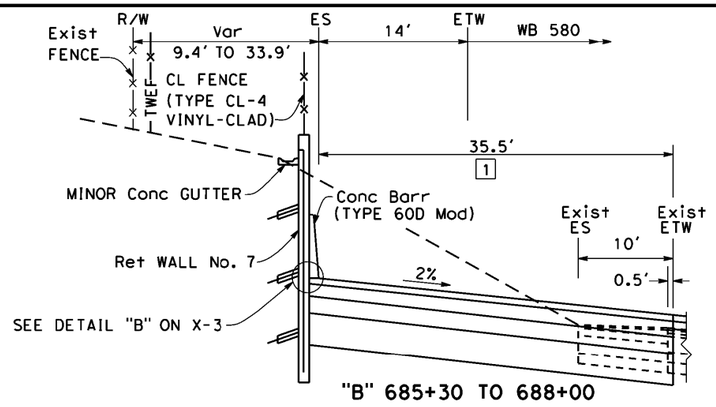
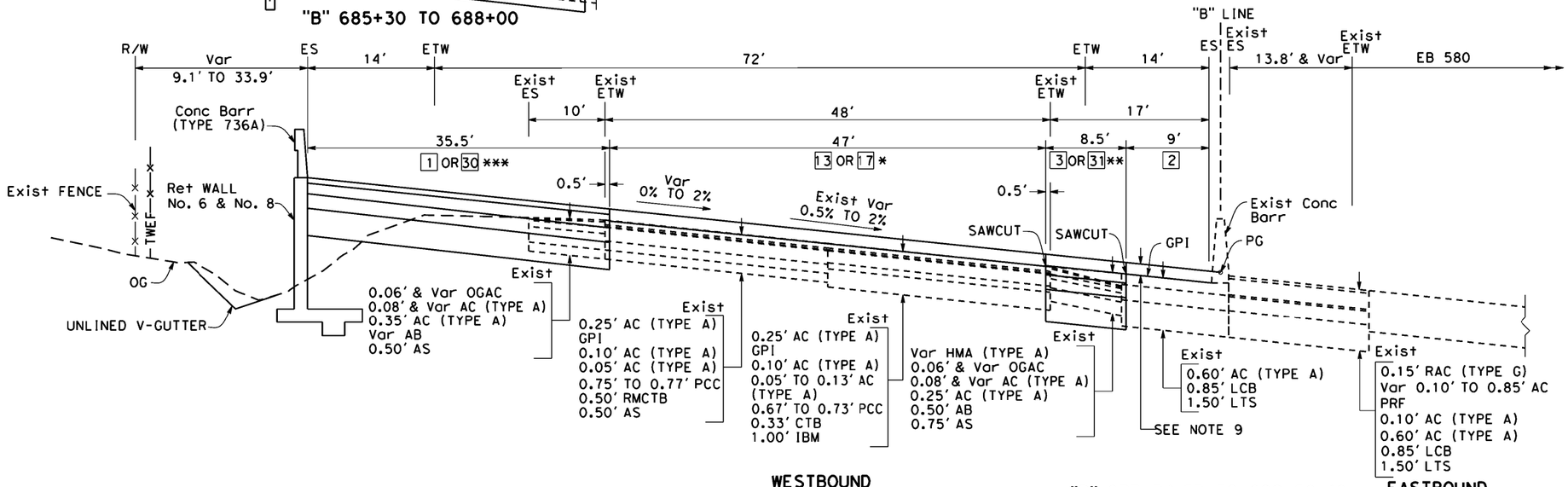
OAKLAND, CA. 94612



"B" 685+30 TO 688+00



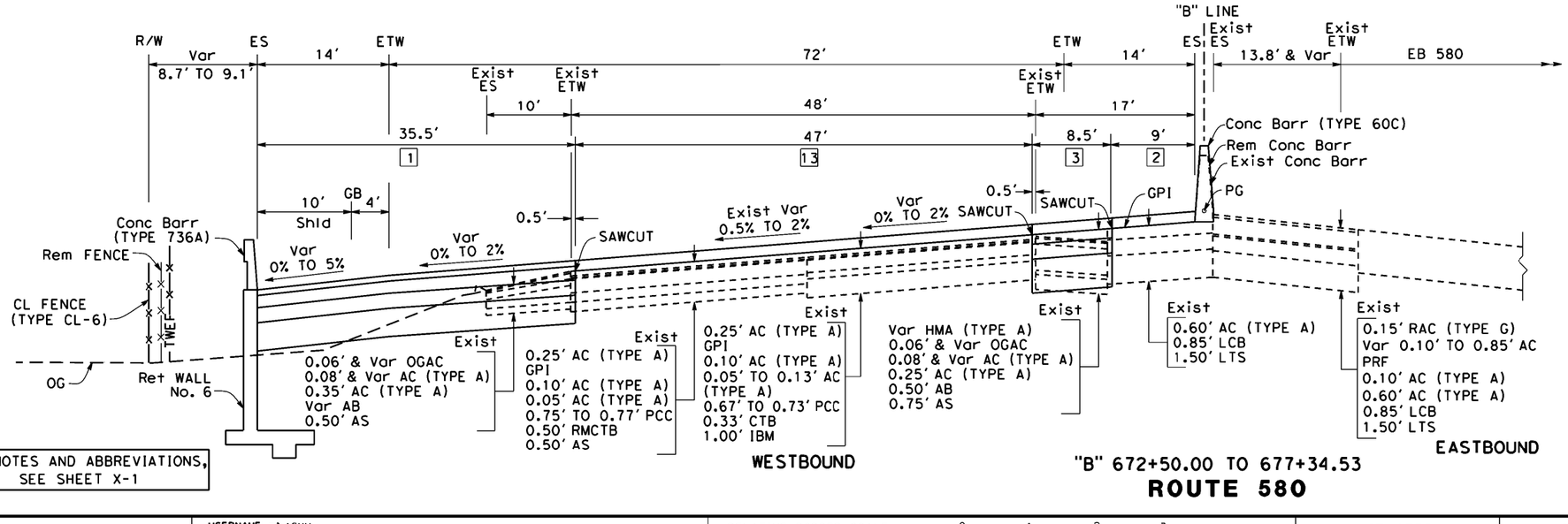
WESTBOUND

EASTBOUND

"B" 677+34.53 TO 692+59.49

31 ** & 17 * "B" 691+00.00 TO 692+59.49

30 *** "B" 691+00.00 TO 692+62.27



WESTBOUND

EASTBOUND

"B" 672+50.00 TO 677+34.53

FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

ROUTE 580

TYPICAL CROSS SECTIONS

NO SCALE

X-10

LAST REVISION DATE PLOTTED =>5/8/2012
05-07-12 TIME PLOTTED =>12:10:25 PM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

CALCULATED-DESIGNED BY: INNA ASHUROV

CHECKED BY: LUIS GARCIA

REVISED BY	DATE REVISED
IA	5/7/12

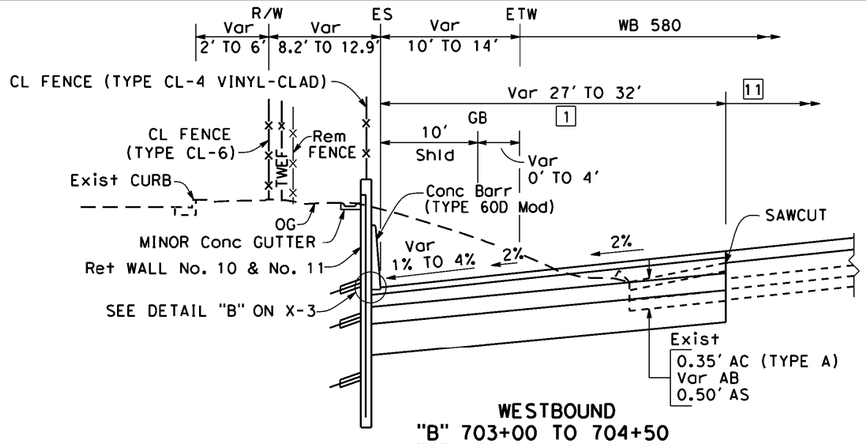
BORDER LAST REVISED 7/2/2010

USERNAME => ASHU
DGN FILE => 0400021248ca010.dgn

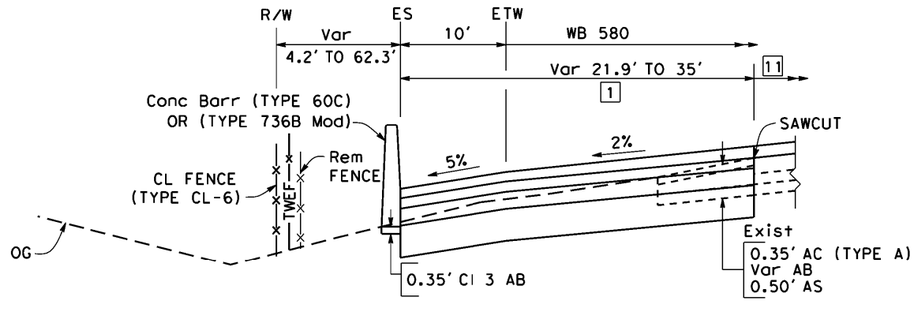
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0735

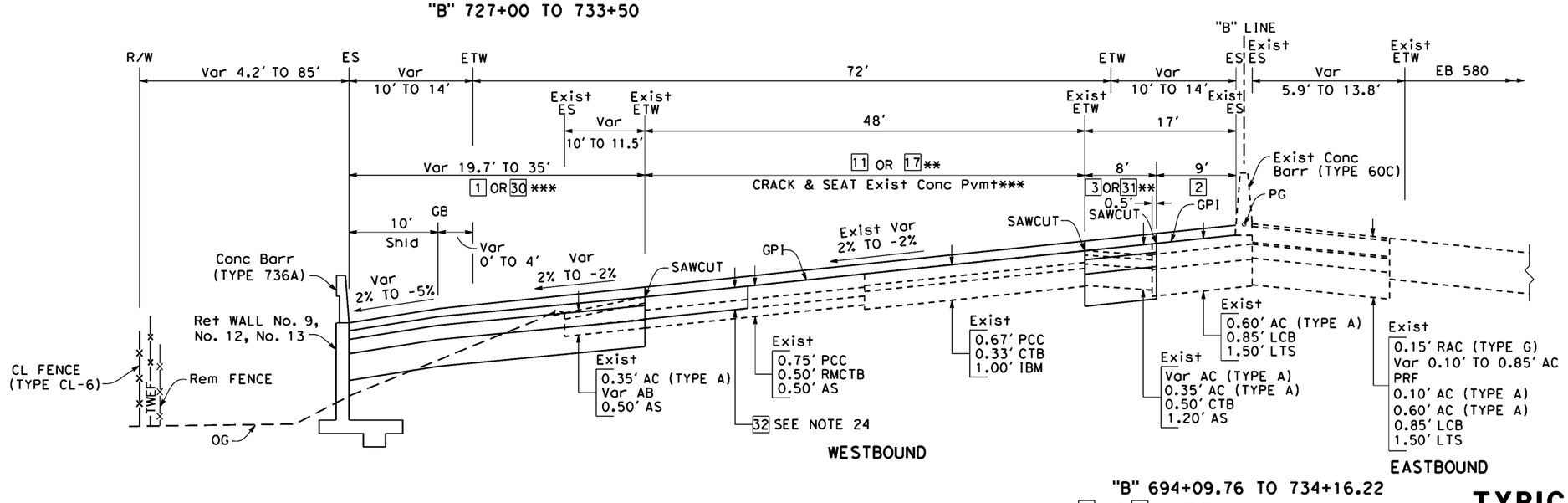
PROJECT NUMBER & PHASE 04000212481



WESTBOUND
"B" 703+00 TO 704+50
"B" 707+20 TO 707+80



WESTBOUND
"B" 702+70 TO 703+00
"B" 707+80 TO 709+30
"B" 713+50 TO 715+50
"B" 727+00 TO 733+50



WESTBOUND

EASTBOUND

"B" 694+09.76 TO 734+16.22
31** & 17 ** "B" 694+09.76 TO 695+15.00
30 *** "B" 694+15.94 TO 695+15.00

ROUTE 580

FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-11

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612

REVISED BY	DATE REVISED
IA	5/7/12

CALCULATED-DESIGNED BY: INNA ASHUROV
CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 05-07-12 DATE PLOTTED => 5/4/2012 TIME PLOTTED => 9:00:06 AM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ca011.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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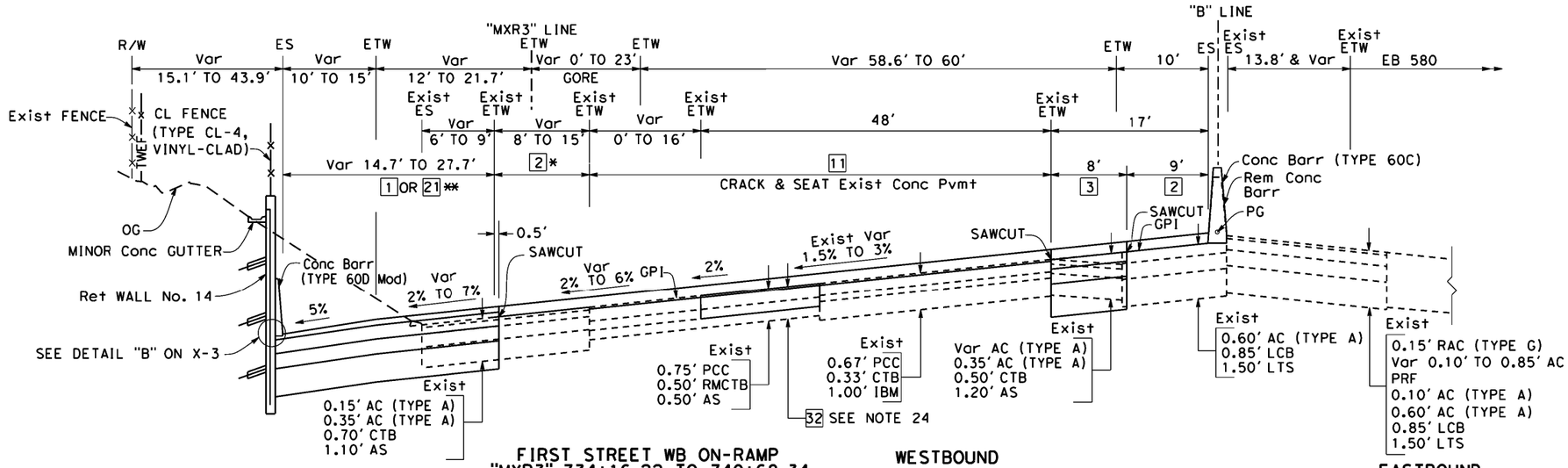
PLEASANTON, CA. 94588

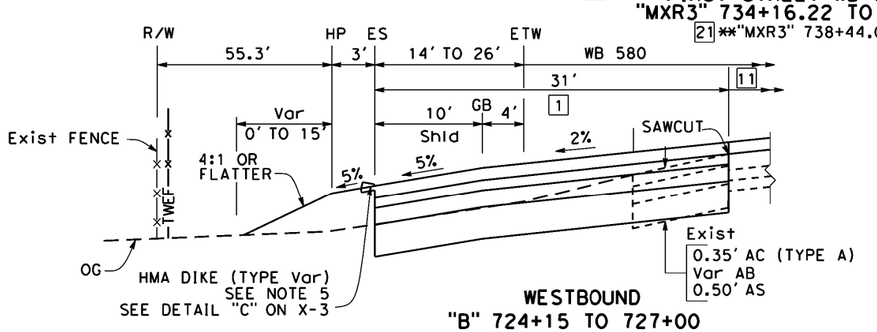
ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612



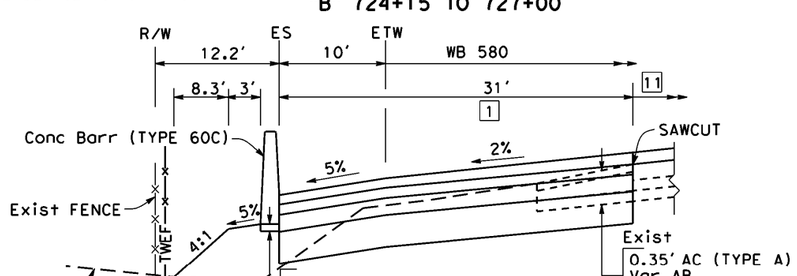
FIRST STREET WB ON-RAMP
"MXR3" 734+16.22 TO 740+68.34
21 **"MXR3" 738+44.00 TO 740+68.34
WESTBOUND

"B" 734+16.22 TO 740+75.65
2 *Beg @ "B" 732+30.74
EASTBOUND

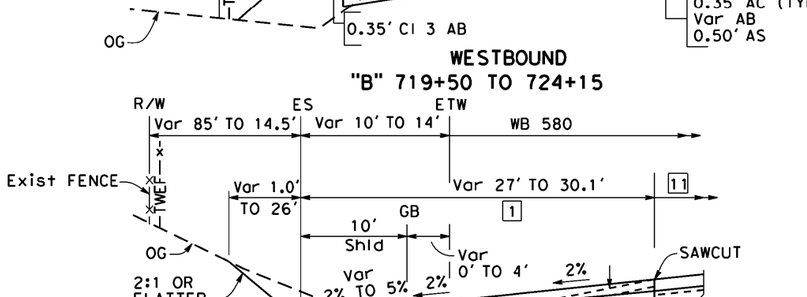
ROUTE 580



WESTBOUND
"B" 724+15 TO 727+00



WESTBOUND
"B" 719+50 TO 724+15



FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

WESTBOUND
"B" 704+50 TO 707+20

TYPICAL CROSS SECTIONS

NO SCALE

X-12

REVISED BY	DATE REVISED
IA	5/7/12

CALCULATED-DESIGNED BY: INNA ASHUROV
CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 05-07-12 | DATE PLOTTED =>5/7/2012 | TIME PLOTTED =>4:58:40 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ca012.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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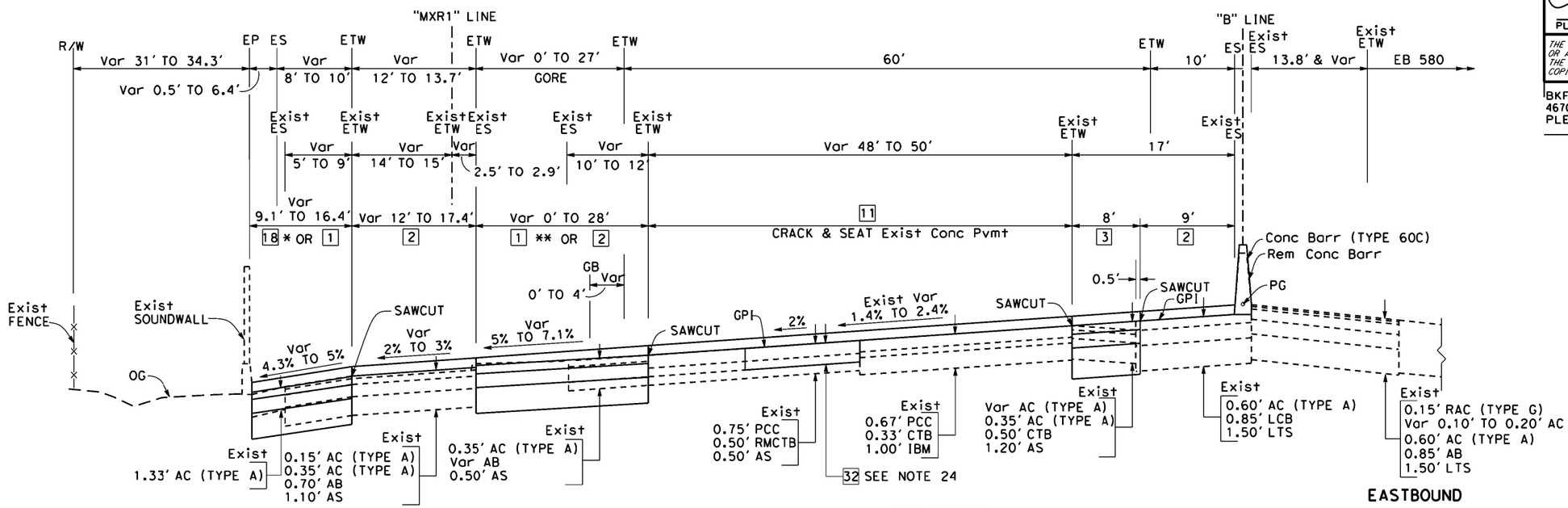
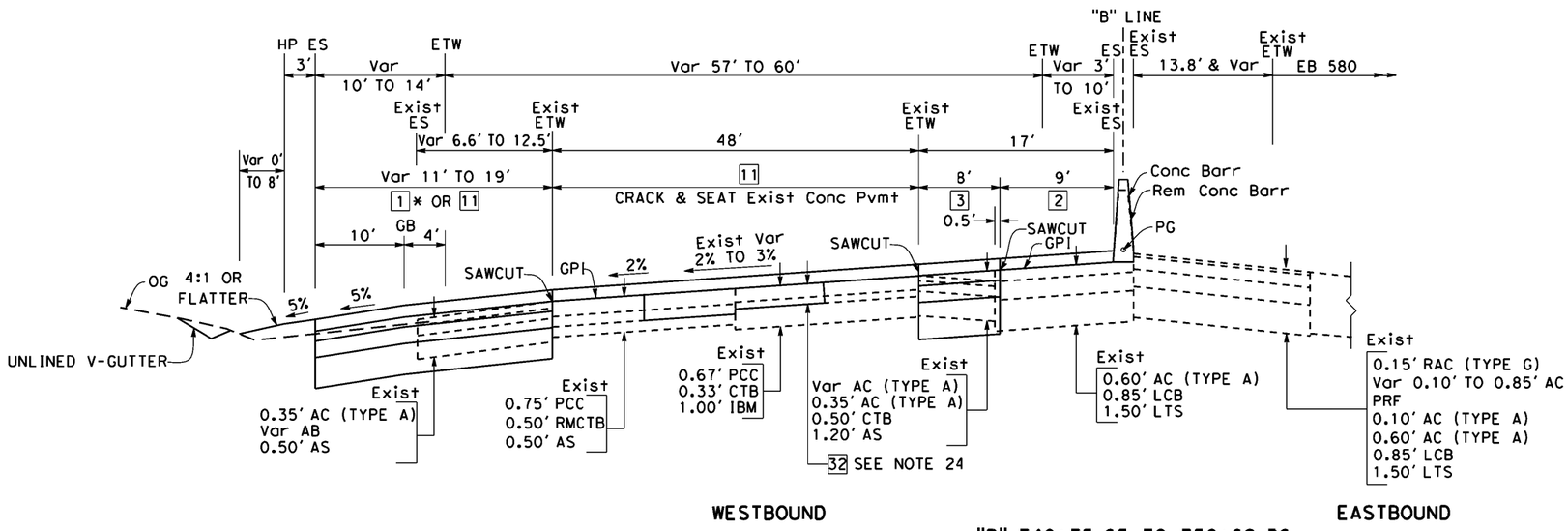


FIRST STREET WB OFF-RAMP
"MXR1" 758+66.20 TO 761+84.23
18* "MXR1" 758+36.79 TO 761+75.49

"B" 758+62.36 TO 761+84.23
1** "B" 758+62.36 TO 759+35.69



"B" 740+75.65 TO 758+62.36
1* "B" 752+31.89 TO 758+62.36

ROUTE 580

TYPICAL CROSS SECTIONS

NO SCALE

X-13

FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

REVISED BY	DATE REVISED
IA	5/7/12

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NATALINA V. BERNARDI — CONSULTANT FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 05-07-12 — DATE PLOTTED =>5/4/2012 — TIME PLOTTED =>9:01:27 AM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ca013.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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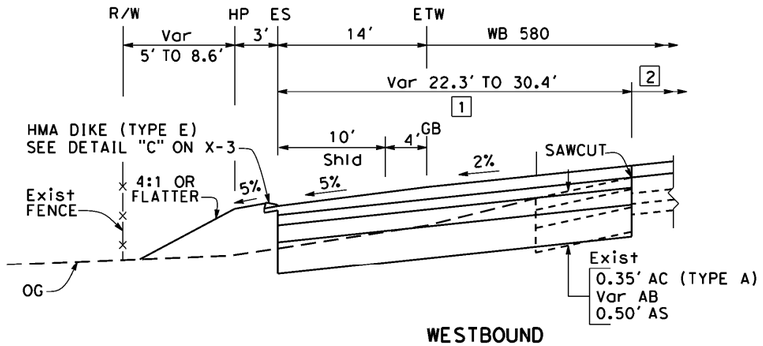
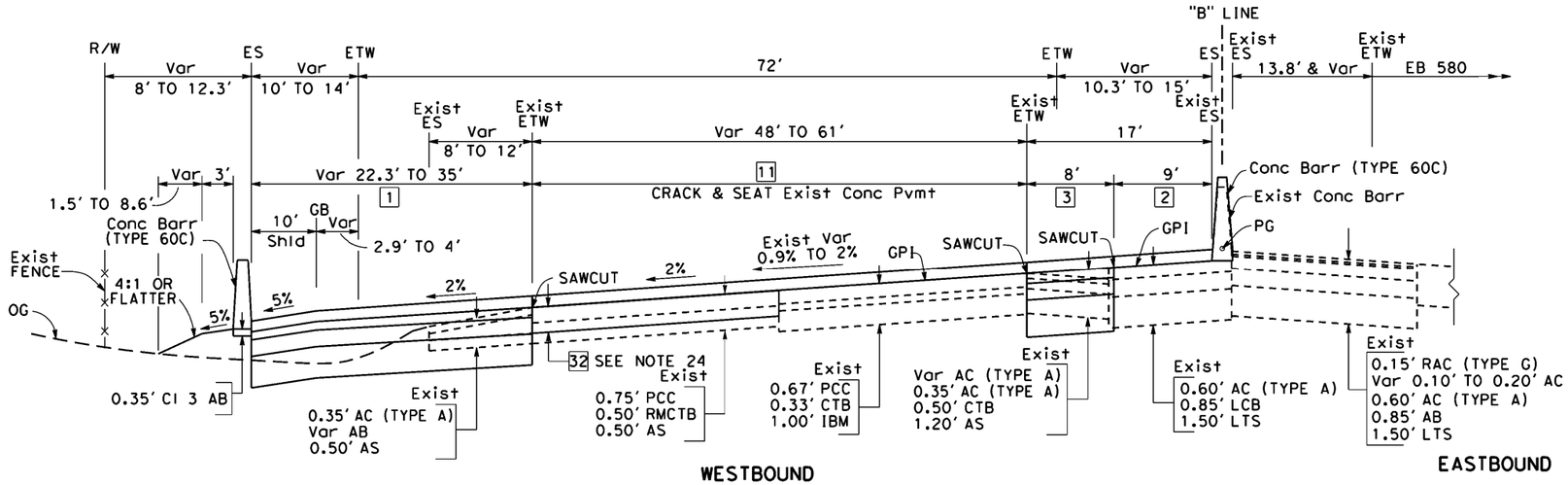
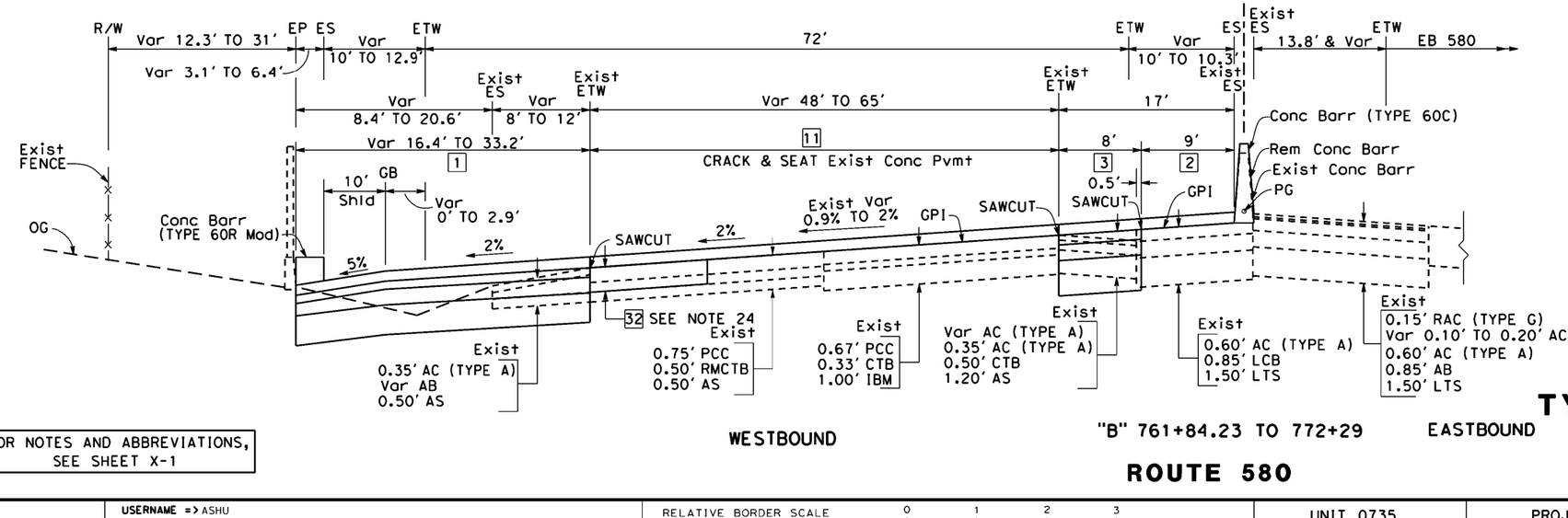


WESTBOUND
"B" 782+00 TO 787+67.08



WESTBOUND — **EASTBOUND**
"B" 772+29 TO 787+67.08



WESTBOUND — **"B" 761+84.23 TO 772+29** — **EASTBOUND**

FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

ROUTE 580

X-14

REVISED BY	DATE REVISED
IA	5/7/12

INNA ASHUROV — LUIS GARCIA — CALCULATED-DESIGNED BY — CHECKED BY

NATALINA V. BERNARDI — CONSULTANT FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

LAST REVISION 05-07-12 — DATE PLOTTED =5/8/2012 — TIME PLOTTED =9:14:24 AM

BORDER LAST REVISED 7/2/2010 — USERNAME => ASHU — DGN FILE => 0400021248ca014.dgn — RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 — UNIT 0735 — PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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PLEASANTON, CA. 94588

ALAMEDA CTC
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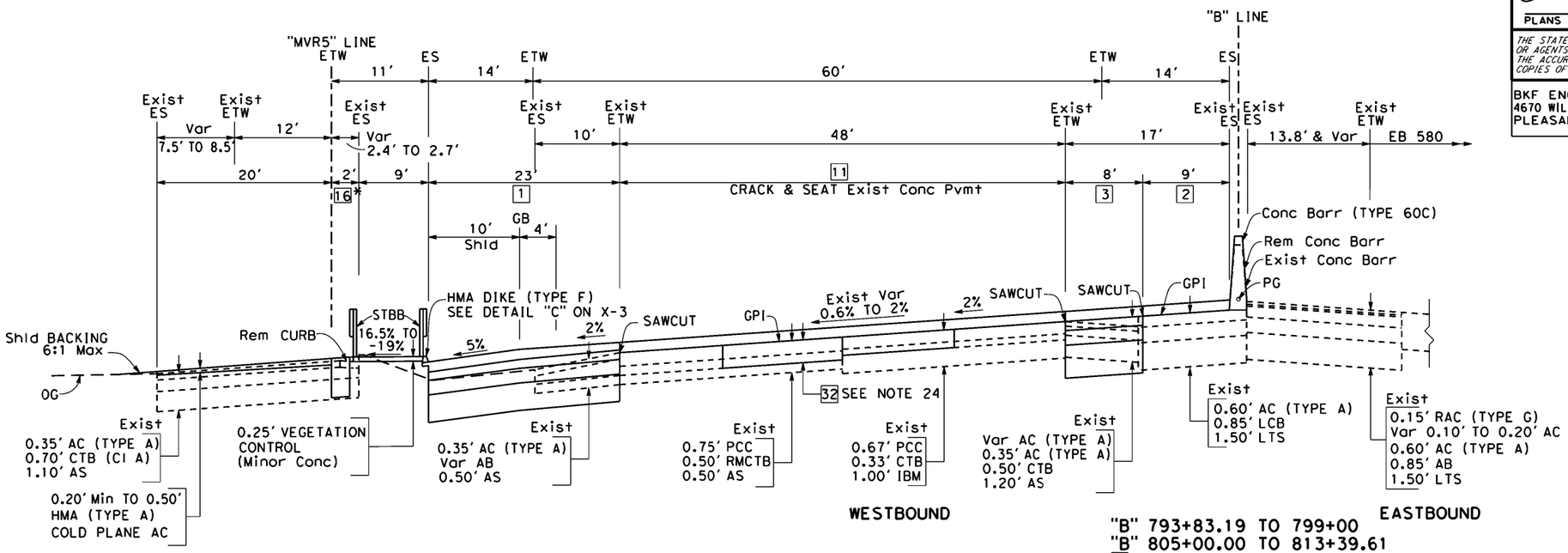
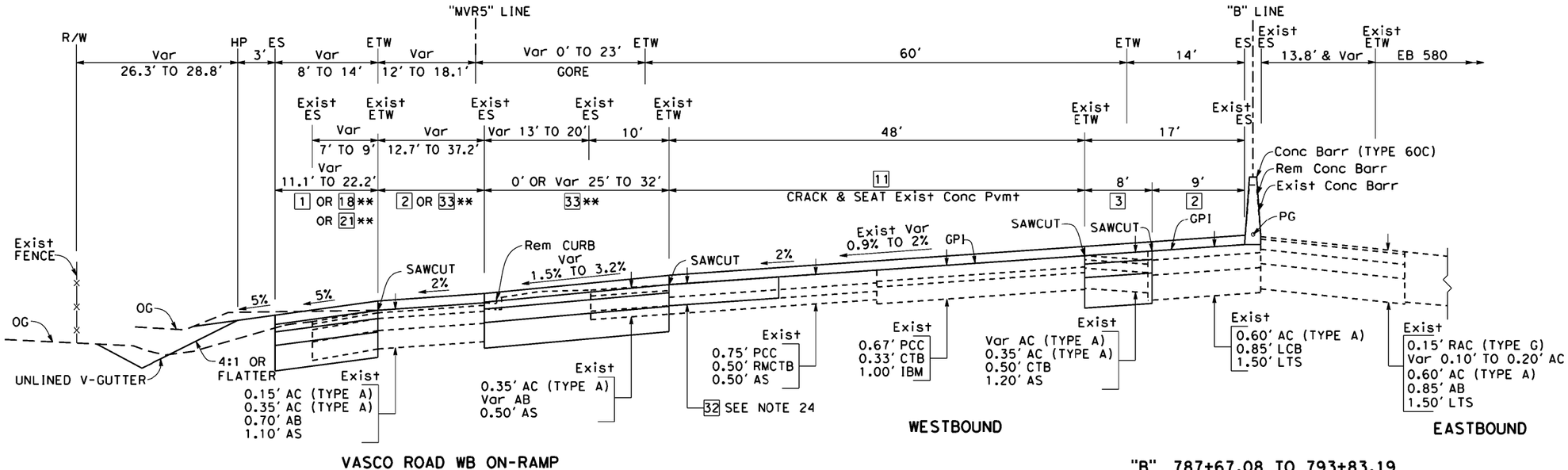
OAKLAND, CA. 94612



"B" 793+83.19 TO 799+00
"B" 805+00.00 TO 813+39.61
16 *"MVR5" 793+83.68 TO 797+23.19



VASCO ROAD WB ON-RAMP
"MVR5" 787+67.08 TO 793+83.68
18** Beg @ "MVR5" 792+04.07
21** "MVR5" 789+13.00 TO 792+04.07

"B" 787+67.08 TO 793+83.19
33*"B" 792+00.00 TO 793+83.19

ROUTE 580

FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-15

REVISED BY	DATE REVISED
IA	5/7/12

CALCULATED-DESIGNED BY: INNA ASHUROV
CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 05-07-12 | DATE PLOTTED =>5/4/2012 | TIME PLOTTED =>9:02:53 AM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ca015.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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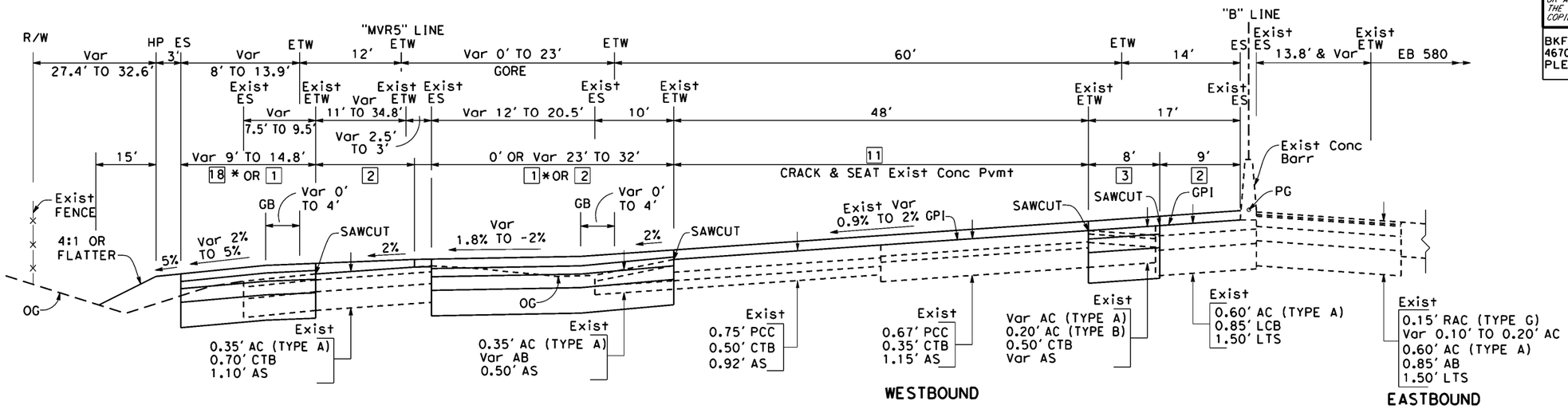
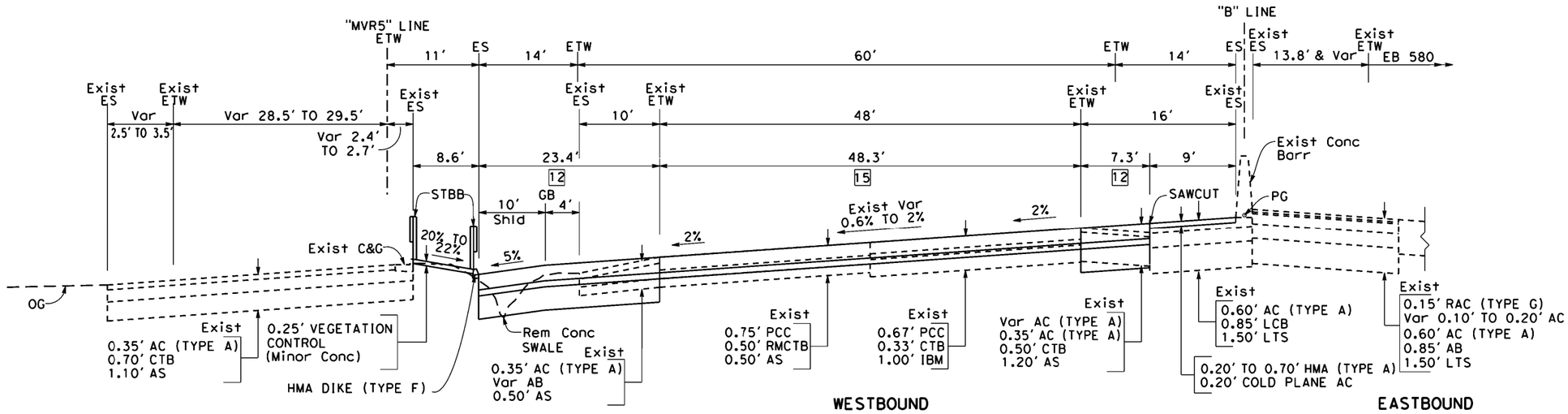
BKF ENGINEERS
4670 WILLOW ROAD, SUITE 250
PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612



VASCO ROAD WB OFF-RAMP
"MVR5" 812+93.41 TO 816+11.26
18 * END @ "MVR5" 815+87.22

"B" 813+39.61 TO 816+09.59
1 * "B" 813+39.61 TO 814+24.48



"B" 799+00.00 TO 805+00.00

ROUTE 580

TYPICAL CROSS SECTIONS

NO SCALE

FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

X-16

REVISED BY	DATE REVISED
IA	5/7/12

INNA ASHUROV — CALCULATED-DESIGNED BY
LUIS GARCIA — CHECKED BY
NATALINA V. BERNARDI — CONSULTANT FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 05-07-12 — DATE PLOTTED => 5/4/2012 — TIME PLOTTED => 9:03:35 AM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

PLANS APPROVAL DATE

N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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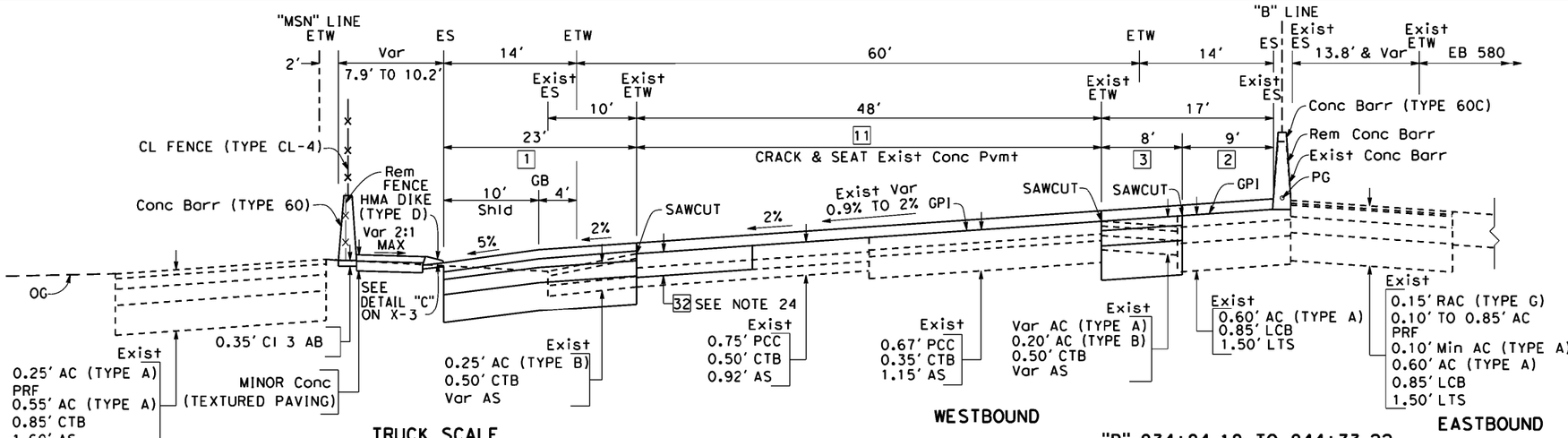
PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612

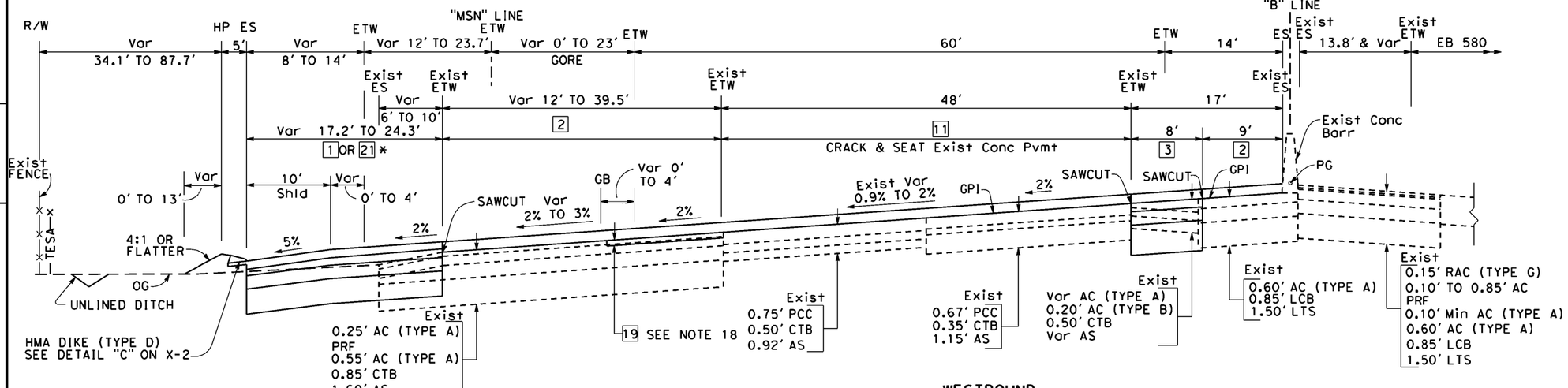


TRUCK SCALE
"MSN" 835+47.59 TO 842+60.28

WESTBOUND

"B" 834+84.18 TO 844+73.22

EASTBOUND

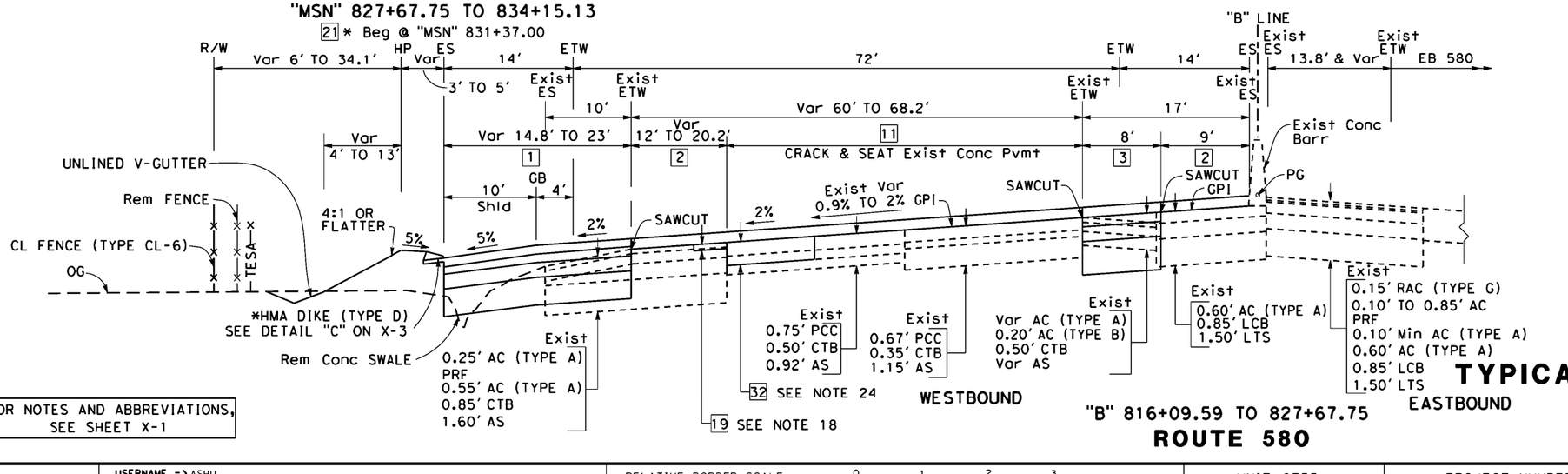


TRUCK SCALE WB ON-RAMP
"MSN" 827+67.75 TO 834+15.13
21 * Beg @ "MSN" 831+37.00

WESTBOUND

"B" 827+67.75 TO 834+84.18

EASTBOUND



FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

WESTBOUND

"B" 816+09.59 TO 827+67.75

EASTBOUND

TYPICAL CROSS SECTIONS

NO SCALE

ROUTE 580

X-17

REVISED BY	DATE REVISED
IA	5/7/12

INNA ASHUROV — CALCULATED-DESIGNED BY
LUIS GARCIA — CHECKED BY
NATALINA V. BERNARDI — CONSULTANT FUNCTIONAL SUPERVISOR
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

LAST REVISION 05-07-12 — DATE PLOTTED =>5/8/2012 — TIME PLOTTED =>2:16:36 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ca017.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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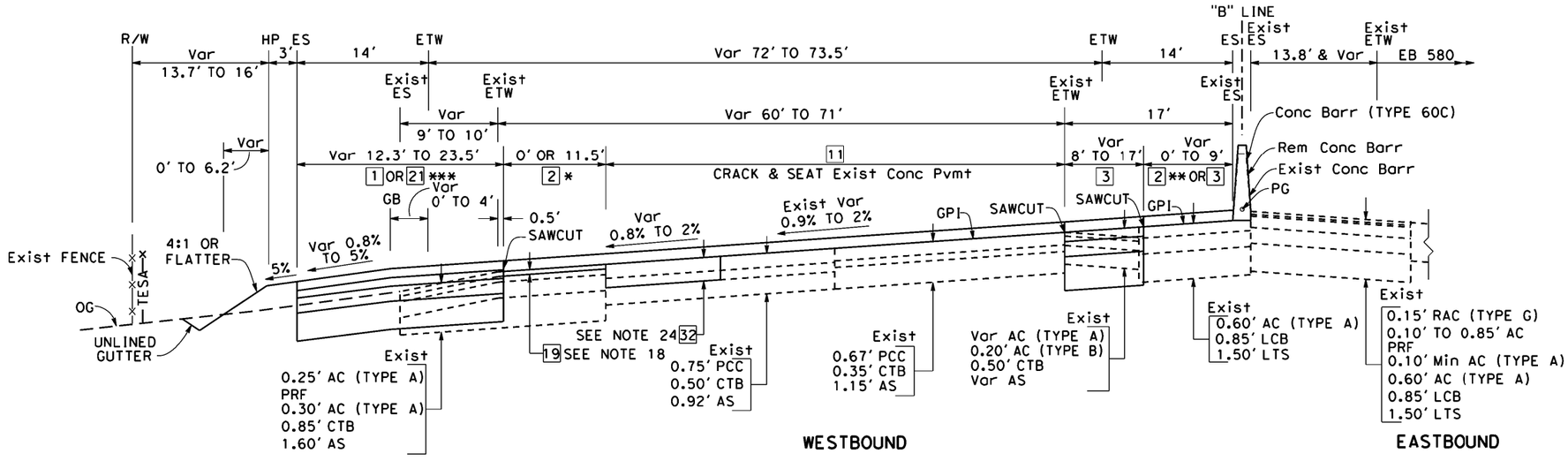
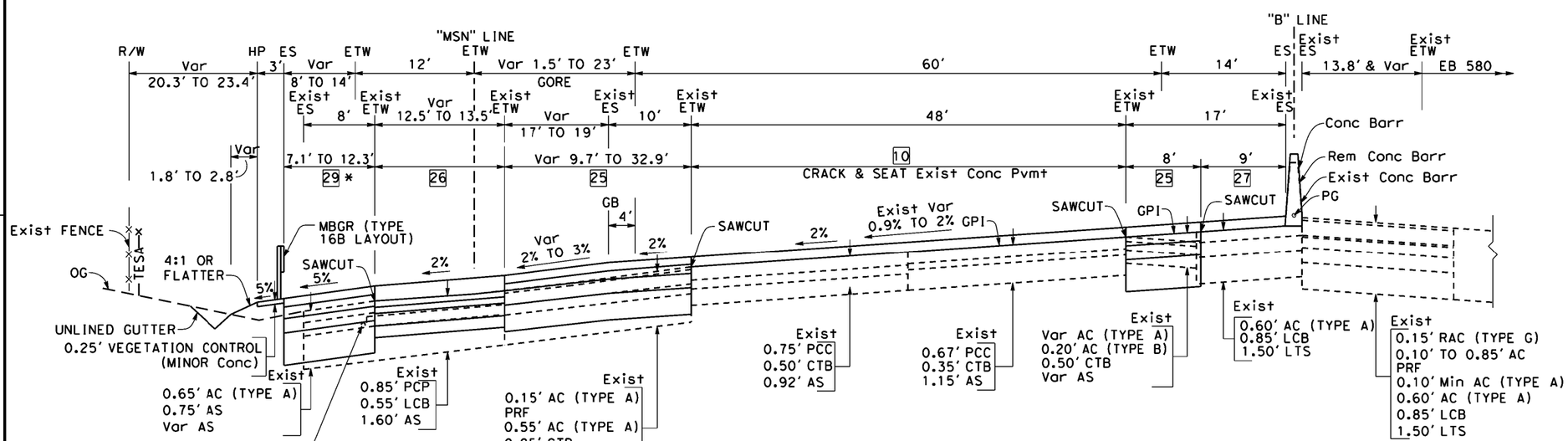


"B" 847+72.32 TO 856+52.57

2 * Beg @ "B" 851+32.86

2 ** END @ "B" 854+06.51

21 *** END @ "B" 849+00.00



TRUCK SCALE WB OFF-RAMP
"MSN" 844+72.97 TO 847+73.00

29 * END @ "MSN" 847+85

"B" 844+73.22 TO 847+72.32

ROUTE 580

FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-18

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

CALCULATED-DESIGNED BY: INNA ASHUROV

CHECKED BY: LUIS GARCIA

REVISED BY: IA — DATE REVISED: 5/7/12

LAST REVISION — DATE PLOTTED = 5/7/2012 — TIME PLOTTED = 5:03:23 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ca018.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

PLANS APPROVAL DATE

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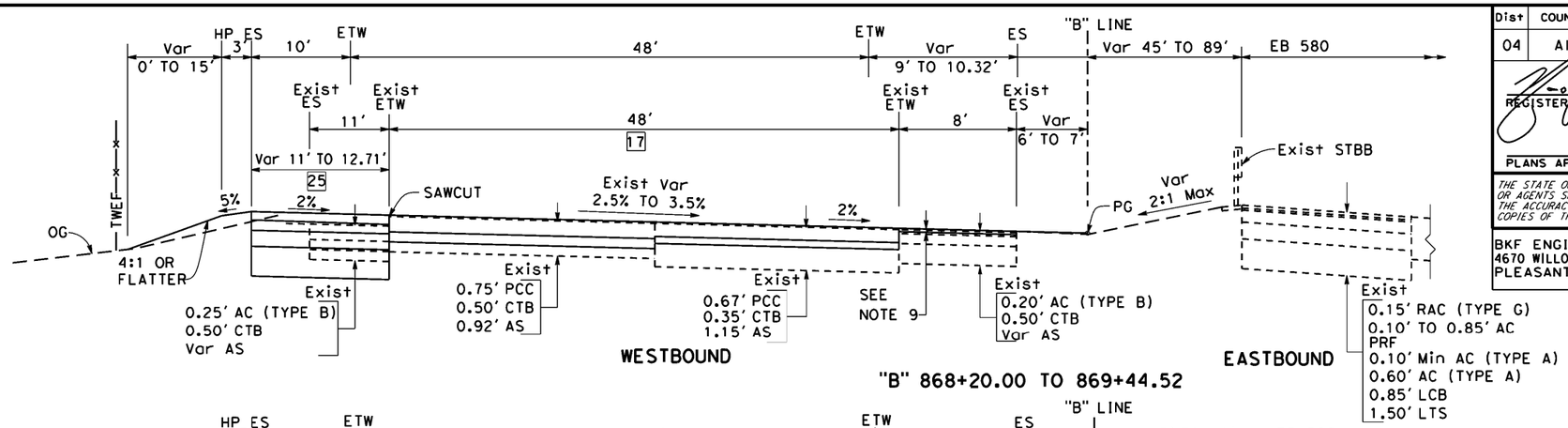
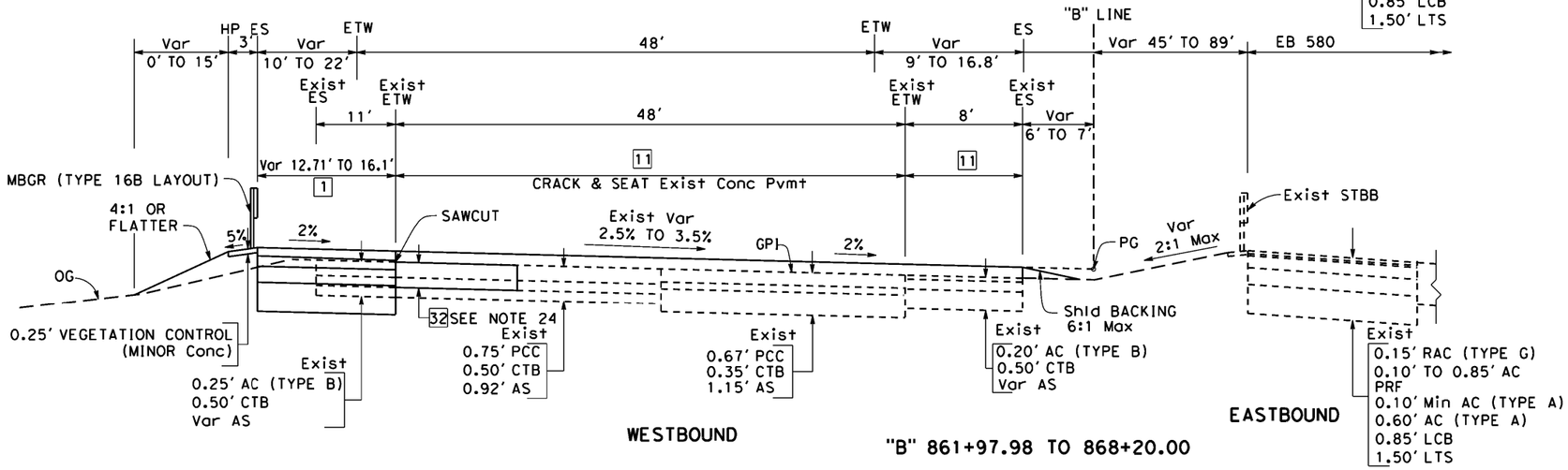
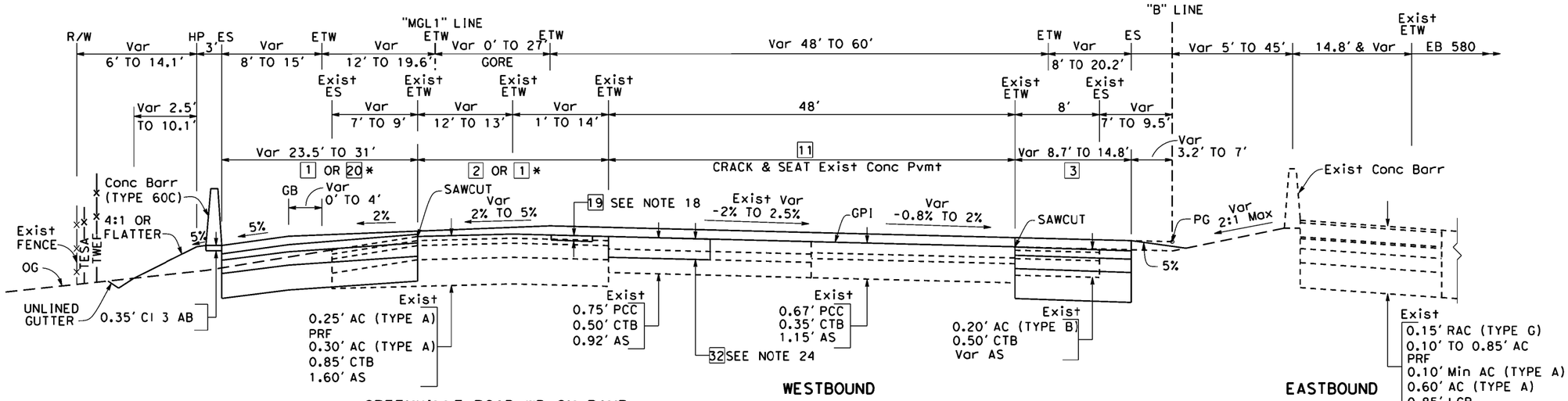
OAKLAND, CA. 94612



"B" 868+20.00 TO 869+44.52



"B" 861+97.98 TO 868+20.00



GREENVILLE ROAD WB ON-RAMP
"MGL1" 856+52.57 TO 862+03.84

20 * Beg @ "MGL1" 858+89.00

"B" 856+52.57 TO 861+97.98

1 * "B" 861+43.41 TO 861+97.98

ROUTE 580

TYPICAL CROSS SECTIONS

NO SCALE

X-19

FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

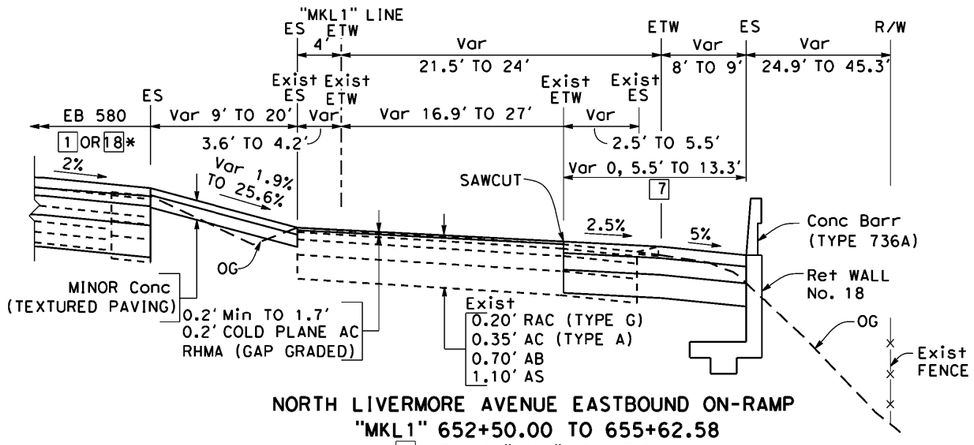
REVISED BY	DATE REVISED
IA	5/7/12

CALCULATED-DESIGNED BY: INNA ASHUROV
CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

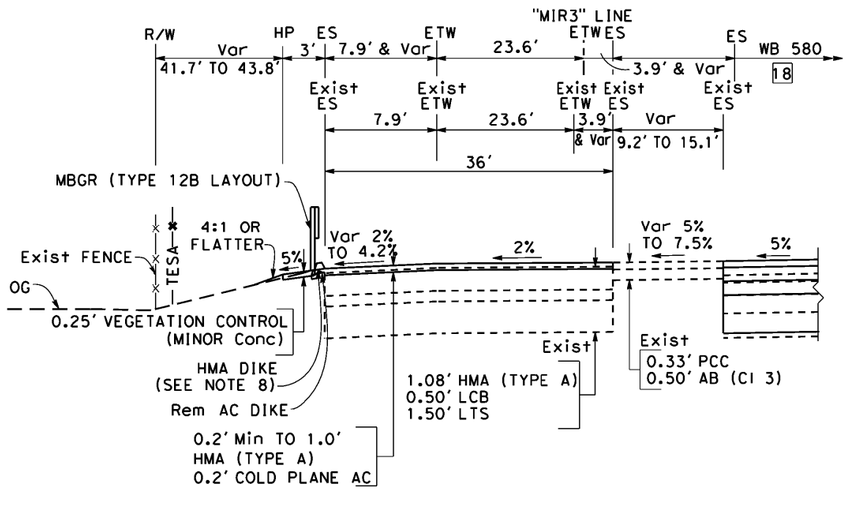
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

LAST REVISION 05-07-12 | DATE PLOTTED =15/8/2012 | TIME PLOTTED =18:49:57 AM

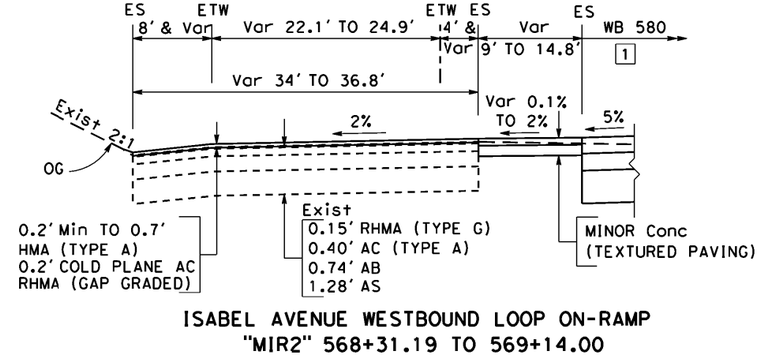
BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ca019.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481



NORTH LIVERMORE AVENUE EASTBOUND ON-RAMP
"MKL1" 652+50.00 TO 655+62.58
18* Beg @ "MKL1" 654+17.01

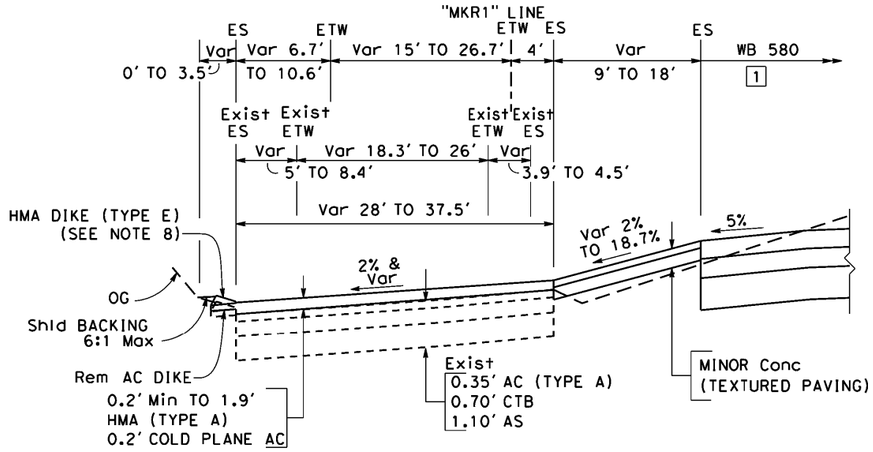


ISABEL AVENUE OFF-RAMP
"MIR3" 584+34.29 TO 585+03.39

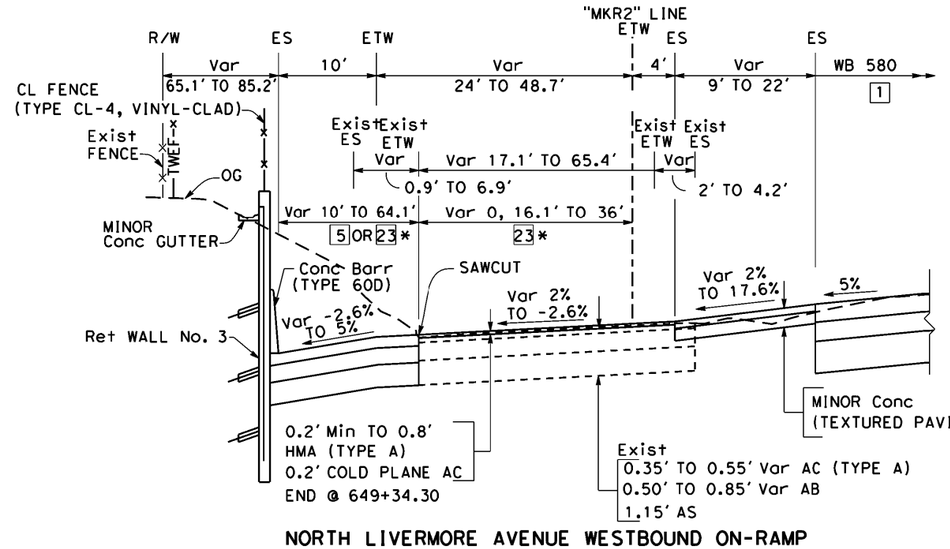


ISABEL AVENUE WESTBOUND LOOP ON-RAMP
"MIR2" 568+31.19 TO 569+14.00

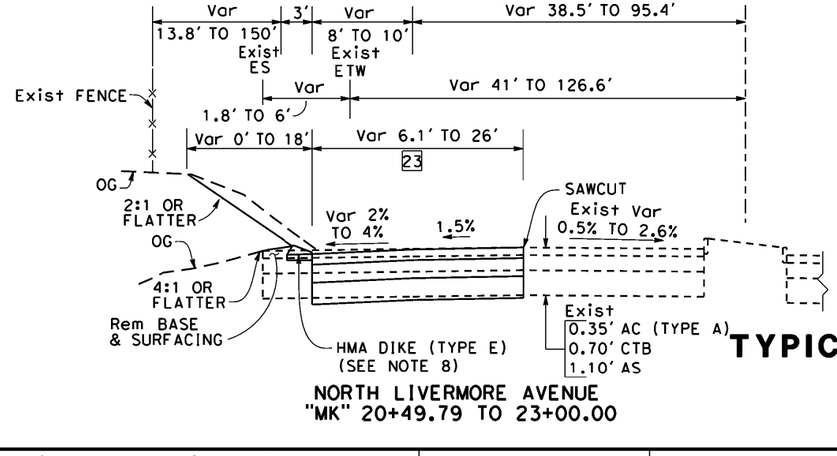
FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1



"MKR1" 655+51.21 TO 656+90.46
NORTH LIVERMORE AVENUE WESTBOUND OFF-RAMP



NORTH LIVERMORE AVENUE WESTBOUND ON-RAMP
"MKR2" 646+21.14 TO 650+41.74
23* "MKR2" 649+34.30 TO 650+41.74



NORTH LIVERMORE AVENUE
"MK" 20+49.79 TO 23+00.00

TYPICAL CROSS SECTIONS

NO SCALE

X-20

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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REVISED BY: IA — DATE REVISED: 5/7/12
CALCULATED-DESIGNED BY: INNA ASHUROV
CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 05-07-12 | DATE PLOTTED =>5/8/2012 | TIME PLOTTED =>9:28:06 AM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

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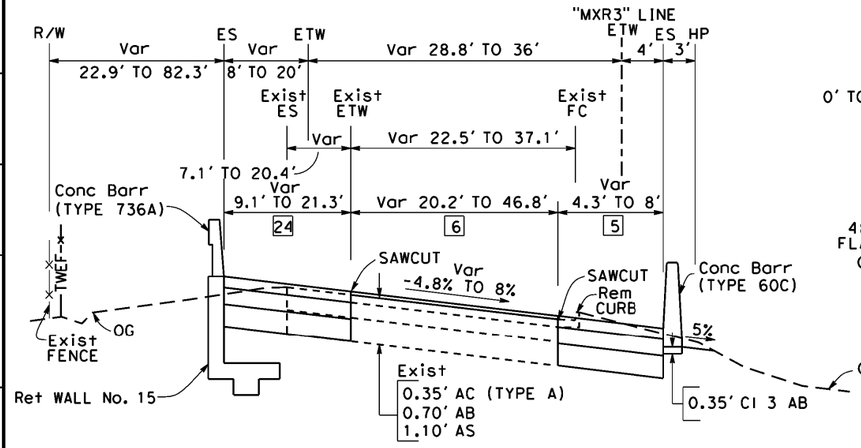
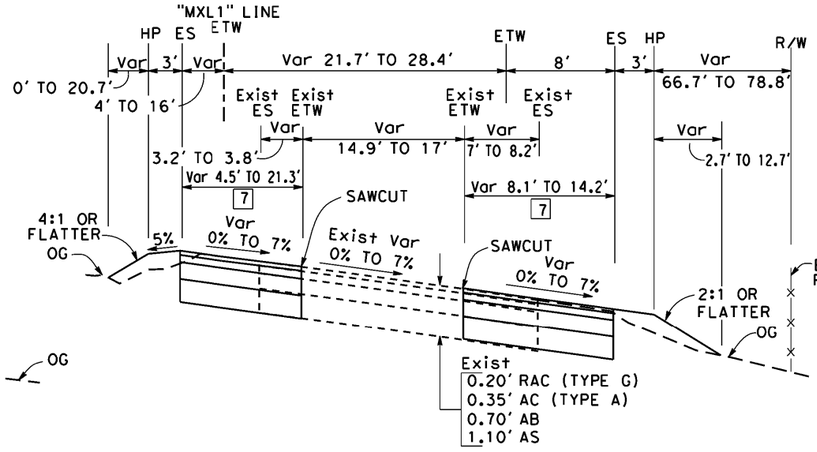
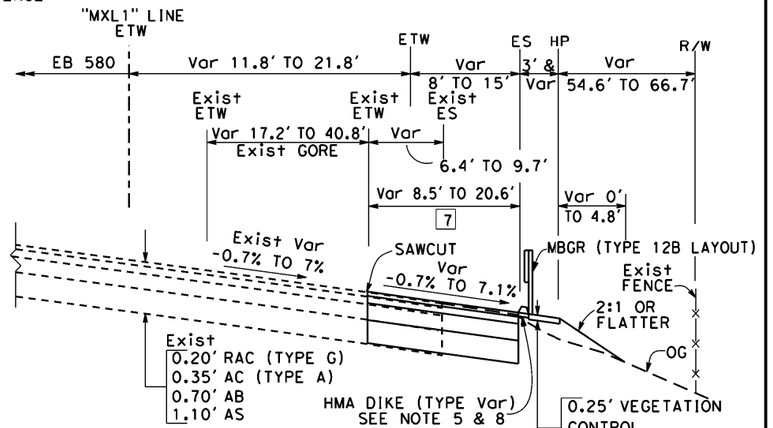


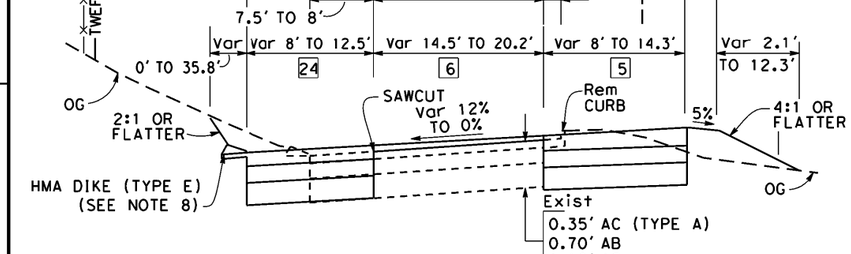
FIRST STREET WESTBOUND ON-RAMP
"MXR3" 746+06.38 TO 750+06.37



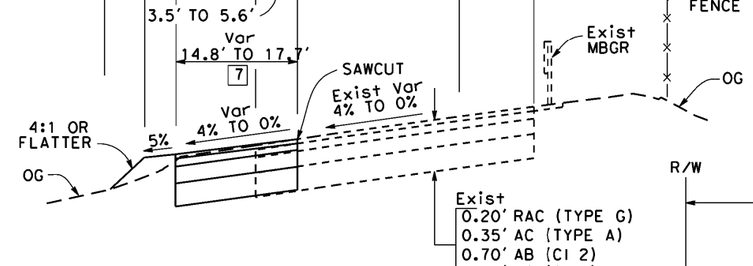
FIRST STREET EASTBOUND ON-RAMP
"MXL1" 750+49.85 TO 753+15.75



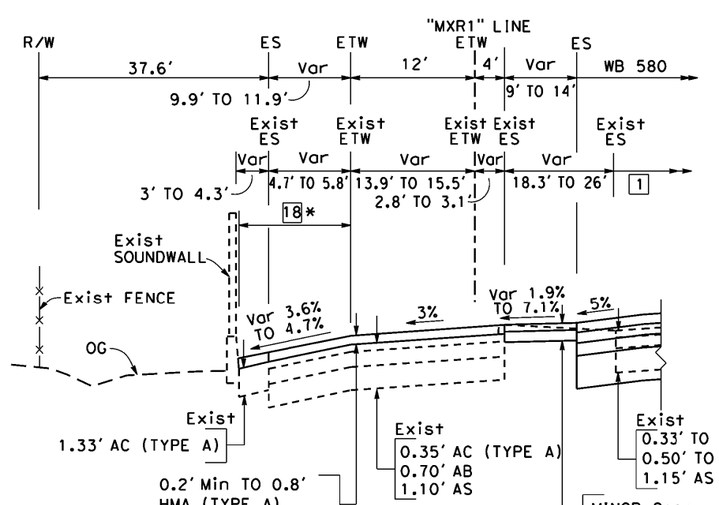
FIRST STREET EASTBOUND ON-RAMP
"MXL1" 753+15.75 TO 756+10.79



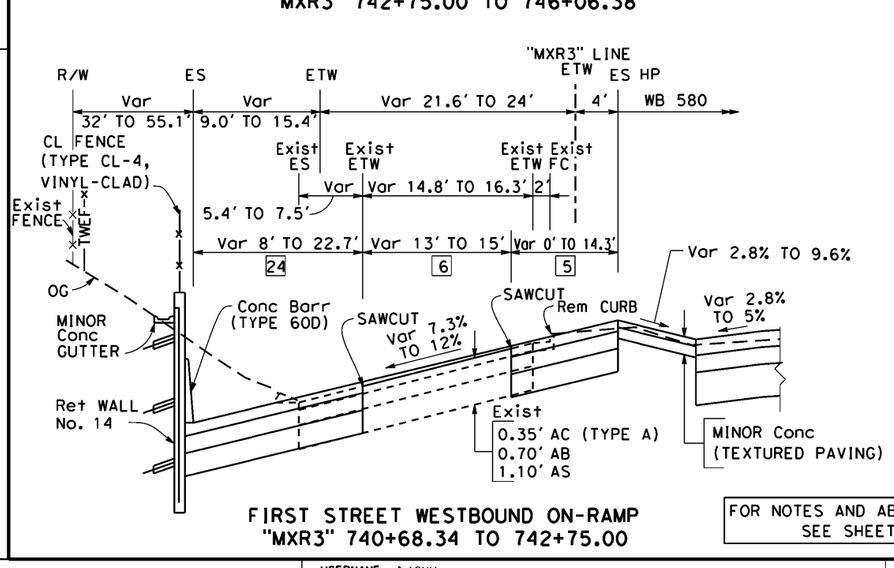
FIRST STREET WESTBOUND ON-RAMP
"MXR3" 742+75.00 TO 746+06.38



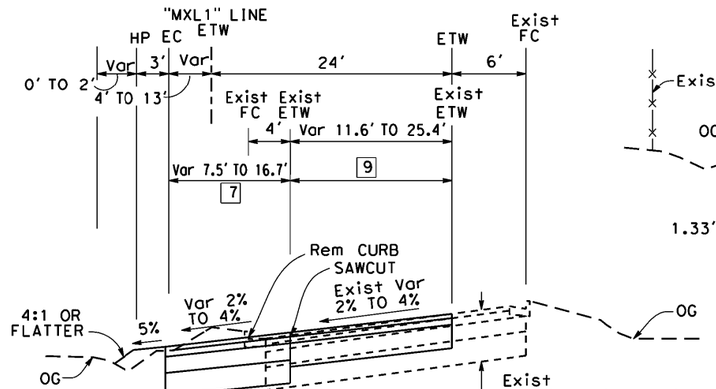
FIRST STREET EASTBOUND ON-RAMP
"MXL1" 746+50 TO 750+49.85



FIRST STREET WESTBOUND OFF-RAMP
"MXR1" 757+50.00 TO 758+66.20
18* Beg @ "MXR1" 758+36.79



FIRST STREET WESTBOUND ON-RAMP
"MXR3" 740+68.34 TO 742+75.00



FIRST STREET EASTBOUND ON-RAMP
"MXL1" 745+50.00 TO 746+50.00

FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-21

REVISED BY	DATE REVISED
IA	5/7/12

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CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI
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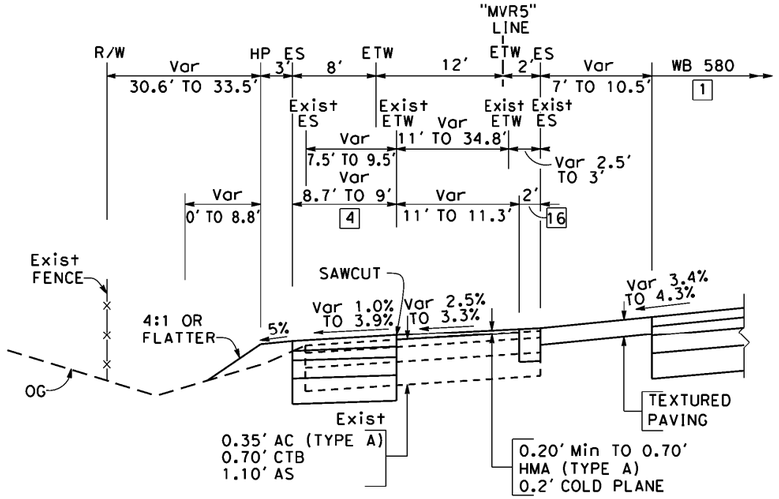
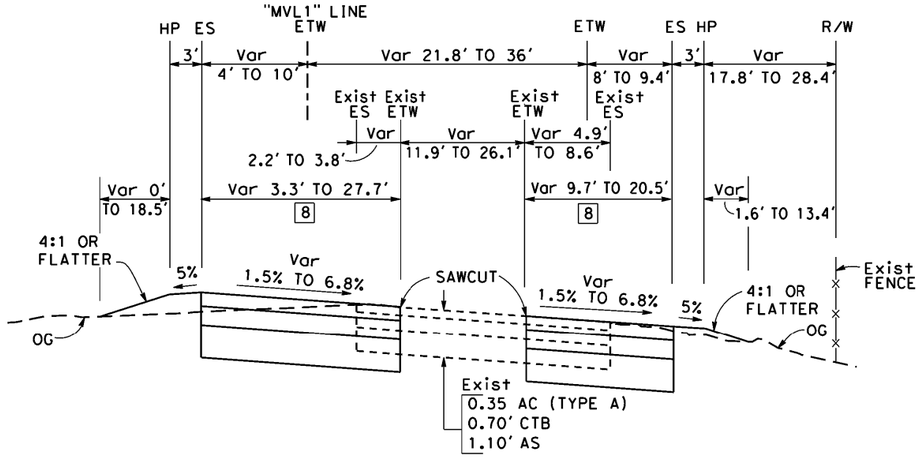
LAST REVISION 05-07-12 DATE PLOTTED =5/8/2012 TIME PLOTTED =9:39:01 AM

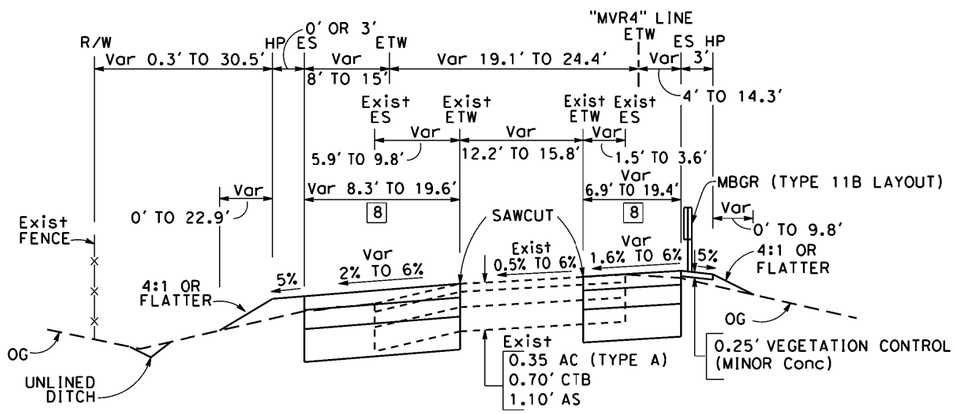
BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ca021.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481



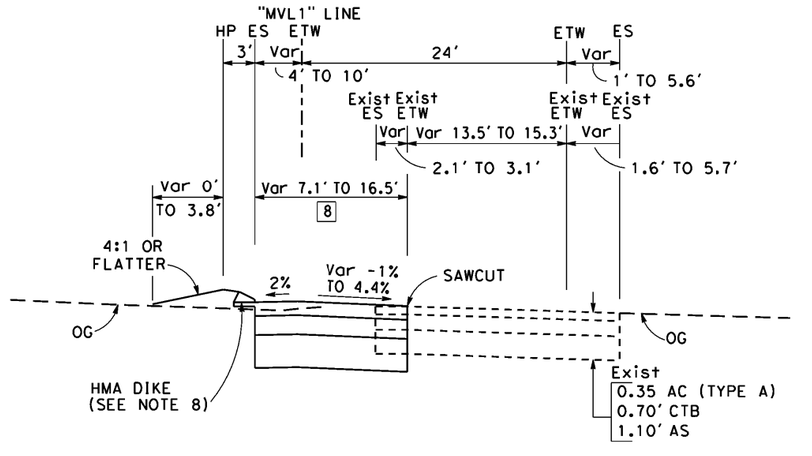
VASCO ROAD WB OFF-RAMP
"MVR5" 812+00.00 TO 812+93.41



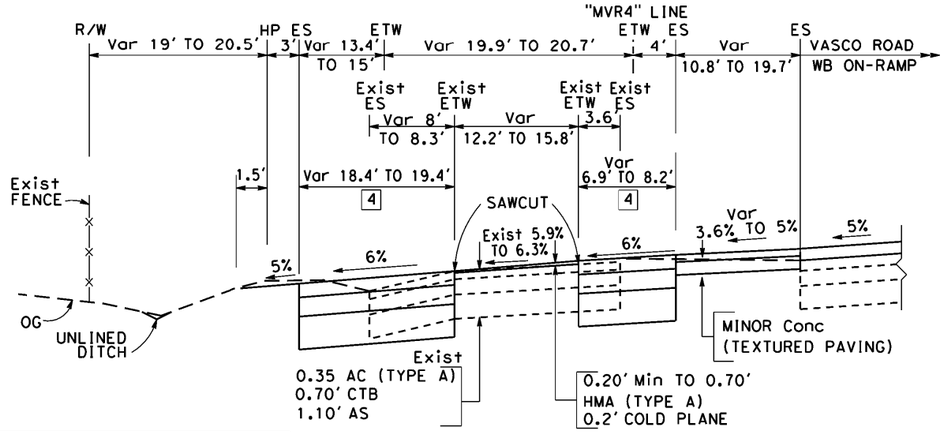
VASCO ROAD EASTBOUND ON-RAMP
"MVL1" 802+12.86 TO 810+95.93



VASCO ROAD WESTBOUND ON-RAMP
"MVR4" 796+00.00 TO 806+87.00

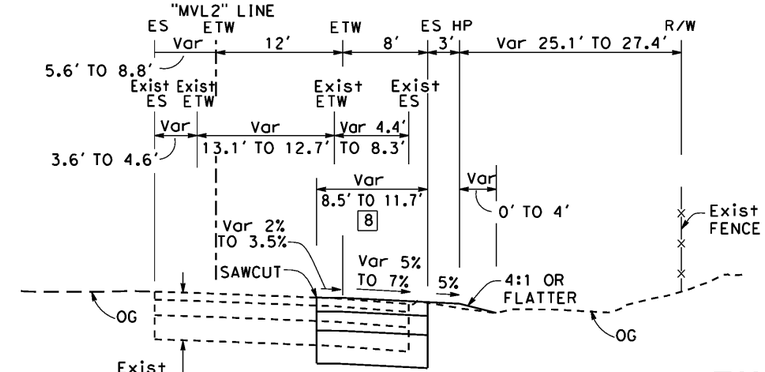


VASCO ROAD EASTBOUND ON-RAMP
"MVL1" 800+01.71 TO 802+12.86



FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

VASCO ROAD WESTBOUND ON-RAMP
"MVR4" 795+71.41 TO 796+00.00



VASCO ROAD EASTBOUND ON-RAMP
"MVL2" 800+50.00 TO 802+12.86

TYPICAL CROSS SECTIONS

NO SCALE

X-22

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612

REVISED BY	DATE REVISED
IA	5/7/12

CALCULATED-DESIGNED BY: INNA ASHUROV
CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION DATE PLOTTED =>5/4/2012
05-07-12 TIME PLOTTED =>9:08:25 AM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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ALAMEDA CTC
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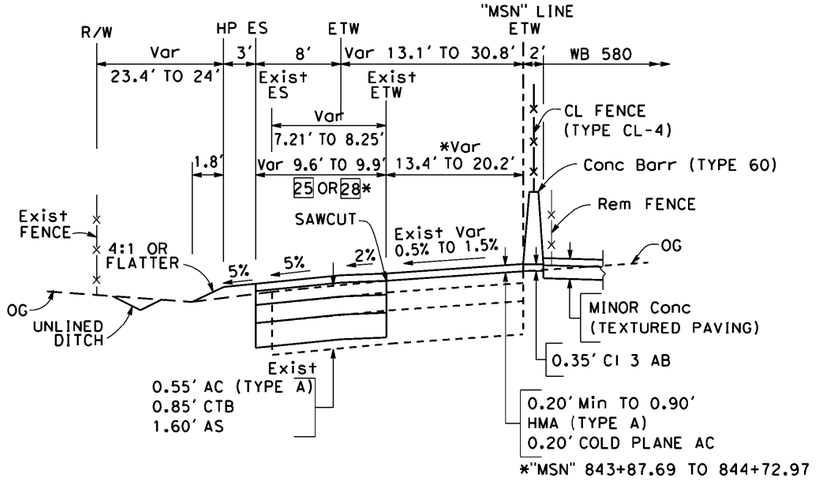
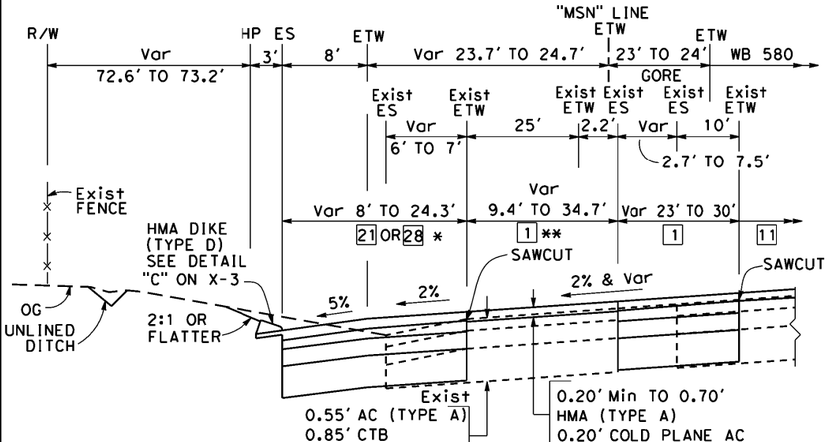
OAKLAND, CA. 94612



*"MSN" 843+87.69 TO 844+72.97

TRUCK SCALE WESTBOUND OFF-RAMP
"MSN" 842+60.28 TO 844+72.97

28* "MSN" 843+87.69 TO 844+72.97

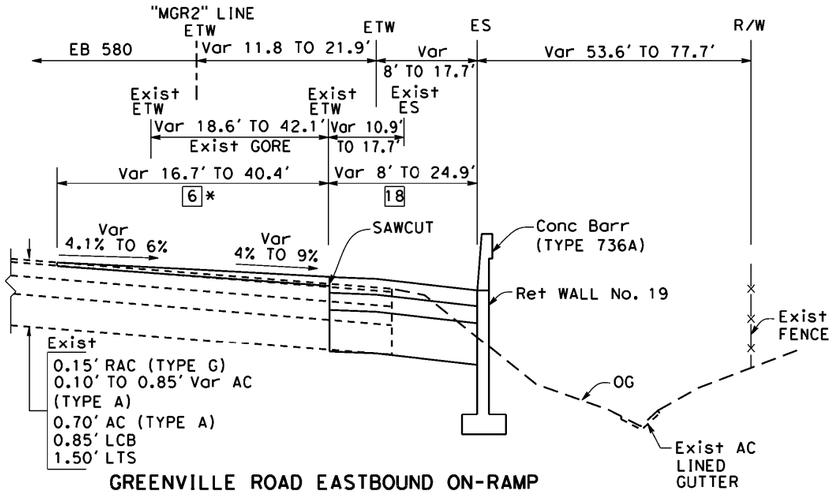


TRUCK SCALE WESTBOUND ON-RAMP
"MSN" 834+15.13 TO 835+47.59

1 **"MSN" 834+15.13 TO 834+84.71

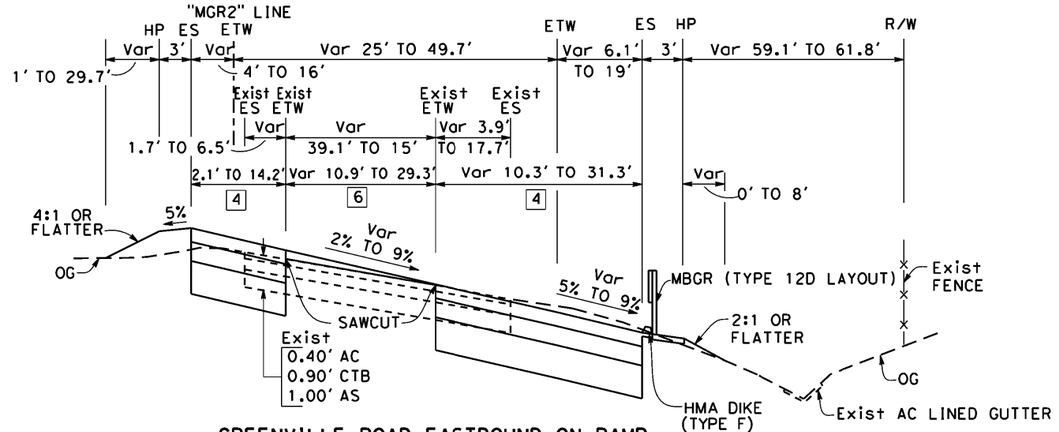
28* "MSN" 834+84.71 TO 835+47.59

VASCO ROAD EASTBOUND ON-RAMP
"MVL1" 810+95.93 TO 813+88.93



GREENVILLE ROAD EASTBOUND ON-RAMP
"MGR2" 862+63.27 TO 865+47.57

6* END @ "HE" 863+96.46



GREENVILLE ROAD EASTBOUND ON-RAMP
"MGR2" 859+00.00 TO 862+63.27

GREENVILLE ROAD EASTBOUND ON-RAMP
"MGR2" 858+20.00 TO 859+00.00

4 * Beg @"MGR2" 858+71.04

FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-23

REVISED BY	DATE REVISED
IA	5/7/12

CALCULATED-DESIGNED BY: INNA ASHUROV
CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

LAST REVISION DATE PLOTTED =>5/8/2012
05-07-12 TIME PLOTTED =>9:53:39 AM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ca023.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 5/7/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

BKF ENGINEERS
4670 WILLOW ROAD, SUITE 250
PLEASANTON, CA. 94588

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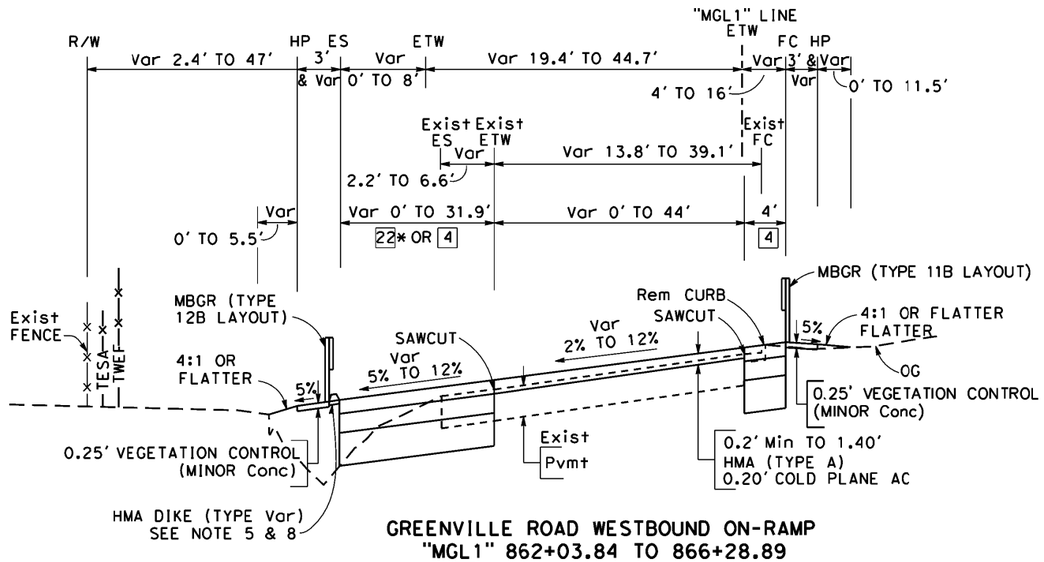
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612



GREENVILLE ROAD WESTBOUND ON-RAMP
"MGL1" 862+03.84 TO 866+28.89
22*"MGL1" 862+03.84 TO 864+00.00

FOR NOTES AND ABBREVIATIONS, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-24

CALCULATED-DESIGNED BY			
CHECKED BY			
REVISED BY	IA		
DATE REVISED	5/7/12		

CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

INNA ASHUROV

LUIS GARCIA

LAST REVISION 05-07-12

DATE PLOTTED => 5/7/2012
TIME PLOTTED => 10:03:51 AM

APPENDIX E

CALTRANS COMMENTS AND RESPONSES

GDMR COMMENTS DATED JANUARY 18, 2012

Agency:	Caltrans	**Responded By:**	BKF/Parikh
Review Unit:	Materials	**Date Responded:**	
Comments By:	Maninder Kaur, 286-4827	**JRT Meeting Date:**	
Date Reviewed:	1/18/2012		

TECHNICAL COMMENT REVIEW AND RESPONSE

Title: **Plans, Specifications and Estimates (PS&E)**	Submittal: **June 2011 Submittal**	

Revision Action Code: **A**-Will Comply; **B**-Consultant to Evaluate; **C**-Will Not Incorporate; **D**-BKF/ACTC to Evaluate

Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
1	General	**As you are aware, we never had an opportunity to do a detailed review of the GD&MR and PS&E for the "West Segment". It is consultant's responsibility to evaluate the following comments made on these documents for the "East Segment" and apply them to the respective documents for the "West Segment" as well, especially the ones that. have to do with ISRPCP and PPCP.**	GDMR for the West Segment will be revised as appropriate, wherever applicable.	A		
2	General	**It is unclear whether Caltrans Traffic Operations and Electrical Functional Units were informed of the proposed overlay of the existing mainline (Min. 0.45' on existing mainline flexible pavement and Min. 0.55' on existing mainline concrete pavement) and the proposed overlay of the existing ramps (variable thickness) when they designed the proposed WIMs (refer to Electrical Plans). Please contact all relevant Caltrans Offices for their revised recommendations based on the current project scope which includes the above-mentioned overlays.**	Caltrans Design to inform Traffic Operations and Electrical Functional units.			
COMMENTS TO GEOTECHNICAL DESIGN AND MATERIALS REPORT (dated November 18, 2011)						

Agency:	Caltrans	**Responded By:**	BKF/Parikh
Review Unit:	Materials	**Date Responded:**	
Comments By:	Maninder Kaur, 286-4827	**JRT Meeting Date:**	
Date Reviewed:	1/18/2012		

TECHNICAL COMMENT REVIEW AND RESPONSE

Title: **Plans, Specifications and Estimates (PS&E)**	Submittal: **June 2011 Submittal**	

Revision Action Code: **A**-Will Comply; **B**-Consultant to Evaluate; **C**-Will Not Incorporate; **D**-BKF/ACTC to Evaluate

Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
3	Pages 19 thru 22 - Section 7.2 and Section 7.3.2	Based on information represented by Boring No. 300 or A-09-300 (Para "f" of Section 7.2 and Table 2 of section 7.3.2), groundwater occurred 5 feet below ground surface --which is 1.5 feet above the approximate FG. Incorporate recommendations for placement of a permeable material (blanket) and underdrains to handle the groundwater. Specify the type of underdrain pipe to be installed in SSP 68-010, "Underdrains".	FG Elevation is incorrect on GDMR. FG is above GW and will be corrected. There is no need for underdrains.	C		
4	Page 27, Section 8.2.1	First Para: Statement regarding not encountering groundwater within cut depths is inconsistent with information presented in Section 7.2 and 7.3.2.	FG Elevation has been corrected; so it is true that GW is not encountered in cut depths.	C		
5	Page 53, Section 9	Update station limits of the new concrete pavement and its proposed types (ISRPCP = Individual Slab Replacement Precast Concrete Panel, PPCP = Precast Prestressed Concrete Pavement, ISRRSC = Individual Slab Replacement Rapid Strength Concrete, and JPCP = Jointed Plain Concrete Pavement). For station limits for each type, refer to comments to project plans and comments below to Page 62.	Station limits have been updated.	A		

Agency:	Caltrans	**Responded By:**	BKF/Parikh
Review Unit:	Materials	**Date Responded:**	
Comments By:	Maninder Kaur, 286-4827	**JRT Meeting Date:**	
Date Reviewed:	1/18/2012		

TECHNICAL COMMENT REVIEW AND RESPONSE

Title: **Plans, Specifications and Estimates (PS&E)**	Submittal: **June 2011 Submittal**	

Revision Action Code: **A**-Will Comply; **B**-Consultant to Evaluate; **C**-Will Not Incorporate; **D**-BKF/ACTC to Evaluate

Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
6	Page 53, Section 9	Include recommendations to extend any existing RAC-G layer to the new mainline and ramp widenings - to avoid creating a "bath tub" section that will trap water.	Text has been revised.	A		
7	Page 53, Section 9	Include recommendations for those portions of ramps to weigh stations --which per HDM Index 613.5(1)(c)(2) have to be designed for the mainline ESALs and with a load distribution factor of 1.0.	Weigh Station Ramps have been designed for TI = 15.5 similar to Mainline.	A		
8	Page 53, Section 9	Include JPCP recommendations for widening adjacent to an existing rigid structural section (refer to Table 9B for segment of "MSN" from Sta 835+50.67 to 847+90.92).	Flexible pavement sections are designed for widening adjacent to rigid pavement sections such as noted in the Typical Sections.	C		
9	Page 55	Bottom Para: Replace "LTS" with "LSTS". What do you mean by the sentence, "... is recommended that the specifications require the determinations of the percent lime content for the required UCS for the LTS during construction." Are these additional recommendations?	LTS has been replaced by LSTS. Yes. These are additional recommendations to be implemented during construction.	A A		

EA 2908C1 & EA 2908E1
I-580 Westbound HOV Lane and Roadway Rehabilitation – East & West Segment
04-ALA-580-PM R 8.4/R21.6

Agency:	Caltrans	**Responded By:**	BKF/Parikh
Review Unit:	Materials	**Date Responded:**	
Comments By:	Maninder Kaur, 286-4827	**JRT Meeting Date:**	
Date Reviewed:	1/18/2012		

TECHNICAL COMMENT REVIEW AND RESPONSE

Title: **Plans, Specifications and Estimates (PS&E)**	Submittal: **June 2011 Submittal**	

Revision Action Code: **A**-Will Comply; **B**-Consultant to Evaluate; **C**-Will Not Incorporate; **D**-BKF/ACTC to Evaluate

Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
10	Pages 57, Tables 9A	Revise Table 9A to reflect that there is no existing OGAC layer -- this was removed under contract 04-2G5704 (a Director's Order for WB Ala 580 repair job between PM 11.7 and 15.0). You may also want to refer to information shown on the project plans for existing structural section.	Text has been revised.	A		
11	Pages 58, Table 9B	Verify the existence of the RAC (Type 0) listed for segments of Vasco Rd. and Greenville Rd EB on-ramps.	HMA (Open Grade) of section No. 18 will remain to be compatible with HMA (OPEN GRADED) being installed by concurrent project, EA2908U1.	A		

EA 2908C1 & EA 2908E1
I-580 Westbound HOV Lane and Roadway Rehabilitation – East & West Segment
04-ALA-580-PM R 8.4/R21.6

Agency:	Caltrans	**Responded By:**	BKF/Parikh
Review Unit:	Materials	**Date Responded:**	
Comments By:	Maninder Kaur, 286-4827	**JRT Meeting Date:**	
Date Reviewed:	1/18/2012		

TECHNICAL COMMENT REVIEW AND RESPONSE

Title: **Plans, Specifications and Estimates (PS&E)**	Submittal: **June 2011 Submittal**	

Revision Action Code: **A**-Will Comply; **B**-Consultant to Evaluate; **C**-Will Not Incorporate; **D**-BKF/ACTC to Evaluate

Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
12	Page 59	What do you mean by the statement: ***"...It should be noted that the above table and the sections do not account for any overlays that may have been placed"*** This is UNACCEPTABLE!!! Do you mean that a thorough As-Built research was not performed for this project? Keep in mind that the pavement structural sections to be shown as existing on the project plans should reflect all original construction work and any subsequent pavement rehabilitation, maintenance, or widenings that had been carried out over the years. Please explain.	As-built sections in Tables 9A and 9B are based on the most up to date as-built information. The sentence "...It should be noted that the above table and the sections do not account for any overlays that may have been placed" has been removed and the text has been revised.	A		
13	Page 60	Para in second bullet: Replace "post-tensioned" with "prestressed" to be consistent with latest HQ's nomenclature.	Text has been revised.	A		
14	Page 62	Top fragment: Specify what type of material will replace the LTS.	LTS will be replaced by AS (Cl. 4) Text has been revised.	A		
15	Page 62	Replace all occurrences of "LTS" with "LSTS".		A		

EA 2908C1 & EA 2908E1
I-580 Westbound HOV Lane and Roadway Rehabilitation – East & West Segment
04-ALA-580-PM R 8.4/R21.6

Agency:	Caltrans	**Responded By:**	BKF/Parikh
Review Unit:	Materials	**Date Responded:**	
Comments By:	Maninder Kaur, 286-4827	**JRT Meeting Date:**	
Date Reviewed:	1/18/2012		

TECHNICAL COMMENT REVIEW AND RESPONSE

Title: **Plans, Specifications and Estimates (PS&E)**	Submittal: **June 2011 Submittal**	

Revision Action Code: **A**-Will Comply; **B**-Consultant to Evaluate; **C**-Will Not Incorporate; **D**-BKF/ACTC to Evaluate

Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
16	Page 62	Para in first bullet: For the precast pavement section, replace LCB with LCBRS. For new pavement or widenings with PPCP, use 0.90' PPCP / 0.35' LCBRS / 1.35' AS (Class 4). For concrete pavement reconstruction with PPCP, use a section consisting of 0.90' PPCP / 0.35' Min & Var LCBRS, that is, without the AS layer. Set station limits for the new PPCP. These station limits should reflect, first, areas that will match the existing finished grade; and second, areas where PPCP will be installed tapered (as a 1:200 or flatter transition taper) from the mainline overlay. Include recommendations for placement of an interim overlay at the locations where the tapered PPCP will be installed; said interim overlay will be placed concurrently with the mainline permanent overlay; it then will be removed to construct the PPCP. Also, replace "post-tensioned" with "prestressed" to be consistent with latest HQ's nomenclature. Revise Para accordingly.	LCB will be replaced by LCBRS as commented. Pavement sections will be revised. Eliminated proposed AS layer at concrete pavement reconstruction. Station limits added. This will most likely be how the Contractor constructs this but falls under Contractor's means and methods; consequently, it is not necessary to show or state. Revised nomenclature to be consistent with plans.	A A A C A		

EA 2908C1 & EA 2908E1
I-580 Westbound HOV Lane and Roadway Rehabilitation – East & West Segment
04-ALA-580-PM R 8.4/R21.6

Agency:	Caltrans	**Responded By:**	BKF/Parikh
Review Unit:	Materials	**Date Responded:**	
Comments By:	Maninder Kaur, 286-4827	**JRT Meeting Date:**	
Date Reviewed:	1/18/2012		

TECHNICAL COMMENT REVIEW AND RESPONSE

Title: **Plans, Specifications and Estimates (PS&E)**	Submittal: **June 2011 Submittal**	

Revision Action Code: **A**-Will Comply; **B**-Consultant to Evaluate; **C**-Will Not Incorporate; **D**-BKF/ACTC to Evaluate

Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
17	Page 62	Para in second bullet: For the approaches to existing bridges, if the approach is in tangent alignment and its length is more than 64 feet, we recommend using PPCP sections identical to those described in the preceding Para. However, if the approach is in a curved alignment, we recommend using ISRPCP (Individual Slab Replacement Precast Concrete Panel). Per HQ's instructions, the proposed thicknesses of new ISRPCP shall match the existing PCC thickness at each location but the Min thickness should be 0.70' for ISRPCP and 0.35' for LCBRS. For the pavement conform near the eastern limit of the project, use ISRPCP as well. PPCP or ISRPCP will be installed tapered (as a 1:200 or flatter transition taper) in these conform areas. Include recommendations for placement of an interim overlay at the locations where these tapered PPCP or ISRPCP will be installed; said interim overlay will be placed concurrently with the mainline permanent overlay; it then will be removed to construct the PPCP or ISRPCP. Revise Para accordingly.	Revised pavement sections per comments.	A		

EA 2908C1 & EA 2908E1
I-580 Westbound HOV Lane and Roadway Rehabilitation – East & West Segment
04-ALA-580-PM R 8.4/R21.6

Agency:	Caltrans	**Responded By:**	BKF/Parikh
Review Unit:	Materials	**Date Responded:**	
Comments By:	Maninder Kaur, 286-4827	**JRT Meeting Date:**	
Date Reviewed:	1/18/2012		

TECHNICAL COMMENT REVIEW AND RESPONSE

Title: **Plans, Specifications and Estimates (PS&E)**	Submittal: **June 2011 Submittal**	

Revision Action Code: **A**-Will Comply; **B**-Consultant to Evaluate; **C**-Will Not Incorporate; **D**-BKF/ACTC to Evaluate

Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
18	Page 63	Update Table 10B by incorporating those segments where PPCP will be constructed (see preceding comments to Page 62).	Revised pavement sections.	A		
19	Page 63	Bottom Para: Specify that the 2.15' FDHMA is supposed to be used in narrow areas. Likewise, specify its minimum width. Since it will be difficult to achieve the required compaction in a narrow space, we recommend removing an additional portion of the existing pavement to allow compaction with a small roller.	There was only one 2.15' FDHMA (Section 16), with a 2'ft width (appropriate for TI = 15.5) – on the Vasco Road On-Ramp shoulder, where a TI of 12 is more appropriate. The section has been redesigned as: 0.35' HMA-A underlain by 1.65' Minor Concrete, separated by GPI.	A		
20	Page 64	Second Para: Reference 5 (CHEC) is not listed/shown on page 75.	Has been added in the Reference List in the revised GDMR.	A		
21	Page 64	Third Para: For the pavement segment which Caltrans has already partially rehabilitated the failed pavement, include the following information: Contract No. 04-2G5704, PM 11.7/15.0, work done: cold plane = 0.35', bottom HMA(A) layer = 0.10', GPI, surface HMA(A) layer = 0.25'.	Report will revised to include the partial rehabilitation.	A		
22	Page 65	Remove the GPI statement right on top of the "9.3.3. Ramps" heading as GPI is not required for widening areas.	Text has been revised.	A		

EA 2908C1 & EA 2908E1
I-580 Westbound HOV Lane and Roadway Rehabilitation – East & West Segment
04-ALA-580-PM R 8.4/R21.6

Agency:	Caltrans	**Responded By:**	BKF/Parikh
Review Unit:	Materials	**Date Responded:**	
Comments By:	Maninder Kaur, 286-4827	**JRT Meeting Date:**	
Date Reviewed:	1/18/2012		

TECHNICAL COMMENT REVIEW AND RESPONSE

Title: **Plans, Specifications and Estimates (PS&E)**	Submittal: **June 2011 Submittal**	

Revision Action Code: **A**-Will Comply; **B**-Consultant to Evaluate; **C**-Will Not Incorporate; **D**-BKF/ACTC to Evaluate

Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
23	Page 65 & 66	Resolve discrepancy on thickness of required LCB for temporary traffic (0.80' or 0.85'?).	It should be 0.80' LCB. Text revised.	A		
24	Page 66	Table 10C: Delete RHMA-A from the Notes. You are not using this abbreviation in this table. Add a note recommending using "prime coat" on AB prior to placement of HMA-A (similar to Note 1 in Table 10A).	RHMA-G (mistakenly put as RHMA-A) will be used in the revised table to address the sections adjacent to other sections topped by RHMA-G to avoid bathtub effects. See also response to Item No. 50. Recommendation for Prime Coat will not be added. Based on Federal Highway Administration "Guidelines For Using Prime And Tack Coats", Publication No. FHWA-CFL/TD-05-002 and www.asphaltinstitute.org research, prime coat may not be necessary if the HMA layer is greater than 4 inches thick. HMA layer is proposed to be a minimum of 6 inches above untreated based.	A C		

EA 2908C1 & EA 2908E1
I-580 Westbound HOV Lane and Roadway Rehabilitation – East & West Segment
04-ALA-580-PM R 8.4/R21.6

Agency:	Caltrans	**Responded By:**	BKF/Parikh
Review Unit:	Materials	**Date Responded:**	
Comments By:	Maninder Kaur, 286-4827	**JRT Meeting Date:**	
Date Reviewed:	1/18/2012		

TECHNICAL COMMENT REVIEW AND RESPONSE

Title: **Plans, Specifications and Estimates (PS&E)**	Submittal: **June 2011 Submittal**	

Revision Action Code: **A**-Will Comply; **B**-Consultant to Evaluate; **C**-Will Not Incorporate; **D**-BKF/ACTC to Evaluate

Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
25	Page 66	Table 10C, new FDHMA sections: Based on the project plans, new sections No. 10 (1.60' FDHMA) is proposed for narrow ramp slivers (2-foot-wide on sheets X-15 and X-21). It will be difficult to achieve the required compaction in such a narrow space. We recommend removing an additional portion of the existing pavement to allow compaction with a small roller. Include minimum width recommendations to that effect in the GD&MR.	The 2-ft wide, 1.60' thick FDMA sections (for TI = 12) have been replaced by 0.35' HMA-A underlain by 1.65' Minor Concrete, separated by GPI.	A		
26	Page 66	Update Table 10C by incorporating those segments where JPCP will be constructed along the ramps. FYI, on sheet L-25, a 12-inch thick minor concrete structural section is shown for a portion of ramp MSN. We could not find this recommendation in the GD&MR. See comment below as well.	Revised to JPCP.	A		

Agency:	Caltrans	**Responded By:**	BKF/Parikh
Review Unit:	Materials	**Date Responded:**	
Comments By:	Maninder Kaur, 286-4827	**JRT Meeting Date:**	
Date Reviewed:	1/18/2012		

TECHNICAL COMMENT REVIEW AND RESPONSE

Title: **Plans, Specifications and Estimates (PS&E)**	Submittal: **June 2011 Submittal**	

Revision Action Code: **A**-Will Comply; **B**-Consultant to Evaluate; **C**-Will Not Incorporate; **D**-BKF/ACTC to Evaluate

Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
27	Page 66	Update Table 10C by incorporating specific recommendations for ramps to weigh stations based on the mainline ESALs and a load distribution factor of 1.0 - refer to HDM Index 613.5(1)(c)(2). Identify clearly those ramps in the Notes (MSN?). Likewise, provide recommendations for mainline or ramp pavement approaching/departing either existing or new WIM stations refer to Electrical Plans).	Pavement sections for ramps to Weigh In stations are based on a TI of 15.5, same as for Mainline. Recommendations for WIM locations will be provided in the revised report.	C A		
28	Page 68	Bottom Para: Provide more specific recommendations regarding the "...over-excavation and replacing with dry granular fill to facilitate earthwork construction."	The expression "over-excavation and replacing with dry granular fill to facilitate earthwork construction." is self explanatory and is standard for all GDMRs. Additional information is not required.	C		
29	Appendix "D"	Replace Typical Cross Sections sheets (X-1 thru X-23) with those to be updated by addressing our comments to the PS&E.		A		

EA 2908C1 & EA 2908E1
I-580 Westbound HOV Lane and Roadway Rehabilitation – East & West Segment
04-ALA-580-PM R 8.4/R21.6

Agency:	Caltrans	**Responded By:**	BKF/Parikh
Review Unit:	Materials	**Date Responded:**	
Comments By:	Maninder Kaur, 286-4827	**JRT Meeting Date:**	
Date Reviewed:	1/18/2012		

TECHNICAL COMMENT REVIEW AND RESPONSE

Title: **Plans, Specifications and Estimates (PS&E)**	Submittal: **June 2011 Submittal**	

Revision Action Code: **A**-Will Comply; **B**-Consultant to Evaluate; **C**-Will Not Incorporate; **D**-BKF/ACTC to Evaluate

Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
30	Appendix "E"	Even though in "Design Responses'" to Materials Comments (Page 5/8) it has been acknowledged that the "... existing shoulders will be subjected to some traffic when the median is being reconstructed" and asserts that the structural adequacy of the shoulders will be investigated and addressed in the report, there is no section in the report addressing it.	Per present traffic handling plans, temporary traffic will encroach only 6 to 12 inches into the outside shoulders. The designated existing shoulder sections have been checked and found adequate for a temporary traffic TI of 9.5. The locations of the existing shoulders have addressed in the report.	A		
		COMMENTS TO PLANS (dated November 18, 2011)				
31	All	Reconcile station limits. There are inconsistencies between the station limits shown on X- and those shown on the L- sheets and those tabulated on the Q- sheets.	Station limits reconciled.	A		
32	All Typicals on X-Sheets	There are overlaps between station limits --e.g. Typicals for MSN ramp on sheet X-16 overlap with those on sheet X-22.	Limits revised.	A		

CALTRANS COMMENTS AND RESPONSES

GDMR – 100% SUBMITTAL

Agency:	Caltrans	**Responded By:**	BKF/BCA/WMH/ AEC/PARIKH
Review Unit:	Design	**Date Responded:**	01/17/2012
Comments By:		**JRT Meeting Date:**	
Date Reviewed:	12/28/2011		

TECHNICAL COMMENT REVIEW AND RESPONSE

Title: **100% PS&E** | Submittal: **November 2011 Submittal**

Revision Action Code: **A**-Will Comply; **B**-Consultant to Evaluate; **C**-Will Not Incorporate; **D**-BKF/ACCMA to Evaluate

Item No.	Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
171	Q-6	CRASH CUSHION [TYPE ADIEM]: Change to "CRASH CUSHION [ADIEM]".		A		
172	Q-9	SACKED CONCRETE SLOPE PROTECTION: Construction Details are missing.	Comment no longer applicable. Sacked concrete has been deleted.	C		
173	Q-9	ROCK SLOPE PROTECTION (SQFT): Is this the RSP (Backing No.2, Mathod B)? Otherwise, show Construction Details.	Quantity table and construction Details have been revised to show RSP Method A and Method B.	A		
174	R-12	Ret Wall Nos. 15, 16, & 17: "LOG OF TEST BORINGS" are missing?	New LOTBs added	A		
175	R-17	UNIT: Use "SQFT" instead of "SF".		A		
176	LOTB	P.E.'s seal needs to be updated.		A		
177	SW-1	Quantities are missing.		A		
178	SW-1	TYPICAL SECTION, PRECAST CONCRETE PANEL SOUND WALL: Need to show the depth for footing?	Soundwall design to be by Contractor.	C		
179	SW-1	AESTHETICS, Panel, & Column details are missing.	Additional information added regarding aesthetics. Soundwall design to be by Contractor.	A C		

CALTRANS COMMENTS AND RESPONSES

GDMR – 95 % SUBMITTAL

OSFP Review Comment & Response Form

General Project Information	Review Phase	Reviewer Information
Dist: 04 **EA:** 290861 **Project Name:** ALA 580 East Segment-Retaining Walls **OSFP Liaison:** Overcomer Hor **Phone:** 916-227-8419 **e-mail:** overcomer_Hor@dot.ca.gov	☐ PSR/PDS (Review No. _) ☐ APS/PSR (Review No. _) ☐ APS/PR (Review No. _) ☐ Type Selection ☐ 65% PS&E Unchecked Details ☐ PS&E (Review No. _) ☐ Construction Support ☒ Other: Foundation Report **Structure Information** (Use when necessary to document comments by individual structure) **Structure Name:** Rtaining Walls No. 3, 4, 5, 8, 10, 11&15 **Br No:** ____	**Reviewer Name:** E. Ortega/R. Nashed **Functional Unit:** GS-GDW **Phone Number:** (510)286-4821 **e-mail:** eduardo_ortega@dot.ca.gov **Date of Review:** 07/12/2010

Consultant Information (to be filled in by Consultant)

Consultant Structure Lead (First and Last Name)	Structure Consultant Firm	Phone Number	e-mail	Response Date

#	Doc. (See Note 1)	Page, Section, or SSP	Review Comments	Consultant Responses	
1	GDMR	N/A	GDMR prepared by Parikh Consultant, Inc., dated June, 2010.	Not Required.	
2	GDMR	Retainig Wall No.3 P45	Sta. 643+00 to Sta. 648+50 Below 8-ft depth- very stiff clay not hard clay (correct)	Based on Boring A-08-208 @ Sta. 646+90, hard clay (Blow Counts of 77 and 70 per MA sampler) is encountered below 8-ft depth.. Thus, no change is required..	
3		Retainig Wall No.4 P 46	- Should be consistent in descriping the soil profile for all walls, either to go by depth or by elevation. - Sta. 659+50 to Sta. 662+50 El. Above 482 Soil conditions: Stiff not very Stiff (correct)	In this case, soil profile is better described by elevations, since, the wall is cutting into a ridge. Agreed. Text will be revised.	

Note 1: Abbreviations for Typical Documents (if Abbr. is not below, type in the document type)					
P=Structure Plans	SP=Special Provisions	FR=Foundation Rpt	DC=Design Calcs	TS=Type Sel. Report	QCC=Quant. Check Calcs
RP=Road Plans	E=Estimate	H=Hydraulics Rpt	CC=Check Calcs	QC=Quant. Calcs	

✓= Comment Resolved
(for Reviewer's use)

4	GDMR	Retainig Wall No.5 P 47	Sta. 655+50 to Sta. 667+50 Soil conditions: medium dense Poorly graded sand not Dense Sand (correct)	Blow counts (Modcal) are 48 and 44 for this layer. It should be Medium Dense to Dense. Text will be revised.	
5	GDMR	Retainig Wall No.8 P 50	"B" Line Sta. 690+50 to Sta. 692+74 The Wall length is 224 ft, not 2274 ft (correct)	It is 226.4 feet per General Plans (approximately 226 feet. Text is revised.	
6	GDMR	Retainig Wall No.15 P 55	"MXR3" Line Sta. 747+25 to Sta. 748+55 - The Wall length is 130 ft, not 153 ft (correct) - The nearest bore hole is Boring No. A-09-250, not A-09-260 (correct)	The length per General Plans for the wall is 153c feet. Agreed. Boring No. will be changed to A-09-250.	
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(for Reviewer's use)

EA 290861 / E-FIS: 04 0002 0210
I-580 Westbound HOV Lane - East Segment
04-ALA-580-PM R8.4/R14.6

Agency:	Caltrans	**Responded By:**	
Review Unit:	Geotechnical	**Date Responded:**	
Comments By:		**JRT Meeting Date:**	
Date Reviewed:	10/20/2010		

TECHNICAL COMMENT REVIEW AND RESPONSE

Title: **Plans, Specifications and Estimates (PS&E)**	Submittal: **95% Submittal – May 2010**	

Revision Action Code: **A**-Will Comply; **B**-Consultant to Evaluate; **C**-Will Not Incorporate; **D**-BKF/ACCMA to Evaluate

Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
8	P. 38, Section 8.4, Earth Retaining System	Horizontal Drilling is necessary for Soil Nail Walls No. 3, 4, 5, 8, 10, and 15. *The response by consultants is that cannot perform this due to access limitations required horizontal distance encroaching on the highway.* **If drilling is not going to be performed, how are you going to obtain the design parameters for the Soil Nail Walls?**	Parikh had submitted for review by Caltrans, soil borings and the inferred soil profiles along the 6 walls. They also presented their recommended design information for the walls. After review, Caltrans indicated that they were satisfied with the information and there is no requirement for additional horizontal drilling (see attached e-mail from Wing K. Lok of Caltrans dated June 28, 2011).			

Partha Sircar

From: Luis Garcia [lgarcia@BKF.com]
Sent: Wednesday, June 29, 2011 10:49 AM
To: Gary Parikh; Partha Sircar
Subject: FW: EA 04-29086 04-29087 From Parikh Consultants - Sections-Profiles along Retaining Wall Alignments with Relevant Boring Logs

Good news!

From: Wing Lok [mailto:wing_lok@dot.ca.gov]
Sent: Tuesday, June 28, 2011 10:10 AM
To: shaas@alamedactc.org
Cc: Sotero D Angeles; Wilfung Martono; Issa Bouri; Luis Garcia; Natalina Bernardi
Subject: Fw: EA 04-29086 04-29087 From Parikh Consultants - Sections-Profiles along Retaining Wall Alignments with Relevant Boring Logs

Geotechnical West has reviewed the submitted section profiles for proposed Retaining Walls # 3, 4, 5, 7, 10 and 14, and the parameters obtained. They believe the parameters are acceptable, and therefore no additional horizontal drilling.

See below for forwarded e-mails

-=-

Wing K Lok, Transportation Engineer
Division of Design East
Office of Design Contra Costa (Sotero Angeles)
California Department of Transportation (Caltrans) District 4
Mail Station 9C
111 Grand Avenue
PO Box 23660
Oakland, CA 94623-0660
Office: (510) 286-6208
Fax: (510) 286-5122
wing_lok@dot.ca.gov

-=-

----- Forwarded by Wing Lok/D04/Caltrans/CAGov on 06/28/2011 10:07 AM -----

Eduardo Ortega/D04/Caltrans/CAGov

06/28/2011 10:03 AM

To Wing Lok/D04/Caltrans/CAGov@DOT
cc Mahmood Momenzadeh/D04/Caltrans/CAGov@DOT
Subject Re: EA 04-29086 04-29087 From Parikh Consultants - Sections-Profiles along Retaining Wall Alignments with Relevant Boring Logs Link

Wing,

We can live with the information provided. No requirement of additional horizontal drilling.

Wing Lok/D04/Caltrans/CAGov

06/28/2011 10:00 AM

To Eduardo Ortega/D04/Caltrans/CAGov@DOT
cc Mahmood Momenzadeh/D04/Caltrans/CAGov@DOT, Rifaat Nashed/HQ/Caltrans/CAGov@DOT, Sotero D Angeles/D04/Caltrans/CAGov@DOT, Wilfung Martono/D04/Caltrans/CAGov@DOT, Issa Bouri/D04/Caltrans/CAGov@DOT
Subject Re: EA 04-29086 04-29087 From Parikh Consultants - Sections-Profiles along Retaining Wall Alignments with Relevant Boring Logs Link

Agency:	Caltrans	**Responded By:**	
Review Unit:	Geotechnical	**Date Responded:**	
Comments By:		**JRT Meeting Date:**	
Date Reviewed:	10/20/2010		

TECHNICAL COMMENT REVIEW AND RESPONSE

Title: **Plans, Specifications and Estimates (PS&E)**	Submittal: **95% Submittal – May 2010**	

Revision Action Code: **A**-Will Comply; **B**-Consultant to Evaluate; **C**-Will Not Incorporate; **D**-BKF/ACCMA to Evaluate

Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
9	P. 50 & P. 51, Section 8.4, Earth Retaining System	Retaining Wall No. 9 For 22 ft high: If pile foundation is used, consider the free standing of pile section due to scour in their design. Additional boring will be required. If spread footing is used, the standard wall spread footing, if possible, has to be lowering below the scour level and backfill with rip-rap to grade. Additional boring may be required.	The footing has be re-designed for lower bearing pressure per new boring data. 4' of over-excavation & replacement with Agg Base plus a widened footing is shown on R-17. **However, footing elevation has not been lowered. We don't think scour is an issue since this is the inlet side of the pipe. We are not aware of any rip-rap to be placed in this area.**			
End Comments for GDMR dated on October 2009						

Agency:	Caltrans	**Responded By:**	
Review Unit:	Construction	**Date Responded:**	
Comments By:		**JRT Meeting Date:**	
Date Reviewed:	10/21/2010, 10/29/2010		

TECHNICAL COMMENT REVIEW AND RESPONSE

Title: **Plans, Specifications and Estimates (PS&E)**	Submittal: **95% Submittal – May 2010**	

Revision Action Code: **A**-Will Comply; **B**-Consultant to Evaluate; **C**-Will Not Incorporate; **D**-BKF/ACCMA to Evaluate

Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
8	TH-36	At N. Livermore Ave., installation of AB 350 is proposed. Where are the K-rails? Are the AB 350s for Falsework columns? Can you explain what are we doing there besides falsework installation? Please provide a cross section. K-rail is needed to protect the falsework columns.	BKF-SJ			
9	Sign I, SD-2	Where is detail for Concrete Barrier 60E (MOD)?	WMH			
10	Log of Test Boring	Missing Log of Test Boring: Sign A, C, I,	New borings have been drilled in the proximity of the stations.	A		
	SSP	The SSPs mention to use Section 39 of the Standard Spec "HMA" but Section 39 is not HMA, it is "Asphalt Concrete." The SSPs need to have Amended Section 39. Please see 'Guidance For Amended Section 39, "Hot Mix Asphalt"' http://www.dot.ca.gov/hq/esc/oe/specifications/SSPs/99_04-SSPs/SSPs_HMA/!HMA_Guidance11-16-07.doc				

CALTRANS COMMENTS AND RESPONSES

GDMR – 65 % SUBMITTAL

I-580 WB HOV LANE WIDENING PROJECT
EASTERN SEGMENT – EA 290821

Agency:	Caltrans	**Responded By:**	
Review Unit:	Geotechnical Services	**Date Responded:**	
Comments By:	RIFAAT NASHED	**JRT Meeting Date:**	
Date Reviewed:	12-21-09		

TECHNICAL COMMENT REVIEW AND RESPONSE

Title:	Submittal: **Comments on Geotechnical Design & Materials Report**	

Revision Action Code: **A**-Will Comply; **B**-Consultant to Evaluate; **C**-Will Not Incorporate; **D**-CCTA to Evaluate

Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
	GDMR	***GDMR dated October 2009***				
1	P13, Surface Drainage	The creeks and water streams that crossing the project should be named	Agreed. The text has been revised.	A		
2	P14 Section 4.5 Regional Geology and Seismicity	The statement " The Coast Range forms…….East Bay Hills/ Diablo range (eastern block)." Should be replaced by the following: " The project area lies in Alameda County, which is located at the northern end of Diablo Range. It is bounded on the north by the south flank of Mount Diablo. San Francisco Bay forms the western boundary; San Joaquin Valley borders it on the east. The Alameda County consists of a folded and faulted portion of the Diablo Range. Livermore Valley is one of the chief valleys present within the Diablo Range (Alameda County Planning Department, 1975).	Agreed. Text has been revised.	A		
3	P20 Table 1B Summary of Borings	- Approximate Ground Elevation for Boreholes No: A-09-204, A-09-205, A- 209-207, A-09-232, A—09- 249 and A-09-261 should be corrected. - Boring Depth for Borings No. A-09-204 and A-09-225 should be corrected.	Agreed. The boring elevations and boring depths have been corrected in the revised report. Please note that the elevation for borehole no. A-09-204 is correct in the report.	A		
4	P22 Table 1D Summary of Bridges Borings	North Livermore Undercrossing Bridge (33-0153) – Boring No. LIV-01 Stationing, Approx. Ground Elev., and Approx. Groundwater Elv., should be corrected	Agreed. The boring elevation and groundwater elevation have been corrected in the report.	A		

I-580 WB HOV LANE WIDENING PROJECT
EASTERN SEGMENT – EA 290821

Agency:	Caltrans	**Responded By:**	
Review Unit:	Geotechnical Services	**Date Responded:**	
Comments By:	RIFAAT NASHED	**JRT Meeting Date:**	
Date Reviewed:	12-21-09		

TECHNICAL COMMENT REVIEW AND RESPONSE

Title:	Submittal: **Comments on Geotechnical Design & Materials Report**	

Revision Action Code: **A**-Will Comply; **B**-Consultant to Evaluate; **C**-Will Not Incorporate; **D**-CCTA to Evaluate

Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
5	P24 Section 7.1 Site Geology	The majority of surficial material are Alluvial fan and fluvial deposits (Qpaf) and Alluvial Terrace Deposits, and not Floodplain Deposits (Qhfp)	Agreed. The text has been revised.	A		
6	P26 Section 7.2 Subsurface Soil Conditions	There are firm clay layers also in Borings No. 241 and 242	Agreed. The text has been revised to reflect the response.	A		
7	P27 Section7.3.1 Surface Water	1- The title of this section should be "Water Drainage". 2- The following statement should be added:" The project area crosses Arroyo Las Positas Creek and Arroyo Seco Creek. Arroyo Las Positas Creek crosses the Alignment twice and considered the main drainage element	Agreed. The revisions will be made in the text.	A		

I-580 WB HOV LANE WIDENING PROJECT
EASTERN SEGMENT – EA 290821

Agency:	Caltrans	**Responded By:**	
Review Unit:	Geotechnical Services	**Date Responded:**	
Comments By:	RIFAAT NASHED	**JRT Meeting Date:**	
Date Reviewed:	12-21-09		

TECHNICAL COMMENT REVIEW AND RESPONSE

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Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
8	P38, Section 8.4 Earth Retaining System	Horizontal Drilling is necessary for Soil Nail Walls No. 3, 4, 5, 8, 10, and 15.	We cannot perform this due to the access limitations required horizontal distance encroaching on the highway. In addition, soil conditions expected are alluvial fan and fluvial deposits and alluvial terrace deposits. Uncertainties such as hard rock or bedrock are not expected..	C		

I-580 WB HOV LANE WIDENING PROJECT
EASTERN SEGMENT – EA 290821

Agency:	Caltrans	**Responded By:**	
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TECHNICAL COMMENT REVIEW AND RESPONSE

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Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.

EA 290821
I-580 Westbound HOV Lane - East Segment
04-ALA-580-PM R08.3/R14.6

Agency:	Caltrans	**Responded By: Partha Sircar**	
Review Unit:	Materials	**Date Responded: May 25, 2010**	
Comments By:		**JRT Meeting Date:**	
Date Reviewed:	11/10/2009, 11/25/2009, 11/30/2009		

TECHNICAL COMMENT REVIEW AND RESPONSE

Title: **Plans, Specifications and Estimates (PS&E)**	Submittal: **65% Submittal - September 2009**	

Revision Action Code: **A**-Will Comply; **B**-Consultant to Evaluate; **C**-Will Not Incorporate; **D**-BKF/ACCMA to Evaluate

Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
1	Geotech Design & Materials Report	Table 2, Summary of Groundwater Elevations: Insert a column to show the proposed (approximate) widening finished grade so that we can ascertain the depth of groundwater in relation to the finished pavement grade.	Agreed. A column will be added to show the finished grade near boring location.	A		
2	Geotech Design & Materials Report	Table 5B, Summary of Proposed Retaining Walls - Eastbound Side: Starting/End Stations values are not consistent with those shown in the retaining wall description paragraphs that follow the Table. Likewise, information in the "Relevant Borings" column is not consistent with the boring identification number(s) shown in the Log of Test Boring plates (Appendix A).	Agreed. The report will be revised to reflect the latest retaining wall numbers, heights, lengths and other pertinent information. The inconsistencies of the Eastbound side withregard to the stationing and associated borings will be corrected.	A		
3	Geotech Design & Materials Report	Subsection 8.5.1, Corrosion Investigation: Provide recommendations for allowable alternative pipe materials. Since the Culbert 4 program has already been superseded, provide APC recommendations based on the latest version of the AltPipe program and latest updates to HDM Chapters 820 thru 850 dated November 2, 2009.	AltPipe program will be run by designers (BKF Engineers)	A		

EA 290821
I-580 Westbound HOV Lane - East Segment
04-ALA-580-PM R08.3/R14.6

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Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
4	Geotech Design & Materials Report	Section 9, Structure Pavement: a) Include a note stating reason(s) why RHMA is not proposed for the mainline. b) Include a subsection addressing the need or not to either relocate or construct new edge drains and underdrains. c) Specify whether the proposed pavement structural sections are for cut locations, fill locations, or both.	a) The revised sections will all have 0.2-ft of RHMA-G, overlain by 0.1-ft of RHMA-O to be in conformance with the adjacent overlay section b) It is our understanding that there are no underdrains (e.g. ATPB layers) c) The proposed sections are for both cut and fill.	A C A		

EA 290821
I-580 Westbound HOV Lane - East Segment
04-ALA-580-PM R08.3/R14.6

Agency:	Caltrans	**Responded By: Partha Sircar**	
Review Unit:	Materials	**Date Responded: May 25, 2010**	
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Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
5	Geotech Design & Materials Report	Table 10A, Recommended Pavement Sections for Mainline HOV Widening: a) Delete the "RHMA" column. b) Delete the single asterisk (*) from the HMA-A column heading and its description from the Notes below the Table. c) Inconsistency: Whereas in this Table and in Appendix C the LCB thickness for a 20-year design is shown as 0.80', in Appendix D the LCB thickness for pavement structural section No.1is shown as 0.90' (refer to Typical Cross Section sheet X-1). d) Edit the "LCB/HMA-A" column heading to read "LCB or HMA-A" and update values under this column to be consistent with PPB 09-01, "Rigid Pavement Base Design", dated August 27, 2009.	a) Per the latest design, 0.2' of RHMA-G and 0.1' of RHMA-O is recommended. See Response No. 4. b) It will be removed, now that 0.2' of RHMA-G will replace equivalent thickness of HMA-A. c) The typical section was wrong. It should have been 0.8 d) Agreed. Heading will be revised and the values will be made consistent with the August 27, 2009 document.	A A A A		

EA 290821
I-580 Westbound HOV Lane - East Segment
04-ALA-580-PM R08.3/R14.6

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Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
6	Geotech Design & Materials Report	Include recommendations for a new surface course over the entire roadbed as a final finishing surface to eradicate striping marks that will occur due to shifting of lane lines during various construction stages. If there is existing OGAC, then OGAC has to be cold planed before placing new surfacing course.	Per present plans, RHMA-O (OGAC) will be placed on the entire roadbed. This is reflected in the revised report, as well as the typical cross sections. A note is added in the appropriate tables about cold planing before placing new surface course.	A		

EA 290821
I-580 Westbound HOV Lane - East Segment
04-ALA-580-PM R08.3/R14.6

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Comments By:		**JRT Meeting Date:**	
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7	Geotech Design & Materials Report	Section 9, Structural Pavement: a) If existing shoulders will be used during stage construction, address their structural adequacy for traffic detour. b) Address structural adequacies of any portions of existing shoulders that will be converted into permanent traveled way and provide substantiating documents (for both median and outside shoulders). c) Entire width of the old existing median shoulder should be removed and reconstructed in the areas where traffic is being shifted to the median shoulder. Update Table 10A and Typical Cross Sections sheets (Appendix D) accordingly. d) Recommend sawcut line whether it is to be at ETW or inside the edge of shoulder. Keep existing shoulder structural section in view when deciding the sawcut line location.	a) Per present staging plans, the existing shoulders will be subjected to some traffic when the median is being reconstructed. The structural adequacy of the shoulders will therefore be investigated and addressed in the report as appropriate. b) Structural sections of any portions of the existing shoulders that will be converted into permanent traveled way will be designed for a 20-yr design life with appropriate TI. c) Agreed d) Recommended sawcut lines are shown on the typical sections presented in Appendix D. They are generally along the existing ETW line. BKF Engineers will provide information.	A A A A		

EA 290821
I-580 Westbound HOV Lane - East Segment
04-ALA-580-PM R08.3/R14.6

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Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
8	Geotech Design & Materials Report	Table 11B, As-built Pavement Sections - Ramps and Streets: Since RAC-G and RAC-O layers are present, include copies of pertinent as-built plan sheets from which the tabulated pavement sections were deciphered.	Agreed.	A		
9	Geotech Design & Materials Report	Table 10A, Recommended Pavement Sections for Mainline HOV Widening: Edit the "LCB/HMA-A" column heading to read "LCB or HMA-A". For the HMA-A option, recommend use of Prime Coat on aggregate subbase before placing the HMA-A.	Agreed.	A		

EA 290821
I-580 Westbound HOV Lane - East Segment
04-ALA-580-PM R08.3/R14.6

Agency:	Caltrans	**Responded By: Partha Sircar**	
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Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
10	Geotech Design & Materials Report	Table 10B, Recommended Pavement Sections for Ramps: a) We do not recommend placement of LCB directly on soils with R-value = 5. Design option 2 for TI = 12 as a three-layer structural section that includes AS. b) For proposed widenings adjacent to existing pavement with RAC-O, said layers have to be extended with materials with similar permeability. Update pavement design calculations in Appendix C. Update Table 10B and Typical Cross Sections sheets (Appendix D) accordingly. c) Notes (1) and (2): Verify that listed ramp locations are within the limits of this segment - the "East" segment. Delete those locations that belong to the "West" segment.	a) Accepted. The LCB section for Option 2 in Table 10B will be removed. b) Per present plans, finished surfaces for both the new (widened) section and the existing section after overlay will have a continuous RAC-O layer. Table B and the cross-sections will be updated c) Agreed. Notes (1) and (2) will be revised as appropriate.	A A A		
11	Geotech Design & Materials Report	Include recommendations for a new surface course over the entire roadbed as a final finishing surface - for portions of pavement with HMA surfacing - to eradicate striping marks that will occur due to shifting of lane lines during various construction stages.	Per present plans, a new surface course will be placed over the entire	A		

EA 290821
I-580 Westbound HOV Lane - East Segment
04-ALA-580-PM R08.3/R14.6

Agency:	Caltrans	**Responded By: Partha Sircar**	
Review Unit:	Materials	**Date Responded: May 25, 2010**	
Comments By:		**JRT Meeting Date:**	
Date Reviewed:	11/10/2009, 11/25/2009, 11/30/2009		

TECHNICAL COMMENT REVIEW AND RESPONSE

Title: **Plans, Specifications and Estimates (PS&E)**	Submittal: **65% Submittal - September 2009**	

Revision Action Code: **A**-Will Comply; **B**-Consultant to Evaluate; **C**-Will Not Incorporate; **D**-BKF/ACCMA to Evaluate

Item No.	Drawing or Page No.	Review Comments	Design Responses	Revision Action	JRT Disp.	Final Disp.
12	Geotech Design & Materials Report	Appendix D, Typical Cross Sections: a) All sheets: Refer to applicable foregoing comments to update them. b) Sheet X-5 and X-6: Verify proposed widenings in the "eastbound" direction. IF EB widening is part of this project, then include structural sections recommendations and address EB widening in the report.	a) Agreed. b) The proposed widening in the Eastbound direction are shown in sheets X-6 and X-7 and have also been addressed in the report.	A		
13	Geotech Design & Materials Report	Section 9 - Structural Pavement and Tables 10A: State the reason(s) why a 0.65-foot-thick layer of LTS is recommended for the Rigid Pavement strategies.	A 0.65-foot thick layer of LTS is recommended to raise the R-value to 10, consistent with HDM, Section 614.4.	A		

I-580 WESTBOUND HOV IMPROVEMENTS AND EASTBOUND AUXILIARY LANE BRIDGE HYDRAULICS REPORT AND FLOODPLAIN ANALYSIS REPORT EA 290820

04-ALA 580- PM R8.29/R21.43

Cities of Dublin, Pleasanton, Livermore and Unincorporated Alameda County, Alameda County, California

Prepared for:

ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY

and

THE STATE OF CALIFORNIA

DEPARTMENT OF TRANSPORTATION, DISTRICT 04

AND

FEDERAL HIGHWAY ADMINISTRATION

Prepared by:

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1. INTRODUCTION

1.1 Purpose and Scope

Alameda County Congestion Management Agency (ACCMA) in cooperation with Caltrans and the Federal Highway Administration (FHWA) propose to construct a westbound high-occupancy vehicle (HOV) lane and eastbound auxiliary lane along a 13.1-mile segment of Interstate 580 (I-580) beginning west of the Greenville Road undercrossing (post mile 8.29) and ending east of the San Ramon Road/Foothill Road overcrossing (post mile 21.43) in eastern Alameda County (Project). This report confirms that the existing overcrossings and culverts can accommodate peak runoff during the hundred year runoff event with no inundation of the roadway and describes the existing floodplain adjacent to the proposed roadway widening. The roadway widening improvements are within the Cities of Dublin and Livermore and an unincorporated portion of Alameda County, California. The City of Pleasanton is on the south side of I-580 in the vicinity of the proposed improvements. The Project vicinity is shown on Figure 1 in Section 10. The proposed Project will result in extensions and modifications to existing gravity storm drain systems. No new outfalls are proposed as a part of the Project.

1.2 Project Location and Description

The Project is located on I-580 in the tri-valley area (i.e., Cities of Dublin and Livermore and Pleasanton) in eastern Alameda County, California. I-580 is an urban freeway that extends from the junction with Route 101 in the City of San Rafael to the junction with Route 5 south of the City of San Tracy. I-580 is the major thoroughfare for commuters living outside the Bay Area, provides access for the movement of goods and freight into and out of the region, and serves significant recreational travel during weekends and summer months to and from the Central Valley and Sierra Nevada Mountains. I-580 is under Caltrans jurisdiction and is an important link in the regional transportation network, but is not part of the 42,000 km Department of Defense Priority Network. See Figure 1, Vicinity Map.

The project lies within the San Francisco Bay Area, a region with a predominately Mediterranean climate consisting of warm, dry summers, and mild, wet winters. The project site is located inland from the San Francisco Bay in the Amador and Livermore valleys. The valley floors are generally flat and covered with a layer of clay soils that frequently prevents drainage to deeper subsurface alluvial soils. As a result, during the region's winter rainy season, localized flooding is common in the vicinity of the project area. The project is located within the greater Arroyo Mocho watershed, which has a drainage area of 175 square miles. Several creeks and man-made drainage channels

cross the project area including Alamo Creek, Tassajara Creek, Cottonwood Creek, Collier Canyon Creek, Arroyo Las Positas Creek, Arroyo Seco, Arroyo Mocho, Cayatano Creek, Dublin Creek, and Chabot Canal. The main drainage creeks in the project area that would potentially be affected by the roadway improvements include Tassajara Creek, Arroyo Las Positas, and Arroyo Seco.

Project area stormwater runoff eventually drains to Tassajara Creek, which drains from north of the project site southward, and to Arroyo Las Positas, which flows east to west and drains into Arroyo Mocho. The Arroyo Mocho flows northwest from Mount Mocho, located near the Alameda County/Santa Clara County lines. Arroyo Mocho drains into the Arroyo de la Laguna, which flows into Alameda Creek and eventually to the San Francisco Bay and Pacific Ocean.

During the winter rainy season, frequent and substantial flooding occurs in the vicinity of the project area (the greater Amador and Livermore valleys). Storms vary in the amount of precipitation, as well as the severity and duration. Intense precipitation can contribute to rapid runoff rates, exacerbating creeks' flows where flooding or inundation may occur on the valley floor. The most severe flooding occurred in January, 1952 when Arroyo Seco inundated the then Western Pacific Railroad trestle and the valley, damaging railroad lines, bridges, utility lines, and buildings.

Frequent rainfall of lesser volume over several days can also cause localized flooding, as was experienced in the project area in 1955 and 1958. Frequent and/or intense precipitation has frequently overtopped stream channels in the project area and has sometimes resulted in some localized flooding in Dublin, Pleasanton, and Livermore.

1.3 Proposed Improvements

Storm Drainage Improvements are proposed at the following locations:

- Widening two existing crossings of the Arroyo las Positas (Bridge No. 33-0085 and No. 33-0203) at both the westbound and eastbound directions.
- Widening the existing bridge crossing over Tassajara Creek (Bridge No. 33-0015) in the median section and both the eastbound and westbound directions by spanning the creek with a bridge consistent with upstream and downstream bridge sections.
- Extending the existing triple box culvert at Arroyo Seco (Bridge No. 33-0066) along the westbound direction.

The storm drainage systems will be modified to accommodate the widening for an HOV lane along westbound I-580. Future drainage improvements include the installation of vegetated swales and bioretention, and the addition of inlets and storm drain lines to reduce gutter spread along the auxiliary lane. These facilities will be described as a part of a drainage report to be developed in the Plans, Specifications and Estimates (PS&E) phase of the Project.

Major drainage facilities along the I-580 alignment are maintained and operated by Alameda County Flood Control District, Zone 7 (Zone 7). The proposed Project crosses the following creeks and drainage ditches:

1. Dublin Creek
   (Zone 7 Line J, construction date unknown)
2. Zone 7 Line J-1
   (Zone 7 Line J-1, construction date unknown)
3. Alamo Canal
   (Zone 7 Line J, construction date unknown)
4. Zone 7 Line G-1-1
   (Zone 7, Line G-1-1, construction date unknown)
5. Chabot Canal
   (Zone 7 Line G, construction date unknown)
6. Tassajara Creek
   (Zone 7 Line K, Bridge 33-0015, constructed in 1966)
7. Line 3G3
   (Zone 7 Line 3G3, Bridge 33-0014, construction date unknown)
8. Cottonwood Creek
   (Zone 7 Line L, Bridge 33-0013, construction date unknown)
9. Collier Canyon Creek
   (Zone 7 Line M, 33-33-0501, construction date unknown)
10. Arroyo las Positas
    (Zone 7 Line H, Bridge 33-012, constructed in 1972)
11. Arroyo las Positas
    (Zone 7 Line H, Bridge 33-0203, constructed in 1972)
12. Arroyo las Positas
    (Zone 7 Line H, Bridge 33-0085, constructed in 1972)
13. Arroyo Seco
    (Zone 7 Line P, Bridge 33-0066, construction date unknown)

As discussed previously, the Project will only impact creek hydraulic conditions for Tassajara Creek, Arroyo las Positas and Arroyo Seco. Improvements at other locations will be located over existing cross culvert facilities and will not impact creek hydraulics.

Non-Storm Drainage Improvements

In addition to the HOV lane, the following non-storm drainage construction activities are included in the Project description:

- Constructing an auxiliary lane along I-580 westbound between the Vasco Road and First Street Interchanges,
- Constructing an auxiliary lane along I-580 westbound between the First Street and North Livermore Interchanges,
- Constructing 3800 feet of auxiliary lane along I-580 westbound from the North Livermore Avenue on-ramp,
- Constructing 4800 feet of auxiliary lane along I-580 westbound from the Airway Boulevard on-ramp,
- Construction of HOV bypass lanes at the eastbound and westbound on-ramps at Greenville Road, Vasco Road, First Street, and North Livermore Avenue; and the westbound on-ramp at Airway Boulevard,
- Modify the ramp noses at interchange areas to accommodate for auxiliary lane, HOV bypass lane and shoulder widening,
- Widening the North Livermore Avenue undercrossing (Bridge No. 33-0153) in both eastbound and westbound directions, and,
- Widening the Dougherty undercrossing (BART transit corridor) (Bridge No. 33-0150L) in the westbound direction.
- Constructing an eastbound auxiliary lane.

1.4 Method of Analysis and Limitations

The method adopted for analyzing hydrologic data and hydraulic calculations for design of the proposed drainage system is based on guidelines developed by the State of California, Department of Transportation (Caltrans), District 04 - Hydraulic Section, and Chapter 800 "Highway Drainage Design" of Caltrans Highway Design Manual (HDM).

The base flood elevation adjacent to the Project is taken from existing Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs). BKF attempted to collect the backup data for these water levels. FEMA was unable to locate the data used to justify the water levels. At bridges, BKF has used the available survey data and as-built plan information to develop input for the U.S. Army Corps of Engineers HEC-RAS River Analysis System computer model for the purpose of determining pre- and post-Project water levels. A roughness coefficient of 0.035 is used for the flow line of the channel and the channel sideslopes.

Design flow rates for the channel are taken from the FEMA Flood Insurance Studies for the Project area.

2. PROJECT OVERVIEW

2.1 Existing Conditions

The Project drainage areas consist of paved roadways and vegetated roadway sideslopes. Currently, the area is drained by a network of pipes and ditches. Ditches are located adjacent to on-ramps and along the outside shoulders of I-580.

Drainage System

Runoff from the Project area drains to facilities that eventually discharge to Arroyo Mocho. Arroyo Mocho flows southwest and ultimately drains into San Francisco Bay. There are no significant storage facilities for drainage facilities through the Project area.

100-Year Water Level, FEMA

FEMA 100-year water levels adjacent to proposed roadway improvements are presented on Figures 3 through 12. (See Figure 2 for a key map). Water levels adjacent to the roadway are less than the proposed edge of pavement with the following three exceptions:

In the vicinity of Station 175+00, in the vicinity of San Ramon Road/ Foothill Road, the 100-year water level is up to 0.6 feet above the proposed edge of pavement. See Figure 3.

In the vicinity of Station 260+00, in the vicinity of Dougherty Road, the 100-year water level is up to 1.9 feet above the proposed edge of pavement. See Figure 4.

In the vicinity of Station 380+00, east of Santa Rita Road / Camino Tassajara, the 100-year water level is up to 2.9 feet above the proposed edge of pavement. See Figures 5 and 6. Based on the 2009 FEMA FIRM, 100-year event peak flows will spill from south of I-580 across the median to the north side of I-580 in this vicinity. Improvements are proposed to Arroyo Mocho that will prevent this overtopping from occurring.

No changes are proposed to the roadway median grades. The 100-year water levels do not overtop the median of the roadway and no special median requirements are

necessary to provide for overtopping. Berming and/or barriers can limit the roadway inundation during the FEMA 100-year event.

2.2 Proposed Improvements

Proposed storm drain system improvements are shown on the following Advanced Planning Study sheets, included in Section 12.

General Plan – Tassajara Creek
General Plan – Arroyo las Positas (2 locations on 2 sheets)
General Plan – Arroyo Seco

The Tassajara Creek improvements consist of widening the I-580 Bridge (33-0015R) by 5.7 feet along the north edge and 12 feet along the south edge and I-580 Bridge (33-0015l) by 9.7 feet. A total of ten (10) piers will be added within the creek flow path. The piers will be aligned so as to match the existing twin pier bents.

Arroyo las Positas improvements at Bridge 33-0203 include widening on both the east and westbound sides. Westbound widening is an additional 25.4 feet. Eastbound widening is an additional 25.4 feet. The existing pier bents will be extended by two piers for the westbound widening and by two piers for the East bound widening. The existing channel dimensions will be maintained. Piers will be aligned consistent with the existing twin pier bents of the I-580 Bridge.

Arroyo las Positas improvements at Bridge 33-0085 include widening on both the east and westbound sides. Westbound widening is about 25.4 feet. Eastbound widening is by 25.4 feet. The existing pier bents will be extended by two piers for the westbound widening and by two piers for the eastbound widening. The existing channel dimensions will be maintained. Piers will be consistent with pier bents of the existing I-580 Bridge.

Arroyo Seco improvements consist of widening Bridge 33-0066 on the westbound sides. The existing triple box culvert will be extended by about 20.8 feet, and the existing wing walls will be replaced.

3. STORM WATER ROUTING PLAN

3.1 Proposed Storm Water Routing Scheme

The storm runoff routing will remain the same as existing.

3.2 Alteration of Facilities of Other Agencies

The creeks within the Project area are generally under the jurisdiction of Alameda County Flood Control and Water Conservation District, Zone 7, except at roadway crossings. Caltrans is responsible for the maintenance of the creeks within the Caltrans right-of-way. All proposed improvements are within Caltrans right-of-way.

4. DESIGN CRITERIA

4.1 Hydrology

Design flows are from:

1. Existing FEMA Flood Insurance Studies (FIS) for the Cities of Dublin and Livermore and the unincorporated portion of Alameda County.

2. Updated Design Discharges (for Zone 7 ACFC&WCD), Schaaf & Wheeler, June 2000 as presented in I-580 Eastbound HOV Lane Widening Project, Location Hydraulic Study Report.

4.2 Hydraulics

Water levels are based on FEMA 100-year water levels shown on Flood Insurance Rate (FIRM) Maps. The HEC-RAS Computer Model is used for evaluating water levels at bridges. A Manning's Roughness Coefficient of 0.035 is used for natural channels and 0.014 for concrete lined sections.

5. CALCULATIONS

5.1 Tributary Area Maps

A total of 13 creeks flow through the Project limits at the locations shown on Exhibits 1A and 1B in Section 12. There are three existing bridges and one box culvert that are not long enough to accommodate the proposed roadway widening. The bridges include Tassajara Creek, and two locations along Arroyo las Positas. The extended box culvert is at Arroyo Seco. At these locations, the proposed roadway widening will impact the creek hydraulics.

Tributary drainage areas for creek crossings are shown on Exhibit 3.

5.2 Peak Flow Rates

Based on FEMA design flows and hydraulic reviews, the existing bridges and culverts for these drainage ways have adequate flow capacity to accommodate the 100-year peak flow rate. Peak flow rates are presented on Exhibits 1A and 1B in Section 12 for FEMA and Zone 7. FEMA flows are documented on Exhibits 2A through 2F. As a part of these analyses, BKF checked drainage areas. There are some discrepancies between reported drainage areas that could not be resolved including:

Alamo Canal -The FEMA drainage area of 8.6 square miles does not correspond with the calculated drainage area of 39.2 square miles

Tassajara Creek - The FEMA drainage area of 19.6 square miles drainage does not correspond with the calculated area of 26.5 square miles. Note that the previous Dublin FIS shows an area of 29.0 square miles.

In both cases, the reported peak flow rate for the calculated drainage area corresponds well with the Frequency Discharge curve for Arroyo las Positas (Exhibit 2F) for the calculated drainage areas, and no changes in flow rate are recommended.

There are also significant differences between FEMA peak flow rates and Zone 7 peak flow rates. Significant differences occur at the following locations:

Arroyo Seco – The FEMA 100-year peak flow rate is 2,250 cfs compared with 3,600 cfs reported by Zone 7.

Arroyo las Positas - The FEMA 100-year peak flow rate is 5,000 cfs compared with 7,300 cfs reported by Zone 7.

6. DIVERSIONS

There are no diversions proposed within the Project limits.

7. PROJECT EVALUATION

7.1 Risk Associated with the Proposed Action

The Project will cross existing creeks at 13 locations. The Project edge of pavement is above the 100-year water level except at one location about 1,900 feet east of the Santa Rita Road / Camino Tassajara interchange. The Project will not be impacted by creek inundation for the FEMA 100-year storm event except at this one location.

The Project proposes to extend bridges at three locations and extend a triple box culvert at a fourth location. In the three areas where bridges are extended, piers will be located within the channel, consistent with existing bents. With no change in channel configuration, minor increases in water level may occur associated with loss of flow area.

Tassajara Creek (Bridge No. 33-0015) - The bridge will be widened by 27.5 feet. Piers are proposed to support the widened bridge section. The added piers will cause no change in water level or flow velocity. The flow velocity through the bridge is 9.5 feet per section for Bridge No. 33-0015R and 8.4 feet per second for Bridge No. 33-0015L. The channel through the Project reach is concrete lined and there is no potential for scour. Results of the hydraulic analyses are presented in Tables 1a through 1c in Section 11. The 100-year water level at the upstream face of the bridges is elevation 350.8 compared with a proposed soffit elevation of elevation 353.0. The clearance between the soffit elevation and the 100-year water level is 2.2 feet. The 50-year water level at the upstream face of the bridges is elevation 349.7. The clearance between the soffit elevation and the 50-year water level is 3.3 feet.

There are several bridges upstream of the I-580 bridge across Tassajara Creek that would block large floating debris. The frontage road bridge is less than 20 feet upstream. The channel is concrete-lined between bridges. The existing freeboard is adequate at this location.

Arroyo las Positas (Bridge No. 33-0085) - The bridge will be widened by 50.8 feet. Piers are proposed to support the widened bridge section. The added piers will cause an increase in water level of 0.02 feet. There will be a corresponding small decrease in flow velocity associated with the small decrease in flow depth. Flow velocity through the bridge is about 7.8 feet per second. The channel through the Project reach is rock lined. There is potential for about 6 feet of scour during a 100-year storm event. Scour is based on 1-inch average stone size in channel to a depth of 6 feet. Results of the hydraulic analyses are presented in Tables 2a through 2c.

The 100-year water level at the upstream face of the bridge is elevation 485.3 compared with a proposed soffit elevation of elevation 488.6 on the east abutment and 489.9 on the west abutment. At the downstream face of bridge, the 100-year water level is elevation 483.4 versus a soffit at 485.1 on the west abutment and 486.4 on the east abutment. The clearance between the lowest soffit elevation and the 100-year water level is 3.3 feet at the upstream face and 1.7 feet at the downstream face of bridge. During the 50-year event, the water levels are about 1.2 feet lower, and the corresponding freeboard to the soffit increases to 4.5 feet at the upstream face and 2.9 feet at the downstream face.

There are two large drainage areas that join about 0.3 miles upstream of Bridge No. 33-0085, Arroyo las Positas and Arroyo Seco. Bridge No 33-0085 is about 0.8 miles downstream of the Arroyo Seco box culvert (Bridge No 33-0066). There are few trees between the culvert and the bridge. The Bridge is 1.2 miles downstream of the Springtown Boulevard Bridge across Arroyo las Positas. There are few trees between the bridges. Based on field conditions, the available freeboard appears reasonable.

The analyses for the 100-year water level show that the water level is about 1.3 feet higher than the flow depth reported by FEMA upstream of the bridge and 0.7 feet higher downstream of the bridge. Because FEMA analyses are not available, it is not possible to verify the difference. It appears that the FEMA elevations are based on normal depth calculations. In this area, flow is supercritical depth. For these analyses, the HEC-RAS is set to default to critical depth for conditions when flow is super critical. As a result, water levels are higher than those reported by FEMA. The flow is contained below the top of bank through the Project limits.

Arroyo las Positas (Bridge No. 33-0203) - The bridge will be widened by about 50.8 feet. Piers are proposed to support the widened bridge section. The added piers will cause an increase in water level of 0.02 feet. There will be a corresponding small decrease in flow velocity associated with the small decrease in flow depth. Flow velocity through the bridge is about 7.3 feet per second. The channel through the Project reach is rock lined. There is potential for about 6 feet of scour during a 100-year storm event. Scour is based on 1-inch average stone size in channel to a depth of 6 feet. Stone size and depth to be confirmed during the next phase of design. Results of the hydraulic analyses are presented in Tables 3a through 3c.

The 100-year water level at the upstream face of the bridge is elevation 431.8 compared with a proposed soffit elevation of 439.8 on the west abutment and 442.6 on the east abutment. At the downstream face of bridge, the 100-year water

level is elevation 431.6 versus a proposed soffit elevation of 438.9 on the west abutment and 441.8 on the east abutment. The clearance between the lowest soffit elevation and the 100-year water level is 8.0 feet at the upstream face and 7.3 feet at the downstream face of bridge. During the 50-year event, the water levels are about 1.8 feet lower, and the corresponding freeboard to the soffit increases to 9.8 feet at the upstream face and 9.1 feet at the downstream face.

Bridge No 33-0203 is about 0.8 miles downstream of a bridge across North Livermore Avenue. There are few trees in this 0.8 mile reach. The available freeboard is reasonable for the bridge.

Arroyo Seco (Bridge No. 33-0066) - The culvert will be lengthened by 20.8 feet. The lengthening does not change the water level at the Project limits. An apron is proposed at the discharge to protect the channel bottom from scour associated with the transition from box culvert to open channel. A 10-foot wide strip of rock slope protection is proposed at the transition from the concrete apron to vegetated channel to avoid scour associated with a rapid change in creek roughness. It appears that there is a 2 foot drop at the downstream end of the existing concrete apron. The culvert would be installed to discharge at the existing channel flow line with no drop. That installed reach of culvert would be steep, and energy dissipation will be required. Results of the hydraulic analyses are presented in Tables 4a through 4c.

The proposed 100-year water level at the upstream face of the culvert is elevation 509.6 compared with the existing soffit elevation of elevation 511.5. At the downstream face of bridge, the 100-year water level is elevation 508.9 versus a soffit at 508.1. The clearance between the soffit elevation and the 100-year water level is 1.9 feet at the upstream face and the culvert flows under pressure at the culvert outlet. During the 50-year event, the water levels are 507.7 and 507.0 at the upstream and downstream headwalls and the corresponding freeboard to the soffit is 3.8 feet at the upstream face and 1.1 feet at the downstream face. The pressurized flow at the downstream soffit during a 100-year event results from a high tailwater downstream of the Project limits that cannot be lowered by channel changes within Caltrans right-of-way.

There is an existing culvert about 0.3 miles upstream of Bridge No. 33-0066 across First Street that would trap large debris from the upstream drainage area. The area between First Street and the bridge contains some large trees. Arroyo Seco between First Street and I-580 appears to be stable.

7.2 The Impacts on Natural and Beneficial Floodplain Values

Natural and beneficial floodplain values include, but are not limited to, fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agricultural, aquaculture, forestry, natural moderation of floods, water quality maintenance, and groundwater recharge. There is approximately 0.242 acre of wetlands within the vicinity of the project area. Natural communities, habitat for special-status species, and impacts to wetlands and other waters of the U.S. are described in Section 2.3, Biological Environment of the Project EIR.

This Project will have a minor impact on floodplain values in areas where bridges are being widened or culverts extended. The general channel shape and area will be maintained, and there will be no change in the channel bottom.

7.3 Support of Incompatible Floodplain Development

Although portions of the project would be located on the fringe of a floodplain, the project would not support incompatible floodplain development. While the widening of the bridges would occur in the 100-year floodplain, they would not provide access to the existing floodplain nor create the potential for incompatible development within the floodplain. The proposed freeway improvements would maintain local and regional access to existing land uses and would not create new access to developed or undeveloped lands.

7.4 Measures to Minimize Floodplain Actions Associated with the Project

In the existing condition, 100-year flood flows are contained within the creek channels for the creeks adjacent to the proposed widened bridge structures, passing through reinforced concrete box culverts and the soffits of the bridges. It is not anticipated that the Project would cause base flood elevations to overtop the freeway or other roadways such that there would be an interruption in traffic or the ability of emergency service providers to respond to an emergency, or that would result in an impact on the natural and beneficial floodplain values (support of biological species).

7.5 Practicability of Alternatives to any Significant Encroachments

As defined by FHWA, risk shall mean the consequences associated with the probability of flooding attributable to an encroachment. It shall include the potential for property loss and hazard to life during the service life of the bridge and roadway. The increase in risk associated with the Project is negligible. The Project crosses 13 creeks. Any alternative that does not cross these creeks is impractical.

7.6 Practicability of Alternatives to any Longitudinal Encroachments

As defined by FHWA, a longitudinal encroachment is an action within the limits of the base floodplain that is longitudinal to the normal direction of the floodplain.

The Project is longitudinal to the floodplain in several locations, including adjacent to Dublin Creek, Zone 7 Line 3G3, and several locations along Arroyo las Positas. The proposed edge of pavement is above the 100-year water level and, with one minor exception immediately east of the Santa Rita Road / Camino Tassajara Interchange, does not encroach on the floodplain. Minor encroachments may be necessary where fill may be needed to support embankments necessary for roadway widening. Encroachment will be evaluated for specific locations using detailed topography.

In most cases, fill within the floodplain would occur where flow backs up behind existing culverts, and the fill would not encroach on the flow capacity of the floodplain. Based on preliminary review, encroachment will be minor and will not significantly impact 100-year water levels. In the event that fill encroaches on the floodplain, retaining walls may be necessary to reduce impacts to the floodplain.

7.7 Measures to Restore and Preserve the Natural and Beneficial Floodplain Values Impacted by the Action

There are no identified significant impacts to natural and beneficial floodplain values. No non-routine measures would be required. Any environmental impacts would be the result of construction activities and would be mitigated with standard measures, such as revegetation, Best Management Practices (BMPs), and Project permit requirements.

8. SUMMARY

The Project will include widening to the outside of the existing outside travelway. The Project consists of widening three bridges, one at Tassajara Creek and two on Arroyo las Positas, and extending one culvert at Arroyo Seco. There will be minor increases in water level of less than 0.05 feet associated with the proposed bridge widening and the placement of piers consistent with existing bents within Arroyo las Positas and Tassajara Creeks. Proposed differences in water levels are summarized in Table 5.

FEMA 100-year water levels adjacent to proposed roadway improvements are presented on Figures 3 through 12. The FEMA 100-year water levels adjacent to the roadway are less than the proposed edge of pavement with three exceptions.

In the vicinity of Station 175+00, in the vicinity of San Ramon Road/ Foothill Road, the 100-year water level is up to 0.6 feet above the proposed edge of pavement. See Figure 3.

In the vicinity of Station 260+00, in the vicinity of Dougherty Road, the 100-year water level is up to 1.9 feet above the proposed edge of pavement. See Figure 4.

In the vicinity of Station 380+00, east of Santa Rita Road / Camino Tassajara, the 100-year water level is up to 2.9 feet above the proposed edge of pavement. See Figures 5 and 6.

No changes are proposed to the roadway median grades. The 100-year water levels do not overtop the median of the roadway flowing from north to south and no special median requirements are necessary to provide for overtopping. Berms and or barriers can limit the roadway inundation during the FEMA 100-year event. Near Fallon Road, there is a section where runoff overtops the roadway from south to north. The westbound project has provided an overflow path in this area.

9. REFERENCES

Publications on drainage design manuals, design charts and Caltrans "as-built" plans used in the design of the Project Drainage System include the following:

1. Highway Design Manual, Fifth Edition, (1995), State of California, Department of Transportation, Sacramento, California.

2. Standard Plans, (1999), State of California, Department of Transportation, Sacramento, California.

3. Standard Specifications, (1999), State of California, Department of Transportation, Sacramento, California.

4. USGS stream gauge locations:
water.usgs.gov/waterwatch/stateinfos/streamgages/streamgages_06.kmz

5. I-580 Eastbound HOV Lane Widening Project, Location Hydraulic Study Report, Page 7 (2006) WRECO, Walnut Creek, California.

6. Draft Hydrologic Procedures and Design Discharges (for Zone 7 ACFC&WCD) Schaaf & Wheeler, December 3, 1997 and Updated Design Discharges (for Zone 7 ACFC&WCD), Schaaf & Wheeler, June 2000 as presented in *I-580 Eastbound HOV Lane Widening Project, Location Hydraulic Study Report*, Page 7 (2006) WRECO, Walnut Creek, California

7. Flood Insurance Study, Alameda County, California, Community Number 060001 Federal Emergency Management Agency, Revised February 9, 2000

8. Flood Insurance Rate Map, Alameda County, California, Community Number 060001, Federal Emergency Management Agency, Revised

9. Flood Insurance Study, City of Dublin, California, Community Number 060705 Federal Emergency Management Agency, Revised September 17, 1997

9. Letter of Map Revision, Tassajara Creek, City of Dublin, California, Community Number 060705, Federal Emergency Management Agency, Revised September 17, 1997

10. Flood Insurance Rate Map, Alameda County, California, Community Number 060705, Federal Emergency Management Agency, Revised September 17, 1997

11. Flood Insurance Study, City of Livermore, California, Community Number 060008 Federal Emergency Management Agency, Revised September 17, 1997

12. Flood Insurance Rate Map, City of Livermore, California, Community Number 060008, Federal Emergency Management Agency, Revised September 17, 1997

10. FIGURES

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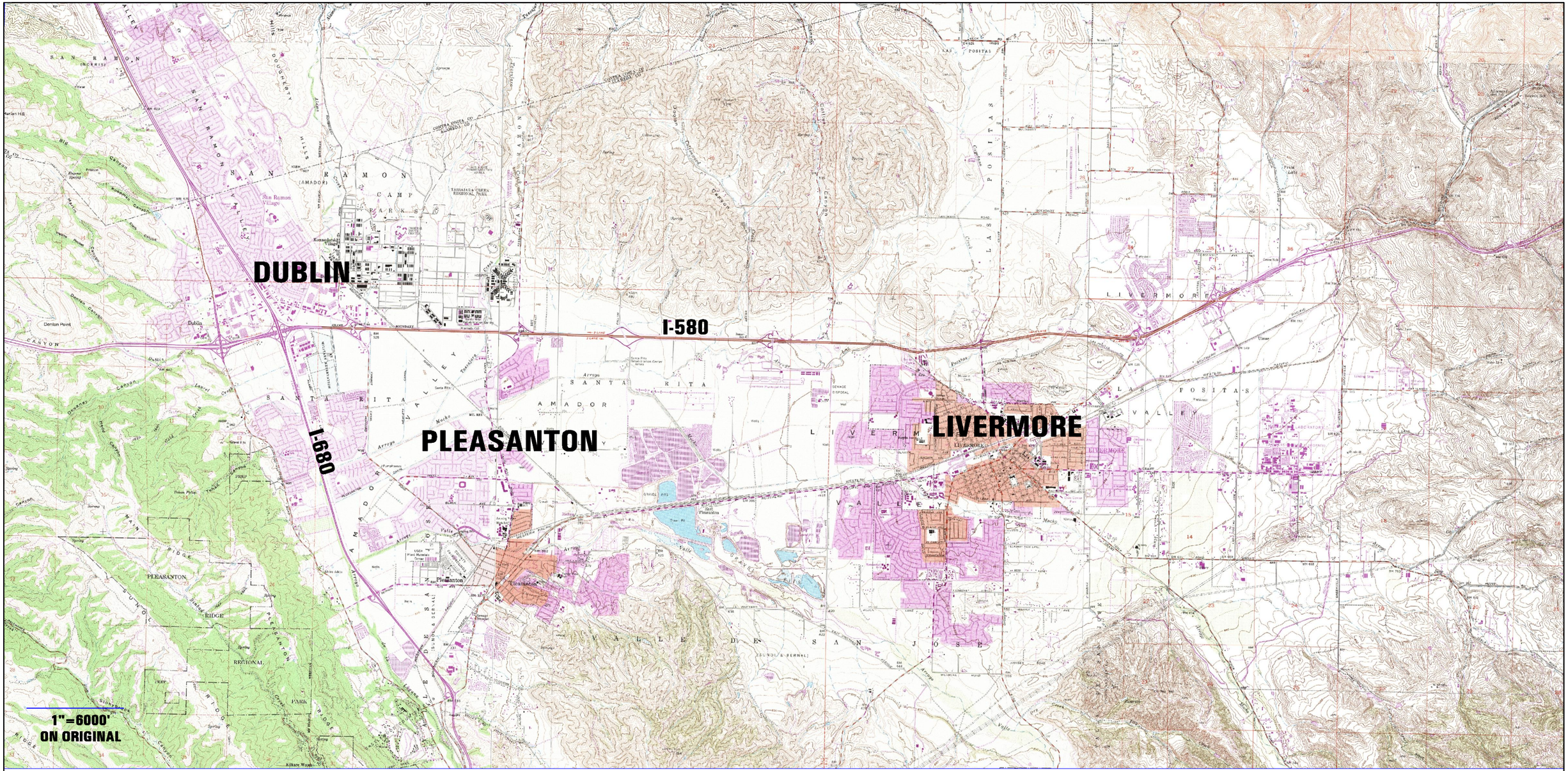

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PLOTTED BY: rebe

JOB NO:	20077061
DATE:	JULY 14, 2008
BY:	D.R.
REV:	ED BOSCACCI

NORTH

FIGURE 1

580 WESTBOUND HOV IMPROVEMENTS

VICINITY MAP

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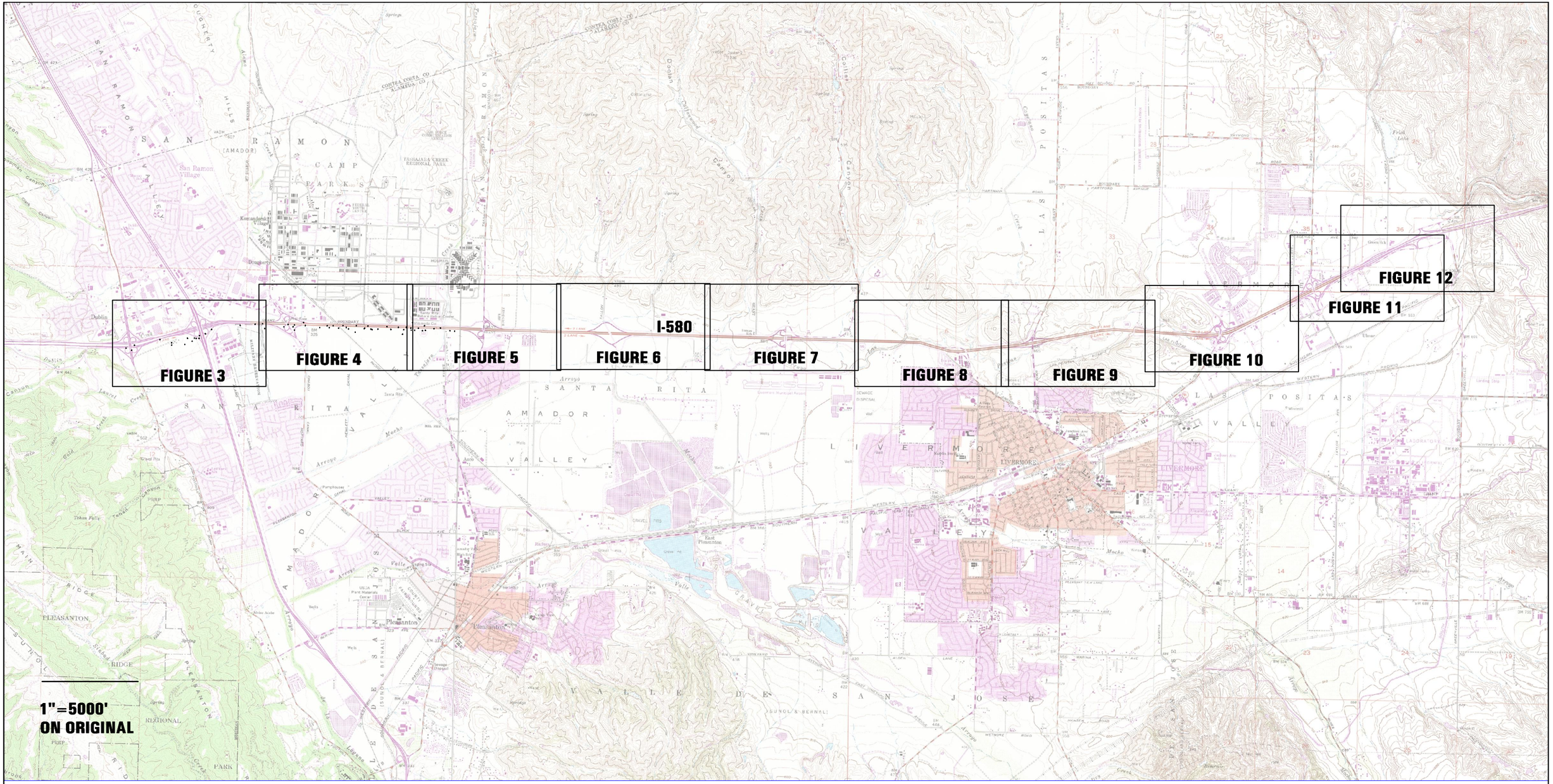

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JOB NO: 20077061
DATE: JULY 14, 2008
BY: D.R.
REV: ED BOSCACCI

FIGURE 2

580 WESTBOUND HOV IMPROVEMENTS

KEY MAP

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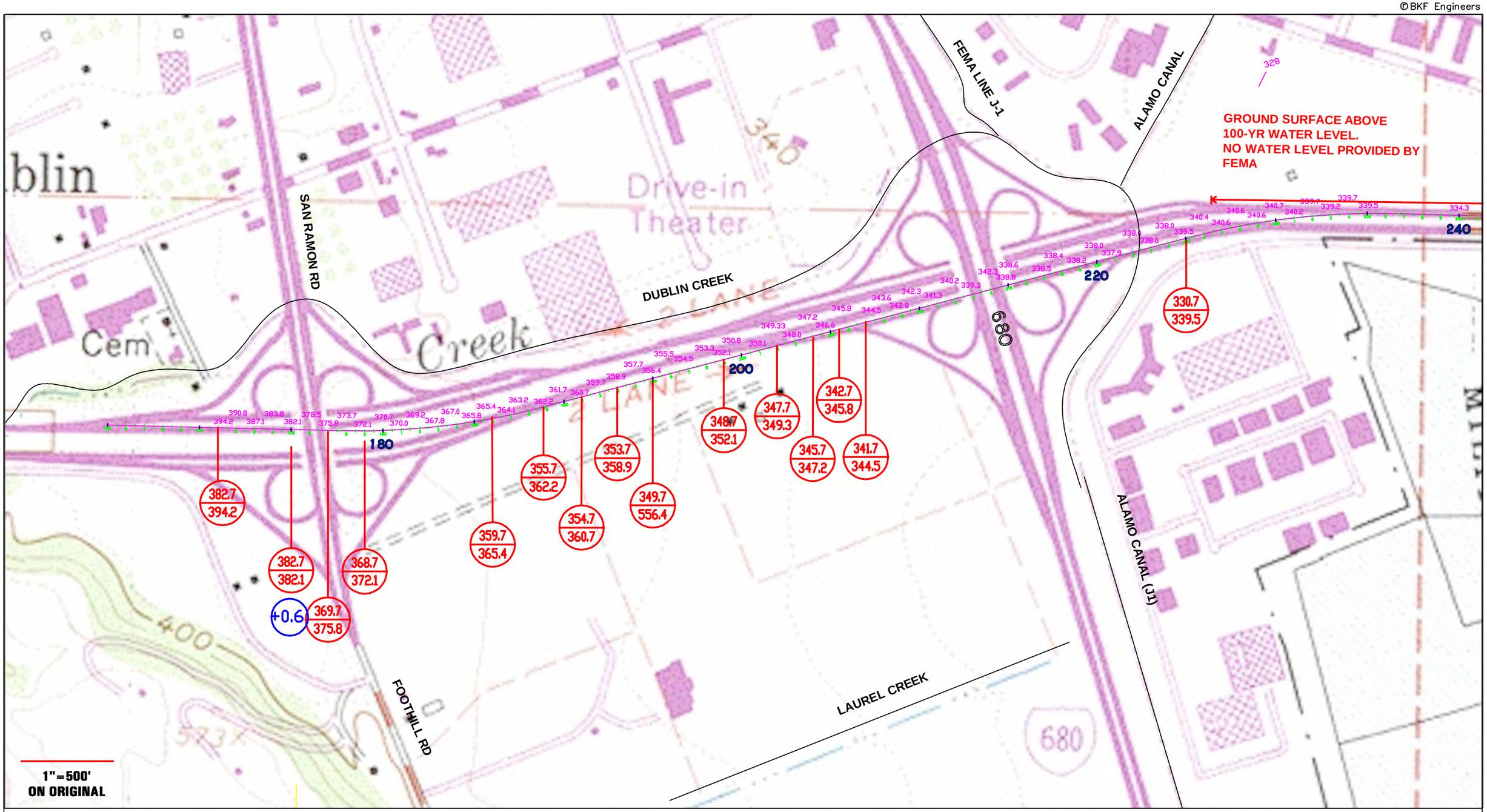

357 — 100 YEAR WATER LEVEL ON SOUTH SIDE OF I-580

347 / 556.4 — 100 YEAR WATER LEVEL ON NORTH SIDE / PROPOSED EDGE OF PAVEMENT

+0.6 — 100 YEAR WATER LEVEL ABOVE PROPOSED EDGE OF PAVEMENT (FEET)

JOB NO: 20077061
DATE: FEBRUARY 2009
BY: ED BOSCACCI

NORTH

FIGURE 3

580 WESTBOUND HOV IMPROVEMENTS

WATER LEVEL & EDGE OF PAVEMENT

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PLOT DATE: 07-09-09
PLOTTED BY: lyon

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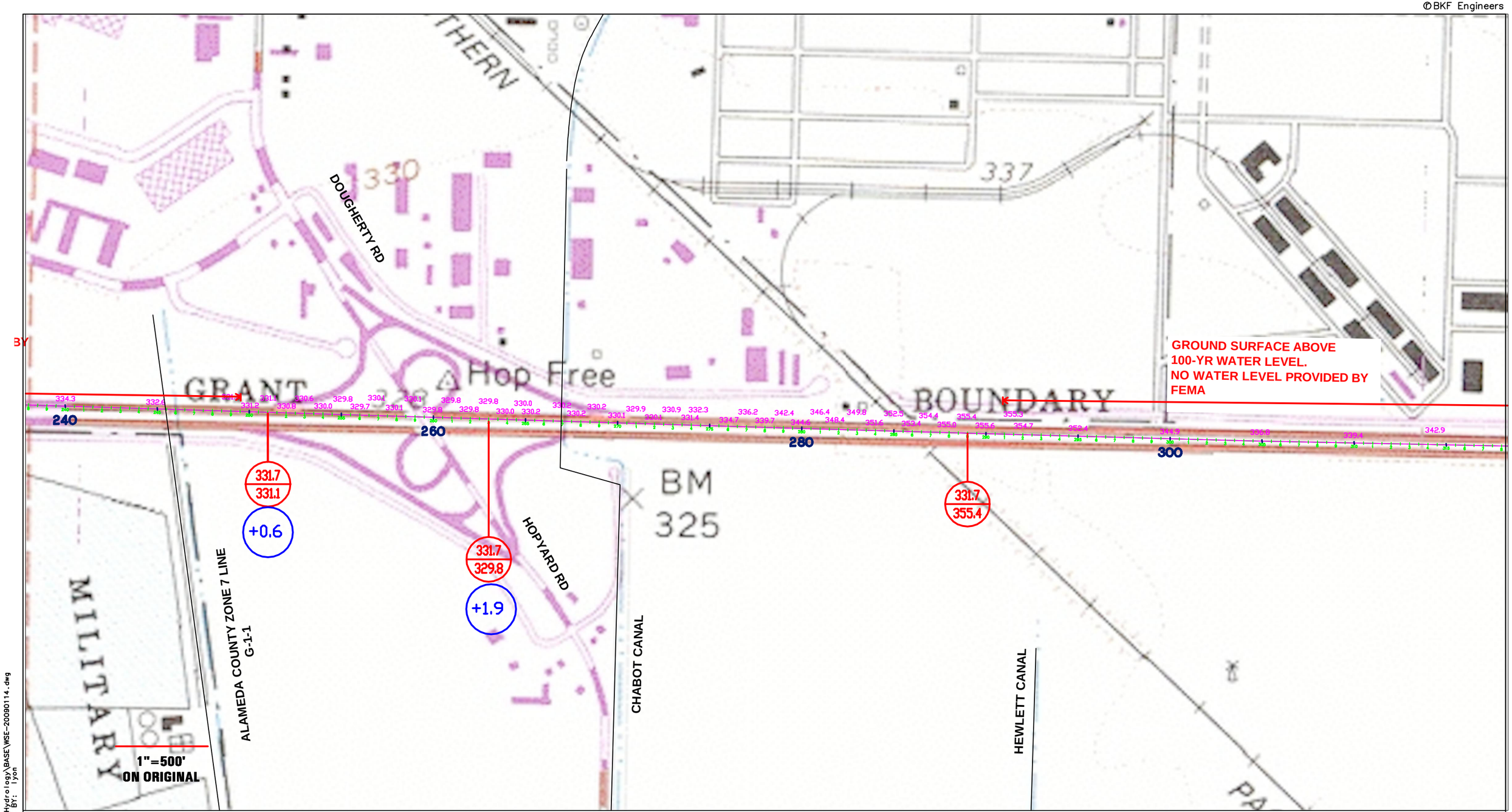

357 — 100 YEAR WATER LEVEL ON SOUTH SIDE OF I-580

347 / 556.4 — 100 YEAR WATER LEVEL ON NORTH SIDE / PROPOSED EDGE OF PAVEMENT

+0.6 — 100 YEAR WATER LEVEL ABOVE PROPOSED EDGE OF PAVEMENT (FEET)

NORTH

JOB NO: 20077061
DATE: FEBRUARY 2009
BY: ED BOSCACCI

FIGURE 4

580 WESTBOUND HOV IMPROVEMENTS

WATER LEVEL & EDGE OF PAVEMENT

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PLOT DATE: 07-09-09 PLOTTED BY: lyon

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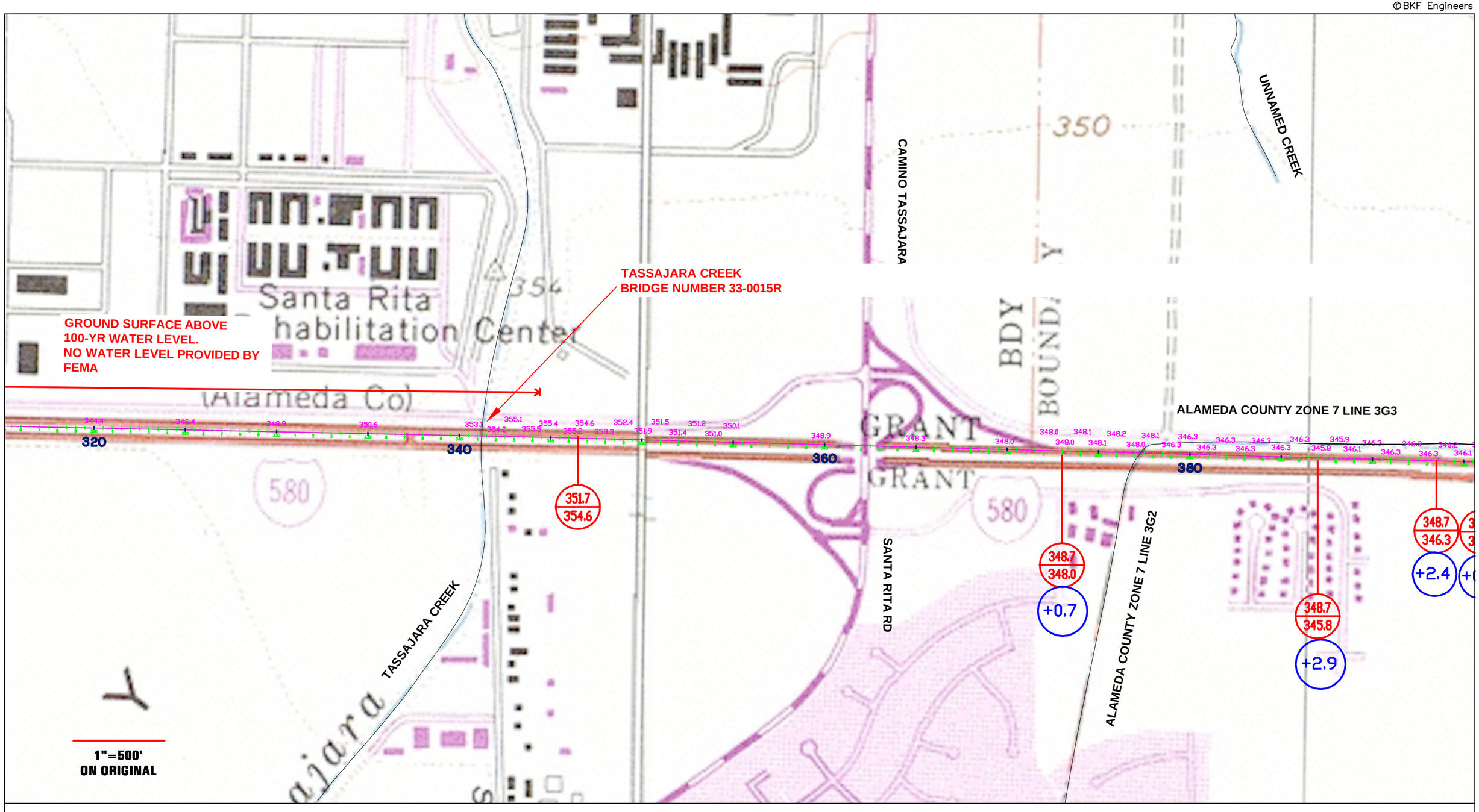

357 — 100 YEAR WATER LEVEL ON SOUTH SIDE OF I-580

347 / 556.4 — 100 YEAR WATER LEVEL ON NORTH SIDE PROPOSED EDGE OF PAVEMENT

+0.6 — 100 YEAR WATER LEVEL ABOVE PROPOSED EDGE OF PAVEMENT (FEET)

JOB NO: 20077061
DATE: FEBRUARY 2009
BY: ED BOSCACCI

NORTH

FIGURE 5

580 WESTBOUND HOV IMPROVEMENTS

WATER LEVEL & EDGE OF PAVEMENT

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ALAMEDA COUNTY
ZONE 7 LINE 3G3

FALLON

400

2 LANE

2 LANE

400 420 440 460

348.7 / 346.3 | 348.7 / 348.0 | +2.4 | +0.7

348.7 / 348.0 | +0.7

348.7 / 352.5

FALLON RD

357

363

364

366

1"=500'
ON ORIGINAL

ARROYO LAS POSITAS

Santa Rita
Rehabilitation Center
Annex

ARROYO LAS POSITAS

357 — 100 YEAR WATER LEVEL ON SOUTH SIDE OF I-580

+0.6 — 100 YEAR WATER LEVEL ABOVE PROPOSED EDGE OF PAVEMENT (FEET)

347 / 556.4 — 100 YEAR WATER LEVEL ON NORTH SIDE PROPOSED EDGE OF PAVEMENT

JOB NO: 20077061
DATE: FEBRUARY 2009
BY: ED BOSCACCI

NORTH

FIGURE 6

580 WESTBOUND HOV IMPROVEMENTS

WATER LEVEL & EDGE OF PAVEMENT

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PLOT DATE: 07-09-09
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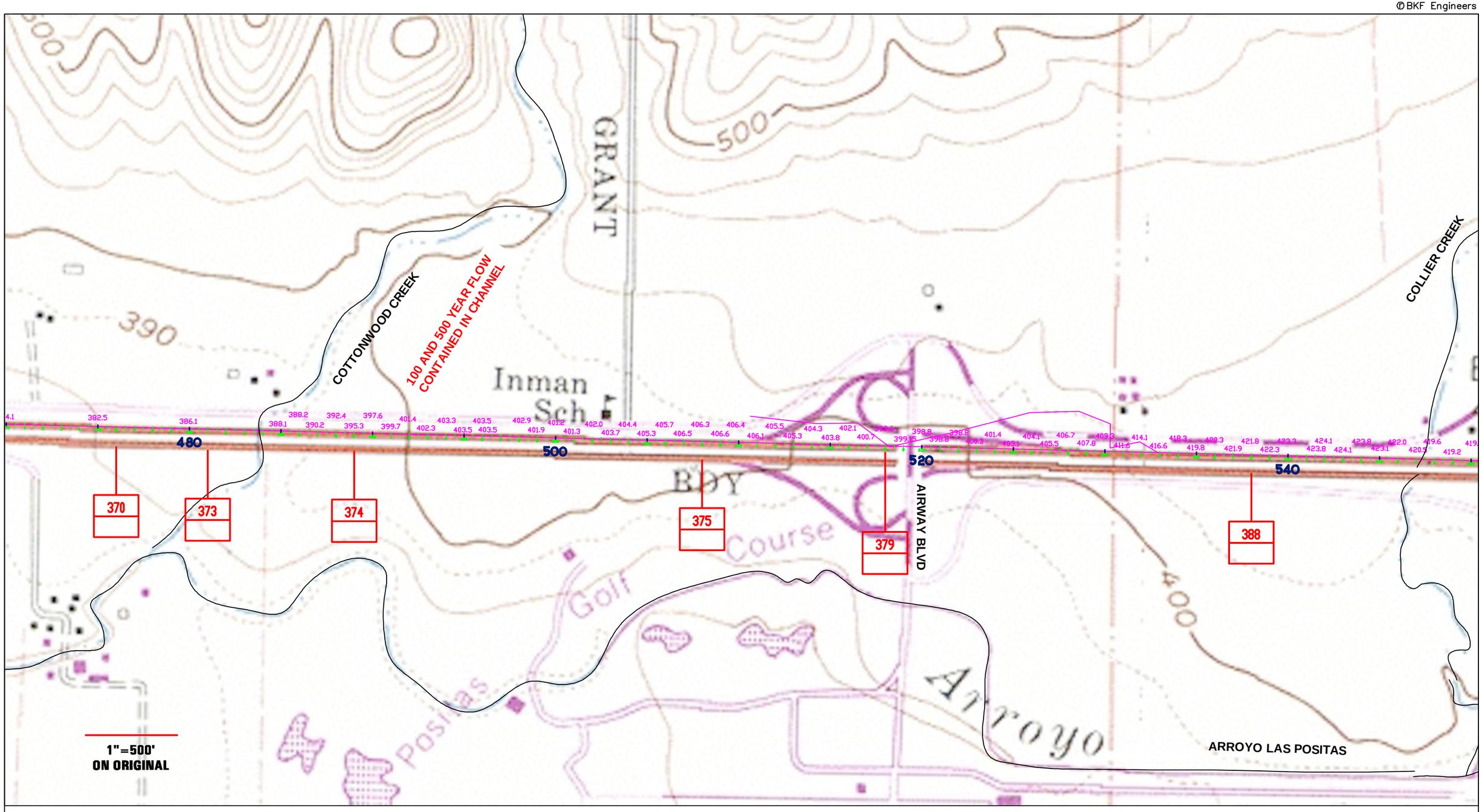

357 — 100 YEAR WATER LEVEL ON SOUTH SIDE OF I-580

347 / 556.4 — 100 YEAR WATER LEVEL ON NORTH SIDE / PROPOSED EDGE OF PAVEMENT

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DATE: FEBRUARY 2009
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FIGURE 7

580 WESTBOUND HOV IMPROVEMENTS

WATER LEVEL & EDGE OF PAVEMENT

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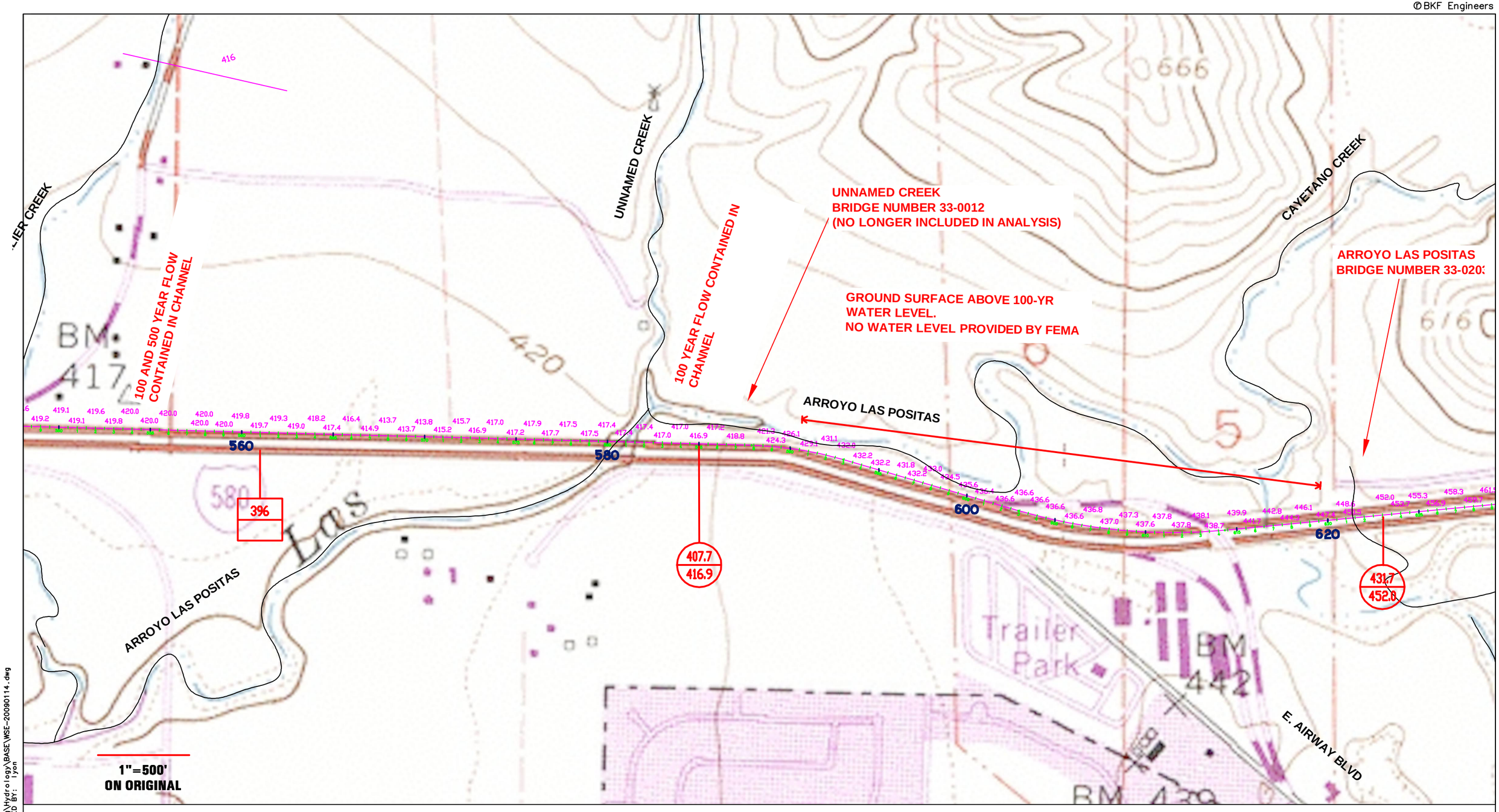

357 — 100 YEAR WATER LEVEL ON SOUTH SIDE OF I-580

347 / 556.4 — 100 YEAR WATER LEVEL ON NORTH SIDE / PROPOSED EDGE OF PAVEMENT

NORTH

JOB NO: 20077061
DATE: FEBRUARY 2009
BY: ED BOSCACCI

FIGURE 8

580 WESTBOUND HOV IMPROVEMENTS

WATER LEVEL & EDGE OF PAVEMENT

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PLOTTED BY: lyon

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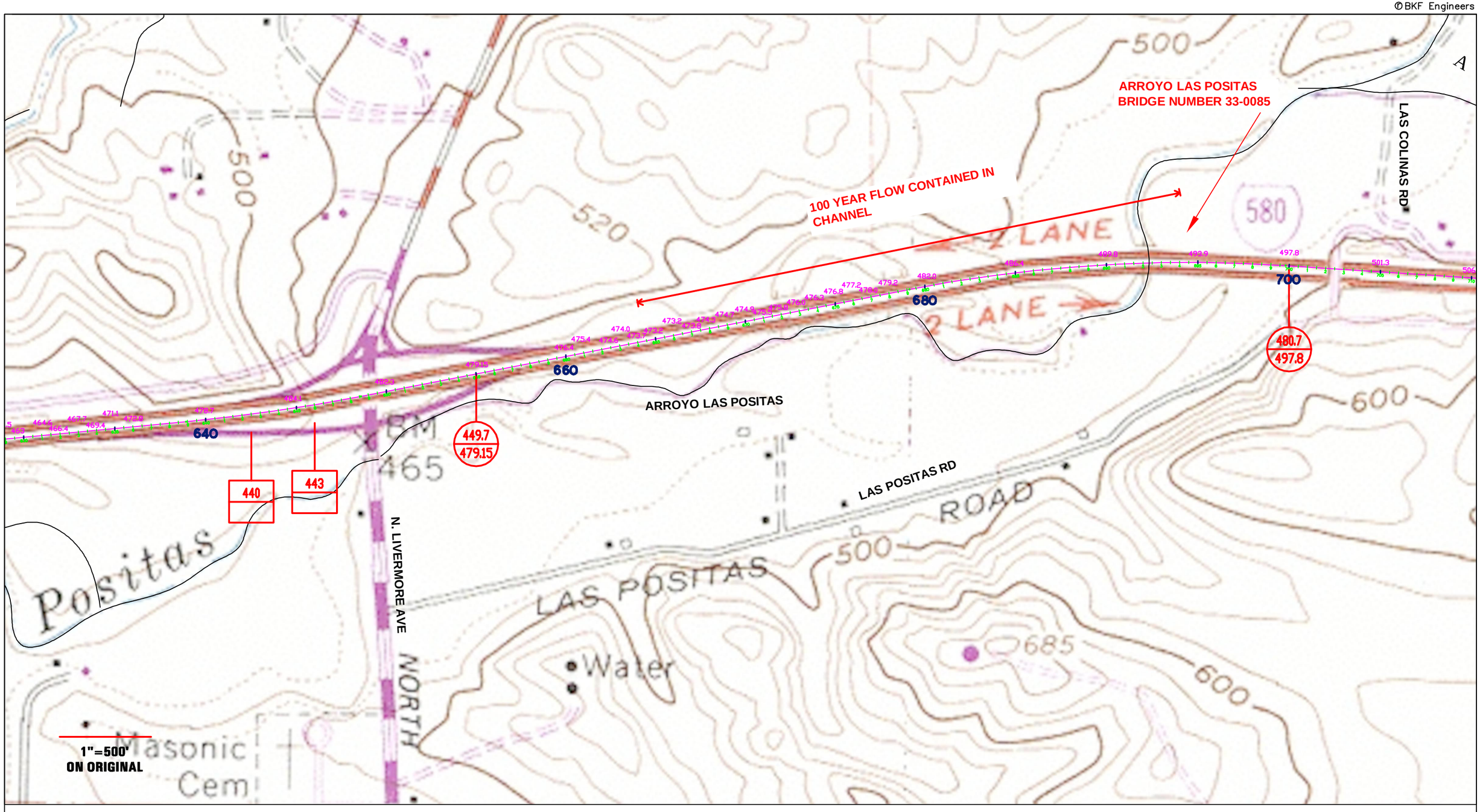

357 — 100 YEAR WATER LEVEL ON SOUTH SIDE OF I-580

347 / 556.4 — 100 YEAR WATER LEVEL ON NORTH SIDE PROPOSED EDGE OF PAVEMENT

JOB NO: 20077061
DATE: FEBRUARY 2009
BY: ED BOSCACCI

NORTH

FIGURE 9

580 WESTBOUND HOV IMPROVEMENTS

WATER LEVEL & EDGE OF PAVEMENT

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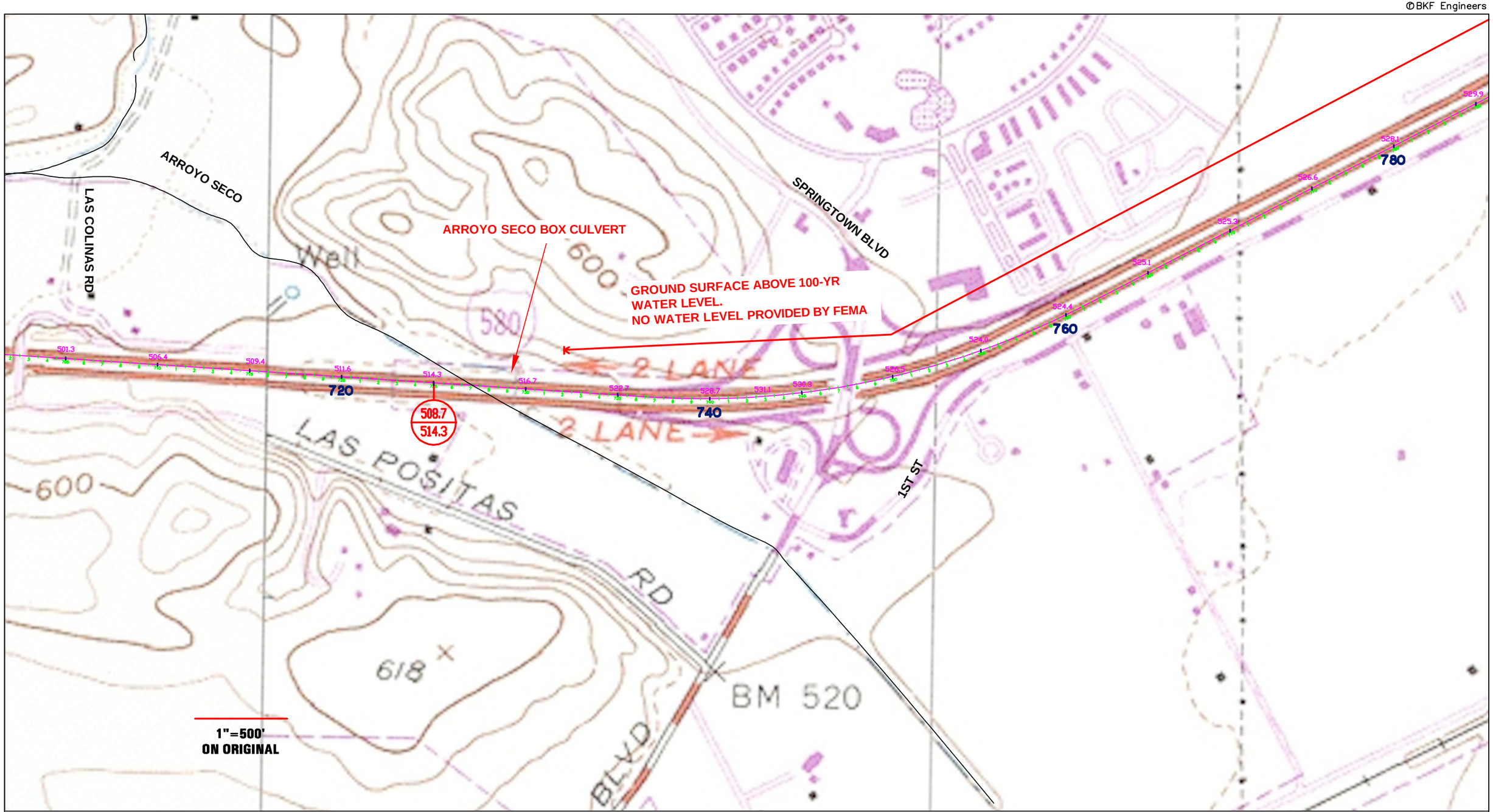

357 — 100 YEAR WATER LEVEL ON SOUTH SIDE OF I-580

347 / 556.4 — 100 YEAR WATER LEVEL ON NORTH SIDE; PROPOSED EDGE OF PAVEMENT

NORTH

JOB NO: 20077061
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FIGURE 10

580 WESTBOUND HOV IMPROVEMENTS

WATER LEVEL & EDGE OF PAVEMENT

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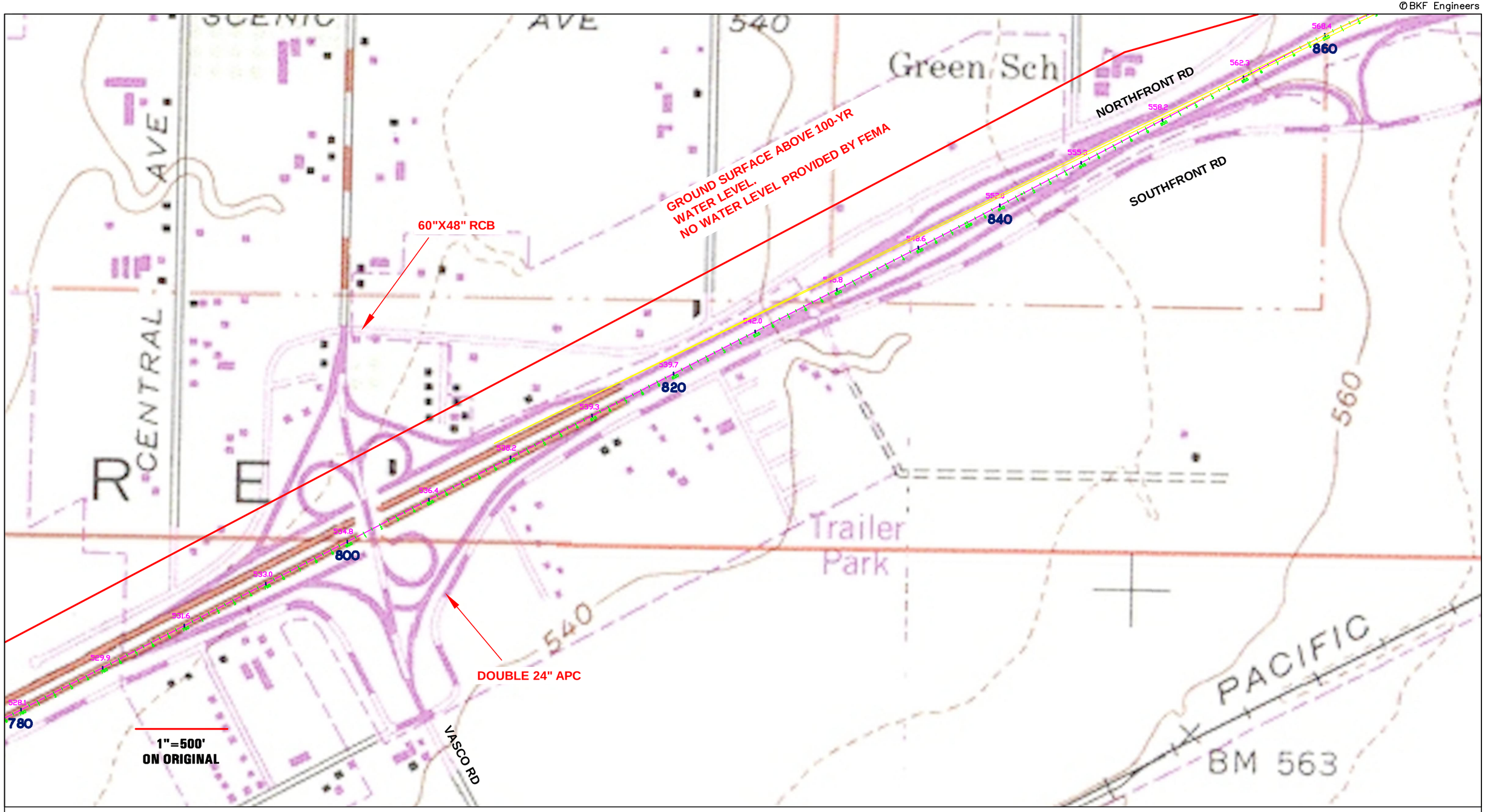

357 — 100 YEAR WATER LEVEL ON SOUTH SIDE OF I-580

347 / 556.4 — 100 YEAR WATER LEVEL ON NORTH SIDE / PROPOSED EDGE OF PAVEMENT

NORTH

JOB NO: 20077061
DATE: FEBRUARY 2009
BY: ED BOSCACCI

FIGURE 11

580 WESTBOUND HOV IMPROVEMENTS

WATER LEVEL & EDGE OF PAVEMENT

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PLOT DATE: 07-09-09 PLOTTED BY: lyon

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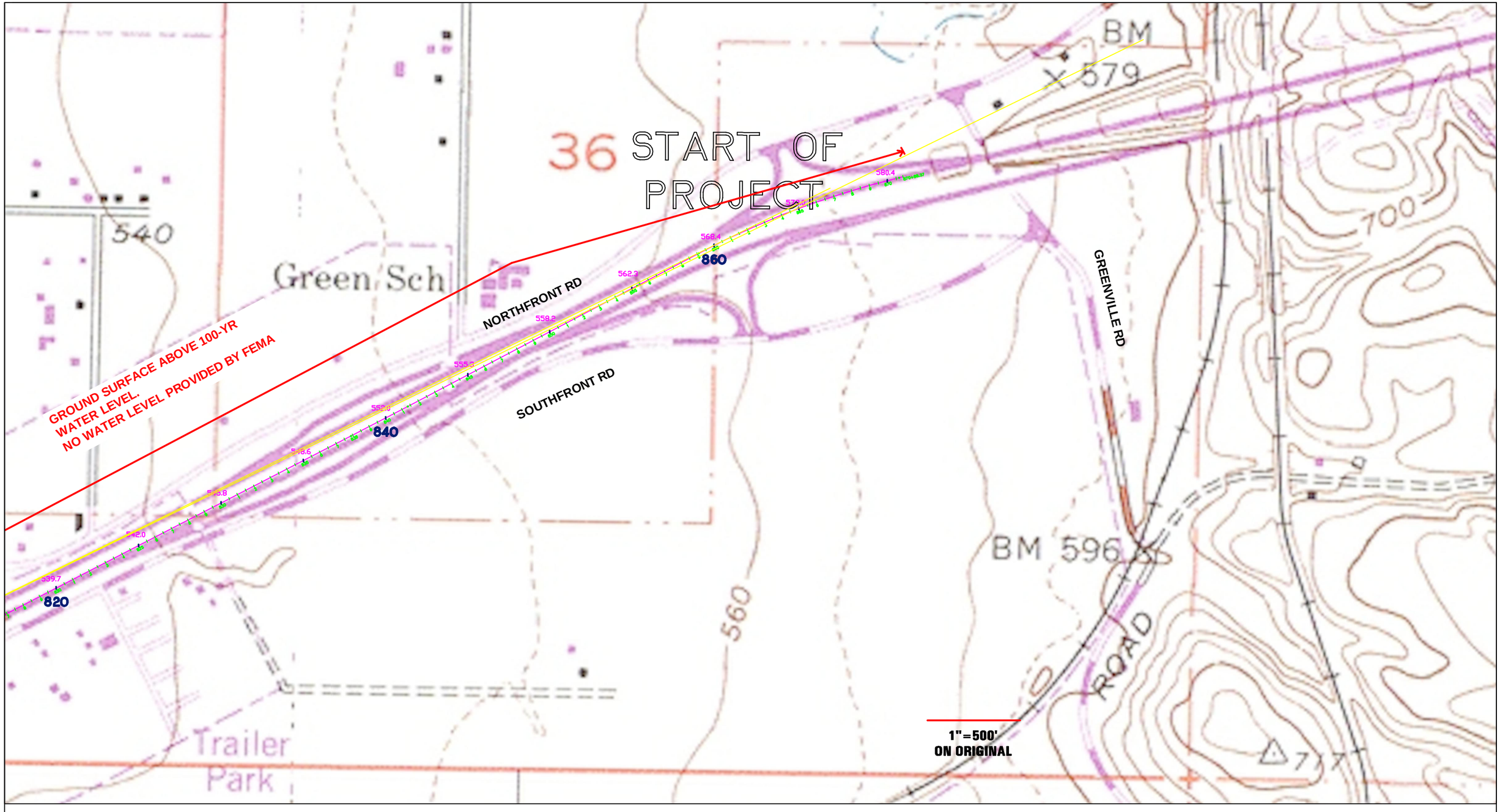

357 — 100 YEAR WATER LEVEL ON SOUTH SIDE OF I-580

347 / 556.4 — 100 YEAR WATER LEVEL ON NORTH SIDE / PROPOSED EDGE OF PAVEMENT

NORTH

JOB NO: 20077061
DATE: FEBRUARY 2009
BY: ED BOSCACCI

FIGURE 12

580 WESTBOUND HOV IMPROVEMENTS

WATER LEVEL & EDGE OF PAVEMENT

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PLOT DATE: 07-09-09
PLOTTED BY: lyon

11. TABLES

TABLE 1a

I-580 Westbound HOV Improvements
Bridge Hydraulics Report

TASSAJARA CREEK, Bridge Number 33-0015

Existing Conditions, Hydraulic Conditions from HEC-RAS Model, 100-Year Flow, 1988 NAVD

River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Depth (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Channel
7135.7	4300	340.1	350.79	10.7		351.86	0.0007	8.3	519.7	76.1	.56
7123.8	4300	339.8	350.83	11.0		351.83	0.0006	8.0	536.5	77.0	.54
7122.8	4300	339.8	350.83	11.0	347.9	351.83	0.0006	8.0	536.5	77.0	.54
7082	Bridge										
7041.2	4300	338.8	350.48	11.7		351.37	0.0005	7.6	567.4	77.6	.49
7040.2	4300	338.8	350.48	11.7		351.37	0.0005	7.6	567.4	77.6	.49
7018.5	4300	338.5	350.53	12.0		351.34	0.0004	7.2	595.2	78.6	.46
7017.5	4300	338.5	350.53	12.0	346.6	351.34	0.0004	7.2	595.1	78.6	.46
6970.45	Bridge										
6923.4	4300	337.4	350.29	12.9		351.01	0.0004	6.8	631.6	78.3	.42
6922.4	4300	337.4	350.30	12.9		351.01	0.0004	6.7	637.7	82.5	.43
6907	4300	337.3	350.18	12.9		350.99	0.0004	7.2	596.8	73.7	.45

Proposed Conditions, Hydraulic Conditions from HEC-RAS Model, 100--year Flow, 1988 NAVD

River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Depth (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Channel
7135.7	4300	340.1	350.79	10.7		351.85	0.0007	8.3	519.3	76.1	.56
7129.6	4300	339.8	350.83	11.0		351.83	0.0006	8.0	536.4	77.0	.54
7128.6	4300	339.8	350.83	11.0	347.9	351.83	0.0006	8.0	536.4	77.0	.54
7082	Bridge							9.5			
7029.2	4300	338.8	350.48	11.7		351.37	0.0005	7.6	567.3	77.6	.49
7028.2	4300	338.8	350.48	11.7		351.37	0.0005	7.6	567.3	77.6	.49
7018.5	4300	338.5	350.53	12.0		351.34	0.0004	7.2	595.6	78.6	.46
7017.5	4300	338.5	350.53	12.0	346.6	351.34	0.0004	7.2	595.5	78.6	.46
6970.45	Bridge							8.4			
6913.7	4300	337.4	350.30	12.9		351.00	0.0004	6.8	637.5	82.5	.43
6912.7	4300	337.4	350.28	12.9		351.00	0.0004	6.8	630.7	78.2	.42
6907	4300	337.3	350.18	12.9		350.99	0.0004	7.2	596.8	73.7	.45

Notes
100-year flow rate, Q = 4,300 cfs (FEMA Flood Records).
100-year water surface elevation at Station 6907, WSE NGVD = 347.5 (FEMA Flood Records), NAVD = 350.2

TABLE 1b

I-580 Westbound HOV Improvements
Bridge Hydraulics Report

TASSAJARA CREEK, Bridge Number 33-0015

Existing Conditions, Hydraulic Conditions from HEC-RAS Model, 50-Year Flow, 1988 NAVD

River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Depth (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Channel
7135.7	3370	340.1	349.64	9.5		350.57	0.0007	7.7	435.6	70.1	.55
7123.8	3370	339.8	349.68	9.9		350.55	0.0006	7.5	451.1	71.5	.52
7122.8	3370	339.8	349.68	9.9	346.9	350.55	0.0006	7.5	451.0	71.5	.52
7082	Bridge										
7041.2	3370	338.8	349.40	10.6		350.14	0.0005	6.9	486.9	71.5	.47
7040.2	3370	338.8	349.40	10.6		350.14	0.0005	6.9	486.9	71.5	.47
7018.5	3370	338.5	349.44	10.9		350.11	0.0004	6.6	512.8	73.4	.44
7017.5	3370	338.5	349.44	10.9	345.6	350.11	0.0004	6.6	512.7	73.4	.44
6970.45	Bridge										
6923.4	3370	337.4	349.26	11.8		349.84	0.0003	6.1	553.7	73.5	.39
6922.4	3370	337.4	349.27	11.8		349.84	0.0003	6.1	555.9	76.0	.40
6907	3370	337.3	349.18	11.9		349.83	0.0004	6.4	524.6	70.3	.41

Proposed Conditions, Hydraulic Conditions from HEC-RAS Model, 50--year Flow, 1988 NAVD

River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Depth (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Channel
7135.7	3370	340.1	349.64	9.5		350.57	0.0007	7.8	435.0	70.1	.55
7129.6	3370	339.8	349.68	9.9		350.55	0.0006	7.5	450.7	71.5	.52
7128.6	3370	339.8	349.68	9.9	346.9	350.55	0.0006	7.5	450.6	71.5	.52
7082	Bridge							9.5			
7029.2	3370	338.8	349.39	10.6		350.14	0.0005	6.9	486.5	71.5	.47
7028.2	3370	338.8	349.39	10.6		350.14	0.0005	6.9	486.5	71.5	.47
7018.5	3370	338.5	349.44	10.9		350.11	0.0004	6.6	512.8	73.4	.44
7017.5	3370	338.5	349.44	10.9	345.6	350.11	0.0004	6.6	512.8	73.4	.44
6970.45	Bridge							8.4			
6913.7	3370	337.4	349.26	11.8		349.83	0.0003	6.1	555.6	76.0	.40
6912.7	3370	337.4	349.26	11.8		349.83	0.0003	6.1	553.2	73.5	.39
6907	3370	337.3	349.18	11.9		349.83	0.0004	6.4	524.6	70.3	.41

Notes
50-year flow rate, Q = 3,370 cfs (FEMA Flood Records).
50-year water surface elevation at Station 6907, WSE NGVD = 346.5 (FEMA Flood Records), NAVD = 350.2

TABLE 1c

I-580 Westbound HOV Improvements
Bridge Hydraulics Report

HYDROLOGIC SUMMARY FOR TASSAJARA CREEK, Bridge Number 33-0015

Drainage Area: 27.1 square miles

	Design Flood	Base Flood	Overtopping Flood Flood of Record
Frequency	50-Year	100-Year	N/A
Discharge	3,370	4,300	
Water Surface Elevation at Bridge	349.7	350.8	

Floodplain data are based upon information available when the plans were prepared and are shown to meet Federal requirements. The accuracy of said information is not warranted by the State and interested or affected parties should make their own investigation.

TABLE 2a

I-580 Westbound HOV Improvements
Bridge Hydraulics Report

ARROYO LAS POSITAS, Bridge Number 33-0085

Existing Conditions, Hydraulic Conditions from HEC-RAS Model, 100-Year

River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Depth (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Channel
424.2	4600	475.0	484.96	9.96		486.16	0.0025	9.5	610.5	87.5	.54
396.9	4600	475.0	484.95	9.95		486.05	0.0035	11.2	634.5	91.5	.63
374	4600	475.0	485.16	10.16	481.54	485.90	0.0016	7.6	768.2	107.2	.43
295	Bridge										
216	4600	473.0	483.50	10.50		484.16	0.0016	6.7	751.7	113.3	.42
164.2	4600	473.0	481.41	8.41	481.41	483.83	0.0089	15.4	451.0	91.0	.97

Proposed Conditions, Hydraulic Conditions from HEC-RAS Model, 100-Year

River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Depth (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Channel
424.2	4600	475.0	485.00	10.00		486.18	0.0024	9.5	614.0	87.7	.54
400.4	4600	475.0	485.01	10.01		486.08	0.0034	11.2	639.5	91.7	.63
399.4	4600	475.0	485.26	10.26	481.54	485.97	0.0016	7.5	778.6	107.2	.43
295	Bridge							7.8			
190.6	4600	473.0	483.40	10.40		484.09	0.0017	6.8	741.1	112.8	.43
164.2	4600	473.0	481.41	8.41	481.41	483.83	0.0089	15.4	451.0	91.0	.97

Notes
100-year flow rate, Q = 4,600 cfs (FEMA Flood Records).
100-year water surface elevation, WSE = 478 NGVD FEMA Flood Records - 480.7 NAVD
100-Year water level set at Critical Depth by Model.

TABLE 2b

I-580 Westbound HOV Improvements
Bridge Hydraulics Report

ARROYO LAS POSITAS, Bridge Number 33-0085

Existing Conditions, Hydraulic Conditions from HEC-RAS Model, 50-Year

River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Depth (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Channel
424.2	3500	475.0	483.82	8.82		484.78	0.0023	8.4	513.8	82.0	.51
396.9	3500	475.0	483.78	8.78		484.68	0.0033	10.1	530.6	85.9	.61
374	3500	475.0	483.95	8.95	480.69	484.55	0.0016	6.8	641.1	101.9	.42
295	Bridge										
216	3500	473.0	482.37	9.37	0.00	482.91	0.0016	6.0	626.9	107.9	.41
164.2	3500	473.0	480.70	7.70	480.55	482.62	0.0078	13.6	387.8	87.8	.90

Proposed Conditions, Hydraulic Conditions from HEC-RAS Model, 50-Year

River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Depth (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Channel
424.2	3500	475.0	483.86	8.86		484.80	0.0023	8.4	516.5	82.2	.51
400.4	3500	475.0	483.83	8.83		484.71	0.0033	10.0	534.6	86.2	.60
399.4	3500	475.0	484.04	9.04	480.69	484.62	0.0015	6.7	650.1	102.4	.41
295	Bridge							0.0			
190.6	3500	473.0	482.28	9.28		482.84	0.0017	6.1	617.4	107.5	.42
164.2	3500	473.0	480.70	7.70	480.55	482.62	0.0078	13.6	387.8	87.8	.90

Notes
50-year flow rate, Q = 3,500 cfs (FEMA Flood Records).
50-Year water level is 476.5 + 2.7 = 479.2 NAVD 88. Water level is set at Critical Depth to elevation 480.5.

TABLE 2c

I-580 Westbound HOV Improvements
Bridge Hydraulics Report

HYDROLOGIC SUMMARY FOR ARROYO LAS POSITAS, Bridge Number 33-0085

Drainage Area: 51.1 square miles

	Design Flood	Base Flood	Overtopping Flood Flood of Record
Frequency	50-Year	100-Year	N/A
Discharge	3,500	4,600	
Water Surface Elevation at Bridge	484.0	485.3	

Floodplain data are based upon information available when the plans were prepared and are shown to meet Federal requirements. The accuracy of said information is not warranted by the State and interested or affected parties should make their own investigation.

TABLE 3a

I-580 Westbound HOV Improvements
Bridge Hydraulics Report

ARROYO LAS POSITAS, Bridge Number 33-0203

Existing Conditions, Hydraulic Conditions from HEC-RAS Model, 100-Year

River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Depth (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Channel
375.5	5000	422.0	431.68	9.68		432.33	0.0020	8.4	900.8	216.0	.48
340.1	5000	422.0	431.74	9.74		432.22	0.0012	6.7	924.8	135.3	.38
318.8	5000	422.0	431.75	9.75	428.05	432.19	0.0011	6.3	969.4	137.1	.36
239.9	Bridge										
161.2	5000	421.0	431.57	10.57		431.92	0.0008	5.5	1078.0	133.9	.30
127.8	5000	421.0	431.58	10.58		431.88	0.0007	5.2	1172.1	151.3	.28
100	5000	421.0	431.70	10.70	426.40	431.81	0.0003	3.6	1986.5	326.8	.19

Proposed Conditions, Hydraulic Conditions from HEC-RAS Model, 100-Year

River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Depth (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Channel
375.5	5000	422.0	431.70	9.70		432.34	0.0019	8.3	903.9	216.1	.48
344.2	5000	422.0	431.80	9.80	428.05	432.23	0.0011	6.2	976.2	137.2	.35
239.9	Bridge							0.0			
135.8	5000	421.0	431.55	10.55		431.90	0.0008	5.6	1075.4	133.9	.30
127.8	5000	421.0	431.58	10.58		431.88	0.0007	5.2	1172.1	151.3	.28
100	5000	421.0	431.70	10.70	426.40	431.81	0.0003	3.6	1986.5	326.8	.19

Notes
100-year flow rate, Q = 5,000 cfs (FEMA Flood Records).
100-year water surface elevation, WSE = 429 (FEMA Flood Records) + 2.7 = 431.7 NAVD/

TABLE 3b

I-580 Westbound HOV Improvements
Bridge Hydraulics Report

ARROYO LAS POSITAS, Bridge Number 33-0203

Existing Conditions, Hydraulic Conditions from HEC-RAS Model, 50-Year

River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Depth (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Channel
375.5	4200	422.0	429.59	7.59		430.91	0.0050	11.3	503.1	124.0	.73
340.1	4200	422.0	429.98	7.98		430.59	0.0021	7.6	691.9	128.5	.48
318.8	4200	422.0	429.98	7.98	427.66	430.53	0.0018	7.1	731.7	131.8	.45
239.9	Bridge										
161.2	4200	421.0	429.69	8.69		430.11	0.0012	6.2	826.9	132.7	.37
127.8	4200	421.0	429.69	8.69		430.06	0.0011	5.9	886.2	148.2	.36
100	4200	421.0	429.80	8.80	426.02	429.97	0.0007	4.7	1366.3	319.9	.28

Proposed Conditions, Hydraulic Conditions from HEC-RAS Model, 50-Year

River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Depth (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Channel
375.5	4200	422.0	429.59	7.59	0.00	0.00	0.0050	11.3	503.9	124.2	.73
344.2	4200	422.0	430.06	8.06	427.66	427.66	0.0017	7.0	742.1	132.1	.44
239.9	Bridge							0.0			
135.8	4200	421.0	429.66	8.66	0.00	0.00	0.0013	6.2	822.4	132.5	.37
127.8	4200	421.0	429.69	8.69	0.00	0.00	0.0011	5.9	886.2	148.2	.36
100	4200	421.0	429.80	8.80	426.02	426.02	0.0007	4.7	1366.3	319.9	.28

Notes
50-year flow rate, Q = 4,200 cfs (FEMA Flood Records).
50-year water surface elevation, WSE = 427.1 (FEMA Flood Records) + 2.7 = 429.8 NAVD/

TABLE 3c

I-580 Westbound HOV Improvements
Bridge Hydraulics Report

HYDROLOGIC SUMMARY FOR ARROYO LAS POSITAS, Bridge Number 33-0203

Drainage Area: 53.9 square miles

	Design Flood	Base Flood	Overtopping Flood Flood of Record
Frequency	50-Year	100-Year	N/A
Discharge	4,200	5,000	
Water Surface Elevation at Bridge	430.0	431.8	

Floodplain data are based upon information available when the plans were prepared and are shown to meet Federal requirements. The accuracy of said information is not warranted by the State and interested or affected parties should make their own investigation.

TABLE 4a

I-580 Westbound HOV Improvements
Bridge Hydraulics Report
ARROYO SECO, Bridge Number 33-0066

Existing Conditions, Hydraulic Conditions from HEC-RAS Model, 100-Year, NAVD

River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Depth (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Channel
678	2250	503.0	512.06	9.06		512.71	0.0018	7.5	369.8	59.6	.44
628	2250	503.0	509.90	6.90	509.90	512.36	0.0083	13.7	194.8	41.0	.93
618	2250	503.0	509.35	6.35	509.35	511.89	0.0064	11.4	181.9	36.6	.80
587	2250	501.5	509.94	8.44	506.35	510.72	0.0026	7.1	317.3	38.3	.43
196.9	Culvert										
193.2	2250	495.8	509.30	13.50		509.60	0.0007	4.4	510.0	38.6	.21
163.2	2250	497.0	509.17	12.17		509.57	0.0005	4.8	445.9	50.7	.25
100	2250	497.0	508.70	11.70	504.60	509.48	0.0017	8.7	398.7	53.7	.45

Proposed Conditions, Hydraulic Conditions from HEC-RAS Model, 100-Year, NAVD

River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Depth (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Channel
678	2250	503.0	512.06	9.06		512.71	0.0018	7.5	369.8	59.6	.44
628	2250	503.0	509.90	6.90	509.90	512.36	0.0083	13.7	194.8	41.0	.93
618	2250	503.0	509.35	6.35	509.35	511.89	0.0064	11.4	181.9	36.6	.80
587	2250	501.5	509.58	8.08	506.33	510.44	0.0030	7.4	303.7	38.2	.46
196.9	Culvert							8.5			
172.4	2250	498.1	508.92	10.82		509.36	0.0012	5.3	421.8	39.0	.29
142.8	2250	495.0	508.93	13.93		509.33	0.0002	3.7	469.7	55.0	.17
100	2250	497.0	508.70	11.70	504.20	509.29	0.0012	7.4	398.7	53.7	.38

Notes
100-year flow rate, Q = 2,250 cfs (FEMA Flood Records).
100-year water surface elevation, WSE = 506 (FEMA Flood Records) + 2.7 = 508.7 NAVD.

TABLE 4b

I-580 Westbound HOV Improvements
Bridge Hydraulics Report
ARROYO SECO, Bridge Number 33-0066

Existing Conditions, Hydraulic Conditions from HEC-RAS Model, 50-Year, NAVD

River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Depth (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Channel
678	1700	503.0	510.84	7.84		511.40	0.0018	6.9	300.1	55.2	.44
628	1700	503.0	508.89	5.89	508.89	511.07	0.0089	12.7	155.1	37.3	.93
618	1700	503.0	508.34	5.34	508.34	510.57	0.0074	10.8	146.4	34.2	.83
587	1700	501.5	507.80	6.30	505.52	508.61	0.0036	7.2	235.9	37.9	.51
196.9	Culvert										
193.2	1700	495.8	507.38	11.58		507.61	0.0006	3.9	436.1	38.2	.20
163.2	1700	497.0	507.21	10.21		507.58	0.0006	4.7	350.8	46.4	.27
100	1700	497.0	506.70	9.70	503.53	507.47	0.0020	8.4	298.2	47.0	.48

Proposed Conditions, Hydraulic Conditions from HEC-RAS Model, 50-Year, NAVD

River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Depth (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Channel
678	1700	503.0	510.84	7.84		511.40	0.0018	6.9	300.1	55.2	.44
628	1700	503.0	508.89	5.89	508.89	511.07	0.0089	12.7	155.1	37.3	.93
618	1700	503.0	508.34	5.34	508.34	510.57	0.0074	10.8	146.4	34.2	.83
587	1700	501.5	507.72	6.22	505.51	508.55	0.0038	7.3	232.9	37.9	.52
196.9	Culvert							8.5			
172.4	1700	498.1	506.98	8.88		507.36	0.0012	4.9	346.4	39.0	.29
142.8	1700	495.0	506.97	11.97		507.34	0.0003	3.6	368.2	48.0	.18
100	1700	497.0	506.70	9.70	503.24	507.30	0.0015	7.3	298.2	47.0	.42

Notes
50-year flow rate, Q = 2,250 cfs (FEMA Flood Records).
50-year water surface elevation, WSE = 504 (FEMA Flood Records) + 2.7 = 506.7.

TABLE 4c

I-580 Westbound HOV Improvements
Bridge Hydraulics Report

HYDROLOGIC SUMMARY FOR ARROYO SECO, Bridge Number 33-0066

Drainage Area: 29.8 square miles

	Design Flood	Base Flood	Overtopping Flood Flood of Record
Frequency	50-Year	100-Year	N/A
Discharge	1,700	2,250	
Water Surface Elevation at Bridge	507.8	509.9	

Floodplain data are based upon information available when the plans were prepared and are shown to meet Federal requirements. The accuracy of said information is not warranted by the State and interested or affected parties should make their own investigation.

TABLE 5

I-580 Westbound HOV Improvements
Bridge Hydraulics Report

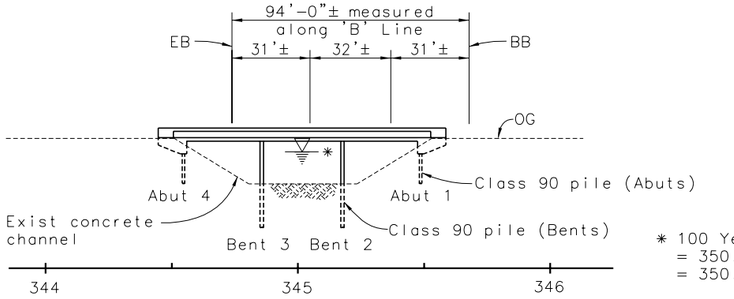
Summary of Results

River	Bridge Number	Existing River Station	Proposed River Station	description	100-Year Existing WSE	100-Year Proposed WSE	Proposed Increase in 100-Year WSE (feet)	FEMA 100-Year WSE	Proposed Increase in WSE from FEMA levels (feet)
Tassajara Creek	33-0015	7135.7	7135.7		350.79	350.79	0.00	350.79	0.00
		7122.8	7128.6	Upstream Face of Bridge 0015R	350.83	350.83	0.00	350.83	0.00
		7041.2	7029.2	Downstream face of Bridge 0015R	350.48	350.48	0.00	350.48	0.00
		7018.5	7018.5	Upstream Face of Bridge 0015L	350.53	350.53	0.00	350.53	0.00
		6923.4	6913.7	Downstream face of Bridge 0015L	350.29	350.30	0.01	350.29	0.01
Arroyo las Positas	33-0203								
		375.5	375.5	furthest upstream River Station	431.68	431.70	0.02	431.7	0.0
		340.1	340.1	River Station is 21.3 feet Upstream of existing bridge and 7.1 feet upstream of proposed bridge	431.74	431.76	0.02	No information	
		127.8	127.8	River Station is 33.4 feet downstream of existing bridge and 7.6 feet downstream of proposed bridge	431.58	431.58	0	No information	
		0	0	furthest downstream River Station	431.70	431.70	0	No information	
Arroyo Las Positas	33-0085								
		424.2	424.2	furthest upstream River Station	484.96	484.99	0.03	483.7	1.3
			399.4	River Station upstream of Proposed edge of bridge		485.24			
		396.9		River Station upstream of Existing edge of bridge	484.95				
		216		River Station Downstream of edge of bridge	483.50				
			202.6	River Station Downstream of proposed edge of bridge		483.45			
		164.2	164.2	furthest downstream River Station	481.41	481.41	0	480.7	0.7
Arroyo Seco	33-0066								
	Triple Box Culvert	678	678	Furthest Upstream River Station	512.06	512.06	0	No Information	
		587	587	River Station Upstream of Culvert	509.94	509.58	-0.36	No Information	
		193.2		First Station Downstream of Existing Culvert	509.30			No Information	
			172.4	First Station Downstream of Proposed Culvert		508.92			
		163.2		Edge of Existing Concrete Apron	509.17				
			142.8	Edge of Proposed Concrete Apron		508.93			
		100	100	Furthest Downstream River Station	508.70	508.70	0	508.7	0.0

WSE - Water Surface Elevation

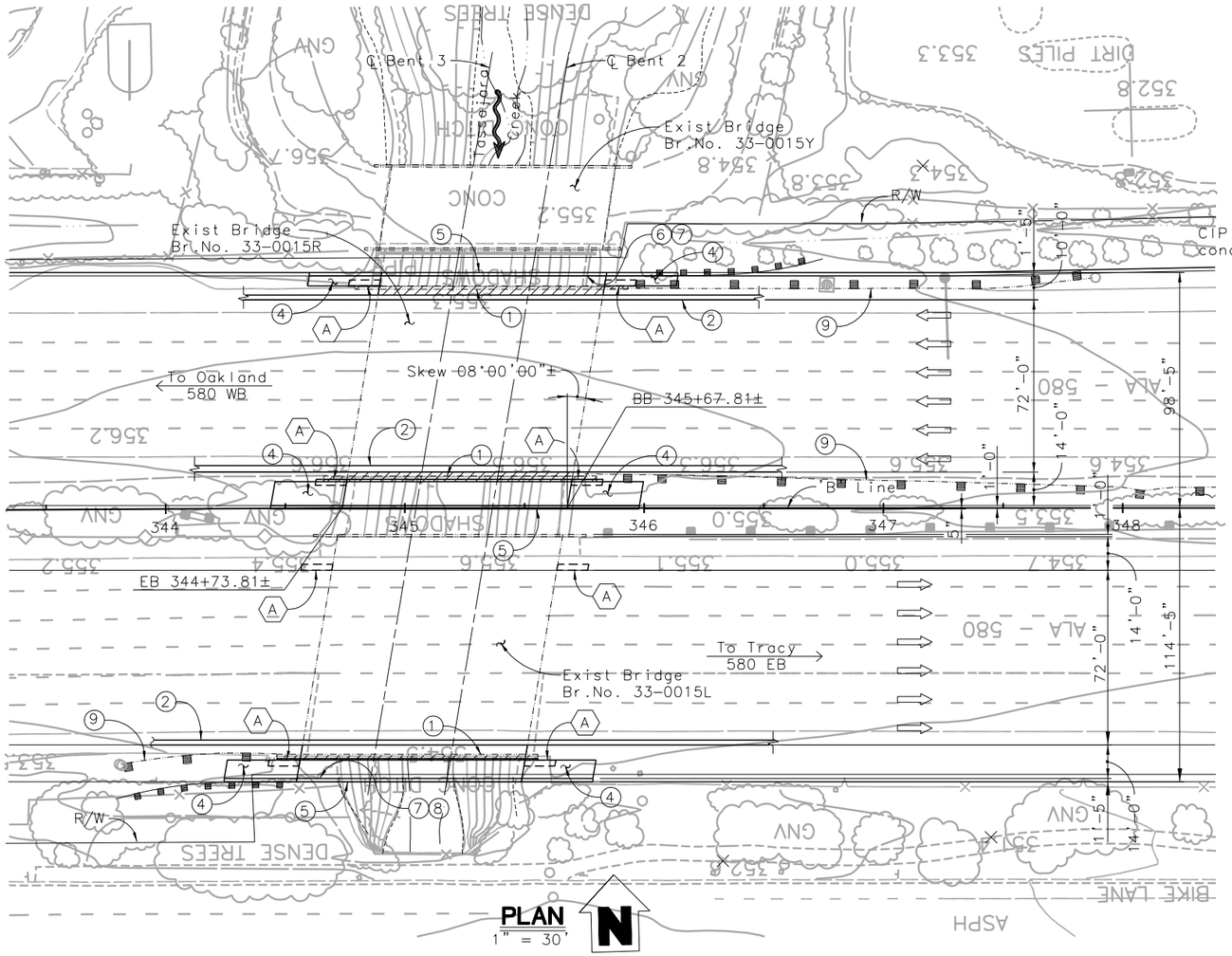
12. EXHIBITS

PREPARED FOR THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

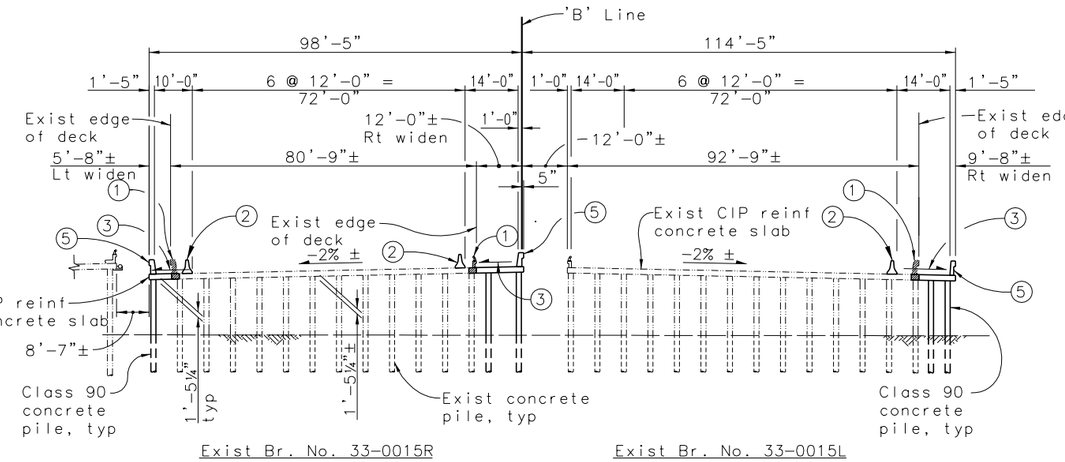


* 100 Year WSE
= 350.83 upstream right of bridge
= 350.30 downstream left of bridge

ELEVATION
1" = 30'



PLAN
1" = 30'



TYPICAL SECTION
1" = 20'

TASSAJARA CREEK BRIDGE		
Date of estimate	=	1/14/09
Str. Depth	=	1'-5¼"
Length	=	94'-0"
Width	=	27'-9"±
Area	=	2608
Cost/Sq. Ft. including 10% Mobilization & 25% Contingency	=	$228
Total Cost	=	$597,000

Legend:

1. Remove existing barrier railing and portion of deck slab and wingwalls
2. Temporary Railing (Type K)
3. Match existing cross slope
4. Structure Approach Type N(30D)
5. Concrete Barrier Type 732
6. Paint 'Bridge No. 33-0015R'
7. Paint 'Tassajara Creek'
8. Paint 'Bridge No. 33-0015L'
9. Existing metal beam guard rail to be removed

- Indicates exist structure
- Indicates new construction
- Indicates bridge removal (Portion)
- Indicates direction of traffic
- (A) Abutment retrofit (Soil keys and piles)

DIST	COUNTY	ROUTE	POST MILE TOTAL PROJECT
04	Ala	580	PM 18.32

ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY
1333 BROADWAY, SUITE 220
OAKLAND, CALIFORNIA 94612

BIGGS CARDOSA ASSOCIATES INC.
865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126

DESIGN OVERSIGHT

SIGN OFF DATE

Note:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material

DESIGNED BY ISL	DATE 4/01/09	INES LI PROJECT ENGINEER	ADVANCE PLANNING STUDY
DRAWN BY TEH	DATE 4/01/09		TASSAJARA CREEK BRIDGE (WIDEN)
CHECKED BY	DATE		BRIDGE NO. 33-0015L/R / CU 04
APPROVED	DATE		SCALE: AS NOTED / EA 290820

ADVANCE PLANNING STUDY SHEET (ENGLISH) (REV. 2/25/05)

FILE => $REQUEST

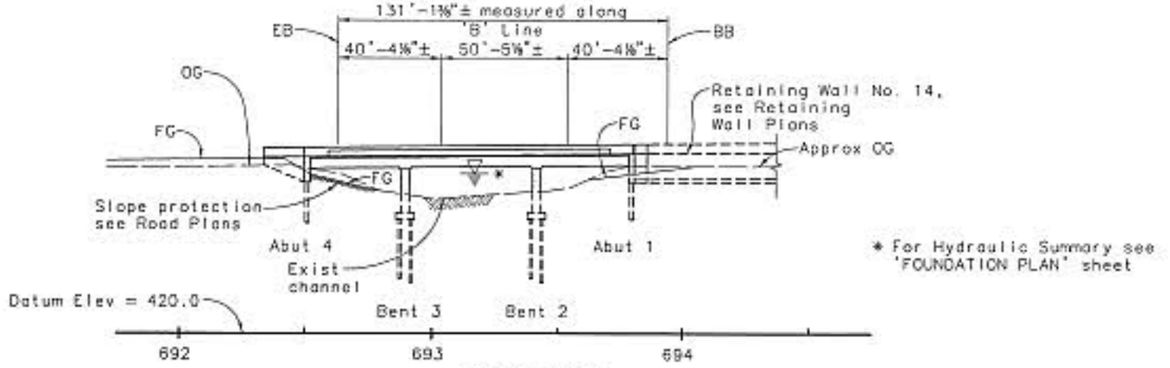
2007236 (2007236_33-0015R_APS_S1)

TIME PLOTTED => $TIME

DATE PLOTTED => $DATE

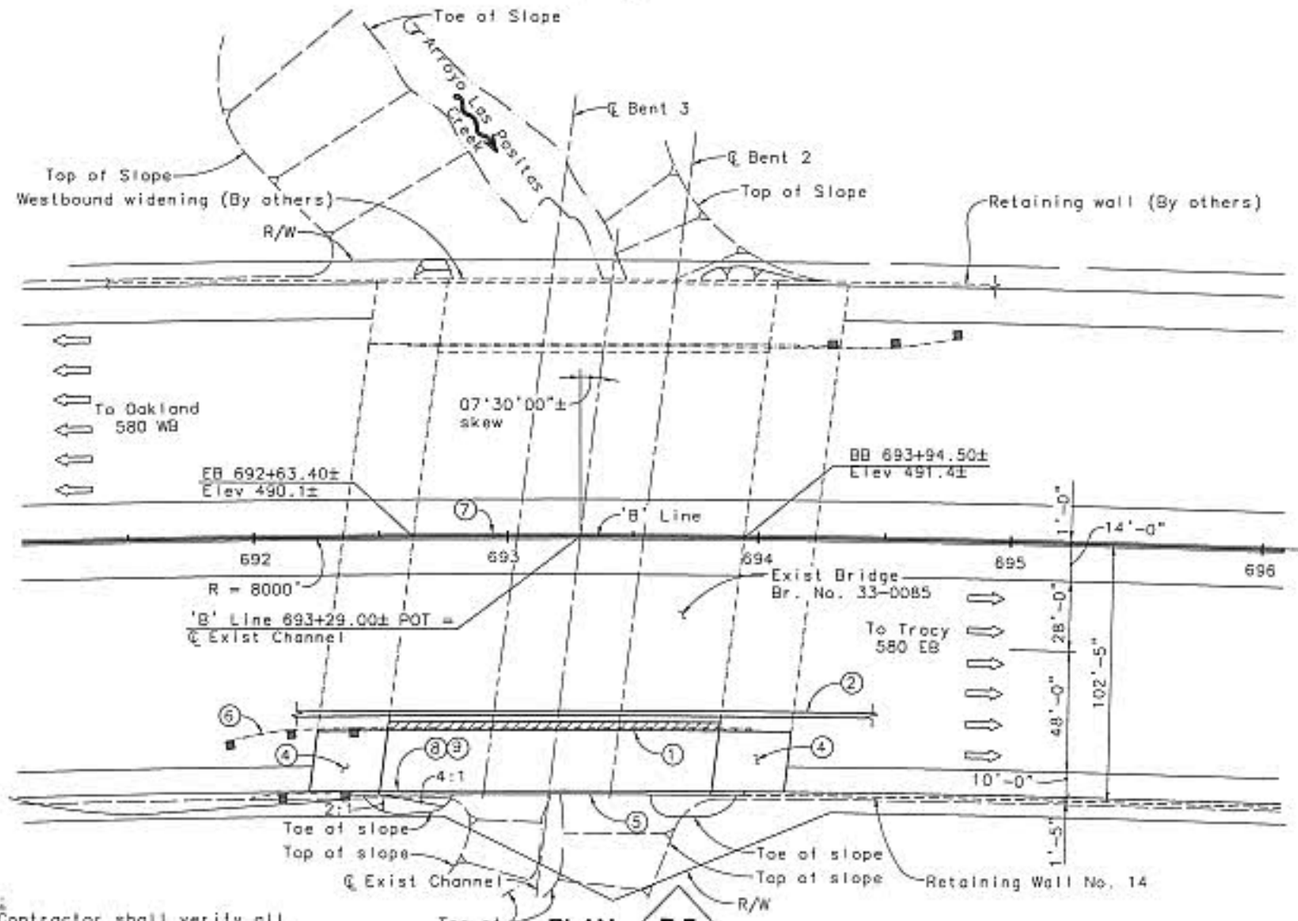
USERNAME => $USER

FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE



* For Hydraulic Summary see 'FOUNDATION PLAN' sheet

ELEVATION
1" = 30'



PLAN
1" = 30'

Note:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material

Legend:
- Indicates exist structure
- Indicates new construction
- Indicates bridge removal (Portion)
- ⇦ Indicates direction of traffic

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580			

REGISTERED CIVIL ENGINEER — DATE

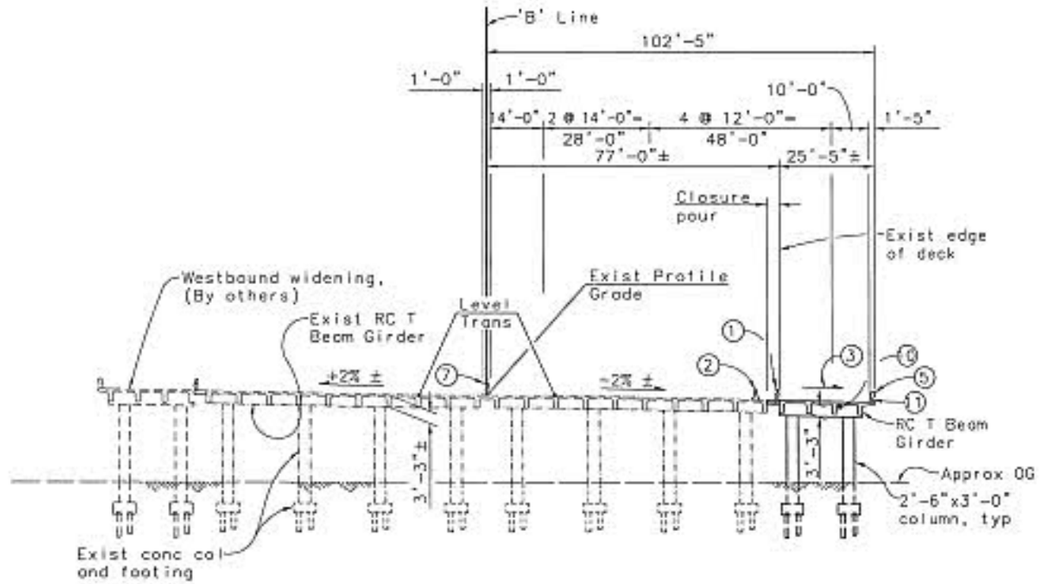
PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

REGISTERED PROFESSIONAL ENGINEER — ROY M. SCHNABEL — No. C46578 — Exp. 6/30/11 — CIVIL — STATE OF CALIFORNIA

BIGGS CARDOSA ASSOCIATES INC.
565 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126

ALAMEDA COUNTY CONCESTION MANAGEMENT AGENCY
1333 BROADWAY, SUITE 220
OAKLAND, CALIFORNIA 94612



TYPICAL SECTION
1" = 20'

Notes:
1. Remove existing overhang & barrier railing and portion of wingwalls
2. Temporary Railing (Type K)
3. Match existing cross slope
4. Structure Approach Type N(30D)
5. Concrete Barrier Type 732
6. Existing metal beam guard railing to be removed, see Road Plans
7. Existing Concrete Barrier (Type 60A Mod)
8. Paint 'Bridge No. 33-0085'
9. Paint 'Arroyo Las Positas'
10. 2-3" dia Electrical Conduits
11. 2-2" dia Electrical Conduits
12. For Index to Bridge Plans & General Notes, see 'INDEX TO PLANS' sheet
13. For Pile Data Table, see 'FOUNDATION PLAN' sheet
14. For Quantities, see 'INDEX TO PLANS' sheets

PLAN CHECK SET/NOT FOR CONSTRUCTION (12/23/09)

DESIGN OVERSIGHT	DESIGN	BY Z. VUKMIROVIC	CHECKED A. REJAIE	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL93 W/"LON-80+", PERMIT DESIGN VEHICLE	CHECKED	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION
SIGN OFF DATE	DETAILS	BY R. RIVAS	CHECKED S. MOYLES	LAYOUT BY I. LI			
	QUANTITIES	BY R. RIVAS	CHECKED M. FRECHETTE	SPECIFICATIONS BY I. LI		PLANS AND SPECS COMPARED	

INES LI
PROJECT ENGINEER

CU 04258
EA 290851

BRIDGE NO. 33-0085
POST MILES 11.72

ARROYO LAS POSITAS BRIDGE (WIDEN)
GENERAL PLAN

DESIGN GENERAL PLAN SHEET (ENGLISH) (REV. 8-01-08)

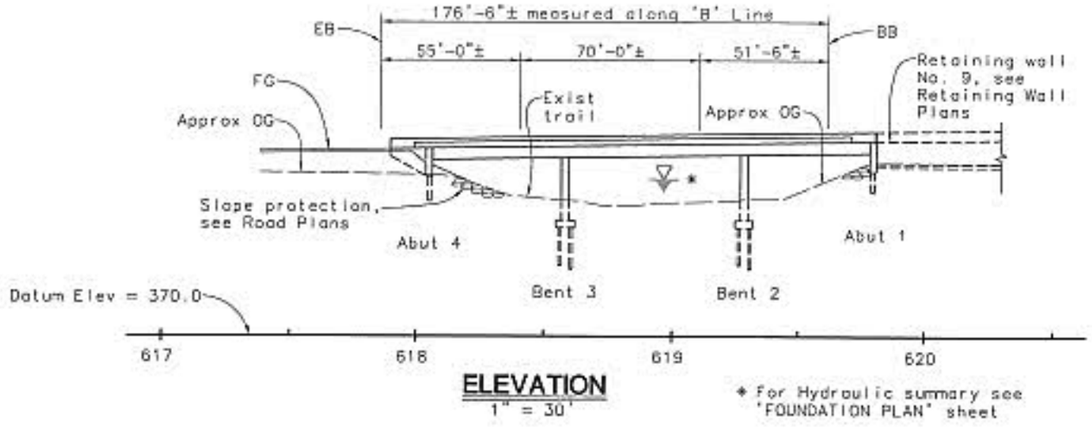
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

DISREGARD PRINTS BEARING EARLIER REVISION DATES → REVISION DATES (PRELIMINARY STATE ONLY) 3/24/10 11/24/10 1/6/11

SHEET 1 OF

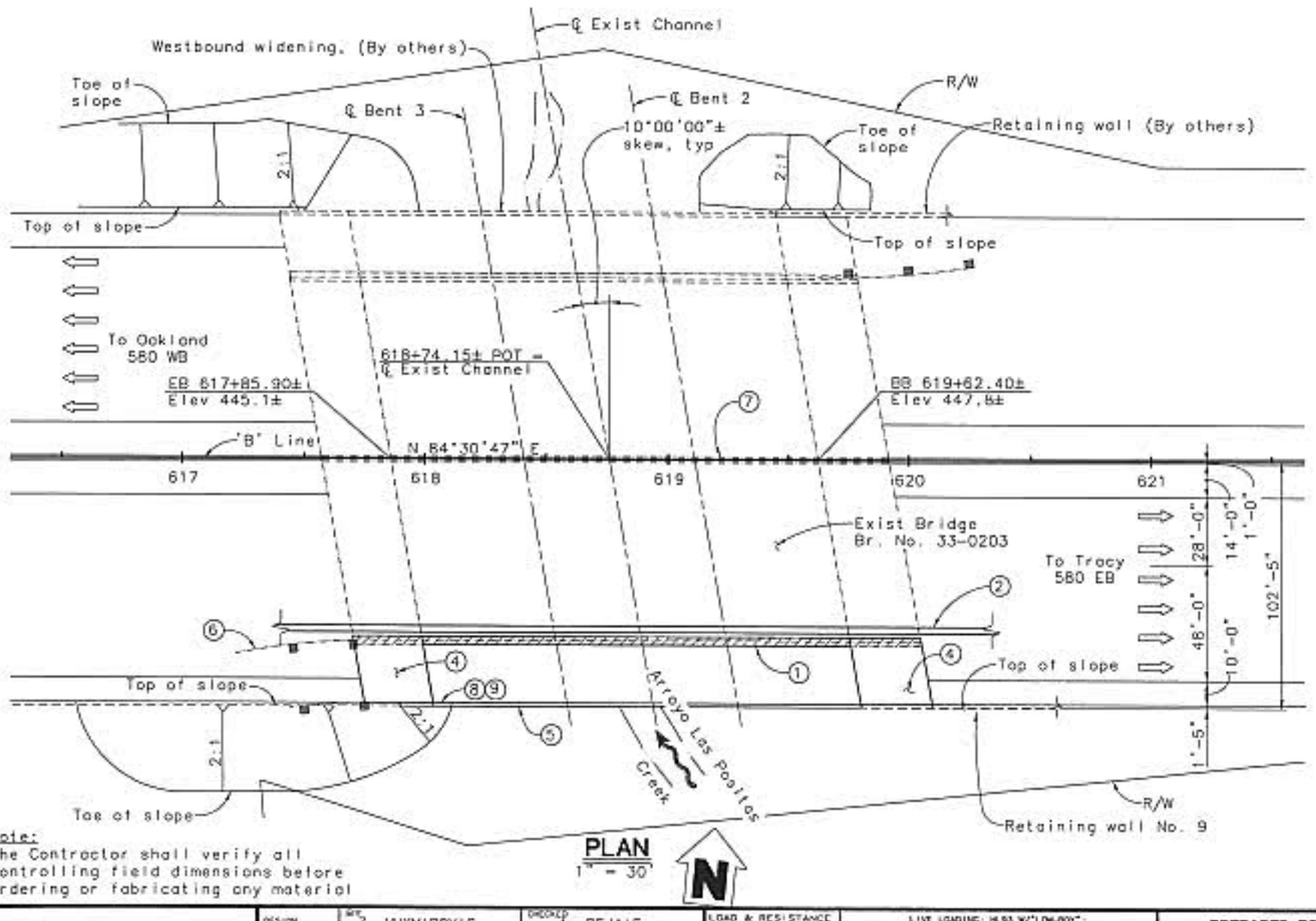
DATE PLOTTED => 3/24/10 TIME PLOTTED => 11:46

FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE



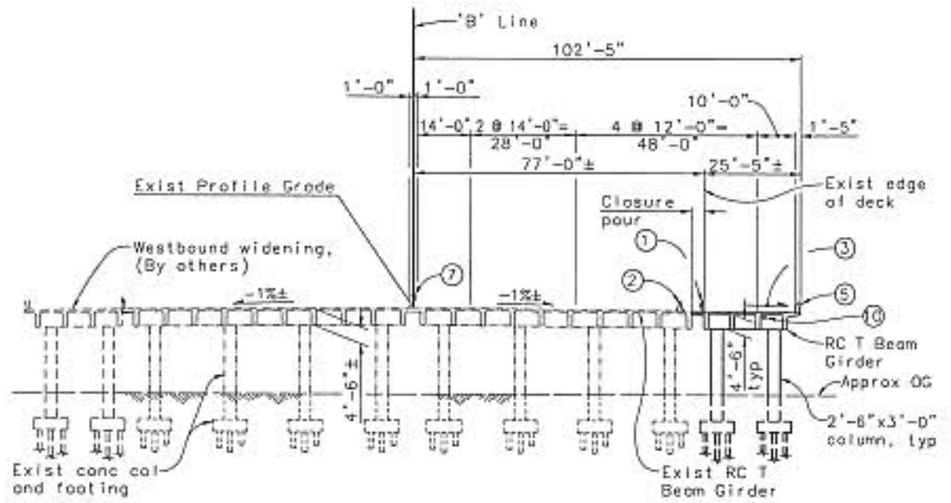
ELEVATION
1" = 30'

* For Hydraulic summary see 'FOUNDATION PLAN' sheet



PLAN
1" = 30'

Note:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material



TYPICAL SECTION
1" = 20'

Notes:

1. Remove existing overhang & barrier railing and portion of wingwalls
2. Temporary Railing (Type K)
3. Match existing cross slope
4. Structure Approach Type N(30D)
5. Concrete Barrier Type 732
6. Existing metal beam guard railing to be removed, see Road Plans
7. Existing Concrete Barrier (Type 60A Mod)
8. Paint 'Bridge No. 33-0203'
9. Paint 'Arroyo Las Positas'
10. 2 - 3" dia electrical conduits
11. For Index to Bridge Plans & General Notes, see 'INDEX TO PLANS' sheet
12. For Pile Data Table, see 'FOUNDATION PLAN' sheet
13. For Quantities, see 'INDEX TO PLANS' sheets

PLAN CHECK SET/NOT FOR CONSTRUCTION (12/23/09)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580			

REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

REGISTERED PROFESSIONAL ENGINEER — ROY M. SCHWARZ — No. C46828 — Exp. 6/30/11 — CIVIL — STATE OF CALIFORNIA

BIGGS CARDOSA ASSOCIATES INC.
885 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126

ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY
1333 BROADWAY, SUITE 220
OAKLAND, CALIFORNIA 94612

DESIGN OVERSIGHT	DESIGN	BY Z. VUKMIROVIC	CHECKED A. REJAIE	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL93 W"LOW-BOY" PERMIT DESIGN VEHICLE	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	INES LI PROJECT ENGINEER	BRIDGE NO. 33-0203	ARROYO LAS POSITAS BRIDGE (WIDEN)
	DETAILS	BY Z. VUKMIROVIC	CHECKED S. MOYLES	LAYOUT BY I. LI	CHECKED			POST MILES 13.13	GENERAL PLAN
SIGN OFF DATE	QUANTITIES	BY R. RIVAS	CHECKED M. FRECHETTE	SPECIFICATIONS BY I. LI	PLANS AND SPECS COMPARED				

DESIGN GENERAL PLAN SHEET (ENGLISH) (REV. 6-01-06)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 04258
EA 290851

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 1 OF

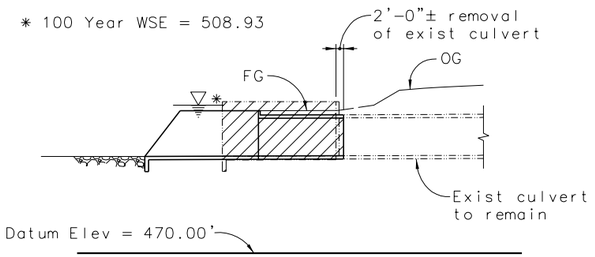
USERNAME => $USER
DATE PLOTTED => $TIME
TIME PLOTTED => $TIME

PREPARED FOR THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DIST	COUNTY	ROUTE	POST MILE TOTAL PROJECT
04	Ala	580	PM 11.04

ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY
1333 BROADWAY, SUITE 220
OAKLAND, CALIFORNIA 94612

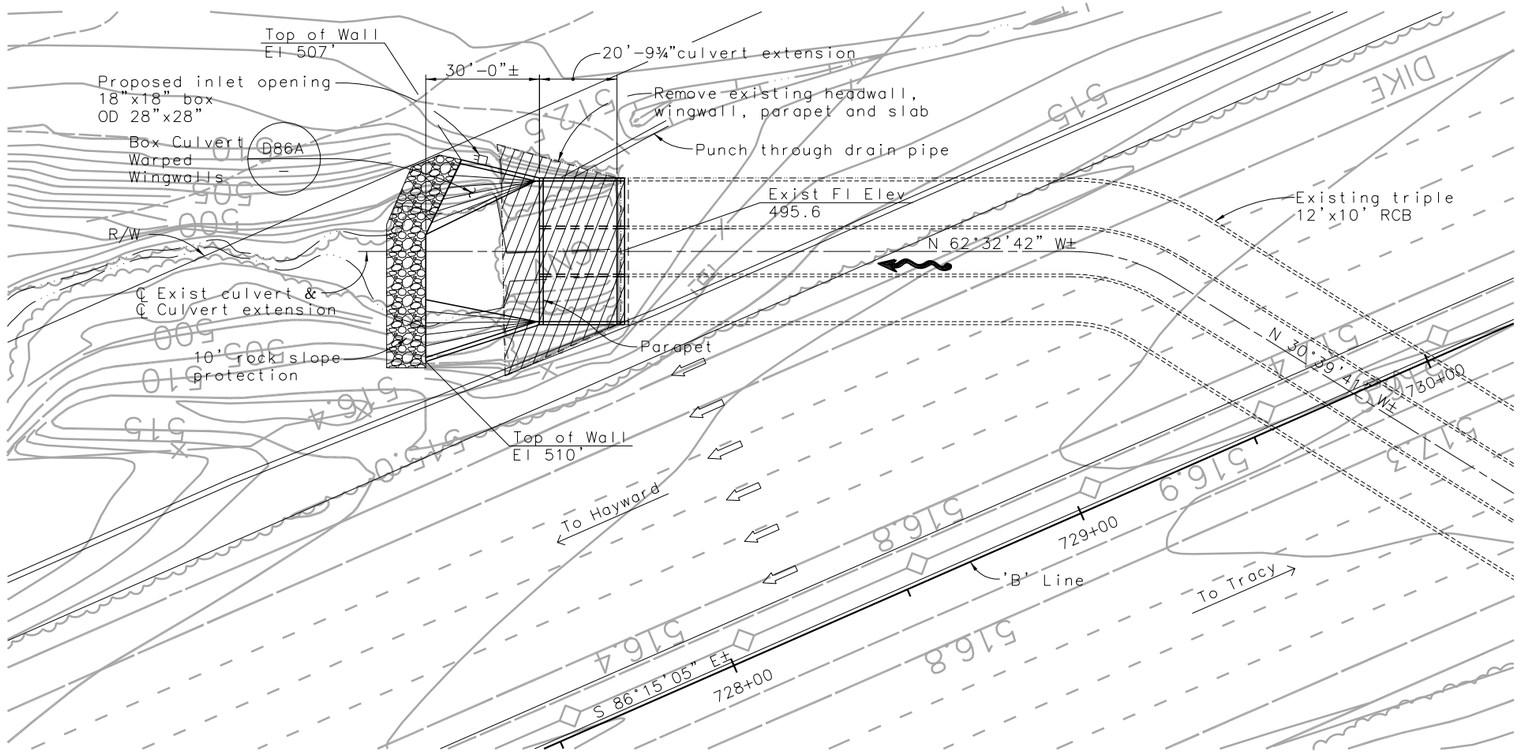
BIGGS CARDOSA ASSOCIATES INC.
865 THE ALAMEDA
SAN JOSE, CALIFORNIA 95126



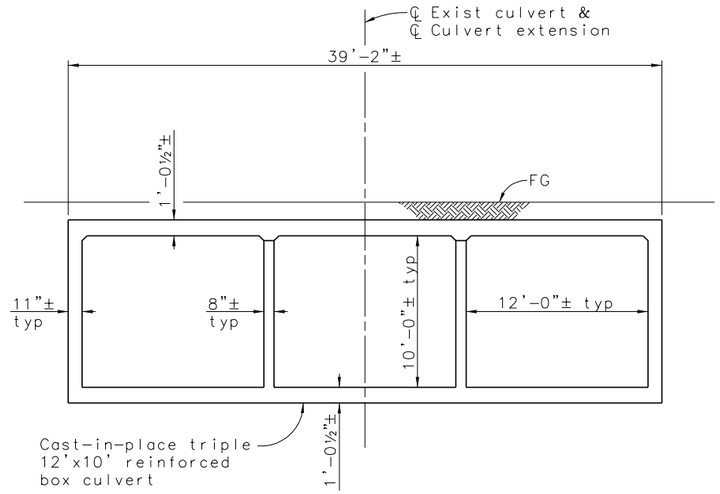
LONGITUDINAL SECTION
1" = 20'

ARROYO SECO CREEK CULVERT

Date of estimate	=	1/14/09
Str. Depth	=	10'-0"
Length	=	21'-0"±
Width	=	39'-0"±
Area	=	817 SF
Cost/Sq. Ft. including 10% Mobilization & 25% Contingency	=	$418
Total Cost	=	$341,000



PLAN
1" = 20'



TYPICAL SECTION
1" = 5'

Legend:
- Indicates direction of traffic
- Indicates exist structure
- Indicates new construction
- Indicates concrete removal

DESIGN OVERSIGHT

SIGN OFF DATE

Note:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material

DESIGNED BY ISL	DATE 4/1/09	INES LI PROJECT ENGINEER	ADVANCE PLANNING STUDY
DRAWN BY TEH	DATE 4/1/09		ARROYO SECO CREEK CULVERT EXTENSION
CHECKED BY	DATE		BRIDGE NO. 33-0066 / CU 04
APPROVED	DATE		SCALE: AS NOTED / EA 290820

ADVANCE PLANNING STUDY SHEET (ENGLISH) (REV. 2/25/05)

FILE => $REQUEST

2007236 (2007236_33-0066_APS_S1)

TIME PLOTTED => $TIME

DATE PLOTTED => $DATE

USERNAME => $USER

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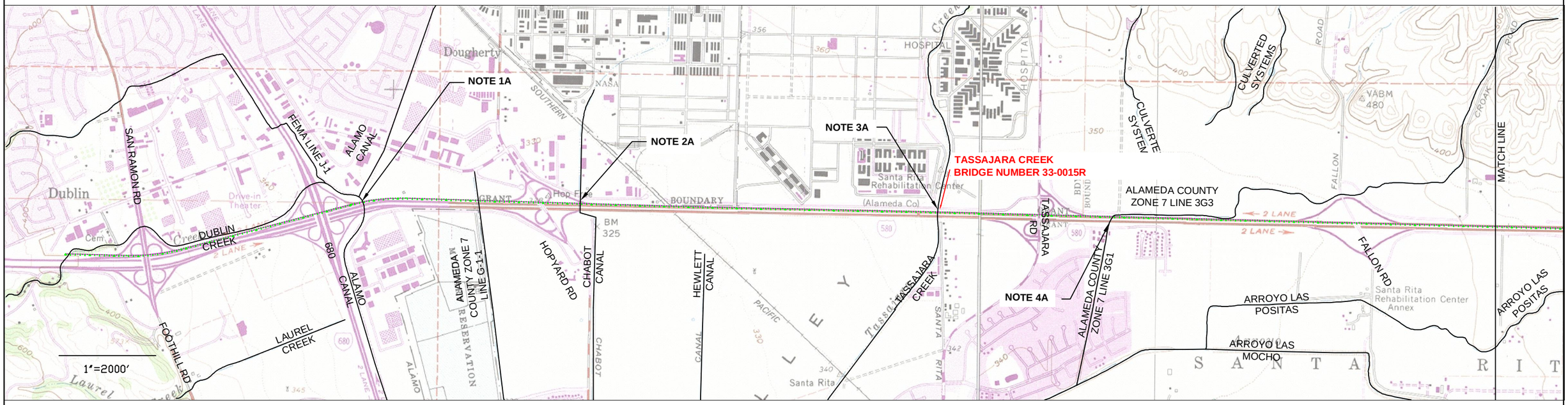

NOTE 1A:
3700 cfs PER EXHIBIT 2C
3800 cfs PER FIGURE 2F
THIS DRAINAGE AREA OF 39.2 SQ MI DOES NOT CORRESPOND WITH FEMA'S AREA OF 8.6 SQ MI

NOTE 2A:
700 cfs PER EXHIBIT 2E

NOTE 3A:
4300 cfs PER EXHIBIT 2C
4400 FOR TASSAJARA AT ARROYO MOCHO PER REFERENCE 6
THIS DRAINAGE AREA OF 26.5 SQ MI DOES NOT CORRESPOND WITH FEMA'S AREA OF 19.6 SQ MI

NOTE 4A:
650 cfs PER EXHIBIT 2E
200 cfs PER REFERENCE 6

EXHIBIT 1A

580 WESTBOUND HOV IMPROVEMENTS

FEMA FLOW RATES

JOB NO: 20077061
DATE: JULY 17, 2008
BY: D.R.
REV: ED BOSCACCI

BkF

DRAWING NAME: J:\Eng07\077061\dwg\Exhibits\EXHIBIT1_080612.dwg
PLOT DATE: 07-09-09
PLOTTED BY: lyon

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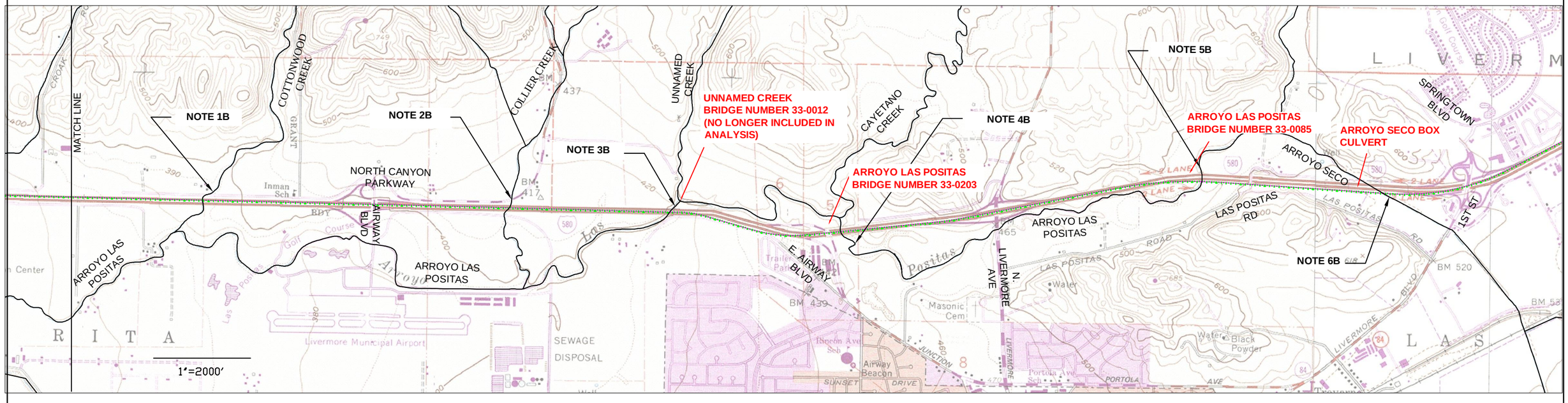

NOTE 1B:
700 cfs PER EXHIBIT 2E

NOTE 2B:
1200 cfs PER EXHIBIT 2A

NOTE 3B:
5600 cfs PER EXHIBIT 2F

NOTE 4B:
5000 cfs PER EXHIBIT 2A
LOCATED VIA REFERENCE 4
7300 PER REFERENCE 6

NOTE 5B:
4600 cfs PER EXHIBIT 2F

NOTE 6B:
2250 cfs PER EXHIBIT 2B
3600 cfs PER REFERENCE 6

DRAWING NAME: J:\Eng07\077061\dwg\Exhibits\EXHIBIT1_080612.dwg
PLOT DATE: 07-09-09
PLOTTED BY: lyon

JOB NO: 20077061
DATE: JULY 17, 2008
BY: D.R.
REV: ED BOSCACCI

NORTH

EXHIBIT 1B

580 WESTBOUND HOV IMPROVEMENTS

FEMA FLOW RATES

BKF

©BKF Engineers

Table 2. Summary of Discharges

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cfs) 10-Year	50-Year	100-Year	500-Year
Arroyo Las Positas					
At USGS Gage No. 11176145	50.9	2,000	4,200	5,000	6,700
Upstream of Arroyo Mocho	--[1]	1,800	1,800	1,800	1,800
Arroyo Mocho					
At USGS Gage No. 11176000	38.7	2,100	3,800	4,500	5,900
Upstream of Arroyo Las Positas	--[1]	1,800	1,800	1,900	1,900
Near Garden Circle	--[1]	5,000	7,800	9,100[2]	11,900
Upstream of Tassajara Creek	--[1]	5,100	7,900	9,200[2]	12,100
Collier Canyon Tributary	0.96	180	410	500	680
Collier Canyon Creek					
Upstream of Tributary	3.11	390	910	980	1,300
Downstream of Tributary	4.09	470	990	1,200	1,600
Near North Canyon Parkway	4.15	470	990	1,200	1,600
San Lorenzo Creek Line B (Zone 2)					
At San Francisco Bay	--[1]	--[1]	--[1]	7,615[3]	7,660[3]
Just upstream of Washington Boulevard	48.23	--[4]	--[4]	9,940[3]	10,965[3]
At confluence of Castro Valley Creek	38.85	--[4]	--[4]	10,200	12,100
San Leandro Line A (Zone 2)					
At San Francisco Bay	9.30	--[1]	--[1]	3,600	3,800
At Southern Pacific Railroad	8.90	--[4]	--[4]	3,600[3]	3,800[3]
Upstream of Line B	5.70	--[4]	--[4]	3,200[3]	3,900[3]
At Nimitz Freeway	4.80	--[4]	--[4]	3,000[3]	3,600[3]
At Hesperian Boulevard	4.10	--[4]	--[4]	3,200[3]	3,900[3]
At upstream corporate limits	3.00	--[4]	--[4]	2,500[3]	3,100[3]

[1]Not applicable
[2]Decrease in 10-, 50-, 100-, and 500-year flood flows in downstream direction is due to overbank losses
[3]Base flood elevations in the improved reach of Arroyo Mocho between Santa Rita and El Charro Roads are based upon peak flows of 12,400 cfs at Santa Rita Road and 12,300 cfs at Garden Circle. These flows do not reflect overbank losses. The design flow for this reach of Arroyo Mocho is 12,500 cfs.
[4]Not available
[5]Decrease in flow without change in area is result of spill
[6]Decrease in flow with increase in area is result of spill

NOTE:
THE LOCATION OF USGS GAGE NO. 11176145 WAS DETERMINED BY USGS .KMZ FILE
http://water.usgs.gov/waterwatch/stateinfos/streamgages/streamgages_06.kmz

EXHIBIT 2A
580 WESTBOUND HOV IMPROVEMENTS
100 YEAR FLOW

JOB NO: 20077061
DATE: JUNE 5, 2008
BY: D.R.
REV: ED BOSCACCI

SOURCE:
ALAMED COUNTY FLOOD INSURANCE STUDY

BkF

DRAWING NAME: J:\Eng07\077061\dwg\Exhibits\EXHIBIT2.dwg
PLOT DATE: 07-14-08 PLOTTED BY: rebe

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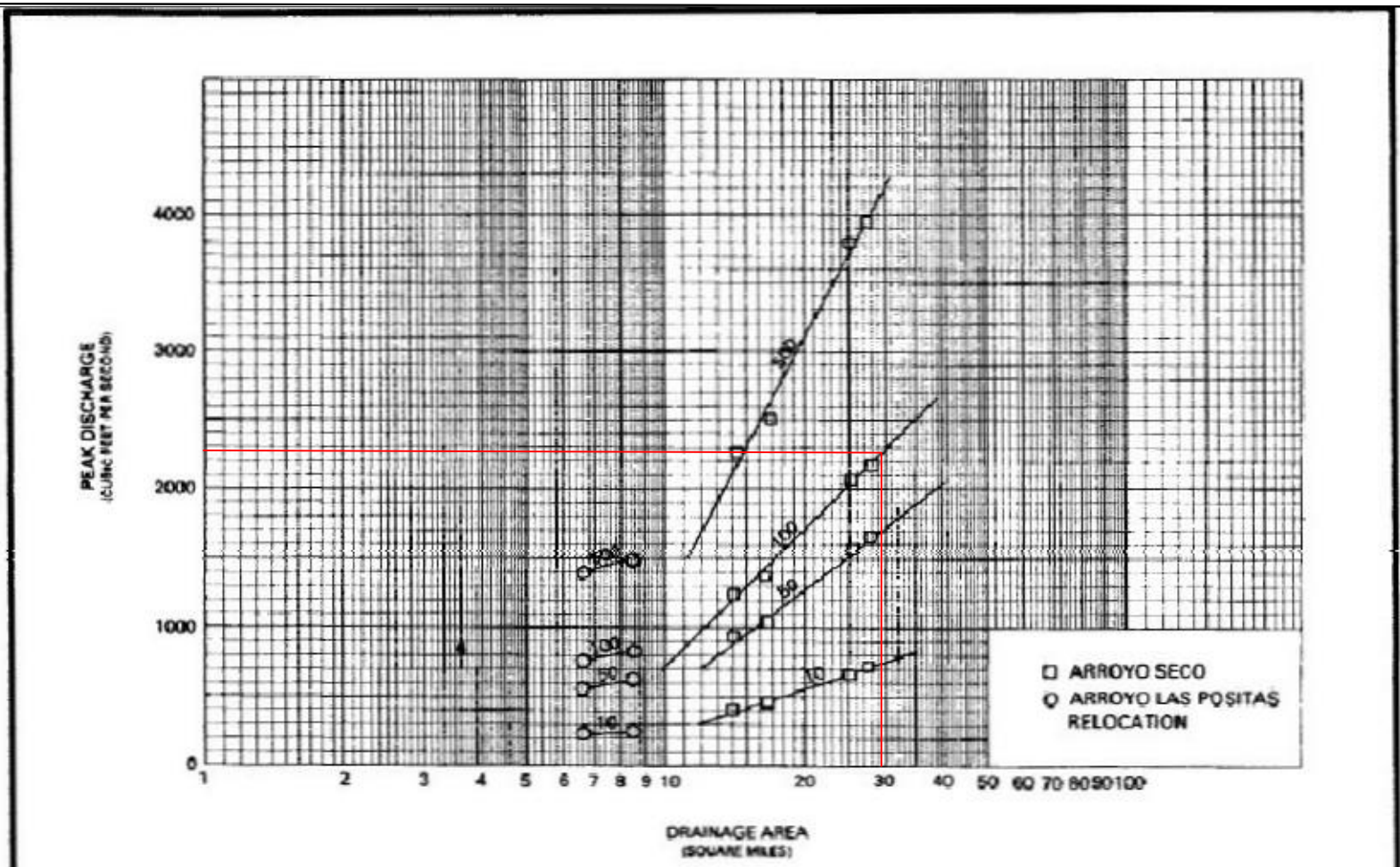

FIGURE 2	FEDERAL EMERGENCY MANAGEMENT AGENCY CITY OF LIVERMORE, CA (ALAMEDA COUNTY)	FREQUENCY DISCHARGE, DRAINAGE AREA CURVES ARROYO SECO, ARROYO LAS POSITAS RELOCATION

EXHIBIT 2B

580 WESTBOUND HOV IMPROVEMENTS

100 YEAR FLOW

JOB NO: 20077061
DATE: JUNE 5, 2008
BY: D.R.
REV: ED BOSCACCI

SOURCE:
ALAMED COUNTY
FLOOD INSURANCE STUDY

BkF

DRAWING NAME: J:\Eng07\077061\dwg\Exhibits\EXHIBIT2.dwg
PLOT DATE: 07-14-08 PLOTTED BY: rebe

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Table 1. Summary of Discharges

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (Cubic Feet Per Second) 10-Year	50-Year	100-Year	500-Year
Line J-1					
U/S of Line J-5	1.18	380	410	410	420
D/S of Line J-5	1.67	550	680	680	810
U/S of Line J-3	1.75	560	900	1,000	1,300
D/S of Line J-3	4.69	1,300	2,100	2,400	3,000
D/S of Line J-2[1]	-	1,200	1,700	1,800	2,200
At Dublin Boulevard[1]	-	1,400	1,600	1,700	1,800
D/S of Dublin Creek	8.57	2,500	3,300	3,700	4,300
At I-580	8.62	2,500	3,300	3,700	4,300
Line J-2					
U/S of Line J-1	0.37	350	370	370	380
Line J-3					
U/S of Line J-4	1.56	510	830	950	1,200
D/S of Line J-4	2.16	740	1,000	1,100	1,200
U/S of Line J-1[1]	-	740	980	1,000	1,000
Line J-4					
U/S of Line J-1	0.60	290	320	360	360
Line J-5					
U/S of Line J-1	0.49	260	270	270	270
Dublin Creek					
U/S of Line J-1	3.82	1,100	1,400	1,400	1,400
Tassajara Creek					
At I-580	19.6		--2	4,300	--2

REVISED TO REFLECT LOMR DATED NOV 0 1 2002

REVISED DATA

[1]Decrease in flows in the downstream direction due to overbank losses.

2Data not available

9

DRAWING NAME: J:\Eng07\077061\dwg\Exhibits\EXHIBIT2.dwg
PLOT DATE: 07-14-08 PLOTTED BY: rebe

EXHIBIT 2C

580 WESTBOUND HOV IMPROVEMENTS

100 YEAR FLOW

JOB NO: 20077061
DATE: JUNE 5, 2008
BY: D.R.
REV: ED BOSCACCI

SOURCE:
ALAMED COUNTY FLOOD INSURANCE STUDY

BKF

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Table 2. Summary of Discharges

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cubic feet per second) 10-Year	50-Year	100-Year	500-Year
Collier Canyon Tributary	0.98	180	410	500	680
Collier Canyon Creek					
Upstream of Tributary	3.11	390	810	980	1,300
Downstream of Tributary	4.09	470	990	1,200	1,600
Near North Canyon Parkway	4.15	470	990	1,200	1,600
Line O					
At Altamont Creek	5.22	610	1,300	1,600	2,200

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PLOT DATE: 07-14-08 PLOTTED BY: rebe

EXHIBIT 2D

580 WESTBOUND HOV IMPROVEMENTS

100 YEAR FLOW

JOB NO: 20077061
DATE: JUNE 5, 2008
BY: D.R.
REV: ED BOSCACCI

SOURCE:
ALAMED COUNTY
FLOOD INSURANCE STUDY

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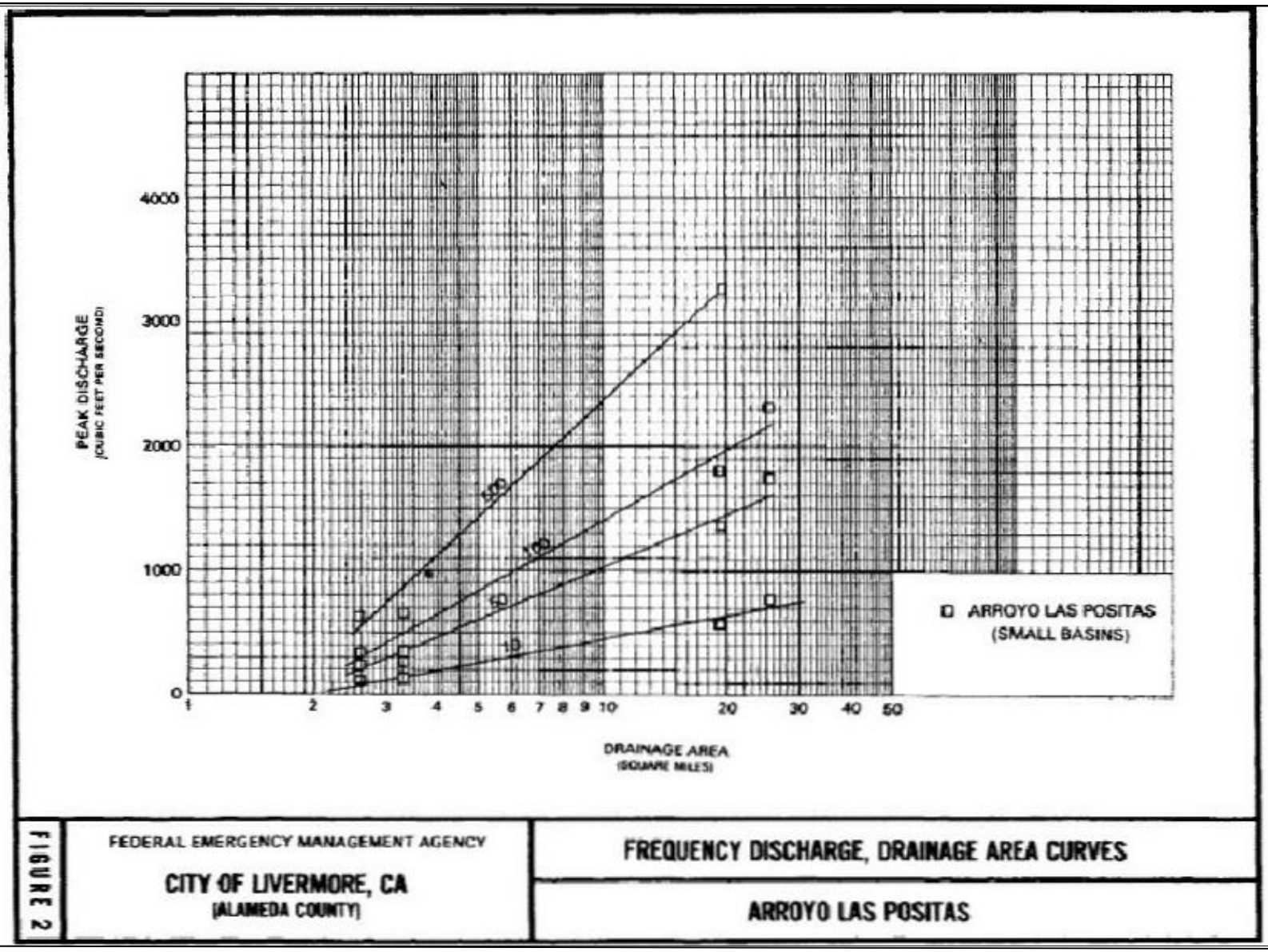

FIGURE 2	FEDERAL EMERGENCY MANAGEMENT AGENCY CITY OF LIVERMORE, CA (ALAMEDA COUNTY)	FREQUENCY DISCHARGE, DRAINAGE AREA CURVES ARROYO LAS POSITAS

EXHIBIT 2E

580 WESTBOUND HOV IMPROVEMENTS

100 YEAR FLOW

JOB NO:	**20077061**	
DATE:	**JUNE 5, 2008**	**SOURCE:**
BY:	**D.R.**	**ALAMED COUNTY**
REV:	**ED BOSCACCI**	**FLOOD INSURANCE STUDY**

BkF

DRAWING NAME: J:\Eng07\077061\dwg\Exhibits\EXHIBIT2.dwg
PLOT DATE: 07-14-08 PLOTTED BY: rebe

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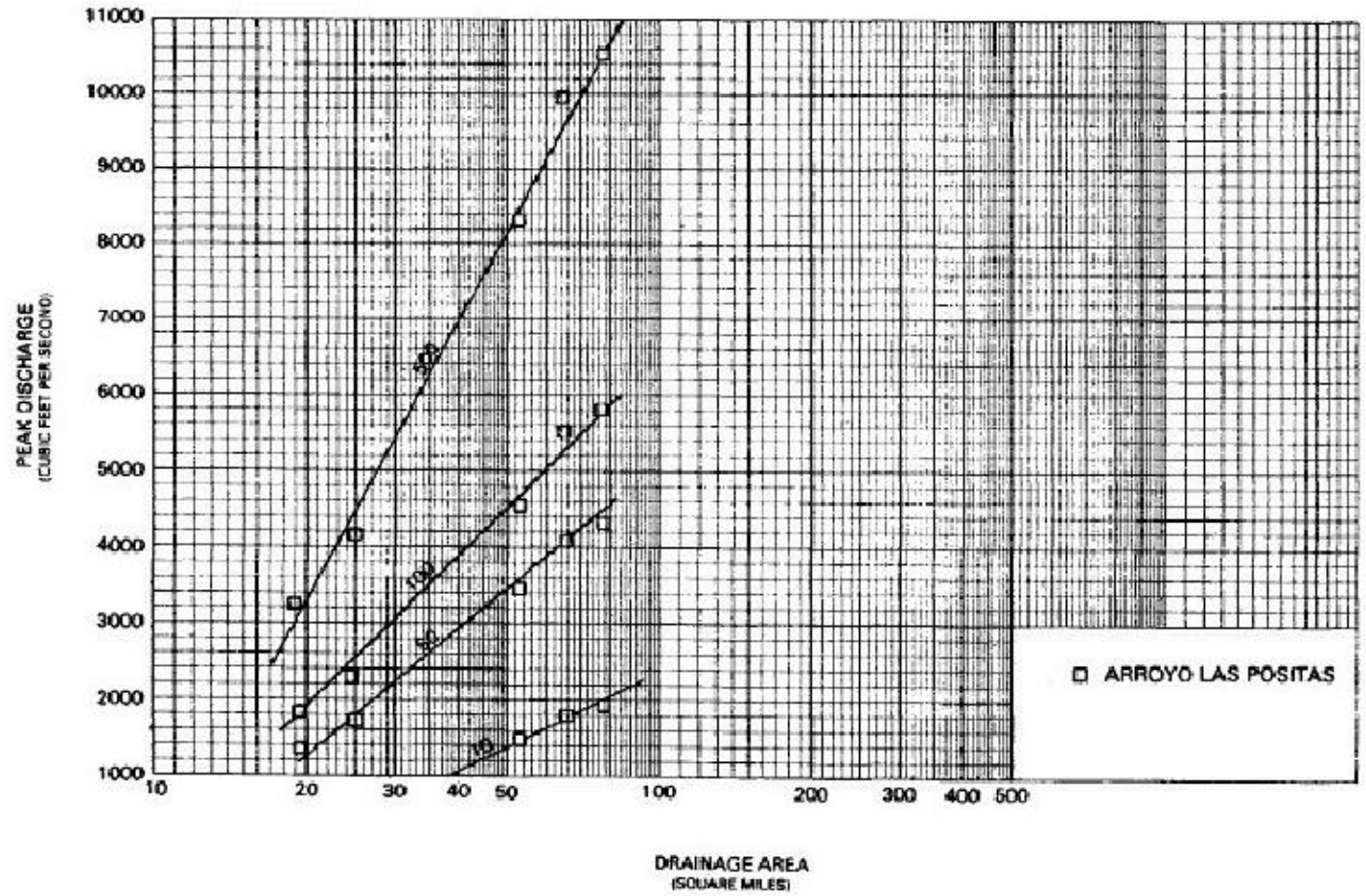

FIGURE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF LIVERMORE, CA
(ALAMEDA COUNTY)

FREQUENCY DISCHARGE, DRAINAGE AREA CURVES

ARROYO LAS POSITAS

EXHIBIT 2F

580 WESTBOUND HOV IMPROVEMENTS

100 YEAR FLOW

JOB NO: 20077061
DATE: JUNE 5, 2008
BY: D.R.
REV: ED BOSCACCI

SOURCE:
ALAMED COUNTY
FLOOD INSURANCE STUDY

BkF

DRAWING NAME: J:\Eng07\077061\dwg\Exhibits\EXHIBIT2.dwg
PLOT DATE: 07-14-08 PLOTTED BY: rebe

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17.5 sq mi
ALAMO CANAL

27.1 sq mi
TASSAJARA
CREEK

12.8 sq mi
SAN RAMON

21.3 sq mi
ARROYO LAS
POSITAS

4.8 sq mi
J1

4.1 sq mi
CHABOT
CANAL

4.0 sq mi
LINE 3G3

29.8 sq mi
ARROYO SECO

4.1 sq mi
COTTONWOOD
CREEK

4.5 sq mi
COLLIER
CREEK

17.0 sq mi
CAYETANO
CREEK

1"=10000'

3.8 sq mi
DUBLIN CREEK

NORTH

EXHIBIT 3

580 WESTBOUND
HOV IMPROVEMENTS
DRAINAGE AREAS

BkF

JOB NO:	20077061
DATE:	JULY 17, 2008
BY:	D.R.
REV:	ED BOSCACCI

DRAWING NAME: J:\Eng07\077061\dwg\Exhibits\EXHIBIT3_DRAINAGE AREAS.dwg
PLOT DATE: 02-06-09 PLOTTED BY: edb

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In Reply Refer To:
81420-2008-F-0487-R003-1

NOV 28 2011

Mr. Jim Richards
Attn: Christopher States
Office of Biological Sciences and Permits
California Department of Transportation
P.O. Box 23660
Oakland, California 94623-0660

Subject: Reinitiation of Consultation on the Biological Opinion on the Effects of the Interstate 580 Westbound High Occupancy Vehicle (HOV) Lane Project, Alameda County, California (Caltrans EA 4S3701)

Dear Mr. Richards:

This letter is a reinitiation of the Biological Opinion issued on September 17, 2009, (Service File No.: 81420-2008-F-0487-2) for the Interstate 580 (I-580) Westbound HOV Lane Project located in Alameda County, California. Reinitiation of consultation was requested by the California Department of Transportation (Caltrans) on July 12, 2011, to address the effects of construction activities associated with off-site compensation at the Eagle Ridge Preserve on the threatened California red-legged frog (*Rana draytonii*), threatened Central Valley DPS California tiger salamander (*Ambystoma californiense*, Central California tiger salamander), San Joaquin kit fox (*Vulpes macrotis mutica*), and designated critical habitat for the California red-legged frog and Central California tiger salamander. The reinitiation also includes the addition of 4.10 acres of Central California tiger salamander habitat within the project construction footprint to the effects analysis. Reinitiation of consultation is exercised under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (Act).

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users legislation (23 U.S.C. 327) allows the Secretary of the U.S. Department of Transportation acting through the Federal Highway Administration (FHWA) to establish a Surface Transportation Project Delivery Pilot Program, whereby a State may assume the FHWA responsibilities under the National Environmental Policy Act (NEPA) for environmental review, agency consultation and other action pertaining to the review or approval of a specific project. Caltrans assumed these responsibilities for the FHWA on July 1, 2007 through a Memorandum of Understanding (MOU) within the State of California (http://www.dot.ca.gov/ser/downloads/MOUs/nepa_delegation/sec6005mou.pdf).

The following changes are made to the September 17, 2009, biological opinion:

1. Add the following to the **Consultation History** on page 2:

November 6, 2009	The Service conducted a site visit with H.T. Harvey & Associates, Water Hole Land Company, Inc., and BKF to evaluate the Eagle Ridge Preserve as off-site compensation habitat for project effects to the California red-legged frog, Central California tiger salamander and San Joaquin kit fox.
March 7, 2011	The Service received a *Mitigation & Monitoring Plan, Long-Term Resources Management Plan and Agreement of the Purchase and Sale of Turn-Key Mitigation Values for the Eagle Ridge Preserve* property to satisfy *Term and Condition 1.b.* compensation requirements in the September 17, 2009, biological opinion for the California red-legged frog, Central California tiger salamander and San Joaquin kit fox.
July 12, 2011	The Service received a request from Caltrans dated July 6, 2011, to reinitiate formal consultation to address the effects of off-site compensation at the Eagle Ridge Preserve for the California red-legged frog, Central California tiger salamander and San Joaquin kit fox.
August 4, 2011	Marcia Grefsrud of the California Department of Fish and Game (CDFG) informed the Service via an electronic mail (e-mail) message that Caltrans had missed several California tiger salamander occurrences within 1.24 miles of the project footprint. This information resulted in the addition of 4.10 acres of California tiger salamander habitat to the project's construction footprint. The revised total California tiger salamander habitat within the construction project footprint is 12.65 acres. The revised data was provided to CDFG by H.T. Harvey & Associates.
August 11, 2011	Caltrans forwarded Jeff Olberding's information regarding California red-legged frog and Central California tiger salamander critical habitat Primary Constituent Elements (PCE's) within the proposed 56.88-acre conservation easement within the Eagle Ridge Preserve.
August 16, 2011	Caltrans provided the Service with a copy of the Agreement of Purchase and Sale for a 0.013-acre conservation easement within vernal pool fairy shrimp between the Alameda County Transportation Commission and the Livermore Valley Preserve LLC. The Service was unable to accept the easement because another conservation easement has already been placed on the 18.84-acre Livermore Valley Preserve as compensation for a Pacific Gas and Electric Company project.

August 16, 2011	A conservation easement was recorded for 508.88 acres of the Eagle Ranch Preserve in favor of Wildlife Heritage Foundation. The easement comprised mitigation/compensation lands for three separate projects including 56.88 acres for the I-580 Westbound HOV Lane project.
September 9, 2011	The Service received an assessment of effects to designated Central California tiger salamander and California red-legged frog critical habitat at the proposed 56.88-acre conservation easement within the Eagle Ridge Preserve.
September 12, 2011	The Service informed Caltrans that the assessment of effects to designated Central California tiger salamander and California red-legged frog critical habitat was incomplete and requested Caltrans revise and resubmit the assessment.
September 29, 2011	The Service received a revised assessment of effects to designated Central California tiger salamander and California red-legged frog critical habitat and graphics exhibits.
July 5, 2011 - November 21, 2011	Electronic and phone correspondence between Caltrans, Olberding Environmental, Inc., H.T. Harvey & Associates and the Service.

2. Add the following to the **Project Description** on Page 4:

Off-Site Compensation at Eagle Ridge Preserve

To reduce the overall level of take of California red-legged frog, Central California tiger salamander and San Joaquin kit fox, Caltrans proposes compensate for the take of these species by purchasing and preserving through a conservation easement and long-term management plan for a 56.88-acre portion of the Eagle Ridge Preserve.

The Eagle Ridge Preserve is located immediately south of the Contra Costa/Alameda County line, northeast of the City of Dublin in Alameda County, west of North Livermore Road and south of Manning Road. The I-580 Westbound HOV Lane Project and Eagle Ridge Preserve are both in the Livermore Valley and in the same watershed and have similar soil and hydrologic conditions. Eagle Ridge Preserve encompasses 535 acres of grass-covered rolling hills which serve as a watershed for the west branch of Cayetano Creek which flows diagonally through the center of the site. Numerous pools occur within the creek channel, where roughly 600 feet of willow riparian habitat is located at the southeastern end of the property. A 0.25-acre stock pond is also located at the southern end of the property. Several large Beechey ground squirrel colonies have been observed throughout the grasslands, providing a network of burrows. Eagle Ridge Preserve is surrounded by grazed grassland habitat, has more than 50 large stock ponds within 1.24 miles, and is located within Service-designated critical habitat for both the California red-legged frog and Central California tiger salamander. The property is also within the range of the San Joaquin kit fox.

The proposed 56.88-acre off-site compensation area includes non-native annual grassland habitat along a hillside and approximately 300 feet of the creek channel at the

southeastern section of the Eagle Ridge Preserve Property. There are no structures on the site. The west branch of Cayetano Creek flows from northwest to southeast through the compensation area and supports a stand of mature willow riparian vegetation.

To compensate for project-related wetland impacts, Caltrans proposes to create a 0.2-acre seasonal wetland within the 56.88-acre compensation area. In addition, approximately 287 linear feet of proposed riparian enhancement would provide additional vegetative cover along a segment of the west branch of Cayetano Creek to mitigate project impacts to channel and creek habitats.

A 0.95-acre area will be disturbed in order to construct the 0.2-acre wetland. Site preparation will involve excavation equipment and front-end loaders to excavate upland areas down to the elevation required for wetland habitat development. The wetland creation site will first be mowed close to the ground surface and the upper 4 to 6 inches of soil will be excavated and stockpiled at a designated upland location. This soil will subsequently be re-applied to the newly constructed wetlands to provide organic matter and potential wetland plant seed material. The construction area will be mass-graded/excavated using a rubber-tired backhoe, front-end loader, and/or earth mover to form bottom micro-topography and side slopes. The area will be excavated to an approximate depth of 18 inches with side slopes of 1:5 or greater. Finish grading will involve grading along the edges of the excavated area to tie into the existing gently sloping topography and grading the bottom of the created wetland area to provide the appropriate flat topographic relief (less than one to two percent slope) for wetland hydrology, soil, and plant development. The created/restored wetland will be seeded with a native seed mix to enhance wetland vegetation growth. Riparian plant installation will be performed with the use of a truck-mounted augur. Disturbed uplands will also be recontoured and revegetated with appropriate grassland plants. The wetland creation site and riparian planting areas will be accessed by existing dirt roads and staging will occur in previously disturbed areas.

3. Change the California tiger salamander acreage from 8.55 acres to 12.65 acres under the I-580 WB HOV Project Effects column in Table 1 on page 8 to reflect the addition of 4.1 acres of California tiger salamander habitat affected by the proposed project.

4. Add the following to the **Project Description** after Table 1 on page 8:

   Caltrans is providing off-site compensation to minimize the effects to the California red-legged frog, Central California tiger salamander and San Joaquin kit fox at the Eagle Ranch Preserve. Caltrans placed a conservation easement on 56.88 acres of the 535-acre Eagle Ranch Preserve in favor of Wildlife Heritage Foundation. The easement was recorded on August 16, 2011. Caltrans will finalize and implement *Long-Term Resources Management Plan* (Olberding Environmental, Inc. 2010) after it is reviewed and approved by the Service and CDFG. Caltrans will provide a funding endowment to manage the habitat in perpetuity within 12 months following project ground-breaking.

5. Make the following changes to the **Proposed Conservation Measures** on page 8:

   Proposed Conservation Measures 9 (*California Red-Legged Frog AMM-1*) on page 12 is negated and superseded by Term and Condition 2.k.

Proposed Conservation Measures 10 (*California Red-Legged Frog AMM-2*) on page 12 is negated and superseded by Term and Condition 2.n.

Proposed Conservation Measures 14 (*California Red-Legged Frog AMM-6*) on page 12 is negated and superseded by Term and Condition 2.m.

Proposed Conservation Measures 15 (*California Red-Legged Frog AMM-7*) on page 12 is negated and superseded by Term and Condition 2.l.

Proposed Conservation Measures 16 (*California Red-Legged Frog AMM-8*) on page 13 is negated and superseded by Term and Condition 2.d.

Proposed Conservation Measures 17 (*California Red-Legged Frog AMM-9*) on page 13 is negated and superseded by Term and Condition 2.d.

Proposed Conservation Measures 18 (*California Red-Legged Frog AMM-10*) on page 13 is negated and superseded by Term and Condition 2.h.

Proposed Conservation Measures 19 (*California Red-Legged Frog AMM-11*) on page 13 is negated and superseded by Term and Condition 2.i.

Proposed Conservation Measures 20 (*California Red-Legged Frog AMM-12*) on page 13 is negated and superseded by Term and Condition 2.j.

Proposed Conservation Measures 23 (*California Tiger Salamander AMM-1*) on page 14 is negated and superseded by Term and Condition 2.d, h, j, k, and l.

6. Add the following to the **Analytical Framework for Jeopardy** after the Jeopardy Determinations discussion on page 16:

Analytical Framework for Jeopardy and Adverse Modification Analyses

Adverse Modification Determination

This biological opinion on the critical habitat for the California red-legged frog and Central California tiger salamander does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR § 402.02. Instead, we have relied upon the statutory provisions of the Act to complete the following analysis with respect to the critical habitat.

In accordance with policy and regulation, the adverse modification analysis in this biological opinion relies on four components: (1) *Status of Critical Habitat* and (2) *Environmental Baseline* of the critical habitat, which evaluates the range wide condition of designated critical habitat for the California red-legged frog and Central California tiger salamander in terms of PCEs, the factors responsible for that condition, and the intended recovery function of the critical habitat overall; and evaluates the condition of critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; (3) *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on PCEs and how that will influence the recovery role of affected critical habitat units; and (4) *Cumulative Effects*, which

evaluates the effects of future, non-Federal activities in the action area on the PCEs and how that will influence the recovery role of affected critical habitat units.

For purposes of the adverse modification determination, the effects of the proposed Federal action on California red-legged frog and Central California tiger salamander critical habitat are evaluated in the context of the range-wide condition of the critical habitat, taking into account any cumulative effects, to determine if the critical habitat range-wide would remain functional (or would retain the current ability for the PCEs to be functionally established in areas of currently unsuitable but capable habitat) to serve its intended recovery role for the California red-legged frog and Central California tiger salamander.

The analysis in this biological opinion places an emphasis on using the intended range-wide recovery function of California red-legged frog and Central California tiger salamander critical habitat and the role of the action area relative to that intended function as the context for evaluating the significance of effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the adverse modification determination.

7. Change the **Action Area** on page 17 from:

The action area is defined in 50 CFR § 402.02, as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." For the proposed action, the Service considers the action area to comprise a 13.1-mi segment of I-580 from west of the Greenville Road undercrossing (post mile 8.29) to east of the San Ramon Boulevard/Foothill Road overcrossing (post mile 21.43), in eastern Alameda County. The action area encompasses the project footprint, equipment staging areas, access routes, Caltrans Right-of-Way (ROW) limits, project-specific construction easements, and adjacent lands that will be subjected to noise, light, and vibration disturbance.

To:

The action area is defined in 50 CFR § 402.02, as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." For the proposed action, the Service considers the action area to comprise a 13.1-mi segment of I-580 from west of the Greenville Road undercrossing (post mile 8.29) to east of the San Ramon Boulevard/Foothill Road overcrossing (post mile 21.43), in eastern Alameda County. The action area also encompasses the 56.88-acre Eagle Ridge Preserve off-site compensation land and the 0.75-acre proposed construction access road that may be affected by construction activity, equipment & vehicle staging, vehicular/personnel access, Caltrans Right-of-Way (ROW) limits, project-specific construction easements.

8. Add the following to the California red-legged frog environmental baseline under the **Status of the Species and Environmental Baseline** on page 28:

The 56.88-acre off-site compensation site at the Eagle Ridge Preserve is located west of the Highland Road and Manning Road intersection between the cities of Livermore and Dublin in Alameda County (APN 903-0002-03 and 903-0002-001-01). It comprises upland and dispersal habitat characterized by non-native annual grasslands among

moderately sloping topography. No breeding habitat was identified within this portion of the action area; however, it does include a 380 linear foot reach of the West Branch of Cayetano Creek and associated arroyo willow, valley oak, coast live oak and California walnut riparian corridor that functions as non-breeding aquatic, foraging and refugia habitat. Two ephemeral drainages drain seasonal surface flows to the northeast toward the West Branch of Cayetano Creek from a northwest to southeast aligned ridgeline. Surveys conducted by LSA Associates in 2009 and Olberding Environmental, Inc., in 2010 documented adult and subadult California red-legged frogs in the West Branch of Cayetano Creek and the associated riparian corridor within the action area. Eight known breeding locations exist within 3 miles of the action area, the nearest is located approximately 0.7-mile to the southwest. No barriers to dispersal exist between these breeding locations and the action area.

9. Add the following to the **Status of the Species and Environmental Baseline** following the California red-legged frog environmental baseline on page 29:

California Red-legged Frog Critical Habitat

The Service designated critical habitat for the California red-legged frog on April 13, 2006 (71 FR 19244) (Service 2006) and a revised designation to the critical habitat was published on March 17, 2010 (75 FR 12816) (Service 2010). At this time, the Service recognized the taxonomic change from *Rana aurora draytonii* to *Rana draytonii* (Shaffer et al. 2010). Critical habitat is defined in Section 3 of the Act as: (1) The specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (a) essential to the conservation of the species and (b) that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. In determining which areas to designate as critical habitat, the Service considers those physical and biological features that are essential to a species' conservation and that may require special management considerations or protection (50 CFR 424.12(b)). The Service is required to list the known PCE's together with the critical habitat description. Such physical and biological features include, but are not limited to, the following:

1. Space for individual and population growth, and for normal behavior;
2. Food, water, air, light, minerals, or other nutritional or physiological requirements;
3. Cover or shelter;
4. Sites for breeding, reproduction, rearing of offspring, or dispersal; and
5. Generally, habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

The PCE's defined for the California red-legged frog was derived from its biological needs. The area designated as revised critical habitat provides aquatic habitat for breeding and non-breeding activities and upland habitat for shelter, foraging, predator avoidance, and dispersal across its range. The PCE's and, therefore, the resulting physical and biological features essential for the conservation of the species were determined from studies of California red-legged frog ecology. Based on the above needs

and our current knowledge of the life history, biology, and ecology of the species, and the habitat requirements for sustaining the essential life-history functions of the species, the Service determined that the PCE's essential to the conservation of the California red-legged frog are:

1. *Aquatic Breeding Habitat.* Standing bodies of fresh water (with salinities less than 7.0 parts per thousand), including: natural and manmade (e.g., stock) ponds, slow-moving streams or pools within streams, and other ephemeral or permanent water bodies that typically become inundated during winter rains and hold water for a minimum of 20 weeks in all but the driest of years.

2. *Non-Breeding Aquatic Habitat.* Freshwater and wetted riparian habitats, as described above, that may not hold water long enough for the subspecies to hatch and complete its aquatic life cycle but that do provide for shelter, foraging, predator avoidance, and aquatic dispersal for juvenile and adult California red-legged frogs. Other wetland habitats that would be considered to meet these elements include, but are not limited to: plunge pools within intermittent creeks; seeps; quiet water refugia during high water flows; and springs of sufficient flow to withstand the summer dry period.

3. *Upland Habitat.* Upland areas adjacent to or surrounding breeding and non-breeding aquatic and riparian habitat up to a distance of one mile in most cases and comprised of various vegetational series such as grasslands, woodlands, wetland, or riparian plant species that provide the frog shelter, forage, and predator avoidance. Upland features are also essential in that they are needed to maintain the hydrologic, geographic, topographic, ecological, and edaphic features that support and surround the wetland or riparian habitat. These upland features contribute to the filling and drying of the wetland or riparian habitat and are responsible for maintaining suitable periods of pool inundation for larval frogs and their food sources, and provide breeding, non-breeding, feeding, and sheltering habitat for juvenile and adult frogs (e.g., shelter, shade, moisture, cooler temperatures, a prey base, foraging opportunities, and areas for predator avoidance). Upland habitat should include structural features such as boulders, rocks and organic debris (e.g., downed trees, logs), as well as small mammal burrows and moist leaf litter.

4. *Dispersal Habitat.* Accessible upland or riparian dispersal habitat within designated units and between occupied locations within a minimum of one mile of each other that allow for movement between such sites. Dispersal habitat includes various natural habitats and altered habitats such as agricultural fields, which do not contain barriers (e.g., heavily traveled road without bridges or culverts) to dispersal. Dispersal habitat does not include moderate- to high-density urban or industrial developments with large expanses of asphalt or concrete, nor does it include large reservoirs over 50 acres in size, or other areas that do not contain those features identified in PCE's 1, 2, or 3 as essential to the conservation of the subspecies.

With the revised designation of critical habitat, the Service intends to conserve the geographic areas containing the physical and biological features that are essential to the conservation of the species, through the identification of the appropriate quantity and spatial arrangement of the PCE's sufficient to support the life-history functions of the

species. Because not all life-history functions require all the PCE's, not all areas designated as critical habitat will contain all the PCE's. Please refer to the final designation of critical habitat for California red-legged frog for additional information (75 FR 12816).

Environmental Baseline

The action area for the 56.88-acre off-site compensation area is located within the Mount Diablo designated critical habitat unit (Unit CCS-2B) for the California red-legged frog. This unit comprises 44,470 acres. The entire 56.88-acre conservation easement lies within Unit CCS-2B and represents less than one-hundredth of one percent of the total unit acreage. The easement contains undeveloped grazed grasslands with moderately sloping topography and two ephemeral drainages that drain surface water to the northeast toward the West Branch of Cayetano Creek. A ridgeline bisects the property aligning northwest to southeast, separating the Cayetano Creek Watershed to the northeast and Collier Canyon Creek Watershed to the southwest. The West Branch of Cayetano Creek traverses the easternmost portion of the compensation area flowing from the northwest to the southeast. It is characterized as an intermittent channel with in-stream pools and a narrow riparian corridor comprising arroyo willow, valley oak, coast live oak and California walnut. The reach of Cayetano Creek within the 56.88-acre conservation easement does not contain aquatic breeding habitat (PCE-1), but it does contain approximately 0.37-acre (380 linear feet) of non-breeding aquatic and riparian habitat (PCE-2) with California red-legged frogs documented on site.

The remaining 56.51 acres of the 56.88-acre compensation area contains suitable upland (PCE-3) and dispersal (PCE-4) habitat comprising actively grazed non-native annual grasslands. Beechey ground squirrels are abundant throughout the compensation area and provide several burrow networks that offer refugia from predators, heat and desiccation. The grasslands are characteristic of grazed grasslands throughout northern Alameda County and are set within a contiguous matrix of grazed grasslands extending in all cardinal directions providing predominantly unrestricted movement, dispersal, foraging and refugia opportunities.

10. Add the following to the California tiger salamander environmental baseline under the **Status of the Species and Environmental Baseline** on page 37:

The 56.88-acre off-site compensation site at the Eagle Ridge Preserve comprises upland and dispersal habitat characterized by grazed, non-native annual grasslands among moderately sloping topography. No breeding habitat was identified within this portion of the action area; however, surveys conducted by LSA Associates in 2009 and Olberding Environmental, Inc., in 2010 documented evidence of breeding (larvae and eggs) in the stock pond approximately 750 feet southwest of the easement boundary and within the West Branch of Cayetano Creek where it flows through the preserve (Olberding Environmental, Inc., 2010). Their report identified more than 50 ponds within 1.24 miles of the preserve boundaries. Caltrans proposes to construct a 0.2-acre seasonal wetland adjacent to the West Branch of Cayetano Creek in the eastern portion of the easement area and will be designed to function as a breeding pond for Central California tiger salamander. Beechey ground squirrels are abundant throughout the easement area and the Eagle Ranch Preserve within which it presides. The entire 56.88-acre easement area provides suitable upland and dispersal habitat and is located within a contiguous matrix of grazed grasslands extending in all cardinal directions providing predominantly

unrestricted movement, dispersal, foraging and refugia opportunities for Central California tiger salamander.

11. Add the following to the **Status of the Species and Environmental Baseline** following the California tiger salamander environmental baseline on Page 37:

Central California Tiger Salamander Critical Habitat

Critical habitat was designated on August 23, 2005 in 19 counties for the Central Valley DPS and is divided into four geographic regions: (1) Central Valley Region; (2) Southern San Joaquin Region; (3) East Bay Region; and (4) Central Coast Region (70 FR 49379). The rule identifies approximately 199,109 acres (80,576 hectares) within 32 critical habitat units.

Critical habitat is defined in Section 3 of the Act as: (1) The specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (a) essential to the conservation of the species and (b) that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. In determining which areas to designate as critical habitat, the Service considers those physical and biological features that are essential to a species' conservation and that may require special management considerations or protection (50 CFR 424.12(b)). The Service is required to list the known PCE's together with the critical habitat description. Such physical and biological features include, but are not limited to, the following:

1. Space for individual and population growth, and for normal behavior;
2. Food, water, air, light, minerals, or other nutritional or physiological requirements;
3. Cover or shelter;
4. Sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and
5. Generally, habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

Critical habitat was designated on August 23, 2005 in 19 counties for the Central Valley DPS and is divided into four geographic regions: (1) Central Valley Region; (2) Southern San Joaquin Region; (3) East Bay Region; and (4) Central Coast Region (70 FR 49379). The rule identifies approximately 199,109 acres (80,576 hectares) within 32 critical habitat units.

The PCE's for the Central California tiger salamander are based on our current knowledge of the life history, biology, and ecology of the species and the relationship of its essential life history functions to its habitat, we have determined that the Central Valley population of the tiger salamander requires the following PCE's: (1) Standing bodies of fresh water including natural and manmade (e.g., stock) ponds, vernal pools, and other ephemeral or permanent water bodies which typically support inundation

during winter rains and hold water for a minimum of 12 weeks in a year of average rainfall; (2) Upland habitats adjacent to and accessible from breeding ponds that contain small mammal burrows or other underground habitat that California tiger salamanders depend upon for food, shelter, and protection from the elements and predation; and (3) Accessible upland dispersal habitat between occupied locations that allow for movement between such sites.

1. *PCE 1*: The requisite aquatic habitat described as the first PCE is essential for the Central California tiger salamander for providing space, food, and cover necessary to support reproduction and to sustain early life history stages of larval and juvenile California tiger salamander. Aquatic and breeding habitats consist of fresh water bodies, including natural and artificial (e.g., stock) ponds, vernal pools, and vernal pool complexes. To be considered essential, aquatic and breeding habitats must have the capability to hold water for a minimum of 12 weeks in the winter or spring in a year of average rainfall, the amount of time needed for California tiger salamander larvae to metamorphose into juveniles capable of surviving in upland habitats. During periods of drought or less-than-average rainfall, these sites may not hold water long enough for individuals to complete metamorphosis; however, these sites would still be considered essential because they constitute breeding habitat in years of average rainfall.

2. *PCE 2*: Essential upland habitats containing underground refugia described as the second PCE are essential for the survival of the Central Valley population's adult and juvenile life history stages. Adult and juvenile (i.e., those that have recently undergone metamorphosis) California tiger salamanders are primarily terrestrial; adults enter aquatic habitats only for relatively short periods of time during the fall and winter to breed. For the majority of their life cycle, California tiger salamanders survive within upland habitats containing underground refugia typically in the form of small mammal burrows. The California tiger salamander cannot persist without upland underground refugia. These underground refugia provide protection from the hot, dry weather typical of California in the nonbreeding season. The California tiger salamander also forages in the small mammal burrows and rely on the burrows for protection from predators. The presence of small burrowing mammal populations is essential for constructing and maintaining burrows. Without the continuing presence of small mammal burrows in upland habitats, the California tiger salamander would not be able to survive.

3. *PCE 3*: The dispersal habitats described as the third PCE are essential for the conservation of the Central California tiger salamander. Protecting the ability of California tiger salamander to move freely across the landscape in search of suitable aquatic and upland habitats is essential in maintaining gene flow, recolonization, and a healthy population structure. Movement between areas containing suitable upland and aquatic habitats (i.e., dispersal) is restricted due to inhospitable conditions around and between areas of suitable habitats. Because many of the areas of suitable habitats may be small and support small numbers of salamanders, local extirpation of these small units may be common. Essential dispersal habitat generally consists of upland areas adjacent to essential aquatic habitats that are not isolated from essential aquatic habitats by barriers that California tiger salamanders cannot cross. Essential dispersal habitats provide connectivity among suitable aquatic and upland habitats. While the California tiger salamander can bypass many obstacles, and do not require a particular type

of habitat for dispersal, habitat connecting essential aquatic and upland habitats need to be free of barriers (e.g., a physical or biological feature that prevents salamanders from dispersing beyond the feature) to function effectively. Examples of barriers are areas of steep topography devoid of soil or vegetation. Agricultural lands such as row crops, orchards, vineyards, and pastures do not constitute barriers to the dispersal of California tiger salamander.

With the designation of critical habitat, the Service intends to conserve the physical and biological features that are essential to the conservation of the species, through the identification of the appropriate quantity and spatial arrangement of the PCE's sufficient to support the life-history functions of the species. Because not all life-history functions require all the PCE's, not all areas designated as critical habitat will contain all the PCE's. Please refer to 70 FR 49379 for additional information on Central California tiger salamander critical habitat.

Environmental Baseline

The 56.88-acre off-site compensation area at the Eagle Ridge Preserve is located within the Central Valley Doolan Canyon critical habitat unit (Unit 18) for the Central California tiger salamander. This unit comprises approximately 1,178 acres. Unit 18 comprises approximately 13.98 acres of the 56.88-acre conservation easement and is situated along the westernmost portion of the easement area. This area comprises approximately 1.2 percent of the total unit acreage and is entirely composed of upland (PCE-2) and dispersal (PCE-3) habitat. The critical habitat designation listing (70 FR 49379) identifies the threats that require special management considerations for this unit to include: "*urban developments, agricultural land conversions, and associated infrastructure including road construction which could destroy or degrade aquatic habitat essential for breeding and rearing; destroy, degrade, or fragment upland habitat essential for growth, feeding, resting, and aestivation; or destroy, degrade, or fragment habitat essential for dispersal and connectivity*". The easement does not include California tiger salamander breeding habitat (PCE 1) but Caltrans proposes to construct a 0.2-acre seasonal wetland as part of a wetland enhancement and creation project within the easement. The wetland will be located adjacent to the West Branch of Cayetano Creek approximately 2,000 feet east of Unit 18 and within the upland and dispersal range of Central California tiger salamander that may breed in the newly constructed wetland.

12. Add the following to the San Joaquin kit fox environmental baseline under the **Status of the Species and Environmental Baseline** on page 48:

The 56.88-acre off-site compensation site at the Eagle Ridge Preserve is located within the northern range of the San Joaquin kit fox. The compensation site is characterized by grazed, non-native annual grasslands among moderately sloping topography with moderate Beechey ground squirrel activity. The compensation site supports a sustainable prey base and is situated within a contiguous matrix of grazed grasslands extending in all cardinal directions providing unrestricted movement, dispersal, foraging and refugia opportunities for San Joaquin kit fox.

13. Change the effected California tiger salamander habitat area calculations from 8.55 acres to 12.65 acres in the last two paragraphs of the **Effects of the Action** under the California red-legged frog and California tiger salamander subheading on page 53 from:

Construction within terrestrial habitat would result in the permanent loss and/or degradation of 19.39 acres of upland California red-legged frog habitat, which may adversely affect foraging, sheltering and dispersing juvenile and adult frogs within the action area. Construction of auxiliary lanes, retaining walls, modifications to intersections and bridge expansions would result in the permanent loss and/or degradation of 8.55 acres of upland Central California tiger salamander habitat, which may adversely affect aestivating, foraging and dispersing juvenile and adult salamanders within the action area, since they use small mammal burrows and soil crevices for shelter and aestivation outside of their breeding season. Upland habitat within the action area provides a link between existing frog populations within Arroyo Las Positas, Arroyo Seco, Cayetano and Tassajara creeks, and other nearby populations to the north and east. Frogs and salamanders in terrestrial habitat may also become entombed under soil, crushed or damaged by equipment or personnel, thereby resulting in harm or mortality to individual frogs. Adverse effects will be partially minimized by erecting construction fencing to keep construction workers from straying outside the designated work zone and disturbing additional habitat and/or species; educating workers about the presence of California red-legged frogs and Central California tiger salamander, their habitat, identification, regulatory laws, and avoidance and minimization measures; and requiring a Service-approved biologist to be present to monitor project activities within or adjacent to suitable habitat.

The permanent loss and/or degradation of: 1) 0.73-acre of California red-legged frog breeding and year-round aquatic habitat, 2) 19.39 acres of California red-legged frog upland foraging, sheltering and dispersal habitat, 3) 0.013-acre of Central California tiger salamander breeding and larval rearing habitat, and 4) 8.55 acres of Central California tiger salamander upland aestivation, foraging and dispersal habitat, will result in the take of all frogs and salamanders within these areas as a direct result of habitat loss. Caltrans has proposed a compensatory habitat conservation measure to provide minimization for the effects on the California red-legged frog and Central California tiger salamander at a ratio of 1:1.

To:

Construction within terrestrial habitat would result in the permanent loss and/or degradation of 19.39 acres of upland California red-legged frog habitat, which may adversely affect foraging, sheltering and dispersing juvenile and adult frogs within the action area. Construction of auxiliary lanes, retaining walls, modifications to intersections and bridge expansions would result in the permanent loss and/or degradation of 12.65 acres of upland California tiger salamander habitat, which may adversely affect sheltering, foraging and dispersing juvenile and adult salamanders within the action area, since they use small mammal burrows, soil crevices and other subterranean habitat throughout the year. Upland habitat within the action area provides a link between existing frog populations within Arroyo Las Positas, Arroyo Seco, Cayetano and Tassajara creeks, and other nearby populations to the north and east. Frogs and salamanders in terrestrial habitat may also become entombed in collapsed burrows, or crushed or injured by equipment or personnel resulting in harm or mortality. Adverse effects will be partially minimized by erecting construction fencing to keep construction

workers from straying outside the project footprint and disturbing additional habitat and/or species; educating workers about the presence of California red-legged frogs and Central California tiger salamanders, their habitat requirements and identification; regulatory laws protecting these species; avoidance and minimization measures; and use of Service-approved biologists to monitor project activities within or adjacent to suitable habitat.

The proposed action will result in the permanent loss and/or degradation of: 1) 0.73-acre of California red-legged frog breeding and non-breeding aquatic habitat; 2) 19.39 acres of California red-legged frog upland foraging, sheltering and dispersal habitat; 3) 0.013-acre of Central California tiger salamander breeding and larval rearing habitat; and 4) 12.65 acres of Central California tiger salamander upland, foraging and dispersal habitat. The Service anticipates take of California red-legged frogs and Central California tiger salamanders as a result of the habitat loss and degradation. Caltrans has proposed to minimize the effects of habitat loss on California red-legged frogs and Central California tiger salamanders through habitat acquisition, preservation and management at a ratio of 1:1.

14. Add the following to the **Effects of the Action** under the California red-legged frog and California tiger salamander subheading on page 53:

The proposed creation of a 0.2-acre seasonal wetland and 287 linear feet of riparian enhancement at the 56.88-acre off-site compensation area at the Eagle Ridge Preserve may result in the mortality, harm and/or harassment of subadult and adult California red-legged frogs and/or Central California tiger salamanders inhabiting the West Branch of the Cayetano Creek and adjacent upland habitat during the construction phase of the project. Once complete the habitat modifications will improve the overall quality of the habitat for both species by providing additional breeding habitat for Central California tiger salamanders and non-breeding aquatic foraging, oversummering and refugia habitat for California red-legged frogs. The placement of 56.88 acres of occupied California red-legged frog and Central California tiger salamander habitat under a conservation easement and long-term management of the easement area will protect this habitat in perpetuity and will be wholly beneficial for these species.

15. Add the following to the end of the first paragraph under the San Joaquin kit fox subheading of the **Effects of the Action** on page 53:

...and 8) construction of a 0.2-acre wetland and the enhancement of 287 linear feet of riparian habitat at the Eagle Ridge Preserve.

16. Add the following to the **Effects of the Action** on page 53:

<u>California Red-legged Frog Critical Habitat</u>

The proposed action will improve the overall quality of designated critical habitat by creating 0.2-acre wetland and enhancing 0.37-acre/287 linear feet of riparian habitat by planting a mixture of trees (i.e., valley oak, California black walnut, red willow, arroyo and willow) and ground cover (i.e., California wild rose, California blackberry and wild lilac) (Olberding Environmental, Inc. 2010). The creation of the seasonal wetland will convert 0.2-acre of upland (PCE 3) and dispersal (PCE 4) habitat into non-breeding aquatic (PCE 2) habitat. Over 99 percent of the habitat within the 56.88 acre easement area comprises upland and dispersal habitat with only a small portion (0.37-acre)

comprising non-breeding aquatic habitat; therefore, conversion of upland and dispersal habitat to non-breeding aquatic habitat will benefit the California red-legged frog and designated critical habitat by improving the overall functionality and diversity of habitat within the easement lands. Implementation of the long-term management plan (Olberding Environmental, Inc. 2010) will serve to maintain the function and values of the habitat in perpetuity.

Central California Tiger Salamander Critical Habitat

The proposed action will not result in the permanent or temporary loss and/or degradation of habitat. Wetland creation, riparian enhancement and construction staging and access areas are not located within designated critical habitat. The 13.98 acres of critical habitat that occur within the off-site compensation land have been placed in a conservation easement that was recorded on August 16, 2011. Implementation of the long-term management plan (Olberding Environmental, Inc. 2010) will serve to maintain the function and values of the habitat in perpetuity.

17. Add the following to the **Amount or Extent of Take** for the California red-legged frog on page 61:

The Service is quantifying incidental take at the proposed 56.88-acre Eagle Ranch Preserve off-site compensation area as the injury and mortality of no more than one adult or subadult California red-legged frog and the capture, harm and harassment of all California red-legged frogs inhabiting or utilizing the 56.88-acre Eagle Ridge Preserve compensation area and 0.75-acre access road. Incidental take of eggs or larvae is not anticipated, since breeding of California red-legged frogs have not been documented within the portion of the West Branch of Cayetano Creek within the compensation area based on focused surveys conducted between 2008 and 2010. The Service anticipates that proposed action may result in take of subadult and adult life history stages as a result of the construction of a 0.2-acre seasonal wetland and enhancement of 287 linear feet of riparian habitat. Upon implementation of the following Reasonable and Prudent Measures, all California red-legged frogs within the action area in proportion to the amount, life history stage, and the type and location of take outlined above will become exempt from the prohibitions described under section 9 of the Act. No other forms of take are exempted under this biological opinion.

18. Add the following to the **Amount or Extent of Take** for the Central California tiger salamander on page 61:

The Service is quantifying incidental take at the proposed 56.88-acre Eagle Ranch Preserve off-site compensation area as the injury and mortality of no more than one adult or subadult Central California tiger salamander and the capture, harm and harassment of all Central California tiger salamanders inhabiting or utilizing the 56.88-acre Eagle Ridge Preserve compensation area and 0.75-acre access road. Incidental take of eggs or larvae is not anticipated, since no breeding is present within the 56.88-acre Eagle Ridge Preserve compensation area and 0.75-acre access road. The Service anticipates that the proposed action may result in take of subadult and adult life history stages as a result of the construction of a 0.2-acre seasonal wetland and enhancement of 287 linear feet of riparian habitat. Upon implementation of the following Reasonable and Prudent Measures, all Central California tiger salamanders within the action area in proportion to the amount, life history stage, and the type and location of take outlined above will

become exempt from the prohibitions described under section 9 of the Act. No other forms of take are exempted under this biological opinion.

19. Add the following to the **Amount or Extent of Take** for the San Joaquin kit fox on page 61:

The Service is quantifying incidental take at the proposed 56.88-acre Eagle Ranch Preserve off-site compensation area as the injury and mortality of no more than one juvenile or adult San Joaquin kit fox and the harm and harassment of all San Joaquin kit foxes inhabiting or utilizing the 56.88-acre Eagle Ridge Preserve compensation area and 0.75-acre access road. The Service anticipates that proposed action may result in take of juvenile or adult San Joaquin kit fox as a result of the construction of a 0.2-acre seasonal wetland and enhancement of 287 linear feet of riparian habitat. Upon implementation of the following Reasonable and Prudent Measures, all San Joaquin kit fox within the action area in proportion to the amount, life history stage, and the type and location of take outlined above will become exempt from the prohibitions described under section 9 of the Act. No other forms of take are exempted under this biological opinion.

20. Change *Term and Condition 1.a.* on page 62 from:

Caltrans shall include Special Provisions that include the Conservation Measures and the Terms and Conditions of this biological opinion in the solicitation for bid information for all contracts for the project that are issued by them to all contractors. In addition, Caltrans shall educate and inform contractors involved in the project as to the requirements of the biological opinion.

To:

Caltrans shall require all contractors and subcontractors to comply with the Act in the performance of the proposed action and shall perform the action as outlined in the Project Description of this biological opinion. Caltrans shall include language in their contracts that expressly requires all contractors and subcontractors to work within the boundaries of the project footprint identified in this biological opinion, including all vehicle parking, staging, laydown areas, and access roads. Changes to the Project Description or performance of work outside the scope of this biological opinion are subject to the requirements of reinitiation of formal consultation.

21. Change the area calculations for Central California tiger salamanders in *Term and Condition 1.b.2.* on page 64 from:

Species	Total Project Effects	Effects Compensated by Other Projects	Ratio	Compensation Required
Vernal pool fairy shrimp	0.013 ac	n/a	1:1	0.013 ac
California red-legged frog	20.09 ac	1.13 ac	3:1	56.88 ac
California tiger salamander	8.56 ac	0.04 ac	3:1	25.56 ac
San Joaquin kit fox	21.21 ac	2.336 ac	1:1	18.874 ac

To:

Species	Total Project Effects	Effects Compensated by Other Projects	Ratio	Compensation Required
Vernal pool fairy shrimp	0.013 ac	n/a	1:1	0.013 ac
California red-legged frog	20.09 ac	1.13 ac	3:1	56.88 ac
Central California tiger salamander	12.65 ac	0.04 ac	3:1	37.83 ac
San Joaquin kit fox	21.21 ac	2.336 ac	1:1	18.874 ac

22. Change *Term and Condition 1.b.ii.2.* on page 64 from:

California red-legged frog habitat (56.88 acres) shall: (1) be located within Alameda County north of I-580 and east of Fallon Road; and (2) support breeding, provide upland habitat within 300 feet of a known breeding site, and/or function as dispersal/ migratory habitat.

To:

California red-legged frog habitat (56.88 acres) shall: (1) be located within Alameda County north of I-580 and east of Fallon Road; and (2) support breeding, provide upland habitat within 300 feet of a known breeding site, and/or function as dispersal/ migratory habitat. The Service will accept the 56.88 acres of habitat located at the Eagle Ranch Preserve as outlined in the Long-Term Resources Management Plan (Olberding Environmental, Inc. 2010) in so far as it meets the requirements of this term and condition.

23. Change *Term and Condition 1.b.ii.3.* on page 64 from:

California tiger salamander habitat (25.56 acres) shall: (1) be located within Alameda County north of I-580 and east of Fallon Road; and (2) support breeding, provide upland habitat within 2,200 feet of a known breeding site, and/or function as dispersal/ migratory habitat.

To:

Central California tiger salamander habitat (37.83 acres) shall: (1) be located within Alameda County north of I-580 and east of Fallon Road; and (2) support breeding, provide upland habitat within 2,200 feet of a known breeding site, and/or function as dispersal/ migratory habitat. The Service will accept the 56.88 acres of habitat located at the Eagle Ranch Preserve as outlined in the Long-Term Resources Management Plan (Olberding Environmental, Inc. 2010) in so far as it meets the requirements of this term and condition.

24. Change *Term and Condition 1.b.ii.4.* on page 64 from:

San Joaquin kit fox habitat (18.874 acres) shall: (1) be located within the kit fox recovery plan area in Alameda County north of I-580; (2) comprise a contiguous, undeveloped tract(s) of land that contributes toward the dispersal of the species into the northern range; (3) be located within grassland habitat that in part comprise slopes less than 22 percent with loose-textured, friable soils, and active ground squirrel activity; (4) provide a

sufficient prey base to support to species; and (5) be free of rodenticide usage that could result in additional take of kit fox.

To:

San Joaquin kit fox habitat (18.874 acres) shall: (1) be located within the kit fox recovery plan area in Alameda County north of I-580; (2) comprise a contiguous, undeveloped tract(s) of land that contributes toward the dispersal of the species into the northern range; (3) be located within grassland habitat that in part comprise slopes less than 22 percent with loose-textured, friable soils, and active ground squirrel activity; (4) provide a sufficient prey base to support to species; and (5) be free of rodenticide usage that could result in additional take of kit fox. The Service will accept the 56.88 acres of habitat located at the Eagle Ranch Preserve as outlined in the Long-Term Resources Management Plan (Olberding Environmental, Inc. 2010) in so far as it meets the requirements of this term and condition.

25. Remove *Term and Condition 2.c.*

26. Add the following as *Term and Condition 2.h.*:

To prevent inadvertent entrapment of animals during construction, all excavated, steep-walled holes or trenches more than 1-foot deep will be covered with plywood or similar materials at the close of each working day or provided with one or more escape ramps constructed of earth fill or wooden planks. The Service-approved biologist shall inspect all holes and trenches at the beginning of each workday and before such holes or trenches are filled. All replacement pipes, culverts, or similar structures stored in the action area overnight will be inspected before they are subsequently moved, capped and/or buried. If at any time a listed species is discovered, the Resident Engineer and Service-approved biologist will be notified immediately and the Service-approved biologist shall implement the species observation and handling protocol outlined in Term and Condition 2.d.

27. Add the following as *Term and Condition 2.i.*:

Construction actions within vegetated areas will be scheduled to occur between April 15 and October 15 to minimize the effects on vernal pool fairy shrimp, California red-legged frogs, Central California tiger salamanders and their habitats. Service-approval to continue work within suitable vernal pool fairy shrimp, California red-legged frog or Central California tiger salamander habitat outside this seasonal work window will be considered by the Service on a case-by-case basis.

28. Add the following as *Term and Condition 2.j.*:

Prior to the start of construction, wildlife exclusion fencing shall be installed along the project footprint in all areas where California red-legged frogs, Central California tiger salamanders or San Joaquin kit fox could enter the project site. The location and extent of wildlife exclusion fencing shall be presented to the Service and CDFG for approval prior project initiation. The location, fencing materials and installation specifications, and monitoring and repair criteria shall be approved by the Service and CDFG prior to project initiation. Caltrans shall include the wildlife exclusion fencing specifications on the final project plans. Caltrans shall include the wildlife exclusion fencing specifications including installation and maintenance criteria in the bid solicitation

package special provisions. The wildlife exclusion fencing shall remain in place throughout the duration of the project and shall be regularly inspected and fully maintained. Repairs to the wildlife exclusion fencing shall be made within 24 hours of discovery. Upon project completion the wildlife exclusion fencing shall be completely removed, the area cleaned of debris and trash, and returned to natural conditions.

29. Add the following as *Term and Condition 2.k.*:

A Service-approved biologist(s) shall be onsite during all activities that may result in take of vernal pool fairy shrimp, California red-legged frogs, Central California tiger salamanders or San Joaquin kit fox as determined by the Service. The Service will consider the implementation of specific project activities without the oversight of an on-site Service-approved biologist on a case-by-case basis.

30. Add the following as *Term and Condition 2.l.*:

Preconstruction surveys shall be conducted by a Service-approved biologist immediately prior to the initiation of any ground disturbing activities and vegetation clearing that may result in take of California red-legged frogs, Central California tiger salamanders or San Joaquin kit fox as determined by the Service. All suitable aquatic and terrestrial habitat including refugia habitat such as dense vegetation, small woody debris, refuse, burrows, etc., shall be thoroughly inspected. The Service-approved biologist(s) shall conduct clearance surveys at the beginning of each day and regularly throughout the workday when construction activities are occurring that may result in take of California red-legged frogs, Central California tiger salamanders or San Joaquin kit fox as determined by the Service. If a California red-legged frog is observed, the Service-approved biologist shall implement the species observation and handling protocol outlined in Term and Condition 2.d.

31. Add the following as *Term and Condition 2.m.*:

The Service, CDFG, and/or their designated agents shall have direct access to the action area and all Service-approved biologists to ensure compliance this biological opinion. Access to areas outside of the Caltrans right-of-way or easements shall be coordinated by Caltrans with the respective property owners.

32. Add the following as *Term and Condition 2.n.*:

To prevent California red-legged frogs and Central California tiger salamanders from becoming entangled, trapped or injured, erosion control materials that use plastic or synthetic mono-filament netting shall not be used within the action area. This includes products that use photodegradable or biodegradable synthetic netting, which can take several months to decompose. Acceptable materials include natural fibers such as jute or twine, or tackified hydroseeding compounds.

33. Throughout the document change the Service contact information from:

The Service contact is Chris Nagano, Division Chief, Endangered Species Program, Sacramento Fish and Wildlife Office at telephone (916) 414-6600.

To:

The Service contact is Coast-Bay/Forest-Foothills Division Chief, Endangered Species Program, Sacramento Fish and Wildlife Office at telephone (916) 414-6600.

This concludes the reinitiation of formal consultation on the I-580 Westbound HOV Lane Project. The remainder of the September 17, 2009, biological opinion is unchanged. If you have questions concerning this reinitiation, please contact Jerry Roe or Ryan Olah, Coast Bay/Forest Foothills Division Chief, at (916) 414-6600.

Sincerely,

Susan K. Moore
Field Supervisor

cc:
Issa Bouri, Valerie Shearer, and Monica Gan, Caltrans, Oakland, CA
Marcia Grefsrud, California Department of Fish and Game, Yountville, CA

LITERATURE CITED

Olberding Environmental, Inc. 2010. *Long-Term Resources Management Plan for the Eagle Ridge Preserve Property (56.88 acre ACCMA Parcel), Alameda County, California.* Prepared for Eagle Ridge Preserve, LLC. November.

DEPARTMENT OF TRANSPORTATION
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Flex your power!
Be energy efficient!

July 6, 2011

Susan Moore, Field Supervisor
U.S. Fish and Wildlife Service
Endangered Species Division
2800 Cottage Way, Room W-2605
Sacramento, California 95825
916.414.6684

Attn: Jerry Roe

Subject: Amendment to: *Biological Opinion on the Effects of the Proposed Interstate 580 Westbound HOV Lane Project, Alameda County, California (Caltrans EA 29082K) on the Endangered Vernal Pool Fairy Shrimp, Threatened California Red-Legged Frog, Threatened California Tiger Salamander Central Valley Distinct Population Segment, and Endangered San Joaquin Kit Fox to Address Offsite Mitigation at Eagle Ridge Preserve* (Service file # 81420-2008-F-0487-2).

Dear Mr. Roe:

The California Department of Transportation (Caltrans) and the United States Fish and Wildlife Service (Service) completed consultation on the Interstate 580 Westbound HOV Lane Project (Project) on September 17, 2009 (Service File #81420-2008-F-0487-2). The Biological Opinion (BO) addresses effects and on-site conservation measures for the vernal pool fairy shrimp (*Branchinecta lynchi*), California red-legged frog (*Rana aurora draytonii*), Central Valley DPS tiger salamander (*Ambystoma californiense*), and San Joaquin kit fox (*Vulpes macrotis mutica*) and requires Caltrans to provide compensatory mitigation off-site. However, the off-site mitigation location and the methods proposed for off-site mitigation activities had not yet been determined at the time the BO was issued; subsequently, Caltrans is requesting reinitiation for the incidental take of these same species during off-site mitigation work currently planned at the Eagle Ridge Preserve.

The Eagle Ridge Preserve is located immediately south of the Contra Costa/Alameda County line, northeast of the City of Dublin in Alameda County, west of North Livermore Road and south of Manning Road. The Interstate 580 Westbound HOV Lane Project and Eagle Ridge Preserve are both in the Livermore Valley and in the same watershed and have similar soil and hydrologic conditions. Eagle Ridge Preserve encompasses 535 acres of grass-covered rolling hills which serve as a watershed for the west branch of Cayetano Creek which flows diagonally through the center of the site. Numerous pools occur within the creek channel, where roughly 600 feet of willow riparian habitat is located at the southeastern end of the property. A 0.25-acre stock pond

is also located at the southern end of the property. Several large ground squirrel (*Spermophilus beecheyi*) colonies have been observed throughout the grasslands, providing a network of burrows. Eagle Ridge Preserve is surrounded by grazed grassland habitat, has 50+ large stock ponds within 1.24 miles, and is located within Service-designated critical habitat for both the California tiger salamander (CTS) and California red-legged frog (CRLF). The property is also within the range of the San Joaquin kit fox (SJKF).

The proposed 56.88-acre Mitigation Area is located within Eagle Ridge Preserve and is intended to provide the compensatory habitat mitigation required under the BO for the CRLF (56.88 acres), CTS (25.56 acres), and SJKF (18.874 acres). The Mitigation Area includes non-native annual grassland habitat along a hillside and approximately 300 feet of the creek channel at the southeastern section of the Eagle Ridge Preserve Property. There are no structures on the site. The west branch of Cayetano Creek flows from northwest to southeast through the Mitigation Area and supports a stand of mature willow riparian vegetation. A detailed description of the Mitigation Area, including ownership status, present and historical uses, jurisdictional areas, aquatic functions, geology, soils, and vegetation can be found in the Mitigation & Monitoring Plan for the Eagle Ridge Preserve Property (Olberding Environmental Inc., 2010), which is appended as Exhibit 1.

In May 2010, Olberding Environmental, Inc. conducted an assessment of habitat suitable for use by the CRLF and CTS within the Eagle Ridge Preserve property, including the Mitigation Area (Exhibit 2). Twenty California Natural Diversity Database (CNDDB) records for the CRLF and 10 CNDDB records for the CTS indicate they were found to occur within the Eagle Ridge Preserve property or the immediate vicinity (approximately 5 miles). Further, surveys performed in 2009 by LSA and Associates and in 2010 by Olberding Environmental located CRLF both within and immediately adjacent to Eagle Ridge Preserve and CTS were located immediately adjacent to the property. The authors concluded that suitable breeding habitat (i.e., one pond and a creek channel with some associated riparian habitat) exists for both species within the Eagle Ridge Preserve property. In addition, both species are expected to disperse onto the property due to the presence of upland and breeding habitat in the surrounding area, numerous known occurrences of CRLF and CTS in close proximity to the site, and the lack of migration barriers between the site and nearby documented breeding ponds. Within the Mitigation Area, the creek channel provides suitable aquatic habitat for the CRLF and the numerous small mammal burrows that occur in the uplands provide refugia for both the CRLF and CTS. The Mitigation Area also provides suitable habitat for the SJKF.

To compensate for Project-related wetland impacts, Caltrans proposes to create 0.2 acre of seasonal wetlands within the 56.88-acre Mitigation Area. In addition, approximately 287 linear feet of proposed riparian enhancement would provide additional vegetative cover along a segment of the west branch of Cayetano Creek to mitigate Project impacts to channel and creek habitats.

Site preparation will involve excavation equipment and front-end loaders to excavate upland areas down to the elevation required for wetland habitat development. The wetland creation site will first be mowed close to the ground surface and the upper 4 to 6 inches of soil will be excavated and stockpiled at a designated upland location. This soil will subsequently be re-applied to the newly constructed wetlands to provide organic matter and potential wetland plant seed material. The mitigation construction area will be mass-graded/excavated using a rubber-tired backhoe,

front-end loader, and/or earth mover to form bottom micro-topography and side slopes. The area will be excavated to an approximate depth of 18 inches with side slopes of 1:5 or greater. Finish grading will involve grading along the edges of the excavated area to tie into the existing gently sloping topography and grading the bottom of the created wetland area to provide the appropriate flat topographic relief (<1-2 percent slope) for wetland hydrology, soil, and plant development. The created/restored wetland will be seeded with a native seed mix to enhance wetland vegetation growth. Riparian plant installation will be performed with the use of a truck-mounted augur. Construction activities are anticipated to begin August 15, 2011 and end by October 15, 2011.

Although the creation of 0.2 acre of seasonal wetlands is expected to increase the long-term suitability of the habitat for the CRLF and CTS, construction, maintenance, and monitoring activities may result in the direct injury or mortality of individuals of these species, as well as the SJKF. SJKF may be injured or killed as a result of equipment use or vehicle traffic. Daily and seasonal movements throughout individuals' home ranges may also be temporarily affected during construction activities because of disturbance, and substrate vibrations may cause individual CRLF and CTS to move out of refugia, exposing them to a greater risk of predation or desiccation. In addition, CRLF, CTS, and SJKF may be crushed in their burrows by the passage of heavy equipment, or trapped and suffocated.

The following measures will be implemented to avoid or minimize potential impacts to the CRLF, CTS, and SJKF:

- Before the onset of wetland creation and restoration activities, a qualified biologist shall conduct an education program for all construction personnel. At a minimum, the training shall include a description of the CTS, CRLF, SJKF and their habitats; the occurrence of these species within the Mitigation Area; an explanation of the species' status and protection under the FESA; the measures that are being implemented to conserve the species, and their habitats as they relate to the work site; and the Mitigation Area boundaries within which construction may occur. A fact sheet conveying this information shall be prepared for distribution to all construction and other project personnel that may enter the work site. Upon completion of the program, personnel shall sign a form stating that they attended the program and understand all the avoidance and minimization measures and implications of FESA.
- Environmentally Sensitive Areas (ESAs) shall be established along the outside perimeter of sensitive habitats that occur in, and immediately adjacent to, wetland creation or restoration areas. Orange barrier fencing shall be installed along the work area perimeter adjacent to sensitive habitats to clearly delineate the extent of the area where construction may occur. The ESAs will prevent construction encroachment into sensitive habitats supporting special-status species, including creek habitats located directly adjacent to but not within the activity areas.
- A Service-approved biologist(s) shall be on-site during all activities that may result in the take of CRLF, CTS, or SJKF. The biologist shall maintain monitoring records that include (1) the start and end time of each day's monitoring effort; (2) a statement identifying the species, including general wildlife species that were encountered, and the time and location where such species were found; (3) the time the specimen was identified and by whom and its condition; (4) a description of any actions taken.

- Prior to the onset of any ground-disturbing activities, a Service-approved biologist shall conduct a pre-construction survey for CTS, CRLF, SJKF, and potential SJKF dens within the activity area.
- In the event that a CRLF, CTS, or SJKF is found within the construction zone, or enters the construction zone after the onset of activities, all construction activities in the immediate vicinity shall be suspended until the animal leaves the site voluntarily or is relocated by a Service-approved biologist to the nearest suitable habitat outside of the area where actions would result in harm or harassment. If CTS are captured from burrows, they shall be relocated to the nearest active burrow network outside of the work zone. If a SJKF den is observed within the activity area, the type (natal or non-natal) and status (occupied or unoccupied) shall be identified and the appropriate avoidance measures instituted based on the San Joaquin Kit Fox Survey Protocol for the Northern Range (Service 1999).
- A speed limit of 15 mph in unpaved portions of the Mitigation Area shall be enforced.
- Temporary construction routes shall be located outside of any designated ESAs. Access routes and the number and size of staging and work areas shall be limited to the minimum necessary to construct the project. Routes and boundaries of wetland creation and restoration activities shall be clearly marked prior to initiating construction or grading.
- All food and food-related trash items shall be enclosed in sealed trash containers and removed completely from the site at the end of each day.
- No pets shall be allowed anywhere in the Mitigation Area during construction.
- All equipment shall be maintained such that there will be no leaks of automotive fluids such as gasoline, oils, or solvents and a Spill Response Plan will be prepared. Hazardous materials such as fuels, oils, solvents, etc. shall be stored in sealable containers in a designated location that is at least 100 ft from wetlands and aquatic habitats.
- All travel routes and staging areas for equipment and materials shall be clearly marked.
- At the close of the workday, all excavated steep-walled holes or trenches more than 2 ft deep shall be covered with plywood or similar material. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. If at any time a trapped listed animal is discovered, the on-site biologist will immediately place escape ramps or other appropriate structures to allow the animal to escape.
- If possible, grading and clearing shall be conducted during the dry season (i.e., between 15 April and 15 October) of any given year. If grading cannot be confined to the dry season, the following additional measures shall be imposed:
    - A temporary barrier consisting of silt fencing, plywood, or suitable material at least 35 inches high that is buried 6 inches in the ground or sealed in a like manner to prevent incursion under the fence shall be placed immediately outside the construction fencing barriers to prevent CRLF and CTS potentially occurring off-site from entering the project site. A qualified biologist will inspect this barrier when it is constructed to verify that this requirement is met.

- The exclusion fence/barrier will be inspected during rain events. During inspections, the Service-approved biologist will inspect subterranean refugia for CRLF and CTS that may be within the activity area, and if any individuals are found, they shall be relocated by a Service-approved biologist to the nearest suitable habitat outside of the area where actions would result in harm or harassment.

- Upon completion of construction, access routes will be restored to original grade by filling in ruts with soils excavated from the constructed wetland areas and disking the route to loosen surface soils that were compacted by vehicular traffic.

In conclusion, the wetland creation and riparian habitat restoration activities planned at the Eagle Ridge Preserve Mitigation Area will increase the quality of the habitat for the CRLF and CTS. In addition, implementation of the above-listed measures will avoid or minimize potential impacts of these activities to the CRLF, CTS, and SJKF. Therefore, Caltrans requests reinitiation for the off-site mitigation work associated with the Interstate 580 Westbound HOV Lane Project based on the information provided in this letter and the attachments.

Please contact Branch Chief Christopher States at 510-286-7185 if you have any questions.

Sincerely,

JEFFREY G. JENSEN Signed for
Office Chief
Office of Biological Sciences and Permits

Exhibit 1: Eagle Ridge Preserve Mitigation and Monitoring Plan, Olberding Environmental Inc., November 2010
Exhibit 2: Eagle Ridge Preserve Habitat Assessment for the California Red-Legged Frog and California Tiger Salamander, Olberding Environmental Inc., October 2010

CC: Jerry Roe, U.S. Fish and Wildlife Service, Sacramento

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET, 16TH FLOOR
SAN FRANCISCO, CALIFORNIA 94103-1398

REPLY TO
ATTENTION OF

APR 17 2012

Regulatory Division

SUBJECT: File Number SPN-2008-00090S

Mr. Jeffrey Jensen
Office of Biological Sciences and Permits
California Department of Transportation, District 4
P.O. Box 23660
Oakland, California 94623-0660

Dear Mr. Jensen:

This letter is written in response to your submittal of January 30, 2012, concerning Department of the Army authorization for the Interstate 580 Westbound HOV Lanes Project. The project is located between Greenville Road and San Ramon Boulevard/Foothill Road on Interstate 580, through the City of Livermore, the City of Pleasanton, and the City of Dublin (Post Mile 8.29 to 21.43), in Alameda County, California.

The segment of Interstate 580 in the project area is subject to significant traffic congestion. Modeling of traffic conditions show that in the current configuration, congestion delay times will nearly double by 2035. The project will improve traffic operations in the area by constructing a westbound HOV lane, auxiliary lanes between exits, and redesigning ramps to improve traffic flow and ease the transition for merging traffic. Work within U.S. Army Corps of Engineers' (Corps) jurisdiction would include widening three bridges over Tassajara Creek and Arroyo Las Positas and the extension of a culvert on Arroyo Seco. Additional impacts will result from grading and widening shoulders for auxiliary lanes and reconfiguring interchanges.

Work will result in permanent impacts to 0.023 acres of wetlands and 0.028 acres of other waters of the U.S. The project will also temporarily impact 0.018 acres of wetlands and 0.445 acres of other waters to perform work and to dewater areas for construction access.

A summary of impacts to waters of the U.S. along the project corridor from west to east are as follows:

Feature Name	Impacts	Wetland Delineation Sheet	Design Layout Sheet
Tassajara Creek (PC-5)	0.167 ac (temporary), dewatering to widen bridge	Sheet 6 of 23 (Corps approved May 26, 2010)	Layout L-14 (contract 04-290874, dated March 26, 2010)
Arroyo las Positas (PC-3, EW-6, EW-7, and EW-8)	0.133 ac (temporary) dewatering to widen bridge	Sheet 15 of 23 (Corps approved May 26, 2010)	Layout L-7 (May 11, 2010)
Emergent Wetland 3 (EW-3)	0.016 ac (temporary) construction access	Sheet 16 of 23 (Corps approved May 26, 2010)	Layout L-11 (May 11, 2010)
Arroyo las Positas (PC-2, EW-5)	0.139 ac (temporary) dewatering to widen bridge	Sheet 17 of 23 (Corps approved May 26, 2010)	Layout L-13 (May 11, 2010)
Emergent Wetland 2 (EW-2)	0.002 ac (temporary) construction access	Sheet 17 of 23 (Corps approved May 26, 2010)	Layout L-13 (May 11, 2010)
Arroyo Seco (PC-1)	0.028 ac (permanent) culvert extension 0.006 ac (temporary) construction access	Sheet 18 of 23 (Corps approved May 26, 2010)	Layout L-16 (May 11, 2010)

Section 404 of the Clean Water Act (CWA) generally regulates the discharge of dredged or fill material below the plane of ordinary high water in non-tidal waters of the United States, below the high tide line in tidal waters of the United States, and within the lateral extent of wetlands adjacent to these waters. Section 10 of the Rivers and Harbors Act generally regulates construction of structures and work, including excavation, dredging, and discharges of dredged or fill material, occurring below the plane of mean high water in tidal waters of the United States; in former diked baylands currently below mean high water; outside the limits of mean high water but affecting the navigable capacity of tidal waters; or below the plane of ordinary high water in non-tidal waters designated as navigable waters of the United States. Navigable waters of the United States generally include all waters subject to the ebb and flow of the tide; and/or all waters presently used, or have been used in the past, or may be susceptible for future use to transport interstate or foreign commerce. An authorized jurisdictional determination was completed and dated certified June 15, 2010.

Based on a review of the information in your submittal, the project qualifies for authorization under Department of the Army Nationwide Permit (NWP) 14 for Linear Transportation Projects, 77 Fed. Reg. 10, February 21, 2012, pursuant to Section 404 of the

CWA of 1972, as amended, 33 U.S.C. § 1344 *et seq*. The project must be in compliance with the terms of the NWP, the general conditions of the Nationwide Permit Program, and the San Francisco District regional conditions (enclosure 1). You must also be in compliance with any special conditions specified in this letter for the NWP authorization to remain valid. Non-compliance with any term or condition could result in the revocation of the NWP authorization for your project, thereby requiring you to obtain an Individual Permit from the Corps. This NWP authorization does not obviate the need to obtain other State or local approvals required by law. All work shall be completed in accordance with the plans and drawings titled:

- "Layout L-1" through "Layout L-30", dated March 26, 2010
- "Layout L-1" through "Layout L-26", dated May 11, 2010
- "Tassajara Creek Bridge (Widen), General Plan", dated February 16, 2010
- "Arroyo las Positas Bridge (Widen), General Plan", dated March 25, 2010
- "Arroyo las Positas Bridge (Widen), General Plan" and "Arroyo Seco Creek Extension, General Plan", dated June 16, 2010.

This verification will remain valid for two years from the date of this letter. Activities which have commenced (i.e., are under construction) or are under contract to commence in reliance upon an NWP will remain authorized provided the activity is completed within 12 months of the date of an NWP's expiration, modification, or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 CFR 330.4(e) and 33 CFR 330.5 (c) or (d). The Chief of Engineers will periodically review NWPs and their conditions and will decide to either modify, reissue, or revoke the permits. If an NWP is not modified or reissued within five years of its effective date, it automatically expires and becomes null and void. It is incumbent upon you to remain informed of any changes to the NWPs. Changes to the NWPs would be announced by Public Notice posted on our website (http://www.spn.usace.army.mil/regulatory/index.html). Upon completion of the project and all associated mitigation requirements, you shall sign and return the Certification of Compliance, enclosure 2, verifying that you have complied with the terms and conditions of the permit.

You shall comply with all terms and conditions set forth by the "*Water Quality Certification for the Westbound Interstate 580 HOV Lane Construction Project, Cities of Dublin, Pleasanton, and Livermore, Alameda County*" issued by the San Francisco Bay, Regional Water Quality Control Board on July 11, 2011, enclosure 3. You shall consider such conditions to be an integral part of the NWP authorization for your project.

General Condition 18 stipulates that project authorization under a NWP does not allow for the incidental take of any federally-listed species in the absences of a biological opinion (BO) with incidental take provisions. As the principal federal lead agency for this project, California

Department of Transportation initiated consultation with the United States Fish and Wildlife Service (USFWS) to address project related impacts to list species, pursuant to Section 7(a) of the Endangered Species Act of 1973, as amended, 16 U.S.C. Section 1531 *et seq*. By letter of September 17, 2009, USFWS issued a BO cited in enclosure 4, which covers project effects to vernal pool fairy shrimp (*Branchinecta lynchi*), California red-legged frog (*Rana aurora draytonii*), California tiger salamander (*Ambystoma californiense*), and San Joaquin kit fox (*Vulpes macrotis mutica*).

In order to ensure compliance with this NWP authorization, the following special conditions shall be implemented:

1) To compensate for the loss of 0.023 acres of wetlands and 0.028 acres of other waters of the U.S., you shall restore 0.2 acres of seasonal wetlands on the Eagle Ridge Preserve site located between the project area and Manning Road, in Alameda County, California. Work shall be implemented, monitored, and maintained in accordance with the "Mitigation and Monitoring Plan for the Eagle Ridge Preserve Property (56.88 Acre ACCMA Parcel), Alameda County, California" (MMP), dated November 2010, and the "Long-Term Resources Management Plan for the Eagle Ridge Preserve Property (56.88 Acre ACCMA Parcel), Alameda County, California" (management plan), dated November 2010.

    a. The off-site wetland restoration mitigation shall be completed prior to or constructed concurrently with the construction of the I-580 Westbound HOV Lanes Project.

    b. A conservation easement shall be recorded on the mitigation site 30 days prior to the start of construction of the I-580 Westbound HOV Lanes Project. A copy of the fully executed easement shall be delivered to our office prior to project construction. The California Department of Fish and Game shall hold the easement and the National Fish and Wildlife Foundation shall manage the endowment for the long-term management and maintenance of the site as reflected in the "Estimated Endowment Costs for Long-Term Resources Management Associated with the Eagle Ridge Preserve 56.88-Acre CMA Parcel), Alameda County, California", dated November 2010.

    c. To ensure mitigation success, you shall monitor the restored seasonal wetlands for 5 years. The mitigation plan will not be deemed successful until you have demonstrated that the site has maintained the functions and values of the wetlands and other waters preserved and you have received written verification of mitigation success from this office

d. You shall submit annual monitoring reports to this office by October 1 of each year. The first monitoring report is due within 1 year of the start of construction of the I-580 HOV Lanes Project. Your monitoring reports should follow the format described in Regulatory Guidance Letter 06-03, dated August 3, 2006.

e. The seasonal wetland restoration on the Eagle Ridge Preserve site will be considered successful when it achieves 80% total cover of wetland vegetation and at least 0.20 acres of seasonal wetlands can be delineated in the field.

2. You shall employ sediment and erosion control best management practices as needed throughout the project area. No objects or fill shall be placed where they can be eroded or washed into drainage systems in the project area. All debris generated as a result of the project, shall be removed from the site and disposed of at an approved location outside of Corps jurisdiction. All project staging and equipment storage areas shall be located away from areas subject to the jurisdiction of the Corps. After construction, any materials used to dewater areas within the creeks shall be removed in their entirety.

3. Environmentally sensitive areas shall be clearly delineated on the construction plans and demarcated in the field with high-visibility fencing prior to commencement of construction activities. ESA fencing shall be properly maintained throughout the duration of the project. The ESA shall be off limits to construction activity and personnel at all times.

4. All project staging and equipment storage areas shall be located away from areas subject to the jurisdiction of the Corps.

5. No debris, oil, petroleum products or other organic material resulting from construction activities shall be allowed to enter or be placed where it may be washed by rainfall or runoff into areas subject to the jurisdiction of the Corps.

6. Following project construction, disturbed areas including access points, staging and equipment storage areas, etc. shall be returned to pre-project conditions. This shall include, but is not necessarily limited to, grading to establish pre-project contours, and removal of debris.

7. To remain exempt from the prohibitions of Section 9 of the Endangered Species Act, the non-discretionary Terms and Conditions for incidental take of federally-listed shall be fully implemented as stipulated in the Biological Opinion entitled, "Biological Opinion on the Effects of the Proposed Interstate 580 Westbound HOV

Lane Project, Alameda County, California (Caltrans EA 290820) on the Threatened Vernal Pool Fairy Shrimp, threatened California Red-legged Frog, Threatened central valley DPS California Tiger Salamander, and Endangered San Joaquin Kit Fox" (pages 1- 86) dated September 17, 2009. Project authorization under the NWP is conditional upon compliance with the mandatory terms and conditions associated with incidental take. Failure to comply with the terms and conditions for incidental take, where a take of a federally-listed species occurs, would constitute an unauthorized take and non-compliance with the NWP authorization for your project. The USFWS is, however, the authoritative federal agency for determining compliance with the incidental take statement and for initiating appropriate enforcement actions or penalties under the Endangered Species Act.

8. Immediately post construction, a topographic survey of the channel cross-sections at points 300 and 600 feet downstream and upstream will be completed. A topographic survey of the river thalwag profile for 1, 000 feet upstream and downstream, with survey points at less than 50 foot intervals, will also be completed. Annual geomorphic monitoring at these locations shall be preformed five times post construction. For each report current geomorphic conditions shall be reported through survey of channel cross-sections, thalwag profile, and field observations. Reports should be submitted to the Corps and the RWQCB upon completion. Should monitoring indicate vertical degradation, bank in-stability, channel incision, or changes in creek conditions up or down stream of the project reach then the applicant shall propose recommendations to alleviate concerns. After receiving approval from the Corps, the changes will be implemented. Photographs will also be taken periodically from establish points for evaluation.

You may refer any questions on this matter to Paula Gill of my Regulatory staff by telephone at 415-503-6776 or by e-mail at Paula.C.Gill@usace.army.mil. All correspondence should be addressed to the Regulatory Division, South Branch, referencing the file number at the head of this letter.

The San Francisco District is committed to improving service to our customers. My Regulatory staff seeks to achieve the goals of the Regulatory Program in an efficient and cooperative manner, while preserving and protecting our nation's aquatic resources. If you would like to provide comments on our Regulatory Program, please complete the Customer Service Survey Form available on our website: http://www.spn.usace.army.mil/regulatory/.

Sincerely,

Jane M. Hicks
Chief, Regulatory Division

Enclosures

Copies furnished with vicinity maps:

US EPA, San Francisco, CA
US FWS, Sacramento, CA
CA DFG, Yountville, CA
CA SWRCB, Sacramento, CA

Enclosure 1:

Nationwide Permit 14 - *Linear Transportation Projects*

Activities required for the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of greater than 1/2-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project. This NWP also authorizes temporary structures, fills, and work necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate. This NWP cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) the loss of waters of the United States exceeds 1/10-acre; or (2) there is a discharge in a special aquatic site, including wetlands. (See general condition 31.) (Sections 10 and 404)

Note: Some discharges for the construction of farm roads or forest roads, or temporary roads for moving mining equipment, may qualify for an exemption under Section 404(f) of the Clean Water Act (see 33 CFR 323.4).

Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR §§ 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR § 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation. (b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States. (c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed. (b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary. (c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps. (d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, The Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. (f) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.noaa.gov/fisheries.html respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for obtaining any "take" permits required under the U.S. Fish and Wildlife Service's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such "take" permits are required for a particular activity.

20. Historic Properties. (a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied. (b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary. (c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties on which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed. (d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps. (e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment. (a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters. (b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provides a project-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332. (1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in minimal adverse effects on the aquatic environment. (2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered. (3) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) – (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). (4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided. (5) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to establish a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or establishing a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with

associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:
"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

_____
(Transferee)

_____
(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

31. Pre-Construction Notification.

(a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either: (1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or (2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) has

been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information: (1) Name, address and telephone numbers of the prospective permittee; (2) Location of the proposed project; (3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans); (4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate; (5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan. (6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and (7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level. (2) For all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of intermittent and ephemeral stream bed, and for all NWP 48 activities that require pre-construction notification, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the

adverse effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5. (3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act. (4) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

San Francisco District Regional Conditions

A. General Regional Conditions that apply to all NWPs in the Sacramento, San Francisco, and Los Angeles Districts:

1. When pre-construction notification (PCN) is required, the permittee shall notify the U.S. Army Corps of Engineers, San Francisco District (Corps) in accordance with General Condition 31 using either the South Pacific Division Preconstruction Notification (PCN) Checklist or a signed application form (ENG Form 4345) with an attachment providing information on compliance with all of the General and Regional Conditions. In addition, the PCN shall include:

    a. A written statement describing how the activity has been designed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States;

    b. Drawings, including plan and cross-section views, clearly depicting the location, size and dimensions of the proposed activity, as well as the location of delineated waters of the U.S. on the site. The drawings shall contain a title block, legend and scale, amount (in cubic yards) and area (in acres) of fill in Corps jurisdiction, including both permanent and temporary fills/structures. The ordinary high water mark or, if tidal waters, the mean high water mark and high tide line, should be shown (in feet), based on National Geodetic Vertical Datum (NGVD) or other appropriate referenced elevation. All drawings for activities located within the boundaries of the Los Angeles District shall comply with the September 15, 2010 Special Public Notice: *Map and Drawing Standards for the Los Angeles District Regulatory Division*, (available on the Los Angeles District Regulatory Division website at: www.spl.usace.army.mil/regulatory/); and

    c. Numbered and dated pre-project color photographs showing a representative sample of waters proposed to be impacted on the site, and all waters of the U.S. proposed to be avoided on and immediately adjacent to the activities site. The compass angle and position of each photograph shall be identified on the plan-view drawing(s) required in subpart b of this Regional Condition.

2. The permittee shall submit a PCN, in accordance with General Condition 31, For all activities located in areas designated as Essential Fish Habitat (EFH) by the Pacific Fishery Management Council (i.e., all tidally influenced areas - Federal Register dated March 12, 2007, 72 C.F.R. 11,092, in which case the PCN shall include an EFH assessment and extent of proposed impacts to EFH. Examples of EFH habitat assessments can be found at: http://www.swr.noaa.gov/efh.htm.

3. For activities in which the Corps designates another Federal agency as the lead for compliance with Section 7 of the Endangered Species Act (ESA) of 1973 as amended, 16 U.S.C. §§ 1531-1544, Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act (EFH), 16 U.S.C. § 1855(b)(4)(B) and/or Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended , 16 U.S.C. §§ 470-470h, the lead Federal agency shall provide all relevant documentation to the appropriate Corps demonstrating any previous consultation efforts, as it pertains to the Corps Regulatory permit area (for Section 7 and EFH compliance) and the Corps Regulatory area of potential effect (APE) (for Section 106 compliance). For activities requiring a PCN, this information shall be submitted with the PCN. If the Corps does not designate another Federal agency as the lead for ESA, EFH and/or NHPA, the Corps will initiate consultation for compliance, as appropriate.

4. For all activities in waters of the U.S. that are suitable habitat for Federally-listed fish species, the permittee shall design all road crossings to ensure that the passage and/or spawning of fish is not hindered. In these areas, the permittee shall employ bridge designs that span the stream or river, including pier- or pile-supported spans, or designs that use a bottomless arch culvert with a natural stream bed unless determined to be impracticable by the Corps.

5. The permittee shall complete the construction of any compensatory mitigation required by special condition(s) of the NWP verification before or concurrent with commencement of construction of the authorized activity, except when specifically determined to be impracticable by the Corps. When mitigation involves use of a mitigation bank or in-lieu fee program, the permittee shall submit proof of payment to the Corps prior to commencement of construction of the authorized activity.

6. Any requests to waive the 300 linear foot limitation for intermittent and ephemeral streams for NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51 and 52, or to waive the 500 linear foot limitation along the bank for NWP 13, must include the following:

    a. A narrative description of the stream. This should include known information on: volume and duration of flow; the approximate length, width, and depth of the waterbody and characteristics observed associated with an Ordinary High Water Mark (e.g. bed and bank, wrack line or scour marks); a description of the adjacent vegetation community and a statement regarding the wetland status of the adjacent areas (i.e. wetland, non-wetland); surrounding land use; water quality; issues related to cumulative impacts in the watershed, and; any other relevant information;

    b. An analysis of the proposed impacts to the waterbody, in accordance with General Condition 31;

    c. Measures taken to avoid and minimize losses to waters of the U.S., including other methods of constructing the proposed activity(s); and

    d. A compensatory mitigation plan describing how the unavoidable losses are proposed to be offset, in accordance with 33 CFR 332.

B. General Regional Conditions that apply to all NWPs in the San Francisco District:

1. Notification to the Corps (in accordance with General Condition No. 31) is required for any activity permitted by NWP if it will take place in waters or wetlands of the U.S. that are within the **San Francisco Bay diked baylands** (see figure 1) (undeveloped areas currently behind levees that are within the historic margin of the Bay. Diked historic baylands are those areas on the Nichols and Wright map below the 5-foot contour line, National Geodetic Vertical Datum (NGVD) (see Nichols, D.R., and N. A. Wright. 1971. Preliminary map of historic margins of marshland, San Francisco Bay, California. U.S. Geological Survey Open File Map)). The notification shall explain how avoidance and minimization of losses of waters or wetlands are taken into consideration to the maximum extent practicable (see General Condition 23).

2. Notification to the Corps (in accordance with General Condition No. 31) is required for any activity permitted by NWP if it will take place in waters or wetlands of the U.S. that are within the **Santa Rosa Plain** (see figure 2). The notification will explain how avoidance and minimization of losses of waters or wetlands are taken into consideration to the maximum extent practicable in accordance with General Condition No. 23.

3. Notification to the Corps (in accordance with General Condition No. 31), including a compensatory mitigation plan, habitat assessment, and extent of proposed-project impacts to Eelgrass Beds are required for any activity permitted by NWP if it will take place within or adjacent to **Eelgrass Beds**.

14. LINEAR TRANSPORATION PROJECTS:

1. Notification to the Corps (in accordance with General Condition No. 31) is required for all projects filling greater than 300 linear feet of channel. For projects involving greater than 300 linear feet of bank stabilization, the project proponent shall address the effect of the bank stabilization on the

stability of the opposite side of the streambank (if it is not part of the stabilization activity), and on adjacent property upstream and downstream of the activity.

2. This permit does not authorize construction of new airport runways and taxiways.

3. If this NWP has been used to authorize previous project segments within the same linear transportation project, justification must be provided demonstrating that the cumulative impacts of the proposed and previously authorized project segments do not result in more than minimal impacts to the aquatic system.

4. To the maximum extent practicable, any new or additional bank stabilization required for the crossing must incorporate structures or modifications beneficial to fish and wildlife (e.g., soil bioengineering or biotechnical design, root wads, large woody debris, etc.). Where these structures or modifications are not used, the applicant shall demonstrate why they were not considered practicable. Bottomless and embedded culverts are encouraged over traditional culvert stream crossings.

Enclosure 3:

California Regional Water Quality Control Board
San Francisco Bay Region

Linda S. Adams
Acting Secretary for Environmental Protection

1515 Clay Street, Suite 1400, Oakland, California 94612
(510) 622-2300 • Fax (510) 622-2460
http://www.waterboards.ca.gov/sanfranciscobay

Edmund G. Brown, Jr.
Governor

July 11, 2011
CIWQS Place No. 736556 (BT)
401 Database Site No. 02-01-C1093

Sent via electronic mail: No hard copy to follow

California Department of Transportation
Attn: Mr. Issa Bouri
Issa_Bouri@dot.ca.gov
111 Grand Ave.
Oakland, CA 94612-3717

Subject: Water Quality Certification for the Westbound Interstate 580 HOV Lane Construction Project, Cities of Dublin, Pleasanton, and Livermore, Alameda County

Department Project No.: EA 04-29082

Dear Mr. Bouri:

We have reviewed and hereby issue water quality certification to the California Department of Transportation (Department) for the Westbound Interstate 580 HOV Lane Construction Project (Project). The Department has received Nationwide Permit No. 14, *Linear Transportation Projects*, from the U.S. Army Corps of Engineers (Corps), pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344). As such, the Department has applied to the Water Board for a Clean Water Act Section 401 water quality certification that the Project will not violate State water quality standards.

Project: The Department is proposing to construct an approximately 13.1 mile high occupancy vehicle (HOV) lane along westbound Interstate 580 in Alameda County between post miles 8.29 and 21.43. Other Project elements include:

- Constructing a westbound auxiliary lane between the Vasco Road and First Street interchanges;
- Constructing a westbound auxiliary lane between the North Livermore and First Street interchanges;
- Constructing approximately 3,800 feet of auxiliary lane along westbound I-580 from the North Livermore on-ramp;

- Constructing approximately 4,800 feet of auxiliary lane along westbound I-580 from the Airway Boulevard on-ramp;
- Widening of the North Livermore Avenue undercrossing in both the east and westbound directions;
- Widening of the Dougherty undercrossing in the westbound direction;
- Constructing HOV lanes at the eastbound and westbound on-ramps at Greenville Road, Vasco Road, First Street, and North Livermore Avenue, and the westbound on-ramp at Airway Boulevard;
- Widening of shoulders to standard roadway widths by a minimum of 10 feet, at all I-580 mainline locations east of the San Ramon Road/Foothill Dougherty Road/Hopyard Road overcrossing to west of the Greenville road undercrossing. Shoulders will not be widened between San Ramon Road/Foothill Road and Dougherty Road/Hopyard Road, at the First Street interchange, and between the Hacienda Drive interchange and the Tassajara Creek Bridge; and
- An additional 4 feet of inside shoulder widening at most locations (14 feet, total) to accommodate California Highway Patrol enforcement areas, and wherever possible, construction of 4 feet of additional pavement width on the outside shoulders (14 feet, total) in anticipation of a future high-occupancy toll lane project.

Jurisdictional Wetlands and Waters Impacts: Project implementation would result in the permanent fill or shading of approximately 0.042 acres of jurisdictional seasonal freshwater wetlands, the permanent shading of approximately 113 linear feet (0.072 acres) of jurisdictional waters, and the permanent fill of approximately 30 linear feet (and 0.030 acres) of jurisdictional waters. Permanent Project impacts are summarized below in Table 1, *Summary of Permanent Impacts.*

Approximately 756 linear feet (0.445 acres) of jurisdictional waters would be temporarily impacted due to diversion of creek flows in order to provide dry in-channel work areas. equipment staging and construction access. Temporary Project impacts are summarized below in Table 2, *Summary of Temporary Impacts.*

Table 1: Summary of Permanent Impacts

Activity	Jurisdictional Feature Impacted (Feature ID)	Acreage and/or Linear Footage of Permanent Impact
Covering and shading of existing concrete, bed, bank and channel due to roadway widening	Tassajara Creek (PC-5)	60 linear feet (0.024 acres)
Widening of bridge deck to cause loss of wetland due to shading	Emergent Wetland at Arroyo Las Positas-West (EW-8)	0.023 acres
Covering and shading of channel due to roadway widening	Arroyo Las Positas-East (PC-2)	43 linear feet (0.041 acres)
Covering and shading of channel	Arroyo Las Positas-West (PC-3)	10 linear feet (0.007 acres)

Activity	Jurisdictional Feature Impacted (Feature ID)	Acreage and/or Linear Footage of Permanent Impact
due to roadway widening		
Fill of earthen channel due to extension of concrete apron and construction of bank armoring in earthen channel	Arroyo Seco (PC-1)	30 linear feet (0.028 acres)
Widening of roadway to fill wetlands.	Seasonal Wetland (SW-2)	0.015 acres
Widening of roadway to fill wetlands	Emergent Wetland (EW-3)	0.004 acres
	Total:	0.042 acres of wetland impacts due to filling or shading; 113 linear feet (0.072 acres) of creek shading; 30 linear feet (0.028 acres) of creek impacts due to filling

Table 2: Summary of Temporary Impacts

Activity	Jurisdictional Feature Impacted	Acreage and/or Linear Footage of Temporary Impact
Temporary access to widen bridge and diversion of stream flow within existing concrete bed, bank and channel	Tassajara Creek (PC-5)	243 linear feet (0.167 acres)
Stream diversion for construction access	Arroyo Las Positas-West (PC-3)	193 linear feet (0.133 acres)
Stream diversion for construction access	Arroyo Las Positas-East (PC-2)	250 linear feet (0.139 acres)
Stream diversion of existing concrete bed, bank and channel for construction access	Arroyo Seco (PC-1)	70 linear feet (0.006 acres)
	Total:	756 linear feet (0.445 acres)

Roadway Pollutant Impacts: Project implementation would result in approximately 46.2 acres of added and reworked impervious area. Stormwater runoff from impervious areas may contain hydrocarbons, metals, volatile organic compounds, trash, and sediment at levels that may significantly impact jurisdictional waters if left untreated.

Hydromodification impacts: Added impervious areas may result in alterations to existing hydrologic regimes, resulting in erosion and/or changes of sediment transport in receiving waters (hydromodification). Project implementation would result in approximately 23.0 acres of added impervious area and therefore the Department is required to evaluate and mitigate potential

hydromodification impacts. The Department evaluated susceptibility for hydromodification impacts to all receiving waters within the Project limits. The Department has identified receiving waters susceptible to hydromodification impacts and has proposed mitigation as appropriate (see Hydromodification Mitigation, below).

Jurisdictional Wetlands and Waters Mitigation: To mitigate for impacts to approximately 0.042 acres of jurisdictional seasonal wetlands and 143 linear feet of jurisdictional waters, the Department shall create 0.14 acres of seasonal wetland and enhance 113 linear feet of riparian channel on Cayetano Creek at the Eagle Ridge Preserve in Livermore (see Table 3, below). The Eagle Ridge Preserve is located approximately two miles north of the Project limits between North Livermore Avenue and Collier Canyon Road. The Department has submitted a Mitigation and Monitoring Plan for the Eagle Ridge Preserve Property (MMP), dated November 2010, that includes plans for 0.20 acres of wetland creation and 287 linear feet of riparian enhancement. This certification requires the Department submit a map showing exactly which portions of the wetland creation and riparian enhancement areas described in the MMP are proposed to meet the mitigation requirements of this certification (see condition no. 5).

Table 3: Mitigation for Proposed Permanent Impacts

Activity	Jurisdictional Feature Impacted (Feature ID)	Acreage and/or Linear Footage of Permanent Impact	Mitigation for Permanent Impacts
Covering and shading of existing concrete, bed, bank and channel due to roadway widening	Tassajara Creek (PC-5)	60 linear feet (0.024 acres)	60 linear feet of riparian enhancement at the Eagle Ridge Preserve
Widening of bridge deck to cause loss of wetland due to shading	Emergent Wetland at Arroyo Las Positas-West (EW-8)	0.023 acres	0.046 acres of wetland creation at the Eagle Ridge Preserve
Covering and shading of channel due to roadway widening	Arroyo Las Positas-East (PC-2)	43 linear feet (0.041 acres)	43 linear feet of riparian enhancement at off-site mitigation at the Eagle Ridge Preserve
Covering and shading of channel due to roadway widening	Arroyo Las Positas-West (PC-3)	10 linear feet (0.007 acres)	10 linear feet of riparian enhancement at off-site mitigation at the Eagle Ridge Preserve
Fill of earthen channel due to extension of concrete apron and construction of bank armoring in earthen channel	Arroyo Seco (PC-1)	30 linear feet (0.028 acres)	0.056 acres of wetland creation at the Eagle Ridge Preserve

Activity	Jurisdictional Feature Impacted (Feature ID)	Acreage and/or Linear Footage of Permanent Impact	Mitigation for Permanent Impacts
Widening of roadway to fill wetlands.	Seasonal Wetland (SW-2)	0.015 acres	0.030 acres off-site mitigation at the Eagle Ridge Preserve
Widening of roadway to fill wetlands	Emergent Wetland (EW-3)	0.004 acres	0.008 acres off-site mitigation at the Eagle Ridge Preserve
	Total:	0.042 acres of wetland impacts due to filling or shading; 113 linear feet of creek shading; 30 linear feet of creek impacts due to filling	0.140 acres of wetland creation and 113 linear feet of riparian channel enhancement at Eagle Ridge Preserve

To mitigate for temporary impacts to State waters as a result of diversion, the Department shall restore the creek beds and temporarily dewatered areas to their original morphological and vegetated condition. A diversion plan shall be submitted to and found acceptable to Water Board staff prior to commencement of any diversion activities at Arroyo Las Positas and Arroyo Seco (see condition no. 11)

Roadway Pollutant Mitigation: As mitigation for increased pollutant loads associated with impervious areas, the Department shall provide treatment of stormwater runoff from approximately 46.2 acres of impervious area using 24 compost-amended biofiltration strips and 12 bioretention swales. The swales and strips shall be installed per the plans included in Attachment A, *Biofiltration Swale and Strip Design and Soil Plans and Specifications*.

The following biofiltration strips and corresponding locations will mitigate water quality impacts resulting from Project implementation:

BMP ID No.	From Post Mile	To Post Mile	Treated Impervious Area (ac)
1	21.26	21.33	0.90
2	21.22	21.29	0.76
3	19.42	19.49	0.97
4	19.33	19.43	0.98
5	19.22	19.33	1.02
6	18.88	19.01	1.85
7	18.84	18.88	0.45
8	18.71	18.76	0.52
9	18.60	18.73	1.52
10	18.05	18.28	3.18
11	17.98	18.04	0.69
12	17.82	17.92	1.11
13	16.93	17.06	2.61
14	16.80	16.82	0.94

BMP ID No.	From Post Mile	To Post Mile	Treated Impervious Area (ac)
15	16.60	16.66	0.70
16	15.01	15.15	1.89
17	14.86	14.94	0.83
18	14.20	14.25	0.50
19	13.97	14.07	0.84
20	13.84	13.88	0.31
21	13.42	13.59	2.07
22	10.71	10.80	1.00
23	10.63	10.70	0.41
24	9.78	9.92	1.72
		total:	27.8

The following bioretention swales and corresponding locations will mitigate water quality impacts resulting from Project implementation:

BMP ID No.	Located at Post Mile	Treated Impervious Area (ac)
1	21.33	0.43
2	20.88	0.43
3	18.58	0.18
4	13.87	0.23
5	13.45	0.32
6	13.17	0.32
7	13.14	0.50
8	11.06	0.61
9	10.56	9.08
10	9.15	5.43
11	8.49	0.28
12	8.48	0.61
	total:	18.4

Hydromodification Mitigation: To mitigate for catchments susceptible to hydromodification impacts, the Department shall utilize the 24 biofiltration strips and twelve bioretention swales, as well as one detention basin planned in the northwest quadrant of the Vasco Road/I-580 interchange, to control stormwater flow volume and duration from the Project area.

California Wetlands Portal: It has been determined through regional, state, and national studies that tracking of mitigation/restoration projects must be improved to better assess the performance of these projects, following monitoring periods that last several years. In addition, to effectively carry out the State's Wetlands Conservation Policy of no net loss to wetlands, the State needs to closely track both wetland losses and mitigation/restoration project success. Therefore, we require that the Department use the California Wetlands Form to provide Project information related to impacts and mitigation/restoration measures (see Condition No. 12 of this

Certification). An electronic copy of the form and instructions can be downloaded at: http://www.waterboards.ca.gov/sanfranciscobay/certs.shtml. Project information concerning impacts and mitigation/restoration will be made available at the web link: http://www.californiawetlands.net.

CEQA Compliance: The Project was evaluated pursuant to the requirements of the California Environmental Quality Act (CEQA) in a Mitigated Negative Declaration. The Department filed a Notice of Determination on February 4, 2010, that the Project would not have a significant effect on the environment.

Certification: I hereby issue an order certifying that any discharge from the referenced project will comply with the applicable provisions of sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act, and with other applicable requirements of State law. This discharge is also regulated under State Water Resources Control Board Order No. 2003 - 0017 – DWQ, "General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received State Water Quality Certification" which requires compliance with all conditions of this Water Quality Certification. The following conditions are associated with this certification:

1. The Project shall be constructed in conformance with the Project Description described in this certification and certification application materials. Any change in the Project may require modification to the certification and shall be reported to the Water Board;

2. The Department shall install 24 compost-amended biofiltration strips and 12 biofiltration swales to treat stormwater contaminants from no less than 46 acres of impervious area. Swale and strips shall be installed and consistent with the information summarized above in "Roadway Pollutant Mitigation," and in Attachment A, *Biofiltration Swale and Strip Design and Soil Plans and Specifications*. Within 60 days of completing the biofiltration swales and strips, the Department shall submit an as-built report to the Water Board. The report shall document that swales and strips were constructed per the plans in certification Attachment A;

3. The Department shall construct a detention basin in the northwest quadrant of the Vasco Road/I-580 interchange to mitigate for potential hydromodification impacts associated with added impervious area. Within 60 days of completing the detention basin, the Department shall submit an as-built report to the Water Board;

4. The Department shall create no less than 0.14 acres of seasonal wetlands and enhance no less than 113 linear feet of riparian channel along the west branch of Cayetano Creek at the Eagle Ridge Preserve mitigation site in Livermore no later than December 1, 2011. Creation and enhancement activities, and monitoring and reporting shall be implemented consistent with the *Mitigation and Monitoring Plan for the Eagle Ridge Preserve Property*

(MMP), dated November 2010. Implementation, monitoring and reporting requirements shall include:

a. Planting of valley oaks, California black walnut, red and arroyo willows, California wild rose and blackberry, and wild lilac to enhance the West Cayeano Creek riparian area;
b. Implementation of an invasive species removal program for wetland and riparian areas;
c. Seeding of created wetland areas with a seed mix native to the local area;
d. The use of onsite wetlands, *W1, W2,* and *W3,* as reference sites for the proposed wetland creation activities. Biological baseline monitoring shall be conducted and include evaluation of soil, hydrology and vegetation conditions, as well as assessment of habitat functions and values;
e. Application of the following wetland creation performance standards:
    i. The frequency of inundation and/or saturation of the wetlands shall be a minimum of 18.25 continuous days per year;
    ii. Native vegetative cover in created wetlands shall be no less than 90 percent by monitoring Year 5;
    iii. Total wetlands vegetation cover shall average greater than 65% of reference wetlands by monitoring Year 3, and 80% by monitoring Year 5;
f. Application of the following riparian enhancement performance standards:
    i. At no time during the 10-year monitoring period shall the number of riparian plant species remaining from the original planting be lower than 80% cumulative survival. If fewer than 80% of the original plantings remain at any time during the monitoring period, replanting shall be conducted so that the original plantings are replaced;
    ii. Site maintenance shall be conducted to assess weed control, irrigation adequacy, trash removal, and vandalism; and
    iii. The health and vigor of each planted riparian species will be assessed using plant color, seed development, new growth, herbivory, drought stress, fungal/insect infestation, and physical damage factors;
g. Submittal of annual monitoring reports for no less than 5 years for wetland creation activities, and no less than 10 years for riparian habitat activities. The Department may limit submittal of annual monitoring reports to years 0, 1, 3, 5, 7, 9, and 10. The Year 0 report shall be submitted no later than April 1, 2012. All other monitoring reports shall be submitted no later than February 15 of the year following the subject monitoring activities; and
h. Designation of permanent photo-monitoring points and submittal of a Year 0 report. Following installation of the mitigation, the immediate post-construction condition of the site shall be photo-documented and a report shall be submitted to the Water Board. The report shall include the post-construction photographs, the as-built plan based on the post-construction survey, a description of the construction activities, including any adjustments to the final grading plan, and a

map with the locations of the photo-documentation points clearly marked (Year 0 report);

5. No later than 15 days from the issuance date of this certification, the Department shall submit a map of the riparian enhancement and wetland creation areas, subject to the acceptance of Water Board staff. The map shall delineate the proposed 113 linear foot section of riparian enhancement at West Cayetano Creek and the 0.14 acres of wetland creation that the Department is proposing as mitigation for Project impacts;

6. Any planting established as part of the Project off-site mitigation plan shall not be considered successfully established until supplemental irrigation systems have been terminated for two or more full growing seasons;

7. Off-site mitigation shall not be considered to satisfy the conditions of this certification until a final mitigation success report has been submitted to the Water Board and found acceptable by the Executive Officer;

8. The Department shall prepare and submit a Grazing Management Plan, subject to the acceptance of Water Board staff, for grazing activities that may affect the off-site wetland creation and riparian habitat restoration activities. Grazing is prohibited within the wetland creation and riparian habitat enhancement areas until a Grazing Management Plan has been found acceptable by Water Board staff;

9. Not later than January 1, 2012, the Department shall submit a copy of the Conservation Easement for the Eagle Ridge Preserve mitigation site to the Water Board Executive Officer for review and approval. The language of the Conservation Easement shall follow the CDFG and/or USFWS templates for conservation easements and shall identify the third-party non-profit entity, qualified to hold a conservation easement under California Civil Code section 815.3, to whom the easement would be granted. The easement should include provisions and responsibilities of the Department and the designated land trust organization, including any future transfers of the easement or fee interest that may be anticipated, and should grant access rights to Water Board staff. The easement should also specify the purposes for which it is established and should include a list of prohibited activities that are inconsistent with the maintenance of the mitigation site. Failure to provide an acceptable conservation easement by January 1, 2012, may result in an enforcement order and requirement to provide additional mitigation;

10. Construction of temporary work platforms within Arroyo Seco and Arroyo Las Positas are prohibited unless a proposal has first been submitted to and found acceptable by Water Board staff. Diversion of Arroyo Las Positas and Arroyo Seco flows are prohibited unless a diversion plan has first been submitted to and found acceptable by Water Board staff. Any

diversion plan shall include a plan to have the diversion system removed by October 1 and installed no sooner than April 15;

11. The Department is required to use the standard California Wetlands Form to provide Project information describing impacts and restoration measures within 45 days from the date of this certification. An electronic copy of the form can be downloaded at: http://www.waterboards.ca.gov/sanfranciscobay/certs.shtml. The completed form shall be submitted electronically habitatdata@waterboards.ca.gov or shall be submitted as a hard copy to both (1) the address on the letterhead (or to the Water Board), to the attention of California Wetlands Portal and (2) to the San Francisco Estuary Institute, 7770 Pardee Lane, 2nd Floor, Oakland, CA, 94621 to the attention of Mike May;

12. The Department shall adhere to the Standard conditions imposed by Nationwide Permit No. 14, issued to the Department by the Corps, and to the Biological Opinion and any subsequent amendments issued to the Department by the United States Fish and Wildlife Service (File no. 81420-2008-F-0487-2);

13. All temporarily disturbed areas shall be restored to pre-construction or enhanced conditions, using only native plant species, immediately following cessation of construction activities in those areas;

14. Except as expressly allowed in this Certification, the discharge, or creation of the potential for discharge, to waters of the State of any construction wastes and/or soil materials including cement, fresh concrete, or washings thereof, silts, clay, sand, oil or petroleum products and other organic materials to waters of the State is prohibited;

15. Erosion control measures shall be utilized throughout all phases of construction where sediment runoff from disturbed areas threatens to enter waters of the State, regardless of date. At no time shall silt-laden runoff be allowed to enter waters of the State;

16. Except as expressly allowed in this certification, no equipment shall be operated in areas of flowing or standing water. No fueling, cleaning or maintenance of vehicles or equipment shall take place within jurisdictional waters or within any areas where an accidental discharge to waters of the State may occur;

17. This certification does not allow for the take, or incidental take, of any special status species. The Department shall use the appropriate protocols, as approved by the California Department of Fish and Game and the U.S. Fish and Wildlife Service, to ensure that Project activities do not impact the Beneficial Use of the Preservation of Rare and Endangered Species;

18. The Department shall maintain a copy of this water quality certification at the Project site so as to be available at all times to site operating personnel. It is the responsibility of the

Department to assure that all personnel (employees, contractors, and subcontractors) are adequately informed and trained regarding the conditions of this certification;

19. This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Section 13330 of the California Water Code (CWC) and Section 3867 of Title 23 of the California Code of Regulations(23 CCR);

20. This certification action does not apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license, unless the pertinent certification application was filed pursuant to California Code of Regulations (CCR) Title 23, Subsection 3855(b) and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought; and

21. Certification is conditioned upon total payment of the full fee required in State regulations (23 CCR Section 3833). Water Board staff received full payment of $640.00 on August 17, 2010.

We anticipate your cooperation in implementing these conditions. However, please be advised that any violation of water quality certification conditions is a violation of State law and subject to administrative civil liability pursuant to California Water Code (CWC) section 13350. Failure to respond, inadequate response, late response, or failure to meet any condition of this certification may subject you to civil liability imposed by the Water Board to a maximum of $5,000 per day per violation or $10 for each gallon of waste discharged in violation of this certification.

Conditions 2, 4, 5, and 8-11 are requirements for information or reports. Any requirement for a report made as a condition to this action is a formal requirement pursuant to CWC section 13267, and failure or refusal to provide, or falsification of such required report is subject to civil liability as described in CWC section 13268.

We anticipate no further action on this request. Should new information come to our attention that indicates a water quality problem with this project, the Water Board may issue Waste Discharge Requirements pursuant to 23 CCR Section 3857.

If you have any question, please contact Brendan Thompson at (510) 622-2506, or via e-mail to BThompson@waterboards.ca.gov.

Sincerely,

Shin-Roei Lee acting for 2011.07.11 10:47:43 -07'00'

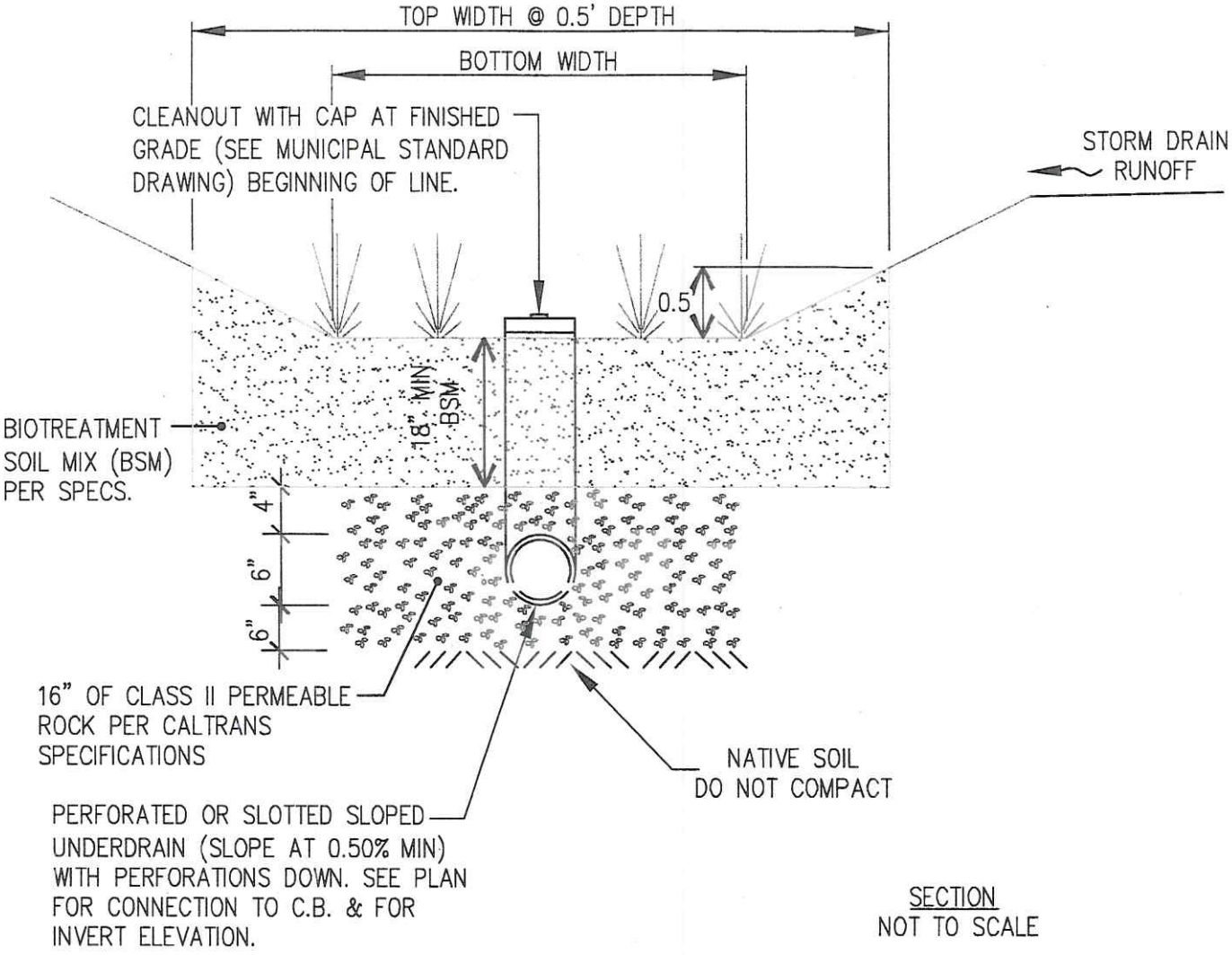
Bruce H. Wolfe
Executive Officer

cc (via e-mail): Mr. Bill Orme SWRCB-DWQ
Mr. Hal Durio, Regulatory Branch, USACE
Ms. Jane Hicks, Regulatory Branch, USACE
Ms. Holly Costa, Regulatory Branch, USACE
Mr. Cameron Johnson, USACE
Ms. Marcia Grefsrud, CDFG
Mr. Dale Bowyer, Water Board
Mr. Cyrus Vafai, Caltrans
Mr. Hardeep Takhar, Caltrans
Mr. Jason Brush, USEPA
Mr. Jerry Roe, USFWS
Mr. Liam Davis, CDFG

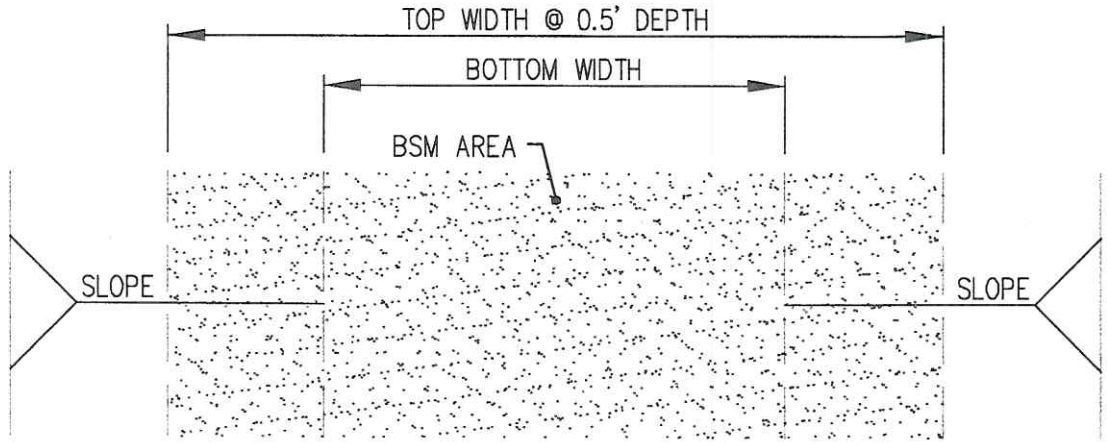
Attachment A

Biofiltration Swale and Strip Design and Soil Plans and Specifications

©BKF Engineers



SECTION
NOT TO SCALE



PLAN
NOT TO SCALE

EXHIBIT A

580 WESTBOUND HOV IMPROVEMENTS
LINEAR BIORETENTION SWALE

JOB NO:	**20077061**
DATE:	**APRIL, 2011**
BY:	**R.A.M**
REV:	**ED BOSCACCI**

BkF

DRAWING NAME: J:\Eng07\077061\dwg\Exhibits\401-Certification\2011-04\Bioretention.dwg
PLOT DATE: 04-26-11 PLOTTED BY: mure

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R14.6/R21.6		

REGISTERED CIVIL ENGINEER — 5/20/2011 DATE

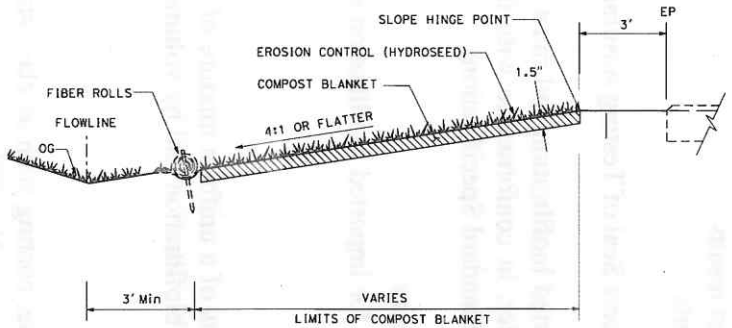
REGISTERED PROFESSIONAL ENGINEER — DAVID M. DICKINSON No. 50815 Exp. 9-30-11 CIVIL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

WMH CORPORATION
555 12th St
Suite 1900
Oakland, CA 94607

ALAMEDA CTC
1333 Broadway
Suite 220
Oakland, CA 94612



BIOFILTRATION STRIP

EROSION CONTROL DETAILS

NO SCALE

ECD-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED/ DESIGNED BY	Y. FAROUQI \ A. VALASQUEZ	REVISED BY	AV	YF	YF
	TIMOTHY J. LEE	CHECKED BY	DAVID M. DICKINSON	DATE REVISED	02/22/10	08/30/10	04/18/11

X:\580 WB HOV\000_CAD\Sheets\West of Sta 540+00\000-Erosion Control\GF-Details\429087gf001.dgn

LAST REVISION 00-00-00 DATE PLOTTED => 5/23/2011
TIME PLOTTED => 2:51:20 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouqi | DGN FILE => 429087gf001.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

10-1.__ IMPORTED BIOFILTRATION SOIL

GENERAL

Summary

This work includes furnishing, and applying imported biofiltration soil.

Submittals

Compost: Before mixing compost with sand and topsoil, submit:

1. A Certificate of Compliance from the compost supplier in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.
2. A copy of the compost producer's compost technical data sheet. The compost technical data sheet must include:

    2.1. Laboratory analytical test results
    2.2. List of product ingredients

3. A copy of the compost producers Seal of Testing Assurance certification.

Imported biofiltration soil: Imported biofiltration soil must be accompanied by a Certificate of Compliance, from the soil supplier, in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.

Quality Control and Assurance

Saturated hydraulic conductivity for imported biofiltration soil must be at least 5 inches per hour.

MATERIAL

Imported biofiltration soil consists of a uniform mixture of sand, compost, and topsoil. The ratio of the components of imported biofiltration soil by volume must consist of two-parts sand; one-part compost; 0.5-part topsoil.

Sand

Sand must be free of wood, waste, coating such as clay, stone dust, carbonate, or any other deleterious material. All aggregate passing No. 200 sieve size must be non-plastic. Sand must be graded within the following limits:

Sieve Sizes	Percentage Passing
3/8"	100
No. 4	90 - 100
No. 8	70 - 100
No. 16	40 - 95
No. 30	15 - 70
No. 40	5-55
No. 100	0 - 15
No. 200	0 - 5

Grain size analysis results of the sand component must be performed in accordance with ASTM D 422, Standard Test Method for Particle Size Analysis of Soils.

Compost

The compost producer must be fully permitted as specified under the California Integrated Waste Management Board, Local Enforcement Agencies and any other State and Local Agencies that regulate solid waste facilities. If exempt from State permitting requirements, the composting facility must certify that it follows guidelines and procedures for production of compost meeting the environmental health standards of Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7.

The compost producer must be a participant in the United States Composting Council's Seal of Testing Assurance program.

Compost may be derived from any single or mixture of any of the following feedstock materials:

1. Green material consisting of chipped, shredded, or ground vegetation; or clean processed recycled wood products
2. Biosolids
3. Manure
4. Mixed food waste

Compost feedstock materials such that weed seeds, pathogens and deleterious materials are reduced as specified under Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7, Section 17868.3.

Compost must not be derived from mixed municipal solid waste and must be reasonably free of visible contaminates. Compost must not contain paint, petroleum products, pesticides or any other chemical residues harmful to animal life or plant growth. Compost must not possess objectionable odors.

Metal concentrations in compost must not exceed the maximum metal concentrations listed in Title 14, California Code of Regulations, Division 7, Chapter 3.1, Section 17868.2.

Compost must comply with the following:

Physical and Chemical Requirements

Property	Test Method	Requirement
pH	TMECC 04.11-A Elastometric pH 1:5 Slurry Method pH Units	6.5–8.0
Soluble Salts	TMECC 04.10-A Electrical Conductivity 1:5 Slurry Method dS/m (mmhos/cm)	0–6.0
Moisture Content	TMECC 03.09-A Total Solids & Moisture at 70+/- 5 deg C % Wet Weight Basis	30–60
Organic Matter Content	TMECC 05.07-A Loss-On-Ignition Organic Matter Method (LOI) % Dry Weight Basis	35–75
Maturity	TMECC 05.05-A Germination and Vigor Seed Emergence Seedling Vigor % Relative to Positive Control	 80 or Above 80 or Above
Stability	TMECC 05.08-B Carbon Dioxide Evolution Rate mg CO_2-C/g OM per day	 8 or below
Particle Size	TMECC 02.02-B Sample Sieving for Aggregate Size Classification % Dry Weight Basis	Inches % Passing 3 100% 1/2 0 – 95% 1/4 0-75% Max. Length 4 inches
Pathogen	TMECC 07.01-B Fecal Coliform Bacteria < 1000 MPN/gram dry wt.	Pass
Pathogen	TMECC 07.01-B Salmonella < 3 MPN/4 grams dry wt.	Pass
Physical Contaminants	TMECC 02.02-C Man Made Inert Removal and Classification: Plastic, Glass and Metal % > 4mm fraction	Combined Total: < 1.0
Physical Contaminants	TMECC 02.02-C Man Made Inert Removal and Classification: Sharps (Sewing needles, straight pins and hypodermic needles) % > 4mm fraction	None Detected

NOTE: TMECC refers to "Test Methods for the Examination of Composting and Compost," published by the United States Department of Agriculture and the United States Compost Council (USCC).

Topsoil

Topsoil must be free of wood, waste or other deleterious material. The topsoil texture must be loamy. Overall dry weight percentages must be 60 to 90 percent sand, with less than 20 percent passing the No.200 sieve, less than 5 percent clay, and no gravel.

CONSTRUCTION

Comply with Section 20-3.02, "Preparation," of the Standard Specifications.

Place imported biofiltration soil in lifts 8 to 12 inches. Lifts are not to be compacted.

MEASUREMENT AND PAYMENT

Quantity of imported biofiltration soil is measured by the cubic yard.

The contract unit price paid per cubic yard for imported biofiltration soil includes full compensation for furnishing all labor, materials, tools, equipment, incidentals, and for doing all the work involved in imported biofiltration soil, including testing, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

California Regional Water Quality Control Board
San Francisco Bay Region

Linda S. Adams
Acting Secretary for Environmental Protection

1515 Clay Street, Suite 1400, Oakland, California 94612
(510) 622-2300 • Fax (510) 622-2460
http://www.waterboards.ca.gov/sanfranciscobay

Edmund G. Brown, Jr.
Governor

July 11, 2011
CIWQS Place No. 736556 (BT)
401 Database Site No. 02-01-C1093

Sent via electronic mail: No hard copy to follow

California Department of Transportation
Attn: Mr. Issa Bouri
Issa_Bouri@dot.ca.gov
111 Grand Ave.
Oakland, CA 94612-3717

Subject: Water Quality Certification for the Westbound Interstate 580 HOV Lane Construction Project, Cities of Dublin, Pleasanton, and Livermore, Alameda County

Department Project No.: EA 04-29082

Dear Mr. Bouri:

We have reviewed and hereby issue water quality certification to the California Department of Transportation (Department) for the Westbound Interstate 580 HOV Lane Construction Project (Project). The Department has received Nationwide Permit No. 14, *Linear Transportation Projects*, from the U.S. Army Corps of Engineers (Corps), pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344). As such, the Department has applied to the Water Board for a Clean Water Act Section 401 water quality certification that the Project will not violate State water quality standards.

Project: The Department is proposing to construct an approximately 13.1 mile high occupancy vehicle (HOV) lane along westbound Interstate 580 in Alameda County between post miles 8.29 and 21.43. Other Project elements include:

- Constructing a westbound auxiliary lane between the Vasco Road and First Street interchanges;
- Constructing a westbound auxiliary lane between the North Livermore and First Street interchanges;
- Constructing approximately 3,800 feet of auxiliary lane along westbound I-580 from the North Livermore on-ramp;

- Constructing approximately 4,800 feet of auxiliary lane along westbound I-580 from the Airway Boulevard on-ramp;
- Widening of the North Livermore Avenue undercrossing in both the east and westbound directions;
- Widening of the Dougherty undercrossing in the westbound direction;
- Constructing HOV lanes at the eastbound and westbound on-ramps at Greenville Road, Vasco Road, First Street, and North Livermore Avenue, and the westbound on-ramp at Airway Boulevard;
- Widening of shoulders to standard roadway widths by a minimum of 10 feet, at all I-580 mainline locations east of the San Ramon Road/Foothill Dougherty Road/Hopyard Road overcrossing to west of the Greenville road undercrossing. Shoulders will not be widened between San Ramon Road/Foothill Road and Dougherty Road/Hopyard Road, at the First Street interchange, and between the Hacienda Drive interchange and the Tassajara Creek Bridge; and
- An additional 4 feet of inside shoulder widening at most locations (14 feet, total) to accommodate California Highway Patrol enforcement areas, and wherever possible, construction of 4 feet of additional pavement width on the outside shoulders (14 feet, total) in anticipation of a future high-occupancy toll lane project.

Jurisdictional Wetlands and Waters Impacts: Project implementation would result in the permanent fill or shading of approximately 0.042 acres of jurisdictional seasonal freshwater wetlands, the permanent shading of approximately 113 linear feet (0.072 acres) of jurisdictional waters, and the permanent fill of approximately 30 linear feet (and 0.030 acres) of jurisdictional waters. Permanent Project impacts are summarized below in Table 1, *Summary of Permanent Impacts.*

Approximately 756 linear feet (0.445 acres) of jurisdictional waters would be temporarily impacted due to diversion of creek flows in order to provide dry in-channel work areas. equipment staging and construction access. Temporary Project impacts are summarized below in Table 2, *Summary of Temporary Impacts.*

Table 1: Summary of Permanent Impacts

Activity	Jurisdictional Feature Impacted (Feature ID)	Acreage and/or Linear Footage of Permanent Impact
Covering and shading of existing concrete, bed, bank and channel due to roadway widening	Tassajara Creek (PC-5)	60 linear feet (0.024 acres)
Widening of bridge deck to cause loss of wetland due to shading	Emergent Wetland at Arroyo Las Positas-West (EW-8)	0.023 acres
Covering and shading of channel due to roadway widening	Arroyo Las Positas-East (PC-2)	43 linear feet (0.041 acres)
Covering and shading of channel	Arroyo Las Positas-West (PC-3)	10 linear feet (0.007 acres)

Activity	Jurisdictional Feature Impacted (Feature ID)	Acreage and/or Linear Footage of Permanent Impact
due to roadway widening		
Fill of earthen channel due to extension of concrete apron and construction of bank armoring in earthen channel	Arroyo Seco (PC-1)	30 linear feet (0.028 acres)
Widening of roadway to fill wetlands.	Seasonal Wetland (SW-2)	0.015 acres
Widening of roadway to fill wetlands	Emergent Wetland (EW-3)	0.004 acres
	Total:	0.042 acres of wetland impacts due to filling or shading; 113 linear feet (0.072 acres) of creek shading; 30 linear feet (0.028 acres) of creek impacts due to filling

Table 2: Summary of Temporary Impacts

Activity	Jurisdictional Feature Impacted	Acreage and/or Linear Footage of Temporary Impact
Temporary access to widen bridge and diversion of stream flow within existing concrete bed, bank and channel	Tassajara Creek (PC-5)	243 linear feet (0.167 acres)
Stream diversion for construction access	Arroyo Las Positas-West (PC-3)	193 linear feet (0.133 acres)
Stream diversion for construction access	Arroyo Las Positas-East (PC-2)	250 linear feet (0.139 acres)
Stream diversion of existing concrete bed, bank and channel for construction access	Arroyo Seco (PC-1)	70 linear feet (0.006 acres)
	Total:	756 linear feet (0.445 acres)

Roadway Pollutant Impacts: Project implementation would result in approximately 46.2 acres of added and reworked impervious area. Stormwater runoff from impervious areas may contain hydrocarbons, metals, volatile organic compounds, trash, and sediment at levels that may significantly impact jurisdictional waters if left untreated.

Hydromodification impacts: Added impervious areas may result in alterations to existing hydrologic regimes, resulting in erosion and/or changes of sediment transport in receiving waters (hydromodification). Project implementation would result in approximately 23.0 acres of added impervious area and therefore the Department is required to evaluate and mitigate potential

hydromodification impacts. The Department evaluated susceptibility for hydromodification impacts to all receiving waters within the Project limits. The Department has identified receiving waters susceptible to hydromodification impacts and has proposed mitigation as appropriate (see Hydromodification Mitigation, below).

Jurisdictional Wetlands and Waters Mitigation: To mitigate for impacts to approximately 0.042 acres of jurisdictional seasonal wetlands and 143 linear feet of jurisdictional waters, the Department shall create 0.14 acres of seasonal wetland and enhance 113 linear feet of riparian channel on Cayetano Creek at the Eagle Ridge Preserve in Livermore (see Table 3, below). The Eagle Ridge Preserve is located approximately two miles north of the Project limits between North Livermore Avenue and Collier Canyon Road. The Department has submitted a Mitigation and Monitoring Plan for the Eagle Ridge Preserve Property (MMP), dated November 2010, that includes plans for 0.20 acres of wetland creation and 287 linear feet of riparian enhancement. This certification requires the Department submit a map showing exactly which portions of the wetland creation and riparian enhancement areas described in the MMP are proposed to meet the mitigation requirements of this certification (see condition no. 5).

Table 3: Mitigation for Proposed Permanent Impacts

Activity	Jurisdictional Feature Impacted (Feature ID)	Acreage and/or Linear Footage of Permanent Impact	Mitigation for Permanent Impacts
Covering and shading of existing concrete, bed, bank and channel due to roadway widening	Tassajara Creek (PC-5)	60 linear feet (0.024 acres)	60 linear feet of riparian enhancement at the Eagle Ridge Preserve
Widening of bridge deck to cause loss of wetland due to shading	Emergent Wetland at Arroyo Las Positas-West (EW-8)	0.023 acres	0.046 acres of wetland creation at the Eagle Ridge Preserve
Covering and shading of channel due to roadway widening	Arroyo Las Positas-East (PC-2)	43 linear feet (0.041 acres)	43 linear feet of riparian enhancement at off-site mitigation at the Eagle Ridge Preserve
Covering and shading of channel due to roadway widening	Arroyo Las Positas-West (PC-3)	10 linear feet (0.007 acres)	10 linear feet of riparian enhancement at off-site mitigation at the Eagle Ridge Preserve
Fill of earthen channel due to extension of concrete apron and construction of bank armoring in earthen channel	Arroyo Seco (PC-1)	30 linear feet (0.028 acres)	0.056 acres of wetland creation at the Eagle Ridge Preserve

Activity	Jurisdictional Feature Impacted (Feature ID)	Acreage and/or Linear Footage of Permanent Impact	Mitigation for Permanent Impacts
Widening of roadway to fill wetlands.	Seasonal Wetland (SW-2)	0.015 acres	0.030 acres off-site mitigation at the Eagle Ridge Preserve
Widening of roadway to fill wetlands	Emergent Wetland (EW-3)	0.004 acres	0.008 acres off-site mitigation at the Eagle Ridge Preserve
	Total:	0.042 acres of wetland impacts due to filling or shading; 113 linear feet of creek shading; 30 linear feet of creek impacts due to filling	0.140 acres of wetland creation and 113 linear feet of riparian channel enhancement at Eagle Ridge Preserve

To mitigate for temporary impacts to State waters as a result of diversion, the Department shall restore the creek beds and temporarily dewatered areas to their original morphological and vegetated condition. A diversion plan shall be submitted to and found acceptable to Water Board staff prior to commencement of any diversion activities at Arroyo Las Positas and Arroyo Seco (see condition no. 11)

Roadway Pollutant Mitigation: As mitigation for increased pollutant loads associated with impervious areas, the Department shall provide treatment of stormwater runoff from approximately 46.2 acres of impervious area using 24 compost-amended biofiltration strips and 12 bioretention swales. The swales and strips shall be installed per the plans included in Attachment A, *Biofiltration Swale and Strip Design and Soil Plans and Specifications*.

The following biofiltration strips and corresponding locations will mitigate water quality impacts resulting from Project implementation:

BMP ID No.	From Post Mile	To Post Mile	Treated Impervious Area (ac)
1	21.26	21.33	0.90
2	21.22	21.29	0.76
3	19.42	19.49	0.97
4	19.33	19.43	0.98
5	19.22	19.33	1.02
6	18.88	19.01	1.85
7	18.84	18.88	0.45
8	18.71	18.76	0.52
9	18.60	18.73	1.52
10	18.05	18.28	3.18
11	17.98	18.04	0.69
12	17.82	17.92	1.11
13	16.93	17.06	2.61
14	16.80	16.82	0.94

BMP ID No.	From Post Mile	To Post Mile	Treated Impervious Area (ac)
15	16.60	16.66	0.70
16	15.01	15.15	1.89
17	14.86	14.94	0.83
18	14.20	14.25	0.50
19	13.97	14.07	0.84
20	13.84	13.88	0.31
21	13.42	13.59	2.07
22	10.71	10.80	1.00
23	10.63	10.70	0.41
24	9.78	9.92	1.72
		total:	27.8

The following bioretention swales and corresponding locations will mitigate water quality impacts resulting from Project implementation:

BMP ID No.	Located at Post Mile	Treated Impervious Area (ac)
1	21.33	0.43
2	20.88	0.43
3	18.58	0.18
4	13.87	0.23
5	13.45	0.32
6	13.17	0.32
7	13.14	0.50
8	11.06	0.61
9	10.56	9.08
10	9.15	5.43
11	8.49	0.28
12	8.48	0.61
	total:	18.4

Hydromodification Mitigation: To mitigate for catchments susceptible to hydromodification impacts, the Department shall utilize the 24 biofiltration strips and twelve bioretention swales, as well as one detention basin planned in the northwest quadrant of the Vasco Road/I-580 interchange, to control stormwater flow volume and duration from the Project area.

California Wetlands Portal: It has been determined through regional, state, and national studies that tracking of mitigation/restoration projects must be improved to better assess the performance of these projects, following monitoring periods that last several years. In addition, to effectively carry out the State's Wetlands Conservation Policy of no net loss to wetlands, the State needs to closely track both wetland losses and mitigation/restoration project success. Therefore, we require that the Department use the California Wetlands Form to provide Project information related to impacts and mitigation/restoration measures (see Condition No. 12 of this

Certification). An electronic copy of the form and instructions can be downloaded at: http://www.waterboards.ca.gov/sanfranciscobay/certs.shtml. Project information concerning impacts and mitigation/restoration will be made available at the web link: http://www.californiawetlands.net.

CEQA Compliance: The Project was evaluated pursuant to the requirements of the California Environmental Quality Act (CEQA) in a Mitigated Negative Declaration. The Department filed a Notice of Determination on February 4, 2010, that the Project would not have a significant effect on the environment.

Certification: I hereby issue an order certifying that any discharge from the referenced project will comply with the applicable provisions of sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act, and with other applicable requirements of State law. This discharge is also regulated under State Water Resources Control Board Order No. 2003 - 0017 – DWQ, "General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received State Water Quality Certification" which requires compliance with all conditions of this Water Quality Certification. The following conditions are associated with this certification:

1. The Project shall be constructed in conformance with the Project Description described in this certification and certification application materials. Any change in the Project may require modification to the certification and shall be reported to the Water Board;

2. The Department shall install 24 compost-amended biofiltration strips and 12 biofiltration swales to treat stormwater contaminants from no less than 46 acres of impervious area. Swale and strips shall be installed and consistent with the information summarized above in "Roadway Pollutant Mitigation," and in Attachment A, *Biofiltration Swale and Strip Design and Soil Plans and Specifications*. Within 60 days of completing the biofiltration swales and strips, the Department shall submit an as-built report to the Water Board. The report shall document that swales and strips were constructed per the plans in certification Attachment A;

3. The Department shall construct a detention basin in the northwest quadrant of the Vasco Road/I-580 interchange to mitigate for potential hydromodification impacts associated with added impervious area. Within 60 days of completing the detention basin, the Department shall submit an as-built report to the Water Board;

4. The Department shall create no less than 0.14 acres of seasonal wetlands and enhance no less than 113 linear feet of riparian channel along the west branch of Cayetano Creek at the Eagle Ridge Preserve mitigation site in Livermore no later than December 1, 2011. Creation and enhancement activities, and monitoring and reporting shall be implemented consistent with the *Mitigation and Monitoring Plan for the Eagle Ridge Preserve Property*

(MMP), dated November 2010. Implementation, monitoring and reporting requirements shall include:

a. Planting of valley oaks, California black walnut, red and arroyo willows, California wild rose and blackberry, and wild lilac to enhance the West Cayeano Creek riparian area;
b. Implementation of an invasive species removal program for wetland and riparian areas;
c. Seeding of created wetland areas with a seed mix native to the local area;
d. The use of onsite wetlands, *W1*, *W2*, and *W3*, as reference sites for the proposed wetland creation activities. Biological baseline monitoring shall be conducted and include evaluation of soil, hydrology and vegetation conditions, as well as assessment of habitat functions and values;
e. Application of the following wetland creation performance standards:
    i. The frequency of inundation and/or saturation of the wetlands shall be a minimum of 18.25 continuous days per year;
    ii. Native vegetative cover in created wetlands shall be no less than 90 percent by monitoring Year 5;
    iii. Total wetlands vegetation cover shall average greater than 65% of reference wetlands by monitoring Year 3, and 80% by monitoring Year 5;
f. Application of the following riparian enhancement performance standards:
    i. At no time during the 10-year monitoring period shall the number of riparian plant species remaining from the original planting be lower than 80% cumulative survival. If fewer than 80% of the original plantings remain at any time during the monitoring period, replanting shall be conducted so that the original plantings are replaced;
    ii. Site maintenance shall be conducted to assess weed control, irrigation adequacy, trash removal, and vandalism; and
    iii. The health and vigor of each planted riparian species will be assessed using plant color, seed development, new growth, herbivory, drought stress, fungal/insect infestation, and physical damage factors;
g. Submittal of annual monitoring reports for no less than 5 years for wetland creation activities, and no less than 10 years for riparian habitat activities. The Department may limit submittal of annual monitoring reports to years 0, 1, 3, 5, 7, 9, and 10. The Year 0 report shall be submitted no later than April 1, 2012. All other monitoring reports shall be submitted no later than February 15 of the year following the subject monitoring activities; and
h. Designation of permanent photo-monitoring points and submittal of a Year 0 report. Following installation of the mitigation, the immediate post-construction condition of the site shall be photo-documented and a report shall be submitted to the Water Board. The report shall include the post-construction photographs, the as-built plan based on the post-construction survey, a description of the construction activities, including any adjustments to the final grading plan, and a

map with the locations of the photo-documentation points clearly marked (Year 0 report);

5. No later than 15 days from the issuance date of this certification, the Department shall submit a map of the riparian enhancement and wetland creation areas, subject to the acceptance of Water Board staff. The map shall delineate the proposed 113 linear foot section of riparian enhancement at West Cayetano Creek and the 0.14 acres of wetland creation that the Department is proposing as mitigation for Project impacts;

6. Any planting established as part of the Project off-site mitigation plan shall not be considered successfully established until supplemental irrigation systems have been terminated for two or more full growing seasons;

7. Off-site mitigation shall not be considered to satisfy the conditions of this certification until a final mitigation success report has been submitted to the Water Board and found acceptable by the Executive Officer;

8. The Department shall prepare and submit a Grazing Management Plan, subject to the acceptance of Water Board staff, for grazing activities that may affect the off-site wetland creation and riparian habitat restoration activities. Grazing is prohibited within the wetland creation and riparian habitat enhancement areas until a Grazing Management Plan has been found acceptable by Water Board staff;

9. Not later than January 1, 2012, the Department shall submit a copy of the Conservation Easement for the Eagle Ridge Preserve mitigation site to the Water Board Executive Officer for review and approval. The language of the Conservation Easement shall follow the CDFG and/or USFWS templates for conservation easements and shall identify the third-party non-profit entity, qualified to hold a conservation easement under California Civil Code section 815.3, to whom the easement would be granted. The easement should include provisions and responsibilities of the Department and the designated land trust organization, including any future transfers of the easement or fee interest that may be anticipated, and should grant access rights to Water Board staff. The easement should also specify the purposes for which it is established and should include a list of prohibited activities that are inconsistent with the maintenance of the mitigation site. Failure to provide an acceptable conservation easement by January 1, 2012, may result in an enforcement order and requirement to provide additional mitigation;

10. Construction of temporary work platforms within Arroyo Seco and Arroyo Las Positas are prohibited unless a proposal has first been submitted to and found acceptable by Water Board staff. Diversion of Arroyo Las Positas and Arroyo Seco flows are prohibited unless a diversion plan has first been submitted to and found acceptable by Water Board staff. Any

diversion plan shall include a plan to have the diversion system removed by October 1 and installed no sooner than April 15;

11. The Department is required to use the standard California Wetlands Form to provide Project information describing impacts and restoration measures within 45 days from the date of this certification. An electronic copy of the form can be downloaded at: http://www.waterboards.ca.gov/sanfranciscobay/certs.shtml. The completed form shall be submitted electronically habitatdata@waterboards.ca.gov or shall be submitted as a hard copy to both (1) the address on the letterhead (or to the Water Board), to the attention of California Wetlands Portal and (2) to the San Francisco Estuary Institute, 7770 Pardee Lane, 2nd Floor, Oakland, CA, 94621 to the attention of Mike May;

12. The Department shall adhere to the Standard conditions imposed by Nationwide Permit No. 14, issued to the Department by the Corps, and to the Biological Opinion and any subsequent amendments issued to the Department by the United States Fish and Wildlife Service (File no. 81420-2008-F-0487-2);

13. All temporarily disturbed areas shall be restored to pre-construction or enhanced conditions, using only native plant species, immediately following cessation of construction activities in those areas;

14. Except as expressly allowed in this Certification, the discharge, or creation of the potential for discharge, to waters of the State of any construction wastes and/or soil materials including cement, fresh concrete, or washings thereof, silts, clay, sand, oil or petroleum products and other organic materials to waters of the State is prohibited;

15. Erosion control measures shall be utilized throughout all phases of construction where sediment runoff from disturbed areas threatens to enter waters of the State, regardless of date. At no time shall silt-laden runoff be allowed to enter waters of the State;

16. Except as expressly allowed in this certification, no equipment shall be operated in areas of flowing or standing water. No fueling, cleaning or maintenance of vehicles or equipment shall take place within jurisdictional waters or within any areas where an accidental discharge to waters of the State may occur;

17. This certification does not allow for the take, or incidental take, of any special status species. The Department shall use the appropriate protocols, as approved by the California Department of Fish and Game and the U.S. Fish and Wildlife Service, to ensure that Project activities do not impact the Beneficial Use of the Preservation of Rare and Endangered Species;

18. The Department shall maintain a copy of this water quality certification at the Project site so as to be available at all times to site operating personnel. It is the responsibility of the

Department to assure that all personnel (employees, contractors, and subcontractors) are adequately informed and trained regarding the conditions of this certification;

19. This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Section 13330 of the California Water Code (CWC) and Section 3867 of Title 23 of the California Code of Regulations(23 CCR);

20. This certification action does not apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license, unless the pertinent certification application was filed pursuant to California Code of Regulations (CCR) Title 23, Subsection 3855(b) and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought; and

21. Certification is conditioned upon total payment of the full fee required in State regulations (23 CCR Section 3833). Water Board staff received full payment of $640.00 on August 17, 2010.

We anticipate your cooperation in implementing these conditions. However, please be advised that any violation of water quality certification conditions is a violation of State law and subject to administrative civil liability pursuant to California Water Code (CWC) section 13350. Failure to respond, inadequate response, late response, or failure to meet any condition of this certification may subject you to civil liability imposed by the Water Board to a maximum of $5,000 per day per violation or $10 for each gallon of waste discharged in violation of this certification.

Conditions 2, 4, 5, and 8-11 are requirements for information or reports. Any requirement for a report made as a condition to this action is a formal requirement pursuant to CWC section 13267, and failure or refusal to provide, or falsification of such required report is subject to civil liability as described in CWC section 13268.

We anticipate no further action on this request. Should new information come to our attention that indicates a water quality problem with this project, the Water Board may issue Waste Discharge Requirements pursuant to 23 CCR Section 3857.

If you have any question, please contact Brendan Thompson at (510) 622-2506, or via e-mail to BThompson@waterboards.ca.gov.

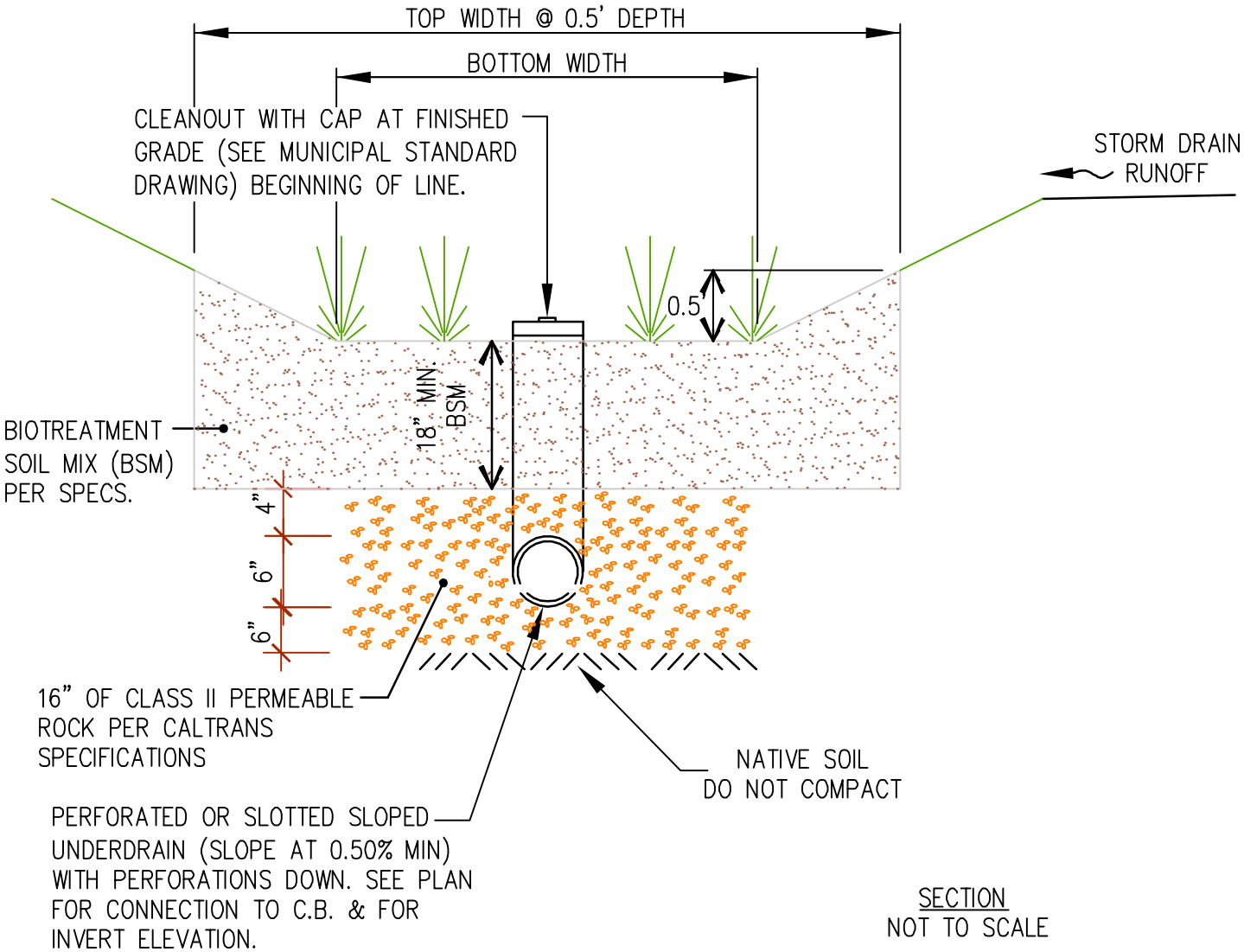
Sincerely,

Bruce H. Wolfe
Executive Officer

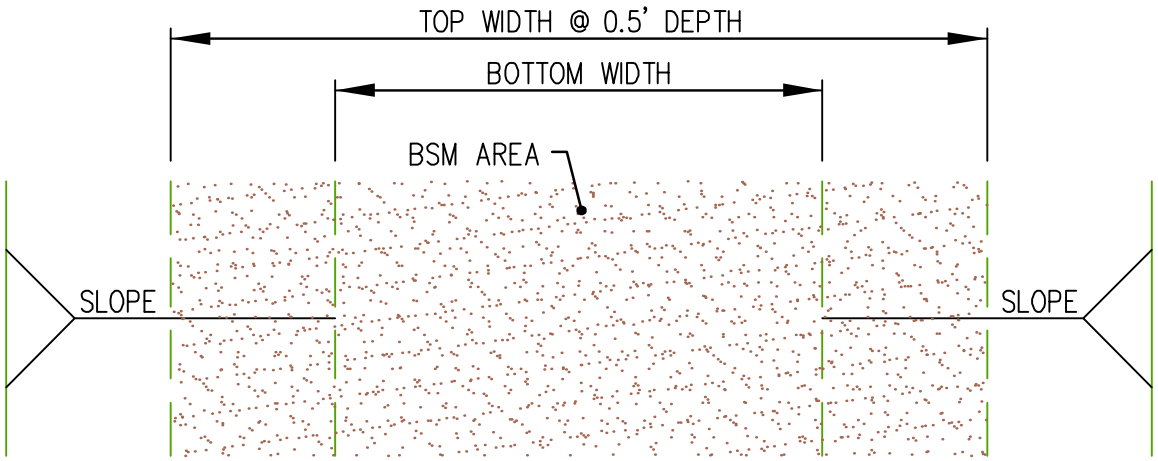
cc (via e-mail): Mr. Bill Orme SWRCB-DWQ
Mr. Hal Durio, Regulatory Branch, USACE
Ms. Jane Hicks, Regulatory Branch, USACE
Ms. Holly Costa, Regulatory Branch, USACE
Mr. Cameron Johnson, USACE
Ms. Marcia Grefsrud, CDFG
Mr. Dale Bowyer, Water Board
Mr. Cyrus Vafai, Caltrans
Mr. Hardeep Takhar, Caltrans
Mr. Jason Brush, USEPA
Mr. Jerry Roe, USFWS
Mr. Liam Davis, CDFG

Attachment A

Biofiltration Swale and Strip Design and Soil Plans and Specifications



SECTION
NOT TO SCALE



PLAN
NOT TO SCALE

EXHIBIT A

580 WESTBOUND HOV IMPROVEMENTS
LINEAR BIORETENTION SWALE

JOB NO:	**20077061**
DATE:	**APRIL, 2011**
BY:	**R.A.M**
REV:	**ED BOSCACCI**

BkF

DRAWING NAME: J:\Eng07\077061\dwg\Exhibits\401-Certification\2011-04\Bioretention.dwg
PLOT DATE: 04-28-11 PLOTTED BY: muro

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R14.6/R21.6		

REGISTERED CIVIL ENGINEER — 5/20/2011 DATE

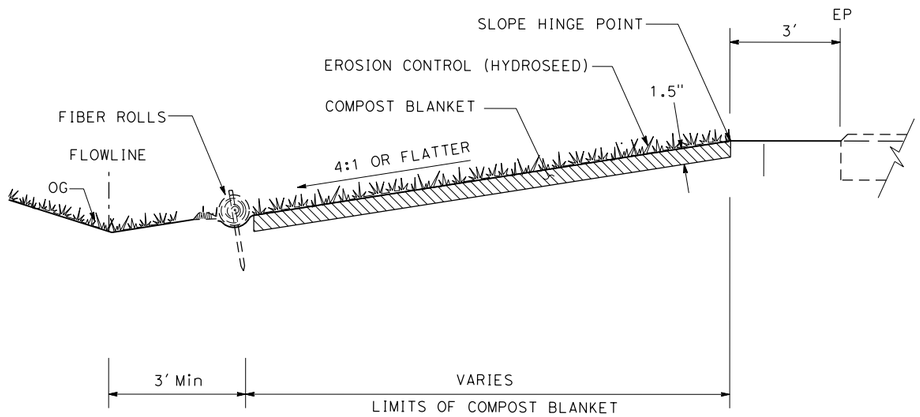
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — DAVID M. DICKINSON — No. 50815 — Exp. 9-30-11 — CIVIL — STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

WMH CORPORATION
555 12th St
Suite 1900
Oakland, CA 94607

ALAMEDA CTC
1333 Broadway
Suite 220
Oakland, CA 94612



BIOFILTRATION STRIP

EROSION CONTROL DETAILS

NO SCALE

ECD-1

REVISED BY	DATE REVISED
AV	02/22/10
YF	08/30/10
YF	04/18/11

CALCULATED-DESIGNED BY: Y. FAROUQI \ A. VALASQUEZ
CHECKED BY: DAVID M. DICKINSON

CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans®

LAST REVISION 00-00-00
DATE PLOTTED => 5/23/2011
TIME PLOTTED => 2:51:20 PM

X:\580 WB HOV\000_CAD\Sheets\West of Sta 540+00\009-Erosion Control\GF-Details\429087gf001.dgn

BORDER LAST REVISED 7/2/2010

USERNAME => yfarouqi
DGN FILE => 429087gf001.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0735

PROJECT NUMBER & PHASE 04000202111

10-1.__ IMPORTED BIOFILTRATION SOIL

GENERAL

Summary

This work includes furnishing, and applying imported biofiltration soil.

Submittals

Compost: Before mixing compost with sand and topsoil, submit:

1. A Certificate of Compliance from the compost supplier in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.
2. A copy of the compost producer's compost technical data sheet. The compost technical data sheet must include:

    2.1. Laboratory analytical test results
    2.2. List of product ingredients

3. A copy of the compost producers Seal of Testing Assurance certification.

Imported biofiltration soil: Imported biofiltration soil must be accompanied by a Certificate of Compliance, from the soil supplier, in conformance with the provisions in Section 6-1.07, “Certificates of Compliance,” of the Standard Specifications.

Quality Control and Assurance

Saturated hydraulic conductivity for imported biofiltration soil must be at least 5 inches per hour.

MATERIAL

Imported biofiltration soil consists of a uniform mixture of sand, compost, and topsoil. The ratio of the components of imported biofiltration soil by volume must consist of two-parts sand; one-part compost; 0.5-part topsoil.

Sand

Sand must be free of wood, waste, coating such as clay, stone dust, carbonate, or any other deleterious material. All aggregate passing No. 200 sieve size must be non-plastic. Sand must be graded within the following limits:

Sieve Sizes	Percentage Passing
3/8"	100
No. 4	90 - 100
No. 8	70 - 100
No. 16	40 - 95
No. 30	15 - 70
No. 40	5-55
No. 100	0 - 15
No. 200	0 - 5

Grain size analysis results of the sand component must be performed in accordance with ASTM D 422, Standard Test Method for Particle Size Analysis of Soils.

Compost

The compost producer must be fully permitted as specified under the California Integrated Waste Management Board, Local Enforcement Agencies and any other State and Local Agencies that regulate solid waste facilities. If exempt from State permitting requirements, the composting facility must certify that it follows guidelines and procedures for production of compost meeting the environmental health standards of Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7.

The compost producer must be a participant in the United States Composting Council's Seal of Testing Assurance program.

Compost may be derived from any single or mixture of any of the following feedstock materials:

1. Green material consisting of chipped, shredded, or ground vegetation; or clean processed recycled wood products
2. Biosolids
3. Manure
4. Mixed food waste

Compost feedstock materials such that weed seeds, pathogens and deleterious materials are reduced as specified under Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7, Section 17868.3.

Compost must not be derived from mixed municipal solid waste and must be reasonably free of visible contaminates. Compost must not contain paint, petroleum products, pesticides or any other chemical residues harmful to animal life or plant growth. Compost must not possess objectionable odors.

Metal concentrations in compost must not exceed the maximum metal concentrations listed in Title 14, California Code of Regulations, Division 7, Chapter 3.1, Section 17868.2.

Compost must comply with the following:

Physical and Chemical Requirements

Property	Test Method	Requirement
pH	TMECC 04.11-A Elastometric pH 1:5 Slurry Method pH Units	6.5–8.0
Soluble Salts	TMECC 04.10-A Electrical Conductivity 1:5 Slurry Method dS/m (mmhos/cm)	0–6.0
Moisture Content	TMECC 03.09-A Total Solids & Moisture at 70+/- 5 deg C % Wet Weight Basis	30–60
Organic Matter Content	TMECC 05.07-A Loss-On-Ignition Organic Matter Method (LOI) % Dry Weight Basis	35–75
Maturity	TMECC 05.05-A Germination and Vigor Seed Emergence Seedling Vigor % Relative to Positive Control	 80 or Above 80 or Above
Stability	TMECC 05.08-B Carbon Dioxide Evolution Rate mg CO_2-C/g OM per day	 8 or below
Particle Size	TMECC 02.02-B Sample Sieving for Aggregate Size Classification % Dry Weight Basis	Inches % Passing 3 100% 1/2 0 – 95% 1/4 0-75% Max. Length 4 inches
Pathogen	TMECC 07.01-B Fecal Coliform Bacteria < 1000 MPN/gram dry wt.	Pass
Pathogen	TMECC 07.01-B Salmonella < 3 MPN/4 grams dry wt.	Pass
Physical Contaminants	TMECC 02.02-C Man Made Inert Removal and Classification: Plastic, Glass and Metal % > 4mm fraction	Combined Total: < 1.0
Physical Contaminants	TMECC 02.02-C Man Made Inert Removal and Classification: Sharps (Sewing needles, straight pins and hypodermic needles) % > 4mm fraction	None Detected

NOTE: TMECC refers to "Test Methods for the Examination of Composting and Compost," published by the United States Department of Agriculture and the United States Compost Council (USCC).

Topsoil

Topsoil must be free of wood, waste or other deleterious material. The topsoil texture must be loamy. Overall dry weight percentages must be 60 to 90 percent sand, with less than 20 percent passing the No.200 sieve, less than 5 percent clay, and no gravel.

CONSTRUCTION

Comply with Section 20-3.02, "Preparation," of the Standard Specifications.

Place imported biofiltration soil in lifts 8 to 12 inches. Lifts are not to be compacted.

MEASUREMENT AND PAYMENT

Quantity of imported biofiltration soil is measured by the cubic yard.

The contract unit price paid per cubic yard for imported biofiltration soil includes full compensation for furnishing all labor, materials, tools, equipment, incidentals, and for doing all the work involved in imported biofiltration soil, including testing, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

State of California – The Natural Resources Agency ***ARNOLD SCHWARZENEGGER**, Governor*
DEPARTMENT OF FISH AND GAME
Bay Delta Region
Post Office Box 47
Yountville, California 94599
(707) 944-5520
www.dfg.ca.gov

March 2, 2011

Arthur L. Dao
Alameda County Transportation Commission
1333 Broadway, Suite 220
Oakland, CA 94612

Subject: Final Lake or Streambed Alteration Agreement
Notification No. 1600-2010-0284-R3
Route 580 High Occupancy Vehicle Lane Widening Project

Dear Mr. Dao:

Enclosed is the final Streambed Alteration Agreement ("Agreement") for the Route 580 High Occupancy Vehicle Lane Widening Project. Before the Department may issue an Agreement, it must comply with the California Environmental Quality Act ("CEQA"). In this case, the Department, acting as a responsible agency, filed a notice of determination ("NOD") on March 2, 2011, based on information contained in the Negative Declaration the lead agency prepared for the Project.

Under CEQA, filing a NOD starts a 30-day period within which a party may challenge the filing agency's approval of the project. You may begin your project before the 30-day period expires if you have obtained all necessary local, state, and federal permits or other authorizations. However, if you elect to do so, it will be at your own risk.

If you have any questions regarding this matter, please contact Melissa Escaron, Staff Environmental Scientist, at (707) 339-0334 or mescaron@dfg.ca.gov.

Sincerely,

Scott Wilson
Environmental Program Manager
Bay Delta Region

cc: Melissa Escaron
Lieutenant Christensen

CALIFORNIA DEPARTMENT OF FISH AND GAME
BAY DELTA REGION
POST OFFICE BOX 47
YOUNTVILLE, CALIFORNIA 94599
(707) 944-5520
WWW.DFG.CA.GOV

STREAMBED ALTERATION AGREEMENT
NOTIFICATION NO. 1600-2010-0284-3
Arroyo Las Positas, Arroyo Seco Creek, Tassajara Creek

CALIFORNIA DEPARTMENT OF TRANSPORTATION
ROUTE 580 WESTBOUND HOV LANE WIDENING

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Game (DFG) and Alameda County Transportation Commission (Permittee) as represented by Arthur L. Dao.

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified DFG on April 14, 2010 that Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC section 1603, DFG has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

WHEREAS, Permittee has reviewed the Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, Permittee agrees to complete the project in accordance with the Agreement

PROJECT LOCATION

The Project is located along Route 580 between post mile 8.29 and post mile 21.43 in Alameda County. The project begins west of Greenville Road and ends east of San Ramon Blvd/Foothill Road. Latitude:42'03" to 43'04:" N37, Longitude: 55'21" to 42'02" W 121.

PROJECT DESCRIPTION

The Permittee proposes to widen westbound 580 along a 13.1 mile stretched to accommodate a new High Occupancy Vehicle (HOV) widening. The proposed widening will impact DFG stream jurisdiction within the following waterways: Arroyo Las Positas, Arroyo Seco Creek, and Tassajara Creek.

Two bridges will be widened over Arroyo Las Positas. All bridge piers will be installed outside of the active channel, the new piers will require pile driving for installation. Arroyo Las Positas will be diverted around the construction site in order to protect the creek during construction activities. This work will result in approximately 1000 square feet of permanent shading of the creek and 12,000 square feet of temporary impacts resulting from the creek diversion.

The concrete box culvert at Arroyo Seco Creek will be extended to accommodate the HOV widening. Approximately 54 cubic yards of concrete and rock slope protection will be placed in the waterway, resulting in approximately 1200 square feet of permanent loss of native riparian habitat.

The bridges crossing Tassajara Creek will be widened into the median over a concrete lined channel causing temporary impacts from the creek diversion and permanent shading impacts.

PROJECT IMPACTS

Existing fish or wildlife resources the project could substantially adversely affect include: Riparian, California red-legged frog (CRLF), California tiger salamander (CTS) habitat, and CRLF and CTS individuals.

The adverse effects the project could have on the fish or wildlife resources identified above include: Temporarily increased erosion and sedimentation within the riparian corridor, removal of riparian vegetation, decrease in potential CRLF and CTS habitat quality, potential CTS and CRLF mortality.

MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

1. Administrative Measures

Permittee (Alameda County Transportation Commission and/or its Designee) shall meet each administrative requirement described below.

1.1 Documentation at Project Site. Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to DFG personnel, or personnel from another state, federal, or local agency upon request.

1.2 Providing Agreement to Persons at Project Site. Permittee shall provide copies of the Agreement and any extensions and amendments to the Agreement to all persons who will be working on the project at the project site on behalf of Permittee, including but not limited to Resident Engineers, contractors, subcontractors, inspectors, and monitors.

1.3 Notification of Conflicting Provisions. Permittee shall notify DFG if Permittee determines or learns that a provision in the Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. In that event, DFG shall contact Permittee to resolve any conflict.

1.4 Project Site Entry. Permittee agrees that DFG personnel may enter the project site at any time to verify compliance with the Agreement.

1.5 Designated Biologist. At least 5 days before initiating ground- or vegetation-disturbing activities, Permittee shall submit to DFG in writing the name, qualifications, business address, and contact information for a biological monitor (Designated Biologist). The Designated Biologist shall be knowledgeable and experienced in the biology and natural history of the California tiger salamander (CTS) and the California red legged frog (CRLF). The Designated Biologist shall be responsible for monitoring construction and/or ground- or vegetation-disturbing activities in areas of CTS and CRLF habitat to help minimize or avoid impact to the CTS and CRLF and to minimize disturbance of CTS and CRLF habitat. Permittee shall obtain DFG approval of the Designated Biologist prior to the commencement of Project-related activities that may result in impacts to CTS.

2. Avoidance and Minimization Measures

To avoid or minimize adverse impacts to fish and wildlife resources identified above, Permittee (Alameda County Transportation Commission and/or its Designee) shall implement each measure listed below.

2.1 Permittee shall designate a biologist, approved by DFG, to conduct a pre-construction survey for sensitive species. If construction activities stop for a period of three days or more, a new pre-construction survey shall be completed no more than 24 hours prior to the re-initiation of construction activities.

2.2 Permittee shall direct the Designated Biologist to monitor weather forecasts for rain events. The Designated Biologist shall work to ensure protection of aquatic resources before, during, and after rain events. All Storm Water Pollution Prevention Plan measures shall be monitored for proper installation and maintained/corrected to prevent sediment transport into waterways.

2.3 Permittee shall conduct an education program for all persons employed or otherwise working on the Project site prior to performing any work on-site. The program shall consist of a presentation from the Designated Biologist that includes a discussion of the biology and general behavior of the CTS and CRLF, information about the distribution and habitat needs of the CTS and CRLF, sensitivity of the CTS and CRLF to human activities, their status under CESA and ESA including legal protection, recovery efforts, penalties for violations and Project-specific protective measures described in this agreement. Interpretation shall be provided for non-English speaking workers, and the same instruction shall be provided for any new workers prior to their performing work on-site. Copies of this Agreement shall be maintained at the worksite. Permittee shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry on-site. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. These forms shall be filed at the worksite offices and be available to DFG upon request.

2.4 Permittee shall direct the Resident Engineer make corrections suggested by the Designated Biologist to ensure compliance with this Agreement.

2.5 Within 48 hours prior to construction, the active work area, within the riparian zone, shall be surveyed by the Designated Biologist for California red-legged frog (CRLF) and California tiger salamander (CTS). If any CRLF or CTS are found, work shall not start until DFG and USFWS have been contacted and have given their approval for

work to continue. If any CRLF or CTS are found, DFG shall be contacted within two hours at (707) 944-5520. The results of the survey shall be emailed to Melissa Escaron, Staff Environmental Scientist, at mescaron@dfg.ca.gov. Refer to Notification Number 1600-2010-0284-R3 when submitting the survey to DFG. If at any time after the start of construction a CTS or CRLF is observed, Permittee shall halt construction until Permittee has obtained approval to resume work from both DFG and USFWS.

2.6 Permittee shall conduct all work within riparian zones between April 15 and October 15 only.

2.7 Permittee shall erect a temporary barrier consisting of ERTEC E-fencing or equivalent, per manufacturer installation recommendations, immediately outside the high visibility construction fencing in the creek work areas that possess suitable CTS and CRLF habitat.

2.8 Permittee shall at a minimum re-seed all disturbed slopes with native grasses.

2.9 Permittee shall at the end of each work day, create an escape ramp at each end of any open trench to allow any animals that may have become entrapped in the trench to climb out overnight. The ramp may be constructed of either dirt fill or wood planking or other suitable material that is placed at an angle no greater than 30 degrees.

2.10 Permittee shall enclose all food and food related trash items in sealed trash containers and removed completely from the site at the end of each day.

2.11 Permittee shall not commence construction within the riparian zone if the work and its associated erosion control measures cannot be completed prior to the onset of a storm event. 72-hour weather forecasts from the National Weather Service shall be consulted prior to start up of any phase of the project.

2.12 Permittee shall submit a Riparian Mitigation and Monitoring Plan to DFG for approval, including success criteria for percent cover and percent survival, by June 15, 2011. All required mitigation planting shall be in place within 1 planting season following approval of the Riparian Mitigation Plan by DFG. Permanent impacts shall be mitigated at a 3:1 ratio for loss of linear feet within the riparian zone Mitigation may be accomplished through preservation and enhancement of existing channel habitat.

2.13 Permittee shall mitigate temporary riparian impacts at a 1:1 ratio through on-site restoration to achieve pre-construction habitat

functions. On-site riparian mitigation design shall be informed by photos documenting pre-construction conditions.

2.14 Permittee shall conduct all work according to the project description stated above as well as the plans submitted to DFG that are not in conflict with the above stated project description. Permittee shall notify the DFG of any modifications made to the plans submitted to DFG that pertain to impacts to riparian zones.

2.15 Prior to construction near existing culverts they shall be inspected for wildlife. If any wildlife is encountered during the course of the inspection, said wildlife shall be allowed to leave the area unharmed, and shall be flushed, hazed, or herded in a safe direction away from the project site. This condition does not allow for the take or disturbance of any state or federally listed species, or state listed species of special concern.

2.16 Permittee shall not use any materials, including landscape or erosion control materials, containing plastic monofilament netting.

2.17 Permittee shall be in compliance with Migratory Bird Treaty Act (MBTA) and Fish and Game Code 3503. To avoid potential impacts to nesting birds, Permittee shall remove vegetation or install exclusion measures during the time period of August 15 to February 15. If construction activities that have the potential to violate MBTA and Fish and Game Code 3503 are scheduled during the nesting season, focused surveys for active nests shall be conducted within 72 hours of said construction activities. If active nests are identified, a 50-foot no-work buffer for non-raptors and a 300-foot no-work buffer for raptors shall be established. If active nests are found, Caltrans shall consult with DFG and the United States Fish and Wildlife Service (USFWS) regarding appropriate action to comply with the MBTA of 1918 and the Fish & Game Code of California.

2.18 Permittee shall allow any wildlife encountered during the course of construction to leave the construction area unharmed. This authorization does not allow for the trapping, capture, or relocation of any other state or federally listed species.

2.19 This authorization does not allow for the removal of any trees within the riparian zone. If the project changes such that tree removal becomes necessary, the Permittee shall consult with the DFG.

2.20 If any state or federal listed species, or state species of special concern, are observed during project surveys, Permittee shall submit California Natural Diversity Data Base (CNDDB) forms to the

CNDDB for all preconstruction survey data within five working days of the sightings, and provide DFG Region 3 with copies of the CNDDB forms and survey maps.

2.21 Permittee shall install, monitor and maintain high-visibility Environmentally Sensitive Area fencing. Fencing shall be monitored and maintained on a daily basis, to protect sensitive resources. Permittee shall remove as little vegetation as is necessary to conduct construction activities.

2.22 Permittee shall have readily available, at all times, plastic sheeting or visquine and will cover exposed spoil piles and exposed areas to prevent these areas from losing loose soil into the stream. These covering materials shall be applied when it is evident rainy conditions threaten to erode loose soils into the stream.

2.23 Permittee shall not operate equipment or vehicles in water-covered portions of the stream or where wetland vegetation, riparian vegetation, or aquatic organisms may be destroyed, except as otherwise provided for in this Agreement and as necessary to complete authorized work.

2.24 Permittee shall locate staging and storage areas for equipment, materials, fuels, lubricants and solvents, outside of the riparian area. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or adjacent to the creek will be positioned over drip pans. Any equipment or vehicles driven and/or operated within or adjacent to the creek will be checked and maintained daily, to prevent leaks of materials that if introduced to water could be deleterious to aquatic life. Vehicles will be moved away from the creek prior to refueling and lubrication.

2.25 Permittee shall prevent raw cement/concrete or washings thereof, asphalt, straw, paint or other coating material, oil or other petroleum products, or any other substances related to project activities which could be hazardous to aquatic life, wildlife, or riparian habitat from contaminating the soil and/or entering the waters of the State. Permittee may be subject to a citation for placing materials where they may enter the creek.

2.26 Permittee shall not dump any litter or construction debris within the within the project area. All such debris and waste shall be picked up daily and properly disposed of at an appropriate site.

2.27 Any materials placed in seasonally dry portions of the creek, that could be washed downstream or could be deleterious to aquatic life,

wildlife, or riparian habitat shall be removed by Permittee prior to inundation by high flows.

CONTACT INFORMATION

Any communication that Permittee or DFG submits to the other shall be in writing and any communication or documentation shall be delivered to the address below by U.S. mail, fax, or email, or to such other address as Permittee or DFG specifies by written notice to the other.

To Permittee:
Arthur L. Dao, Executive Director
Alameda County Transportation Commission
1333 Broadway, Suite 220, Oakland, Ca 94612
(510)836-2560

adao@actia2022.com

To DFG:
Department of Fish and Game
Bay Delta Region
7329 Silverado Trail
Attn: Lake and Streambed Alteration Program – Melissa Escaron
Notification #1600-2010-0284-R3
mescaron@dfg.ca.gov

LIABILITY

Permittee shall be solely liable for any violations of the Agreement, whether committed by Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that the Agreement authorizes.

This Agreement does not constitute DFG's endorsement of, or require Permittee to proceed with the project. The decision to proceed with the project is Permittee's alone.

SUSPENSION AND REVOCATION

DFG may suspend or revoke in its entirety the Agreement if it determines that Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, is not in compliance with the Agreement.

Before DFG suspends or revokes the Agreement, it shall provide Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide Permittee an opportunity to correct any deficiency before DFG suspends or revokes the Agreement, and include instructions to Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused DFG to issue the notice.

ENFORCEMENT

Nothing in the Agreement precludes DFG from pursuing an enforcement action against Permittee instead of, or in addition to, suspending or revoking the Agreement.

Nothing in the Agreement limits or otherwise affects DFG's enforcement authority or that of its enforcement personnel.

OTHER LEGAL OBLIGATIONS

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from obtaining any other permits or authorizations that might be required under other federal, state, or local laws or regulations before beginning the project or an activity related to it.

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but not limited to, FGC sections 2050 et seq. (threatened and endangered species), 3503 (bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

Nothing in the Agreement authorizes Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

AMENDMENT

DFG may amend the Agreement at any time during its term if DFG determines the amendment is necessary to protect an existing fish or wildlife resource.

Permittee may amend the Agreement at any time during its term, provided the amendment is mutually agreed to in writing by DFG and Permittee. To request an amendment, Permittee shall submit to DFG a completed DFG "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the corresponding amendment fee identified in DFG's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

TRANSFER AND ASSIGNMENT

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of the Agreement to another entity shall not be valid or effective, unless the transfer or assignment is requested by Permittee in writing, as specified below, and thereafter DFG approves the transfer or assignment in writing.

The transfer or assignment of the Agreement to another entity shall constitute a minor amendment, and therefore to request a transfer or assignment, Permittee shall submit to DFG a completed DFG "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in DFG's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

EXTENSIONS

In accordance with FGC section 1605(b), Permittee may request one extension of the Agreement, provided the request is made prior to the expiration of the Agreement's term. To request an extension, Permittee shall submit to DFG a completed DFG "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in DFG's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5). DFG shall process the extension request in accordance with FGC 1605(b) through (e).

If Permittee fails to submit a request to extend the Agreement prior to its expiration, Permittee must submit a new notification and notification fee before beginning or continuing the project the Agreement covers (Fish & G. Code, § 1605, subd. (f)).

EFFECTIVE DATE

The Agreement becomes effective on the date of DFG's signature, which shall be: 1) after Permittee's signature; 2) after DFG complies with all applicable requirements under the California Environmental Quality Act (CEQA); and 3) after payment of the applicable FGC section 711.4 filing fee listed at http://www.dfg.ca.gov/habcon/ceqa/ceqa_changes.html.

TERM

This Agreement shall expire on December 31, 2014, unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC section 1605(a)(2) requires.

AUTHORITY

If the person signing the Agreement (signatory) is doing so as a representative of Permittee, the signatory hereby acknowledges that he or she is doing so on Permittee's behalf and represents and warrants that he or she has the authority to legally bind Permittee to the provisions herein.

AUTHORIZATION

This Agreement authorizes only the project described herein. If Permittee begins or completes a project different from the project the Agreement authorizes, Permittee may be subject to civil or criminal prosecution for failing to notify DFG in accordance with FGC section 1602.

CONCURRENCE

The undersigned accepts and agrees to comply with all provisions contained herein.

FOR ARTHUR L. DAO REPRESENTING
ALAMEDA COUNTY TRANSPORTATION COMMISSION

Arthur L. Dao, Executive Director — 12/15/2010 Date

FOR DEPARTMENT OF FISH AND GAME

Scott Wilson — 3/2/11 Date
Environmental Program Manager

Prepared by: Melissa Escaron
Staff Environmental Scientist
September 20, 2010

Revised October 14, 2010
Revised October 17, 2010
Revised December 06, 2010

California Department of Fish and Game
Bay Delta Region
7329 Silverado Trail
Napa, CA 94558

California Endangered Species Act
Incidental Take Permit No. 2081-2010-026-03

Interstate 580 Westbound HOV Lane Project

Authority: This California Endangered Species Act (CESA) Incidental Take Permit (ITP) is issued by the Department of Fish and Game (DFG) pursuant to Fish and Game Code section 2081, subdivisions (b) and (c), and California Code of Regulations, Title 14, section 783.0 et seq. CESA prohibits the take[1] of any species of wildlife designated by the California Fish and Game Commission as an endangered, threatened, or candidate species.[2] DFG may authorize the take of any such species by permit if the conditions set forth in Fish and Game Code section 2081, subdivisions (b) and (c), are met. (See also Cal. Code Regs., tit. 14, § 783.4.)

Permittee:	**Alameda County Congestion Management Agency**
Principal Officer:	**Frank R. Furger**
Contact Person:	**Monica Gan, (510) 622-0795**
Mailing Address:	**1333 Broadway, Suite 220** **Oakland, CA 94612**

Effective Date and Expiration Date of this ITP:
This ITP shall be executed in duplicate original form and shall become effective once a duplicate original is acknowledged by signature of the Permittee on the last page of this ITP and returned to DFG's Habitat Conservation Planning Branch at the address listed in the Notices section of this ITP. Unless renewed by DFG, this ITP's authorization to take the Covered Species shall expire on **October 15, 2015**.

Notwithstanding the expiration date on the take authorization provided by this ITP, Permittee's obligations pursuant to this ITP do not end until DFG accepts as complete the Permittee's Final Mitigation Report required by Condition 7.8 of this ITP.

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[1] Pursuant to Fish and Game Code section 86, "'Take' means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill." See also *Environmental Protection Information Center v. California Department of Forestry and Fire Protection* (2008) 44 Cal.4th 459, 507 (for purposes of incidental take permitting under Fish and Game Code section 2081, subdivision (b), "'take' ... means to catch, capture or kill").

[2] The definition of an endangered, threatened, and candidate species for purposes of CESA are found in Fish and Game Code sections 2062, 2067, and 2068, respectively. "

Project Location:
The Interstate 580 Westbound High Occupancy Vehicle (HOV) Lane Project (hereafter, the Project) is located along a 13.1-mile segment of Interstate 580 starting west of the Greenville Road under-crossing (Post Mile (PM) 8.29) and ending east of the San Ramon Boulevard/Foothill Road over-crossing (PM 21.43), in eastern Alameda County (Figure 1).

The Eagle Ridge Preserve portion of the Project (hereafter, the Preserve) is located north of Interstate 580 (I-580) between the Cities of Livermore and Dublin in Alameda County. The Preserve is located 1.8 miles west of the intersection of Highland Road and Manning Road, and consists of approximately 535 acres of undeveloped grazing land with moderate sloping topography (Figure 2).

Project Description:
I-580 Westbound
In general, the Project consists of the construction of an HOV lane by the Alameda County Congestion Management Agency (Permittee) in cooperation with the California Department of Transportation (Caltrans). The HOV lane will be constructed along a 13.1-mile (21.9-kilometer) segment of I-580, in eastern Alameda County. The Project will occur within an existing Caltrans' I-580 Right-of-Way (ROW), as well as within temporary construction easements and a proposed additional ROW between Greenville Road and San Ramon/Foothill Road within the overall Project boundary. The Biological Study Area (BSA) for the Project is depicted on Resource Maps, dated August 5, 2011, included with this ITP as Attachment 1. Project-related activities will only occur within the BSA.

The Project includes:

- Construction of an auxiliary lane along I-580 westbound between the Vasco Road and First Street Interchanges;
- Construction of an auxiliary lane along I-580 westbound between the First Street and North Livermore Interchanges;
- Construction of 3,800 feet of auxiliary lane along I-580 westbound from the North Livermore Avenue on-ramp;
- Construction of 4,800 feet of auxiliary lane along I-580 westbound from the Airway Boulevard on-ramp;
- Widening the North Livermore Avenue under-crossing (Bridge No. 33-0153) in both eastbound and westbound directions;
- Widening two existing crossings of the Arroyo Las Positas (Bridge No. 33-0085 and Bridge No. 33-0203) in the westbound direction;
- Widening the existing crossing of the Arroyo Las Positas (Bridge No. 33-0012) in the westbound direction only;

- Widening the existing bridge crossing over Tassajara Creek (Bridge No. 33-0015) in the median section, and both the eastbound and westbound directions;
- Widening the Dougherty Drive under-crossing (Bridge No. 33-0150L) in the westbound direction;
- Extending the existing box culvert at Arroyo Seco Creek along the westbound direction;
- Construction of a westbound express bus ramp connection from the westbound HOV lane to the East Dublin/Pleasanton BART Station;
- Construction of HOV bypass lanes at the eastbound and westbound on-ramps at Greenville Road, Vasco Road, First Street, and North Livermore Avenue; and at the westbound on-ramp at Airway Boulevard;
- Modifying the ramp noses at interchange areas to accommodate for auxiliary lane, HOV bypass lane and shoulder widening; and,
- Installing new headwalls and retaining walls.

Construction of the Project HOV lane also involves paving additional new road surface primarily on the northern edge of the current configuration adjacent to the westbound I-580 outside travel lanes to accommodate an additional lane. In general, the existing roadway within the Project area will be widened to accommodate the HOV lane and a new shoulder, which will be up to 14 feet wide. Wherever possible, inside and outside shoulders will be constructed to a 14-foot width; however, shoulder widths will vary along ramps and in other segments where the westbound lanes of I-580 are constrained on either or both sides. Finally, the Project includes construction of a 4-foot wide area between Hacienda and Interstatate 680 to separate existing mixed-flow lanes from the Project HOV lane and shoulder beyond.

Eagle Ridge Preserve Mitigation Area

The Project includes the enhancement, management, and permanent protection of a 56.88-acre property (Mitigation Area) within the Preserve. The Preserve component of the Project and related activities include creation of a new wetland and breeding pond, installation of fencing along an existing drainage, and installation of a cattle water trough. A 0.2-acre seasonal wetland will be graded in existing upland habitat located adjacent to an existing intermittent drainage channel (East Branch of Cayetano Creek).

As part of the full mitigation package for the Project, the Permittee also intends to enhance ground squirrel habitat. A portion of the soil excavated for the Project will be placed in mounds surrounding the constructed wetland to enhance habitat for ground squirrels. All excess soil will be placed in a gravel area located adjacent to two homes on the property. After home demolition unrelated to the Project, the Permittee intends to use remaining excavated soil as fill to for revegetation of the disturbed areas.

Covered Species Subject to Take Authorization Provided by this ITP:
This ITP covers the following species:

Name	CESA Status
1. California tiger salamander (*Ambystoma californiense*)	Threatened[3]

This species and only this species is hereinafter referred to as "Covered Species."

Impacts of the Taking on Covered Species:
Project activities and their resulting impacts are expected to result in the incidental take of individuals of the Covered Species. The activities described above that are expected to result in incidental take of individuals of the Covered Species include all ground disturbing activities, including but not limited to pile driving, grading, excavation, vehicular traffic, clearing, grubbing and Mitigation Area enhancement, and monitoring and management activities (Covered Activities). Incidental take of individuals of the Covered Species may occur from the Covered Activities in the form of mortality ("kill") from crushing burrowing individuals and crushing individuals above ground. Incidental take of individuals of the Covered Species may also occur as a result of authorized capture and relocation of individuals of the Covered Species.

Take could occur within the Mitigation Area and all open, unpaved land within the BSA providing suitable upland or breeding habitat for the Covered Species within 1.24 miles of known occurrences of the Covered Species (Project Area). The Project is expected to cause the permanent loss of 13.013 acres of habitat for the Covered Species and temporary loss of 0.95 acres of habitat for the Covered Species. Impacts of the authorzed taking include adverse impacts to the Covered Species related to temporal losses, increased habitat fragmentation and edge effects, and the Project's incremental contribution to cumulative impacts (indirect impacts). These impacts include: stress resulting from noise and vibrations, and capture and relocation; and long-term effects due to increased pollution, displacement from preferred habitat, increased competition for food and space, and increased vulnerability to predation.

Incidental Take Authorization of Covered Species:
This ITP authorizes incidental take of the Covered Species and only the Covered Species. With respect to incidental take of the Covered Species, DFG authorizes the Permittee, its employees, contractors, and agents to take Covered Species incidentally in carrying out the Covered Activities, subject to the limitations described in this section and the Conditions of Approval identified below. This ITP does not authorize take of Covered Species from activities outside the scope of the Covered Activities, take of Covered Species outside of the

[3] See Cal. Code Regs. Tit. 14 § 670.5, subd. (b)(3)(G)

Project Area, take of Covered Species resulting from violation of this ITP, or intentional take of Covered Species, except for capture and relocation of Covered Species as authorized by this ITP.

Conditions of Approval:
Unless specified otherwise, the following measures shall pertain to all Covered Activities within the Project Area, including areas used for vehicular ingress and egress, staging and parking, and noise and vibration-generating Project activities. DFG's issuance of this ITP and Permittee's authorization to take the Covered Species are subject to Permittee's compliance with and implementation of the following Conditions of Approval:

1. **Legal Compliance:** Permittee shall comply with all applicable state, federal, and local laws in existence on the effective date of this ITP or adopted thereafter.

2. **CEQA Compliance:** Permittee shall implement and adhere to the mitigation measures related to the Covered Species in the Biological Resources section of the Mitigated Negative Declaration (SCH No. 2009032084) adopted by Caltrans on January 28, 2010, as the lead agency for the Project for purposes of the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.).

3. **LSA Agreement Compliance:** Permittee shall implement and adhere to the mitigation measures and conditions related to the Covered Species in the Lake and Streambed Alteration (LSA) Agreement (Notification No. 1600-2010-028-R3) for the Project executed by DFG pursuant to Fish and Game Code section 1600 et seq.

4. **ESA Compliance:** Permittee shall implement and adhere to the terms and conditions related to the Covered Species in the Biological Opinion on the Effects of the Proposed Interstate 580 Westbound HOV Lane Project (No. 81420-2008-F-0487-2), including related amendments (Nos. 81420-2008-F-0487-R001 and 81420-2008-F-0487-R002, respectively) for the Project pursuant to the federal Endangered Species Act (ESA). For purposes of this ITP, where the terms and conditions for the Covered Species in the federal authorization are less protective of the Covered Species or otherwise conflict with this ITP, the conditions of approval set forth in this ITP shall control.

5. **ITP Time Frame Compliance:** Permittee shall fully implement and adhere to the conditions of this ITP within the time frames set forth below and as set forth in the Mitigation Monitoring and Reporting Program (MMRP), which is included as Attachment 2 to this ITP.

6. General Provisions:

6.1. Designated Representative. Before starting Covered Activities, Permittee shall designate a representative (Designated Representative) responsible for communications with DFG and overseeing compliance with this ITP. Permittee shall notify DFG in writing before starting Covered Activities of the Designated Representative's name, business address, and contact information, and shall notify DFG in writing if a substitute Designated Representative is selected or identified at any time during the term of this ITP.

6.2. Designated Biologist. Permittee shall submit to DFG in writing the name, qualifications, business address, and contact information of a biological monitor (Designated Biologist) at least 30 days before starting Covered Activities. Permittee shall ensure that the Designated Biologist is knowledgeable and experienced in the biology, natural history, collecting and handling of the Covered Species. The Designated Biologist shall be responsible for monitoring Covered Activities to help minimize and fully mitigate or avoid the incidental take of individual Covered Species and to minimize disturbance of Covered Species' habitat. Permittee shall obtain DFG approval of the Designated Biologist in writing before starting Covered Activities, and shall also obtain approval in advance in writing if the Designated Biologist must be changed.

6.3. Designated Biologist Authority. To ensure compliance with the Conditions of Approval of this ITP, the Designated Biologist shall have authority to immediately stop any activity that is not in compliance with this ITP, and/or to order any reasonable measure to avoid the unauthorized take of an individual of the Covered Species.

6.4. Education Program. Permittee shall conduct an education program for all persons employed or otherwise working in the BSA before performing any work. The program shall consist of a presentation from the Designated Biologist that includes a discussion of the biology and general behavior of the Covered Species, information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to human activities, its status pursuant to CESA including legal protection, recovery efforts, penalties for violations and Project-specific protective measures described in this ITP. Permittee shall provide interpretation for non-English speaking workers, and the same instruction shall be provided for any new workers before their performing work in the BSA. Permittee shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry in the BSA. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. This

training shall be repeated at least once annually for long-term and/or permanent employees that will be conducting work in the BSA.

6.5. Construction Monitoring Notebook. The Designated Biologist shall maintain a construction-monitoring notebook on-site throughout the construction period which shall include a copy of this ITP with attachments and a list of signatures of all personnel who have successfully completed the education program. Permittee shall ensure a copy of the construction-monitoring notebook is available for review at the Project site upon request by DFG.

6.6. Trash Abatement. Permittee shall initiate a trash abatement program before starting Covered Activities and shall continue the program for the duration of the Project. Permittee shall ensure that trash and food items are contained in closed (animal-proof) containers and removed regularly (at least once a week) to avoid attracting opportunistic predators such as ravens, coyotes, and feral dogs.

6.7. Dust Control. Permittee shall implement dust control measures during Covered Activities to facilitate visibility for monitoring of the Covered Species by the Designated Biologist. Permittee shall keep the amount of water used to the minimum amount needed, and shall not allow water to form puddles.

6.8. Erosion Control Materials. Permittee shall prohibit use of erosion control materials potentially harmful to Covered Species and other species, such as mono-filament netting (erosion control matting) or similar material, in potential Covered Species' habitat.

6.9. Delineation of Project Area. Before starting Covered Activities along each part of the route in active construction, Permittee shall clearly delineate the boundaries of the Project Area with fencing, stakes or flags. Permittee shall restrict all Covered Activities to within the fenced, staked or flagged areas. Permittee shall maintain all fencing, stakes and flags until the completion of Covered Activities in that area.

6.10. Covered Activities Access. Project-related personnel shall access the BSA using existing routes or paved roads, and shall not cross Covered Species' habitat outside of or en route to the BSA or Project Area. Permittee shall restrict Project-related vehicle traffic to established roads, staging, and parking areas. Permittee shall ensure that vehicle speeds do not exceed 20 miles per hour to avoid Covered Species on or traversing the roads. If Permittee determines construction of routes for travel are necessary outside of the BSA, the Designated Representative shall contact DFG for written approval before carrying out such an activity. DFG may require an amendment to this ITP if additional take of Covered Species may result from Project modification.

6.11. Staging Areas. Permittee shall confine all Project-related parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities to the BSA using, to the extent possible, previously disturbed areas. Additionally, Permittee shall not use or cross Covered Species' habitat outside of the marked Project Area unless provided for as described in Condition 6.11 of this ITP.

6.12. Hazardous Waste. Permittee shall immediately stop, and following pertinent state and federal statutes and regulations, arrange for repair and cleanup by qualified individuals of any fuel or hazardous waste leaks or spills at the time of occurrence, or as soon as it is safe to do so. Permittee shall exclude the storage and handling of hazardous materials from the BSA and shall properly contain and dispose of any unused or leftover hazardous products off-site.

6.13. DFG Access. Permittee shall provide DFG staff with reasonable access to the Project, and shall otherwise fully cooperate with DFG efforts to verify compliance with or effectiveness of mitigation measures set forth in this ITP.

6.14. Refuse Removal. Upon completion of Covered Activities, Permittee shall remove from the BSA and properly dispose of all temporary fill and construction refuse, including, but not limited to, broken equipment parts, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, metal or plastic containers, and boxes.

7. Monitoring, Notification and Reporting Provisions:

7.1. Notification Before Commencement. The Designated Representative shall notify DFG 14 calendar days before starting Covered Activities and shall document compliance with all pre-Project Conditions of Approval before starting Covered Activities.

7.2. Notification of Non-compliance. The Designated Representative shall immediately notify DFG in writing if it determines that the Permittee is not in compliance with any Condition of Approval of this ITP, including but not limited to any actual or anticipated failure to implement measures within the time periods indicated in this ITP and/or the MMRP. The Designated Representative shall report any non-compliance with this ITP to DFG within 24 hours.

7.3. Compliance Monitoring. The Designated Biologist shall be on-site daily between October and June and twice weekly between July and September when Covered Activities occur. The Designated Biologist shall conduct compliance inspections to (1) minimize incidental take of the Covered Species; (2) check for compliance with all mitigation and avoidance measures; (3) check all exclusion zones; and (4) ensure

that signs, stakes, and fencing are intact, and that Covered Activities are only occurring in the Project Area. The Designated Representative or Designated Biologist shall prepare weekly written observation and inspection records summarizing: oversight activities and compliance inspections, observations of Covered Species and their sign, survey results, and monitoring activities required by this ITP.

7.4. Photographic Documentation of Covered Activities Area and Covered Activities. Permittee shall conduct photo monitoring of the Project Area as shown on Attachment 1. Prior to commencement of work, Permittee shall establish a minimum of one photo point every 1/8 of a mile along the Project Area alignment or an alternative number of photo points that achieve the objectives below and are approved by DFG in writing. The photo points shall provide comprehensive views of the Project Area including areas where Covered Activities will occur. Prior to construction, Permittee shall photograph the Project Area from each of the established points, noting the direction and magnification of each photo. On a monthly basis, Permittee shall photograph the Project Area from established photo points using the same direction and magnification as pre-construction photos. Labeled copies of photographs taken at each photo point shall be provided to DFG as a component of monthly compliance reports (see Condition 7.5).

7.5. Monthly Compliance Report. The Designated Representative or Designated Biologist shall compile the observation and inspection records identified in Condition 7.3 and 7.4 into a Monthly Compliance Report and submit it to DFG along with a copy of the Mitigation Monitoring and Reporting Program (MMRP) table with notes showing the current implementation status of each mitigation measure. Monthly Compliance Reports shall be submitted to DFG's Regional Office at the office listed in the Notices section of this ITP and via e-mail to DFG's Regional Representative and to swilson@dfg.ca.gov. At the time of this ITP's approval, the DFG Regional Representative is Marcia Grefsrud (mgrefsrud@dfg.ca.gov). DFG may at any time increase the timing and number of compliance inspections and reports required under this provision depending upon the results of previous compliance inspections. If DFG determines the reporting schedule must be changed, DFG will notify Permittee in writing of the new reporting schedule.

7.6. Annual Status Report. Permittee shall provide DFG with an Annual Status Report (ASR) no later than December 31 of every year beginning with issuance of this ITP and continuing until DFG accepts the Final Mitigation Report identified below. Each ASR shall include, at a minimum: (1) a summary of all Monthly Compliance Reports for that year identified in Condition 7.5; (2) a general description of the status of the Project Area and Covered Activities, including actual or projected completion dates, if known; (3) a copy of the table in the MMRP with notes showing the current

implementation status of each mitigation measure; (4) an assessment of the effectiveness of each completed or partially completed mitigation measure in avoiding, minimizing and mitigating Project impacts; (5) all available information about Project-related incidental take of the Covered Species; (6) an accounting of the number of acres subject to both temporary and permanent disturbance, both for the prior calendar year, and a total since ITP issuance; and (7) information about other Project impacts on the Covered Species.

7.7. CNDDB Observations. The Designated Biologist shall submit all observations of Covered Species to DFG's California Natural Diversity Database (CNDDB) within 60 calendar days of the observation and the Designated Biologist shall include copies of the submitted forms with the next Monthly Compliance Report or ASR, whichever is submitted first relative to the observation.

7.8. Final Mitigation Report. No later than 45 days after completion of all mitigation measures, Permittee shall provide DFG with a Final Mitigation Report. The Designated Biologist shall prepare the Final Mitigation Report which shall include, at a minimum: (1) a summary of all Monthly Compliance Reports and all ASRs; (2) a copy of the table in the MMRP with notes showing when each of the mitigation measures was implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) beginning and ending dates of Covered Activities; (6) an assessment of the effectiveness of this ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects on the Covered Species; and (8) any other pertinent information.

7.9. Notification of Take or Injury. Permittee shall immediately notify the Designated Biologist if a Covered Species is taken or injured by a Project-related activity, or if a Covered Species is otherwise found dead or injured within the vicinity of the Project. The Designated Biologist or Designated Representative shall provide initial notification to DFG by calling the Regional Office at (707)944-5500. The initial notification to DFG shall include information regarding the location, species, number of animals taken or injured and the ITP Number. Following initial notification, Permittee shall send DFG a written report within two calendar days. The report shall include the date and time of the finding or incident, location of the animal or carcass, and if possible provide a photograph, explanation as to cause of take or injury, and any other pertinent information.

8. Take Minimization Measures:
The following requirements are intended to ensure the minimization of incidental take of Covered Species in the Project Area during Covered Activities. Permittee shall implement and adhere to the following conditions to minimize take of Covered Species:

8.1. Upland Habitat Work Window. Permittee shall confine all earthwork and vegetation clearing within the Project Area to the period of April 15 to October 31.

8.2. Riparian Work Window. Permittee shall confine all work within riparian areas to period of June 15 to October 15.

8.3. Pond Work Window. Permittee shall confine all activities within ponds or pools to the period between August 31 and October 15. Permittee shall ensure that no activities occur at any time when California tiger salamander is in a breeding, larval, or migratory season. The Permittee shall monitor the National Weather Service (NWS) 72-hr forecast for the Project Area. If rain is predicted within 72 hours during project activity, all activities shall cease until no further rain is forecast. If the ponds/pools remain dry after the rain, the Permittee may continue activities.

8.4. No Work at Night. Permittee shall terminate all Covered Activities in the Project Area 30 minutes before sunset and shall not resume Covered Activities until 30 minutes after sunrise during the California tiger salamander migration/active season from November 1 to June 15. The Permittee shall use sunrise and sunset times established by the U.S. Naval Observatory Astronomical Applications Department for determining when Covered Activities shall terminate and resume.

8.5. Retaining Wall. Permittee shall construct a retaining wall at the edge of the BSA adjacent to Emergent Wetland 3 to protect Emergent Wetland 3 and no additional encroachment or right-of-way acquisition will be considered at this location. Permittee shall extend the existing culvert that drains Emergent Wetland 3 through the retaining wall to maintain the existing hydrology. Permittee shall reroute existing down spouts that drain freeway runoff into Emergent Wetland 3 to improve water quality.

8.6. Temporary Barrier. Before beginning Covered Activities, Permittee shall construct a temporary barrier along the outer limits of grading and disturbance of the Project Area. The Designated Biologist shall inspect this area prior to installation of this barrier and if any Covered Species are observed the measures in Condition 8.8 shall be followed. The barrier shall consist of silt fencing at least three feet tall and buried to a depth of at least six inches below the soil surface. At no greater than 100-foot intervals and at the ends of the barrier, the barrier shall be constructed with a 90

degree angle and extend at least 5 feet away from the Project Area to redirect Covered Species on the outside of the barrier back to habitat areas. The barrier shall be designed to allow the Covered Species to leave the Project Area using a one-way funnel, ramp or other method approved by DFG. The barrier shall remain in place until all Covered Activities have been completed. The Designated Biologist shall inspect the barrier daily and the Permittee shall maintain and repair it as necessary to ensure that it is functional and is not impeding movement of Covered Species on the outer side of the fence. Any Covered Species found along the fence line shall be relocated in accordance with Condition 8.8. Refuge opportunities shall be provided along or near the outer side of the silt fence. Design of the barrier and refuge opportunities shall be approved by DFG prior to installation and prior to beginning Covered Activities.

8.7. Pre-activity Covered Species Surveys. The Designated Biologist shall complete walking surveys of the Project Area to be impacted prior to Covered Activities and shall follow earthmoving equipment to look for California tiger salamanders during initial site grading. If Covered Species are discovered by the Designated Biologist or anyone else, the Designated Biologist shall move the animal to a safe nearby location (e.g. mouth of ground-squirrel burrow outside of the construction area) and monitor it until it is determined that it is not imperiled by predators or other dangers.

8.8. Covered Species Relocation. The Designated Biologist shall relocate any Covered Species found within the Project Area to be impacted to an active rodent burrow system located no more than 300 feet outside of the BSA unless otherwise approved by DFG. Relocation areas shall be identified by the Designated Biologist based upon best suitable habitat available and approved by DFG prior to the start of Covered Activities.

8.9. Escape Ramp. Permittee shall at the end of each work day, create an escape ramp at each end of any open trench to allow any animals that may have become entrapped in the trench to climb out overnight. The ramp may be constructed of either dirt fill or wood planking or other suitable material that is placed at an angle no greater than 30 degrees.

8.10. Erosion Control. Permittee shall use tightly woven fiber netting or similar material for erosion control to ensure that Covered Species do not get trapped. Plastic mono-filament netting (erosion control matting) or similar material shall not be used within areas of potential Covered Species habitat as defined by the Designated Biologist.

8.11. Covered Species Injury. If a Covered Species is injured as a result of Project-related activities, the Designated Biologist shall immediately take it to a DFG approved wildlife rehabilitation or veterinary facility. Permittee shall identify the facility before

starting Covered Activities. Permittee shall bear any costs associated with the care or treatment of such injured Covered Species. The Permittee shall notify DFG of the injury to the Covered Species immediately by telephone and e-mail followed by a written incident report as described in Condition 7.9. Notification shall include the name of the facility where the animal was taken.

9. Habitat Management Land Acquisition, Restoration, and Enhancement: DFG has determined that permanent protection and perpetual management of compensatory habitat is necessary and required pursuant to CESA to fully mitigate Project-related impacts of the taking on the Covered Species that will result with implementation of the Covered Activities. This determination is based on factors including an assessment of the importance of the habitat in the Project Area, the extent to which the Covered Activities will impact the habitat, and DFG's estimate of the acreage required to provide for adequate compensation.

To meet this requirement, the Permittee shall provide for the permanent protection and management of 56.88 acres of Habitat Management (HM) lands in the Eagle Ridge Preserve by recording a conservation easement on the HM lands pursuant to Civil Code 815 et seq., and calculating and depositing funds to manage the HM lands (Condition 9.2). Permanent protection and perpetual management of compensatory habitat must be complete before starting Covered Activities or within 18 months of the effective date of this ITP if Security is provided pursuant to Condition 10 below.

9.1. Cost Estimates. DFG has estimated the cost of acquisition, protection, and perpetual management of the HM lands, enhancement of mitigation land as follows:

9.1.1. Land Acquisition Costs. Land acquisition costs for HM lands identified in Condition 9.2 below, estimated at $21,500/acre for 56.88 acres: **$1,222,920**. Land acquisition costs are estimated using local fair market current value for lands with habitat values meeting mitigation requirements;

9.1.2. Start-up Costs. Start-up costs for HM lands, including initial site protection and enhancement costs as described in Condition 9.2.5 below, estimated at **$65,315**;

9.1.3. Interim Management Period. Interim management period funding as described in Condition 9.2.6 and Condition 9.2.7 below, estimated at **$61,087**;

9.1.4. Long-term Management Funding. Long-term management funding as described in Condition 9.3 below, estimated at $3,994.00/acre for 56.88 acres: **$227,232**. The long-term management endowment fund is estimated initially for the

purpose of providing Security to ensure implementation of HM land management.

9.1.5. Related Transaction Fess. Related transaction fees including but not limited to account set-up fees, administrative fees, title and documentation review and related title transactions, expenses incurred from other state agency reviews, and overhead related to transfer of HM Lands to DFG as described in Condition 9.4, estimated at **$6,000**.

9.2. Habitat Acquisition and Protection. To provide for the acquisition and protection of the HM lands, the Permittee shall:

9.2.1. Fee Title/Conservation Easement. Transfer fee title to the HM lands to DFG pursuant to terms approved by DFG. Alternatively, a DFG-approved non-profit organization qualified pursuant to California Government Code section 65965, or a DFG-approved public agency (collectively "approved entity") may act as grantee for a conservation easement over the HM lands, and an approved entity or a DFG-approved private entity may hold fee title to the HM lands. If an approved entity or DFG-approved private entity holds fee title, Permittee shall record a conservation easement in favor of DFG or other DFG-approved entity as grantee. If an approved entity holds a conservation easement, DFG shall be named third-party beneficiary. The Permittee shall obtain DFG approval of any conservation easement before its recordation;

9.2.2. HM Lands Approval. Obtain DFG approval of the HM lands before acquisition and/or transfer of the land by submitting, at least three months before acquisition and/or transfer of the HM lands, a formal Proposed Lands for Acquisition Form (see Attachment 2B) identifying the land to be purchased or property interest conveyed to an approved entity as mitigation for the Project's impacts on Covered Species;

9.2.3. HM Lands Documentation. Provide a recent preliminary title report, initial hazardous materials survey report, and other necessary documents (see Attachment 2A). All documents conveying the HM lands and all conditions of title are subject to the approval of DFG, and if applicable, the Wildlife Conservation Board and the Department of General Services;

9.2.4. Land Manager. Designate an interim and long-term land manager approved by DFG. The land manager may be the conservation easement grantee, land owner, or other party. Documents related to land management shall identify the land manager. Permittee shall notify DFG of any subsequent changes in the land manager within 30 days of the change. If DFG will hold fee title to the

mitigation land, DFG will also act as long-term land manager unless otherwise specified.

9.2.5. Start-up Activities. Provide for the implementation of start-up activities, including the initial site protection and enhancement of the HM lands. Start-up activities include, at a minimum: (1) preparing a revised Long Term Resources Management Plan (LTRMP) for DFG approval (see Condition 9.2.6); (2) conducting a baseline biological assessment and land survey report within four months of recording or transfer; (3) developing and transferring Geographic Information Systems (GIS) data if applicable; (4) establishing initial fencing; (5) conducting litter removal; (6) conducting initial habitat restoration or enhancement, if applicable; and (7) installing signage. Permittee shall make the habitat enhancements to the 56.88-acre off-site conservation area to coincide with the initial grading and construction activities for the Project as follows:

9.2.5.1. Pond Construction. One pond suitable for breeding by California tiger salamander will be constructed. As part of the full mitigation package for the Covered Species, in that the Covered Species makes use of and benefits from ground squirrel habitat, Permittee will use a portion of the dirt excavated from construction of the new pond to create small mounds around the pond to encourage ground squirrel colonization and potential den areas, and will locate such mounds in areas where no squirrel burrows currently exist.

9.2.5.2. Grazing Management. Grazing management will be instituted that targets the maintenance of suitable dispersal and upland habitat for the Covered Species.

9.2.5.3. No Rodent Control. No rodent control will occur unless approved in advance in writing by DFG.

9.2.6. Revised LTRMP. The revised LTRMP shall include all necessary goals and tasks for site management, including but not limited to: (1) Land Manager responsibilities, (2) initial enhancement actions and costs, (3) initial and capital costs for the first 10 years including success criteria monitoring, (4) potential remedial measures and costs, and (5) endowment. The 10-year monitoring shall include measurable success criteria for population, metamorphosis, and hydroperiod of the Covered Species, fence replacement and maintenance, monitoring for trespass and trash removal, vegetation management, survey and monitoring schedules and methodologies, reporting, and detailed remedial measures and/or an adaptive management strategy. Before initiation of Covered Activities, the revised LTRMP shall be provided to DFG. Permittee

shall obtain DFG approval of a final LTRMP in writing prior to initiating Covered Activities.

9.2.6.1. LTRMP Monitoring. The LTRMP shall require annual monitoring for predatory species. If bullfrogs or fish are detected in any of the Eagle Ridge Mitigation Area ponds, the ponds shall be drained in September of the year of the detection to reduce predation of individuals of the Covered Species.

9.2.6.2. LTRMP Adaptive Management. The LTRMP shall specify remedial and or adaptive management measures and funding to address aquatic habitat modifications such as increasing pond depth, pond hydroperiod, and pond size; and/or terrestrial habitat modifications such as grazing and ground squirrel population, to be completed if any of the success criteria as described in the LTRMP and based on Condition 9.2.6.3 below are not achieved.

9.2.6.3. LTRMP Success Criteria. The LTRMP success criteria for the Preserve shall include:

9.2.6.3.1. Increasing Population Trend. Demonstration of an overall increasing population trend of the Covered Species over the first 10 years of monitoring. The success criteria shall specify the level of survey effort and the increasing population trend needed for a sustainable population.

9.2.6.3.2. Successful Metamorphosis. Demonstration of successful metamorphosis of the Covered Species at the Preserve. Successful metamorphosis shall be measured by comparison to a DFG-approved reference site. The success criteria shall specify the level of survey effort and number of years that successful metamorphosis occurs as compared to the reference site.

9.2.6.3.3. Suitable Hydroperiod. Demonstration that the hydroperiod in the created pond is suitable for successful breeding and metamorphosis of the Covered Species as compared to a DFG-approved reference site.

9.2.7. Interim Management (Initial and Capital). Provide for the interim management of the HM lands. The interim management period shall be a minimum of 10 years from the date of HM land acquisition and protection, and shall continue for at

least three years after full funding of the Endowment and, as described in the LRMRP, expected annual management following start-up activities. Interim management period activities shall include fence repair, continuing trash removal, biological surveys (including the 10-year Covered Species' monitoring described in Condition 9.2.6.3), site monitoring, and vegetation and invasive species management.

9.3. Endowment Fund. The Permittee shall ensure that the HM lands are perpetually managed, maintained, and monitored as described in the final management plan and conservation easement approved by DFG. After obtaining DFG approval of the HM lands, Permittee shall provide long-term management funding for the in-perpetuity management of the HM lands by establishing a long-term management fund (Endowment Fund) prior to permit expiration. The Endowment Fund is a sum of money, held in a DFG-authorized trust fund that provides funds for the perpetual management, maintenance, monitoring, and other activities on the HM lands consistent with the management plan(s) required by Condition 9.2.6. Endowment Fund as used in this ITP shall refer to the endowment deposit and all interest, dividends, other earnings, additions and appreciation thereon.

After the interim management period, Permittee shall ensure that the designated long-term land manager implements the management and monitoring of the HM lands according to the final management plan. The long-term land manager shall be obligated to manage and monitor the HM lands in perpetuity to preserve their conservation values in accordance with this ITP, the conservation easement, and the final management plan. Such activities shall be funded through the Endowment Fund.

9.3.1. Identify an Endowment Fund Manager. The Endowment Fund shall be held by National Fish and Wildlife Foundation or DFG;

9.3.2. Calculate the Endowment Funds Deposit. After obtaining DFG approval of the HM lands, long-term management plan, and Endowment Fund Manager, Permittee shall prepare a Property Analysis Record (PAR) or PAR-equivalent analysis (hereinafter "PAR") to calculate the amount of funding necessary to ensure the long-term management of the HM lands (Endowment Deposit Amount). The Permittee shall submit to DFG for review and approval the results of the PAR before transferring funds to the Endowment Fund Manager.

9.3.2.1. Capitalization Rate and Fees. Permittee shall obtain the capitalization rate from the selected Endowment Fund Manager for use in calculating the PAR and adjust for any additional administrative, periodic, or annual fees.

9.3.2.2. Endowment Buffers/Assumptions. Permittee shall include in PAR assumptions the following buffers for endowment establishment and use that will substantially ensure long-term viability and security of the Endowment Fund:

9.3.2.2.1. 10 Percent Contingency. A 10 percent contingency shall be added to each endowment calculation to hedge against underestimation of the fund, unanticipated expenditures, inflation, or catastrophic events.

9.3.2.2.2. Three Years Delayed Spending. The endowment shall be established assuming spending will not occur for the first three years after full funding of the Endowment Fund.

9.3.2.2.3. Non-annualized Expenses. For all large capital expenses to occur periodically but not annually such as fence replacement or well replacement, payments shall be withheld from the annual disbursement until the year of anticipated need or upon request to Endowment Fund Manager and DFG.

9.3.3. Transfer Long-term Endowment Funds. Permittee shall transfer the long-term endowment funds to the Endowment Fund Manager upon DFG approval of the Endowment Deposit Amount identified above. The approved Endowment Fund Manager may pool the Endowment Fund with other endowments for the operation, management, and protection of HM lands for local populations of the Covered Species but shall maintain separate accounting for each Endowment Fund.

9.4. Reimburse DFG. Permittee shall reimburse DFG for all reasonable expenses incurred by DFG such as transaction fees, account set-up fees, administrative fees, title and documentation review and related title transactions, expenses incurred from other state agency reviews, and overhead related to transfer of HM Lands to DFG.

10. Performance Security

The Permittee may proceed with Covered Activities only after the Permittee has ensured funding (Security) to complete any activity required by Condition 9 that has not been completed before Covered Activities begin. Permittee shall provide Security as follows:

10.1. Security Amount. The Security shall be in the amount of **$1,582,554**. This amount is based on the cost estimates identified in Condition 9.1 above.

10.2. Security Form. The Security shall be in the form of a funding assurance letter signed by the Deputy District Directors of Environmental Planning and Engineering and Project Management, or another form of Security approved in advance in writing by DFG's Office of the General Counsel or another mechanism approved in advance in writing by DFG's Office of the General Counsel.

10.3. Security Timeline. The Security shall be provided to DFG before Covered Activities begin or within 30 days after the effective date of this ITP, whichever occurs first.

10.4. Security Holder. The Security shall be held by DFG or in a manner approved in advance in writing by DFG.

10.5. Security Transmittal. If DFG holds the Security, Permittee shall transmit it to DFG with a completed Mitigation Payment Transmittal Form (see Attachment 4) or by way of an approved instrument such as escrow, irrevocable letter of credit, or other.

10.6. Security Drawing. The Security shall allow DFG to draw on the principal sum if DFG, in its sole discretion, determines that the Permittee has failed to comply with the Conditions of Approval of this ITP.

10.7. Security Release. The Security (or any portion of the Security then remaining) shall be released to the Permittee after all secured requirements have been met as evidenced by:

- Timely submission of all required reports;
- An on-site inspection by DFG; and
- Written approval from DFG.

Even if Security is provided, the Permittee must complete the required acquisition, protection and transfer of all HM lands and record any required conservation easements no later than 18 months from the effective date of this ITP. DFG may require the Permittee to provide additional HM lands and/or additional funding to ensure the impacts of the taking are minimized and fully mitigated, as required by law, if the Permittee does not complete these requirements within the specified timeframe.

Amendment:
This ITP may be amended as provided by California Code of Regulations, Title 14, section 783.6, subdivision (c), and other applicable law. This ITP may be amended without the concurrence of the Permittee as required by law, including if DFG determines that continued implementation of the Project as authorized under this ITP would jeopardize the continued existence of the Covered Species, or where Project changes or changed biological conditions necessitate an ITP amendment to ensure that all Project-related impacts of the taking to the

Covered Species are minimized and fully mitigated.

Stop-Work Order:
DFG may issue Permittee a written stop-work order requiring the Permittee to suspend any Covered Activity for an initial period of up to 25 days to prevent or remedy a violation of this ITP, including but not limited to the failure to comply with reporting, monitoring, or habitat acquisition obligations, or to prevent the unauthorized take of any CESA endangered, threatened, or candidate species. Permittee shall stop work immediately as directed by DFG upon receipt of any such stop-work order. Upon written notice to Permittee, DFG may extend any stop-work order issued to Permittee for a period not to exceed 25 additional days. Suspension and revocation of this ITP shall be governed by California Code of Regulations, Title 14, section 783.7, and other applicable law. Neither the Designated Biologist nor DFG shall be liable for any costs incurred in complying with stop-work orders.

Compliance with Other Laws:
This ITP sets forth DFG's requirements for the Permittee to implement the Project pursuant to CESA. This ITP does not necessarily create an entitlement to proceed with the Project. Permittee is responsible for complying with all other applicable federal, state, and local laws.

Notices:
The Permittee shall deliver a fully executed duplicate original ITP by registered first class mail or overnight delivery to the following address:

Habitat Conservation Planning Branch
California Department of Fish and Game
Attention: CESA Permitting Program
1416 Ninth Street, Suite 1260, Sacramento, CA 95814

Written notices, reports and other communications relating to this ITP shall be delivered to DFG by registered first class mail at the following addresses, or at addresses DFG may subsequently provide the Permittee. Notices, reports, and other communications shall reference the Project name, Permittee, and ITP Number (2081-2010-026-03) in a cover letter and on any other associated documents.

Original cover with attachment(s) to:

Carl Wilcox, Regional Manager
California Department of Fish and Game
7329 Silverado Trail, Napa, CA 94558
Telephone (707) 944-5517
Fax (707) 944-5563

Copy of cover without attachment(s) to:

Office of the General Counsel
California Department of Fish and Game
1416 Ninth Street, 12th Floor, Sacramento, CA 95814

And:

Habitat Conservation Planning Branch
California Department of Fish and Game
1416 Ninth Street, Suite 1260, Sacramento, CA 95814

Unless Permittee is notified otherwise, DFG's Regional Representative for purposes of addressing issues that arise during implementation of this ITP is:

Marcia Grefsrud
7329 Silverado Trail, Napa, CA 94558
Telephone (707) 644-2812
Fax (707) 944-5563

Compliance with CEQA:

DFG's issuance of this ITP is subject to CEQA. DFG is a responsible agency pursuant to CEQA with respect to this ITP because of prior environmental review of the Project by the lead agency, Caltrans. (See generally Pub. Resources Code, §§ 21067, 21069). The lead agency's prior environmental review of the Project is set forth in the October 2009 Mitigated Negative Declaration (SCH No. 2009032084), adopted by Caltrans on January 28, 2010. At the time the lead agency adopted the Mitigated Negative Declaration and approved the Project it also adopted all mitigation measures described in the Mitigated Negative Declaration as conditions of Project approval.

This ITP, along with DFG's CEQA findings for the Project, which are available as a separate document, provide evidence of DFG's consideration of the lead agency's Mitigated Negative Declaration for the Project and the environmental effects related to issuance of this ITP. (Cal. Code Regs., tit. 14, § 15096, subd. (f).) DFG finds that issuance of this ITP will not result in any previously undisclosed potentially significant effects on the environment or a substantial increase in the severity of any potentially significant environmental effects previously disclosed by the lead agency. Furthermore, to the extent the potential for such effects exists, DFG finds adherence to and implementation of the Conditions of Project Approval adopted by the lead agency, as well as adherence to and implementation of the Conditions of Approval imposed by DFG through the issuance of this ITP, will avoid or reduce to below a level of significance any such potential effects. DFG finds that issuance of this ITP will not result in any significant, adverse impacts on the environment.

Findings Pursuant to CESA:

These findings are intended to document DFG's compliance with the specific findings requirements set forth in CESA and related regulations. (Fish & G. Code, § 2081, subds. (b)-(c); Cal. Code Regs., tit. 14, §§ 783.4, subds, (a)-(b), 783.5, subd. (c)(2).)

DFG finds based on substantial evidence in the ITP application, the Mitigated Negative Declaration adopted by the lead agency, as a result of various consultations, and its administrative record of proceedings generally, that issuance of this ITP complies and is consistent with the criteria governing the issuance of ITPs pursuant to CESA:

(1) Take of Covered Species as defined in this ITP will be incidental to the otherwise lawful activities covered under this ITP;

(2) Impacts of the taking on Covered Species will be minimized and fully mitigated through the implementation of measures required by this ITP and as described in the MMRP. Measures include: (1) permanent habitat protection; (2) establishment of avoidance zones; (3) worker education; and (4) Monthly Compliance Reports. DFG evaluated factors including an assessment of the importance of the habitat in the Project Area, the extent to which the Covered Activities will impact the habitat, and DFG's estimate of the acreage required to provide for adequate compensation. Based on this evaluation, DFG determined that the enhancement, protection and management in perpetuity of 56.88 acres of compensatory habitat that is contiguous with other protected Covered Species habitat and/or is of higher quality than the habitat being destroyed by the Project, along with the minimization, monitoring, reporting, and funding requirements of this ITP minimizes and fully mitigates the impacts of the taking caused by the Project;

(3) The take avoidance and mitigation measures required pursuant to the conditions of this ITP and its attachments are roughly proportional in extent to the impacts of the taking authorized by this ITP;

(4) The measures required by this ITP maintain Permittee's objectives to the greatest extent possible;

(5) All required measures are capable of successful implementation;

(6) This ITP is consistent with any regulations adopted pursuant to Fish and Game Code sections 2112 and 2114;

(7) Permittee has ensured adequate funding to implement the measures required by this ITP as well as for monitoring compliance with, and the effectiveness of, those measures for the Project; and

(8) Issuance of this ITP will not jeopardize the continued existence of the Covered Species based on the best scientific and other information reasonably available, and this finding includes consideration of the species' capability to survive and reproduce, and any adverse impacts of the taking on those abilities in light of (1) known population trends; (2) known threats to the species; and (3) reasonably foreseeable impacts on the species from other related projects and activities. Moreover, DFG's finding is based, in part, on DFG's express authority to amend the terms and conditions of this ITP without concurrence of the Permittee as necessary to avoid jeopardy and as required by law.

Attachments:

FIGURE 1	Vicinity Map of I-580 Westbound Project
FIGURE 2	Map of Eagle Ridge Preserve Mitigation Area
ATTACHMENT 1	Resource Mapsheets
ATTACHMENT 2	Mitigation Monitoring and Reporting Program
ATTACHMENT 2A, 2B	Habitat Management Lands Checklist; Proposed Lands for Acquisition Form
ATTACHMENT 3	Letter of Credit Form
ATTACHMENT 4	Mitigation Payment Transmittal Form

ISSUED BY THE CALIFORNIA DEPARTMENT OF FISH AND GAME

on _____

Scott Wilcox FOR
Carl Wilcox, Regional Manager
BAY DELTA REGION

APPROVED AS TO FORM:

John H. Mattox
Staff Counsel IV

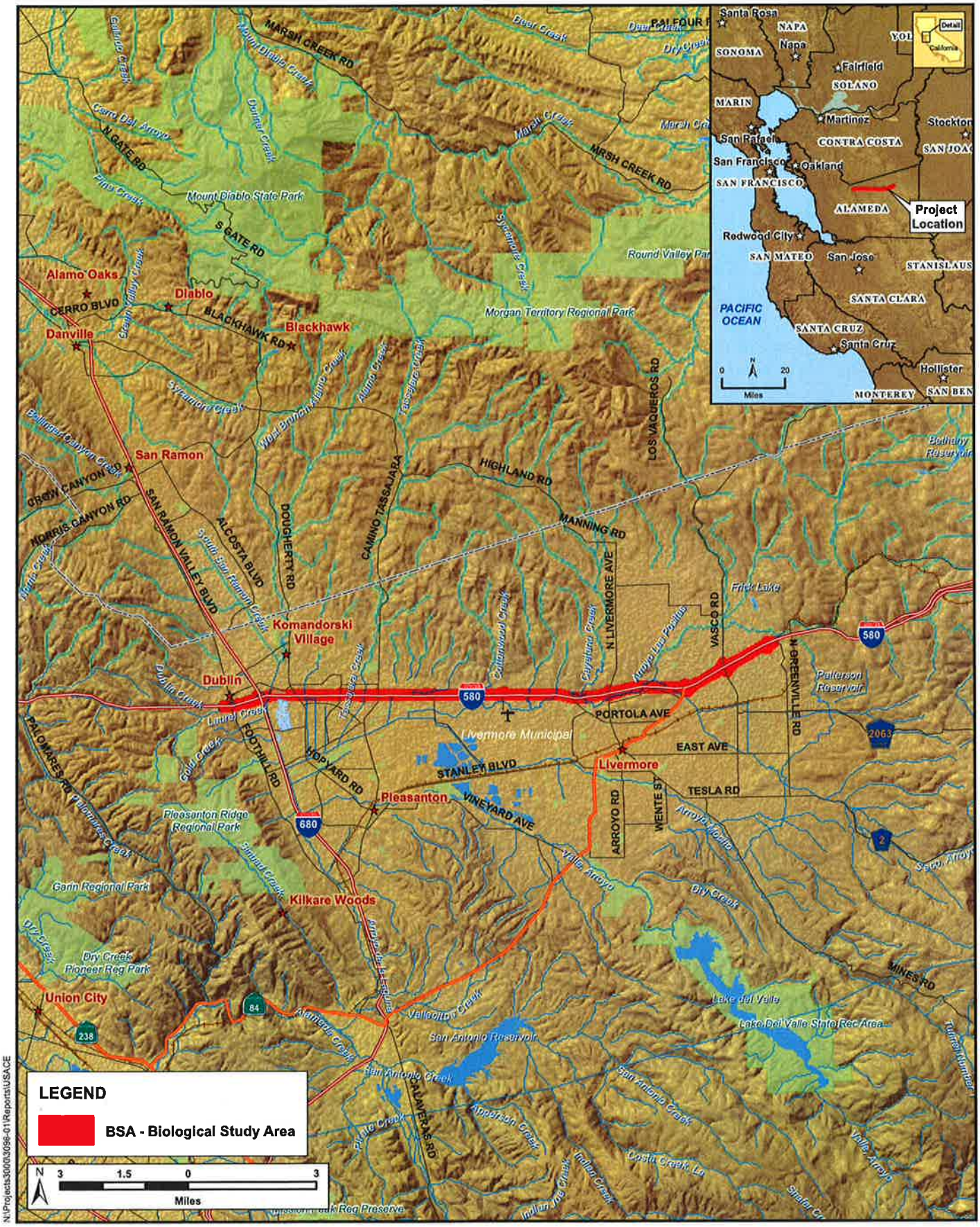
ACKNOWLEDGMENT

The undersigned: (1) warrants that he or she is acting as a duly authorized representative of the Permittee, (2) acknowledges receipt of this ITP, and (3) agrees on behalf of the Permittee to comply with all terms and conditions

By: _____ Date: 11/08/11

Printed Name: ARTHUR DAO Title: Executive Director

FIGURE 1



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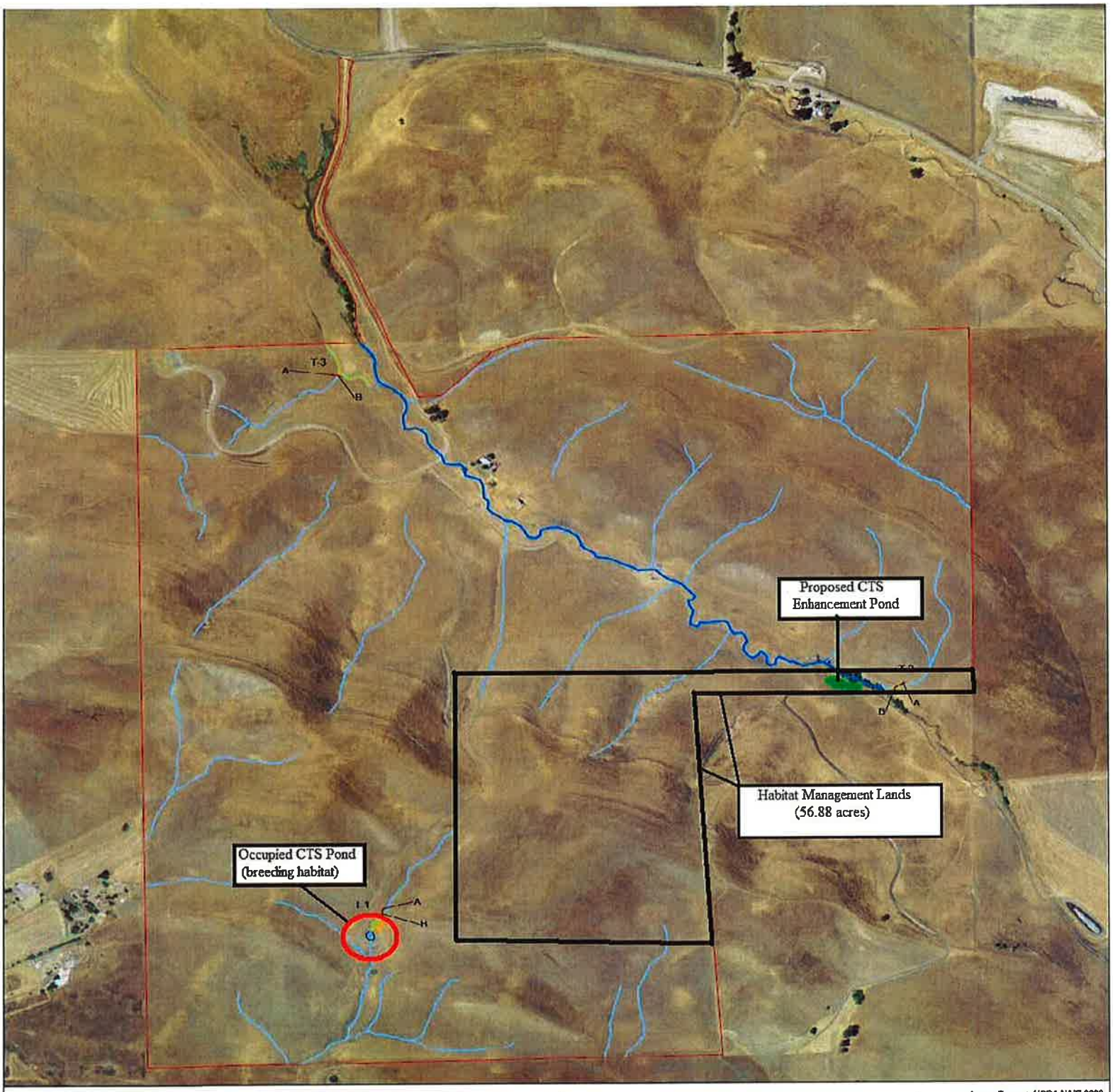
H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Figure 1: Vicinity Map
Route I-580 Westbound HOV Lane Widening Project - Submittal of Materials for NWP 33 (3096-01)
May 2010

FIGURE 2



Eagle Ridge Preserve ACCMA Habitat Management Lands - CTS Enhancement Site

Alameda County
California

Olberding Environmental, Inc.
3170 Crow Canyon Place, Suite 260
San Ramon, California 94583
Phone: (925) 866-2111

Legend

- Eagle Ridge Preserve Boundary
- Seasonal Swale
- Seep
- West Branch Cayetano Creek
- Secondary Drainages
- Stock Pond
- A — Data Point
- T-1 Transect

Wetlands

Seasonal Swale (0.24 acres)
Seep (0.05 acres)

Other Waters of the U.S.

West Branch Cayetano Creek (1.52 acres; 5,435 linear feet)
Secondary Drainages (2.98 acres; 31,059.09 linear feet)
Stock Pond (0.05 acres)

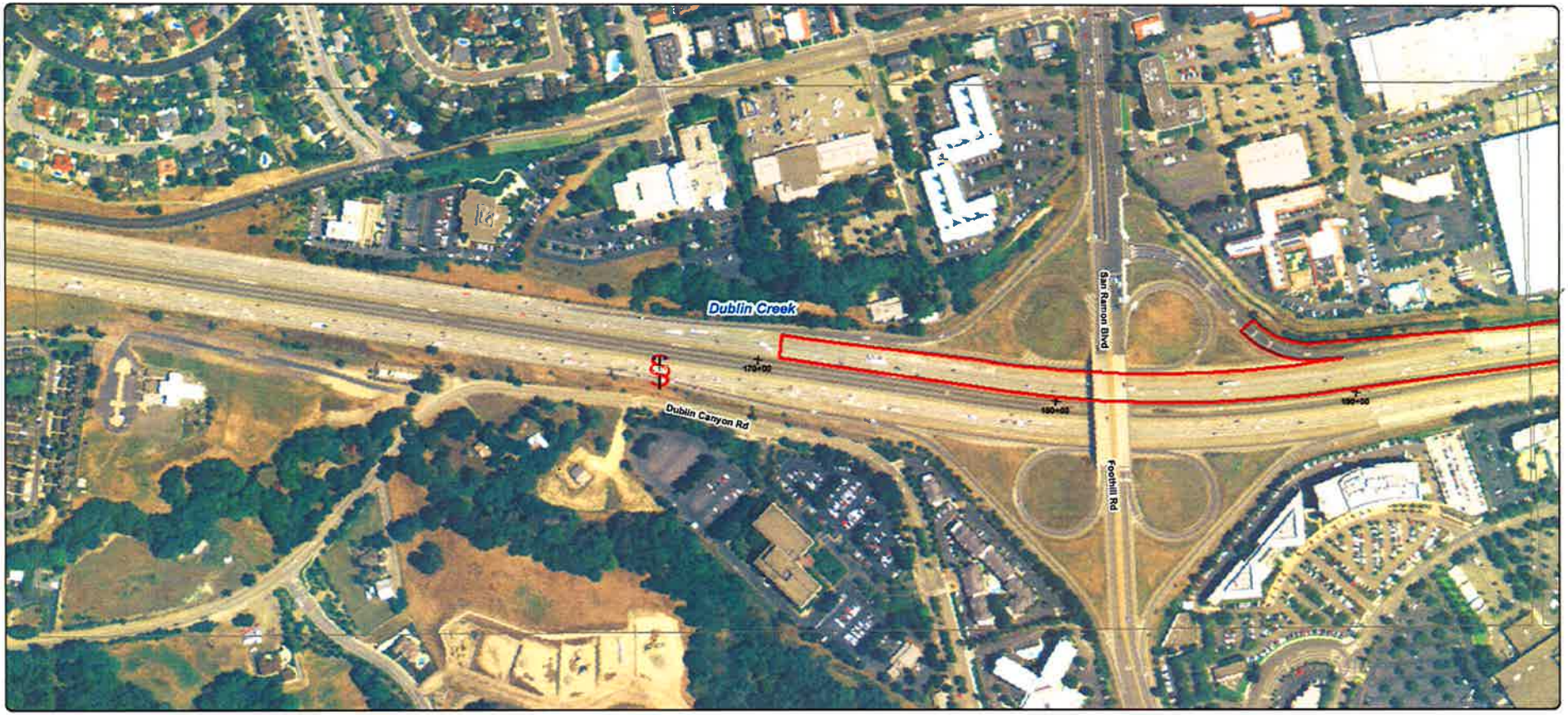
1 inch = 200 feet

0 0.125 0.25 0.5 Miles

Image Source: USDA NAIP 2009
Field Delineation Conducted on November 4, 2010 by Mr. Christopher Branny and Mr. David Simi

N

ATTACHMENT 1



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Sheet 1 of 15

Native Trees in BSA

Congdon's tarplant (Centromadia parryi)

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Revised Aug. 5, 2011

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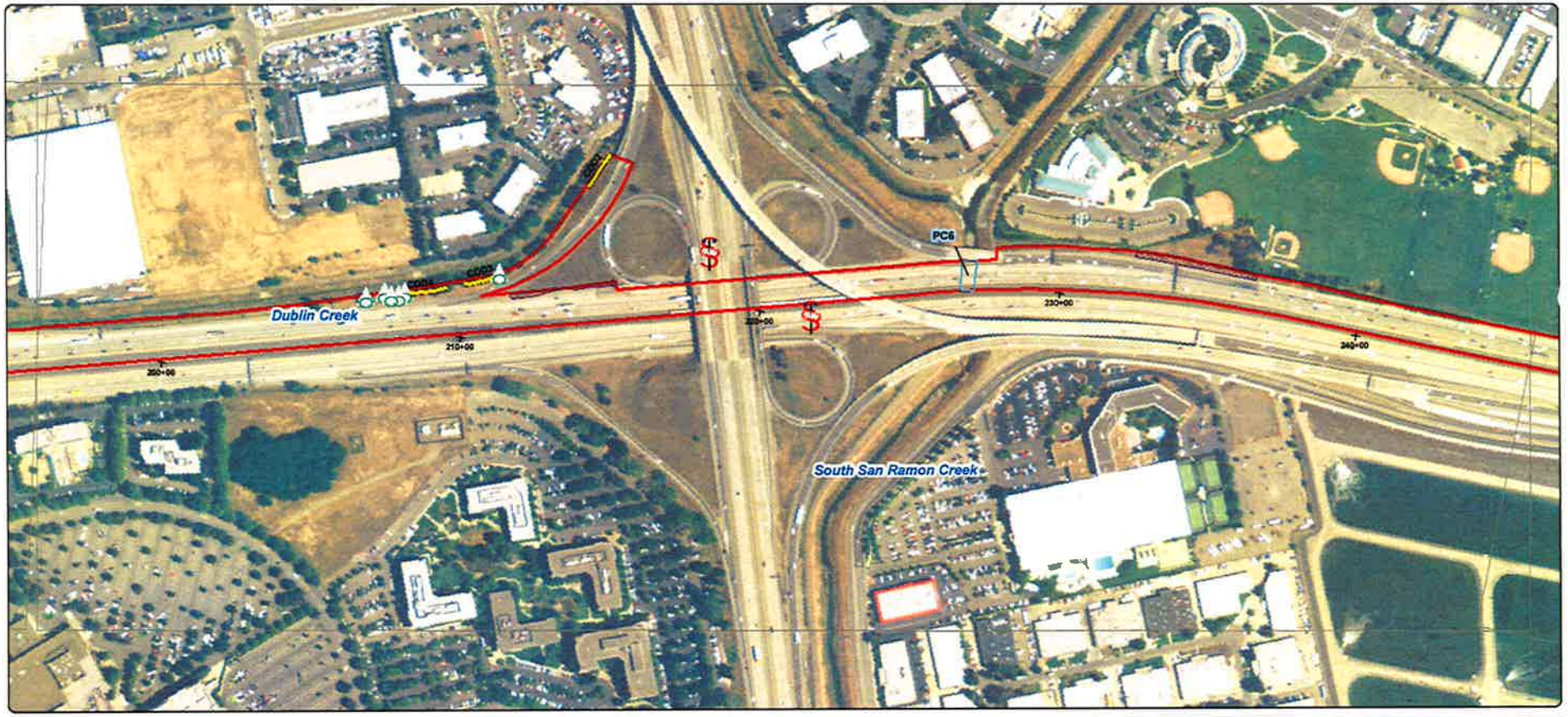

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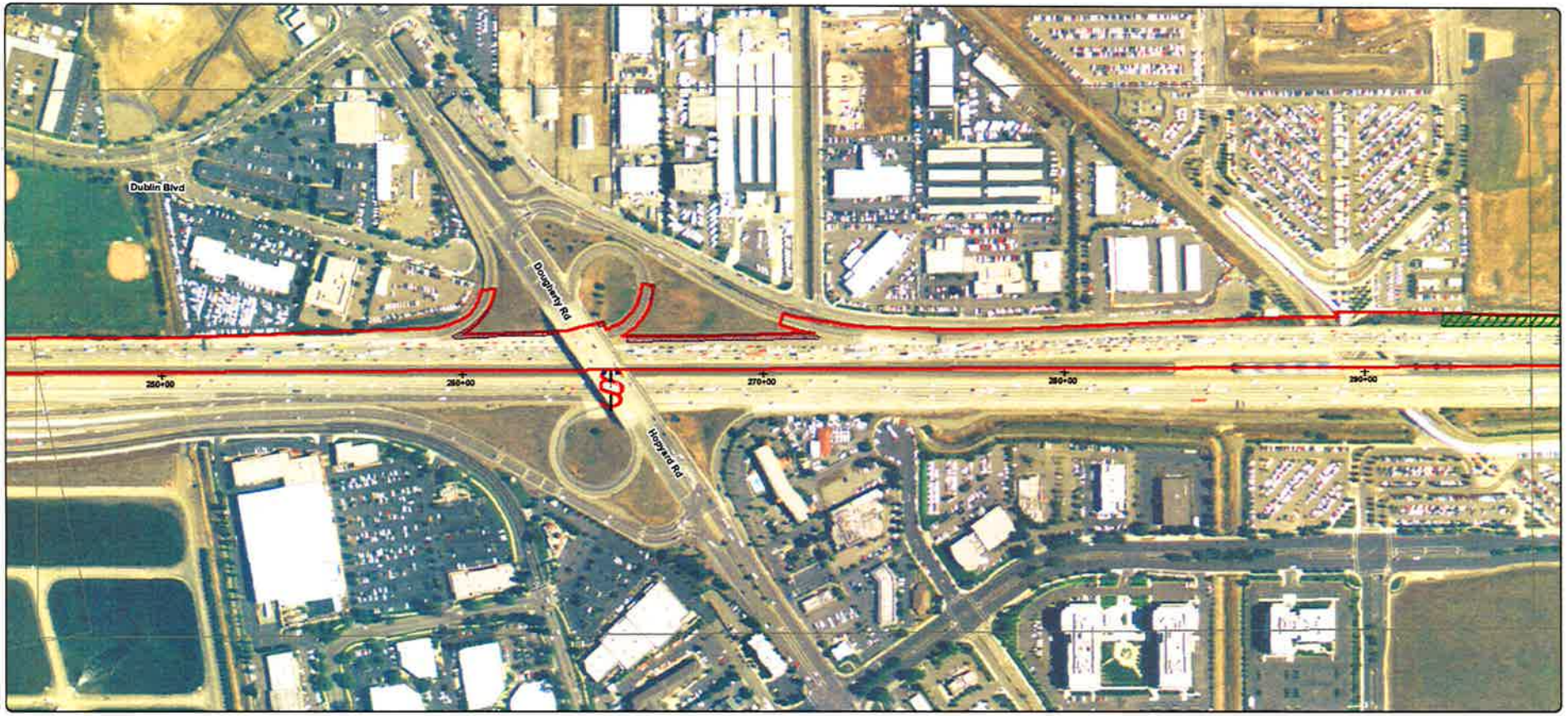

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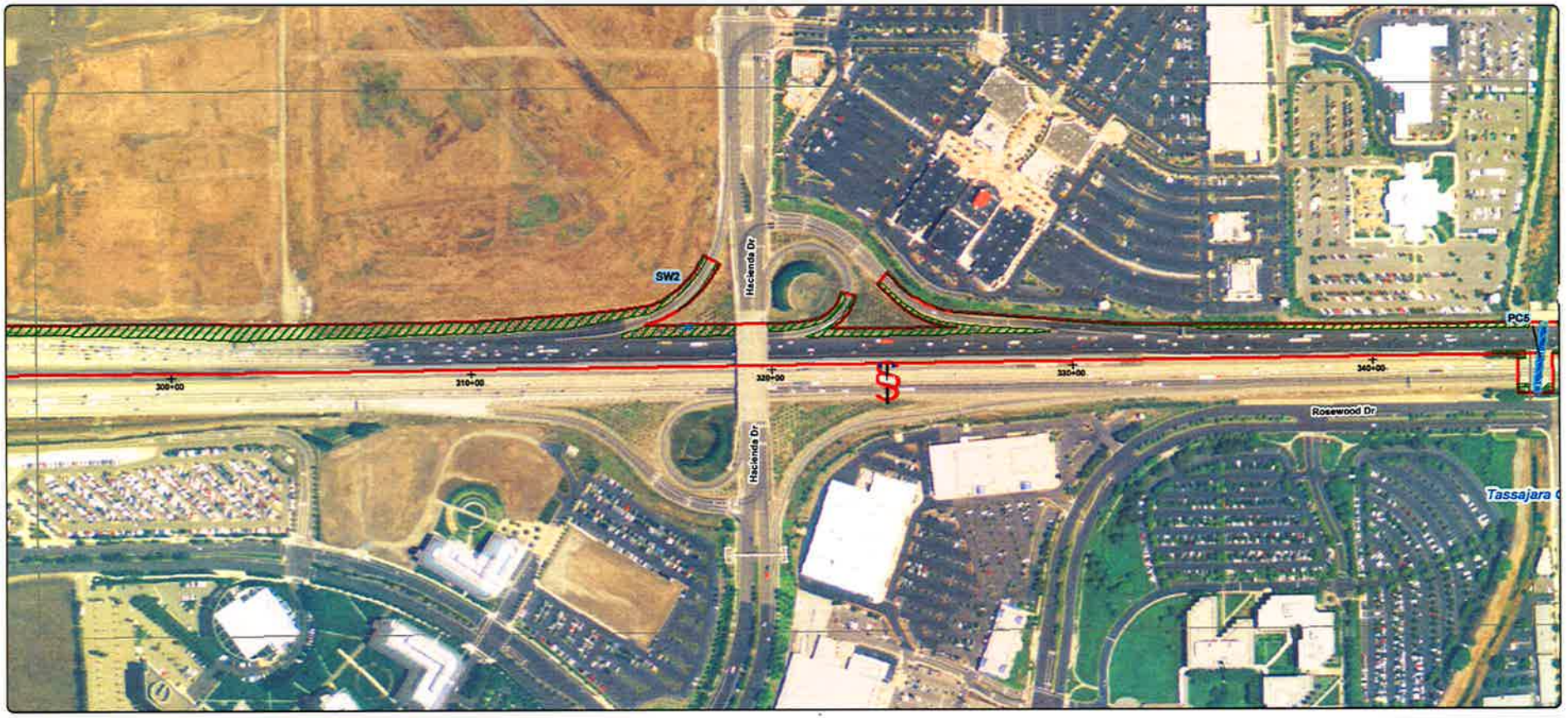

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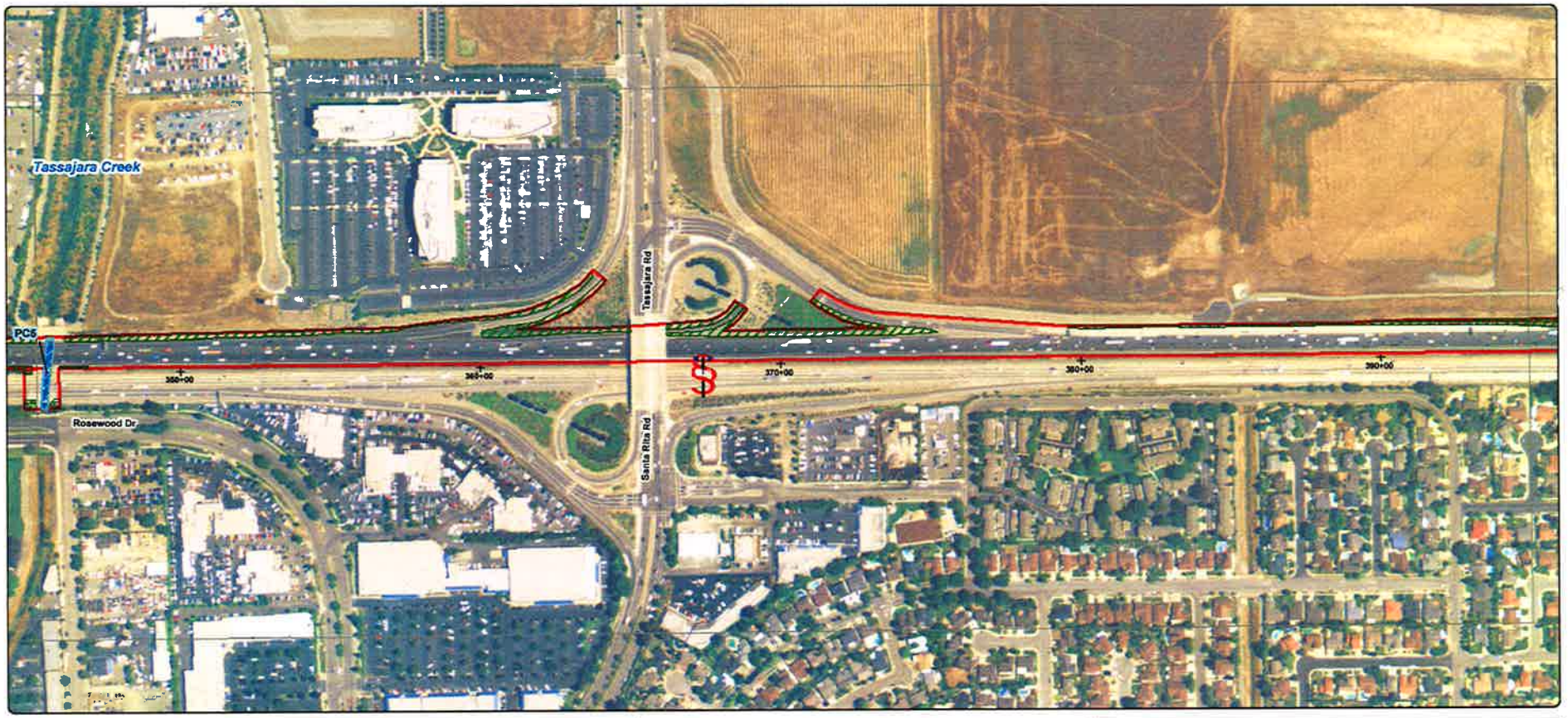

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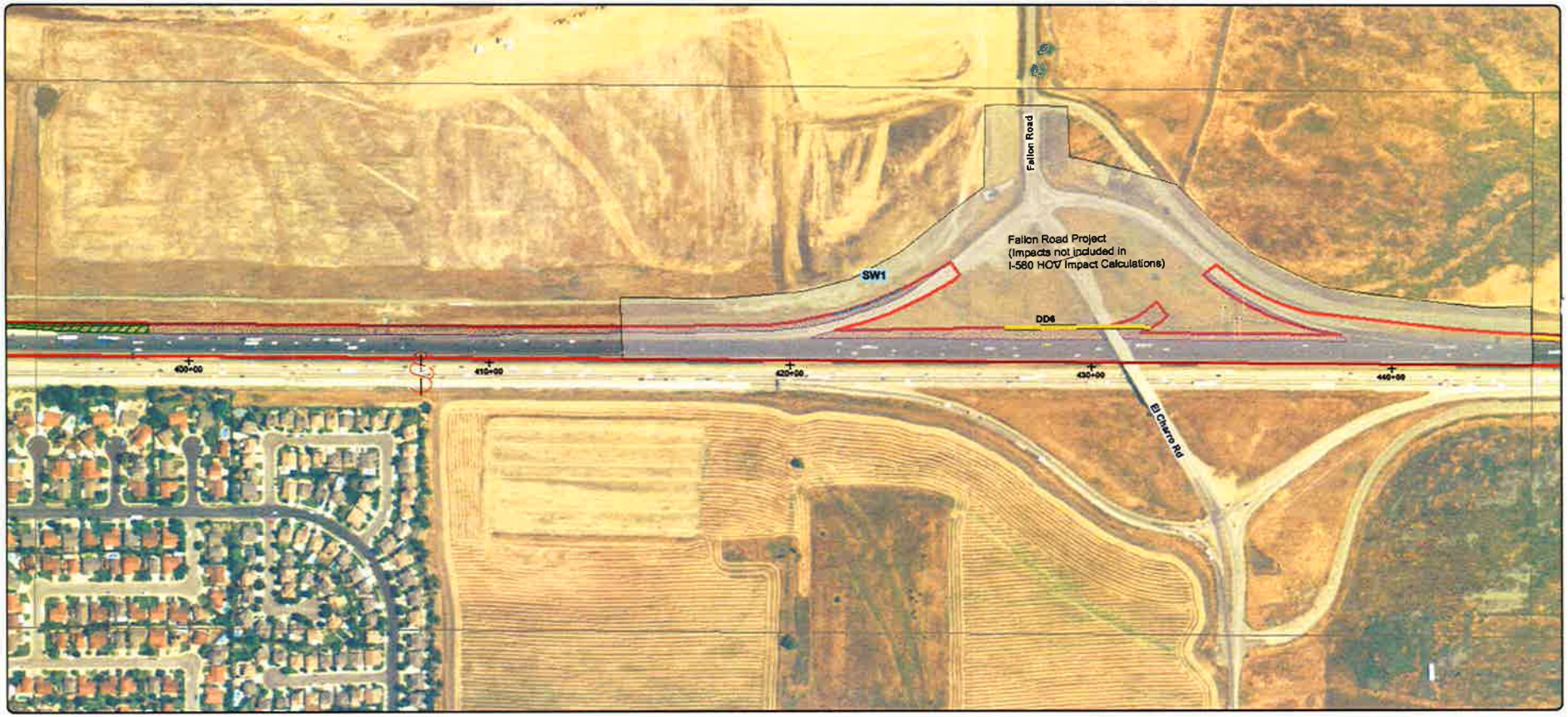

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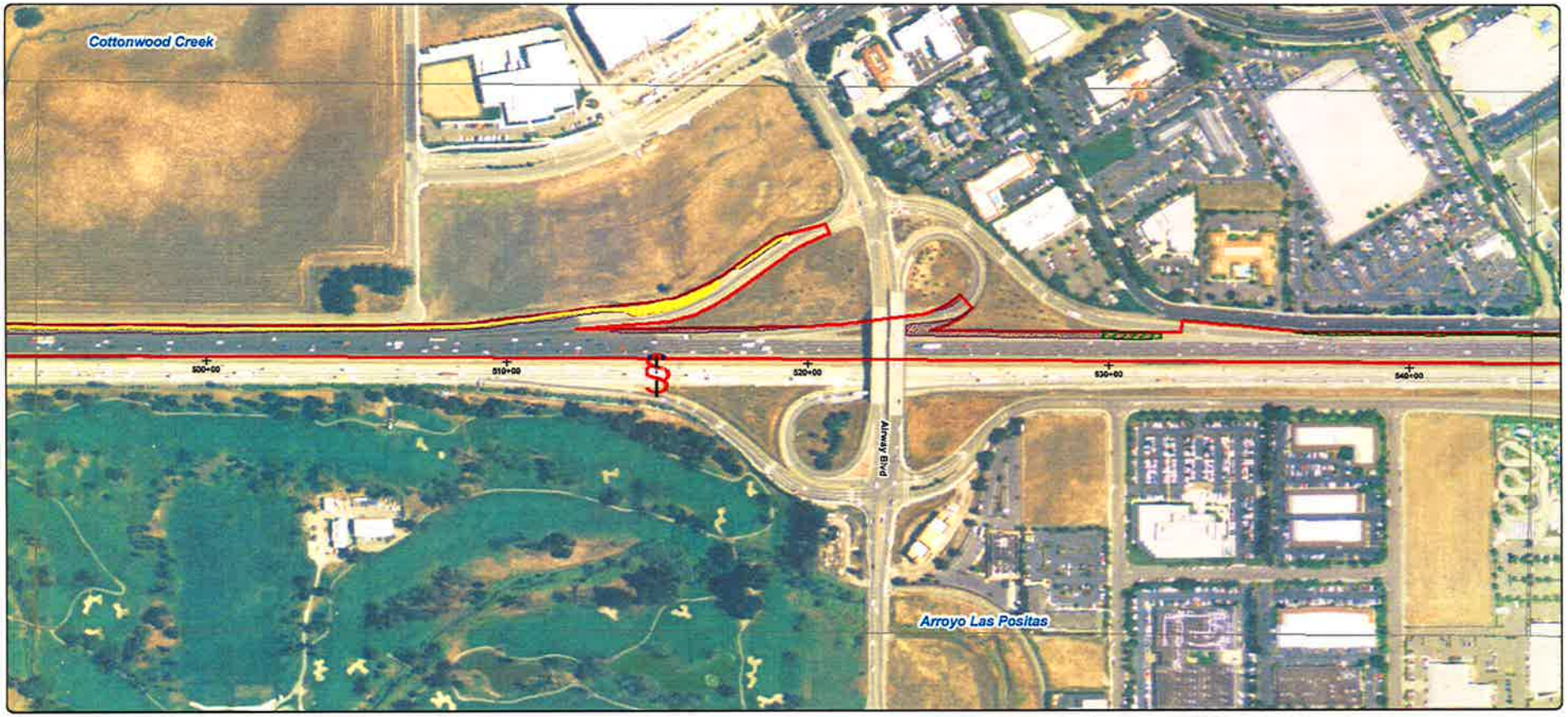

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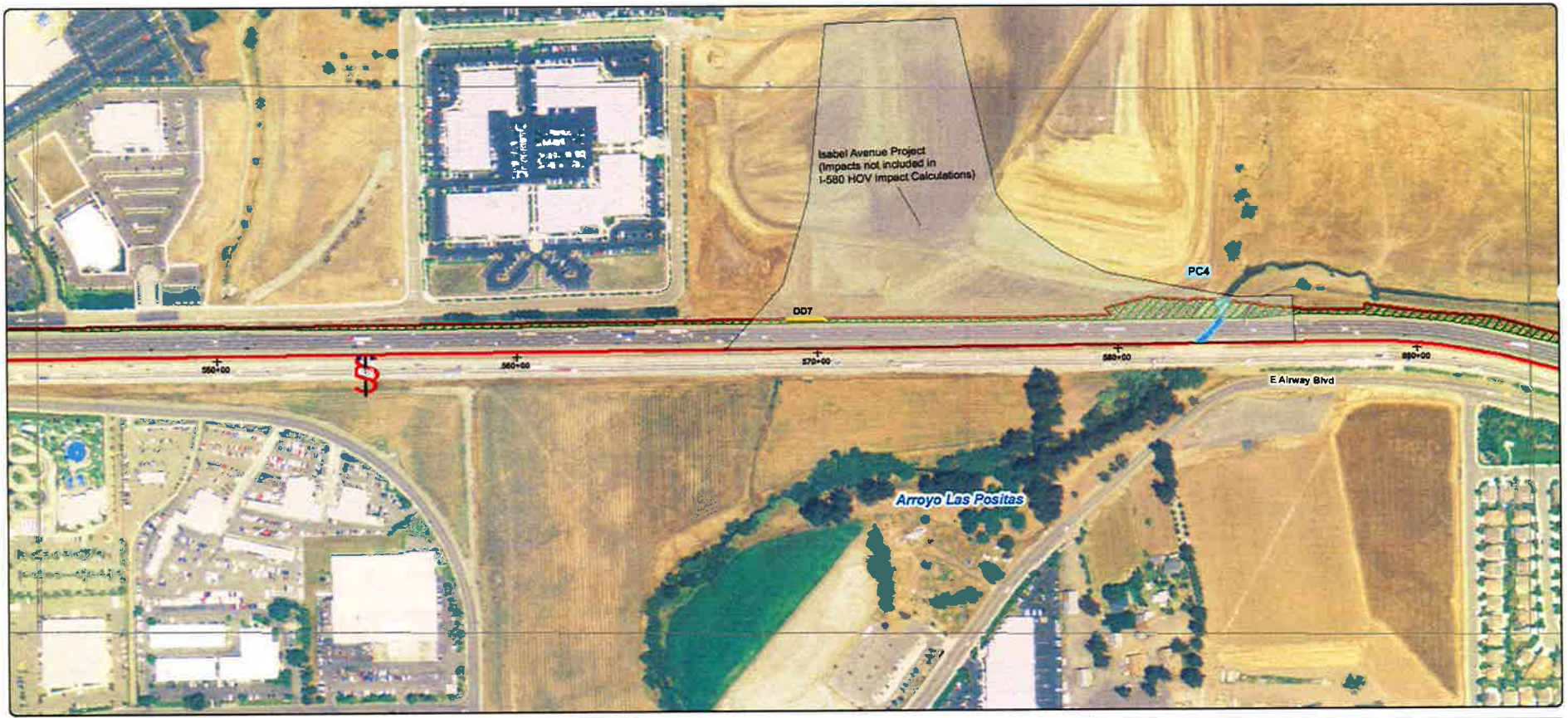

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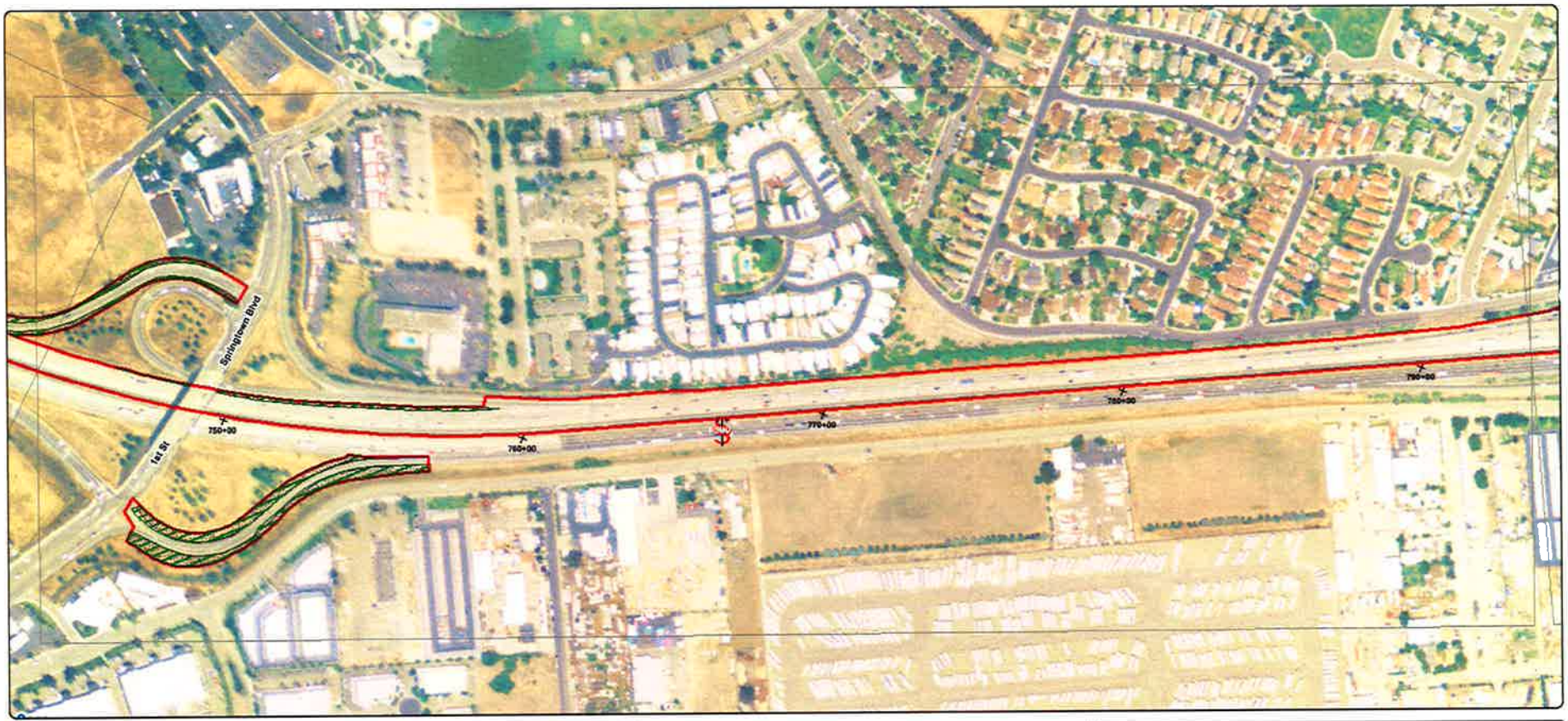
Appendix A. Resource Maps

Preliminary Wetlands & Waters of the U.S.; Permanent & Temporary Impacts to Special-Status Species; and other Sensitive Biological Resources within the BSA of the I-580 Westbound HOV Lane Widening Project



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Sheet 13 of 15

Native Trees in BSA

Congdon's tarplant (Centromadia parryi)

Preliminary Wetlands & Waters
- Emergent Wetland (EW)
- Perennial Creek (PC)
- Seasonal Wetland (SW)
- Drainage Ditch (DD/CDD)
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CRLF Upland Habitat Impacts
- Permanent
- Temporary

CRLF Breeding Habitat Impacts
- Permanent
- Temporary

CTS Habitat Impacts
- Permanent, Upland Habitat
- Permanent, Breeding Habitat
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VPFS Habitat Impacts
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SJKF Habitat Impacts
- Grassland Habitat
- Biological Study Area

Work Done by Others
- Impacts Mitigated by Others
- Estimated Footprint-Work Done by Others

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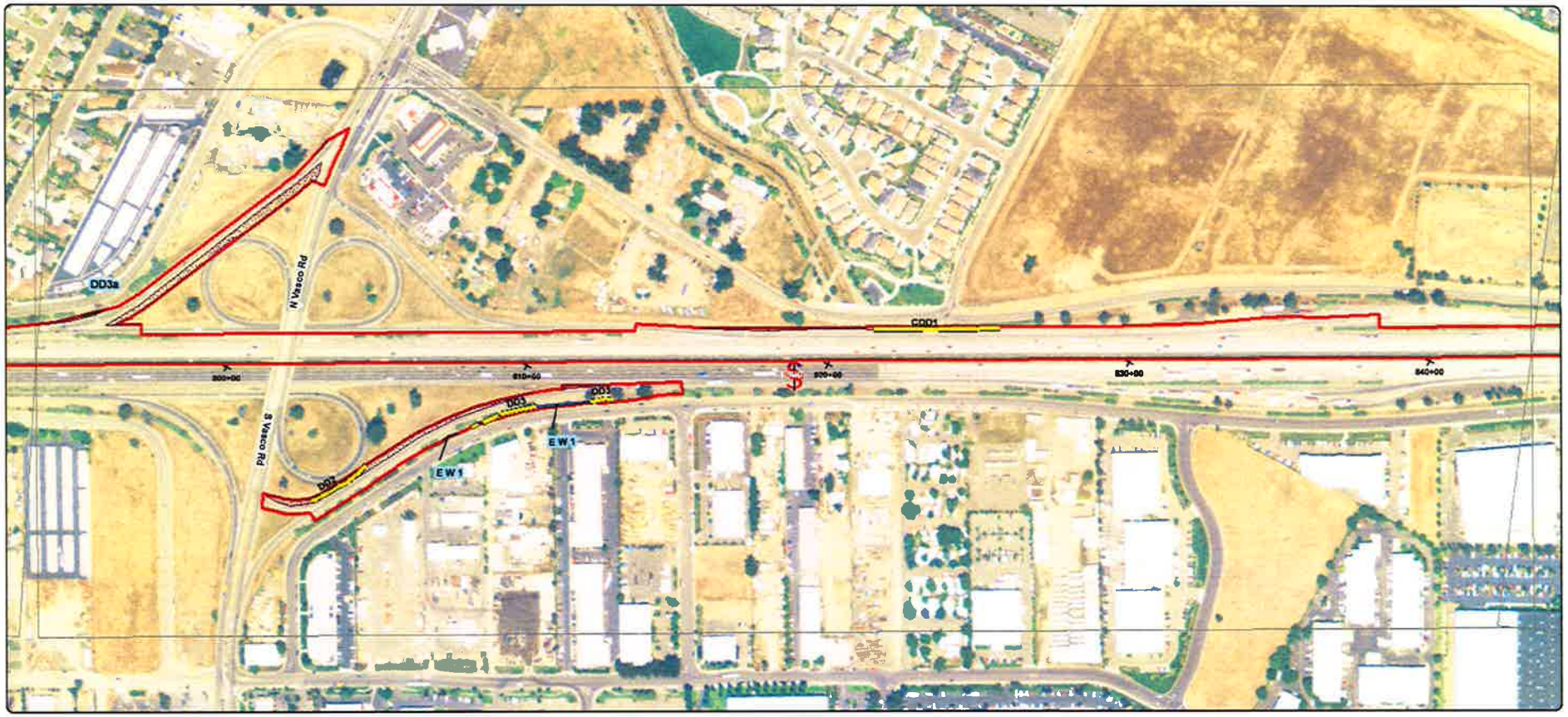

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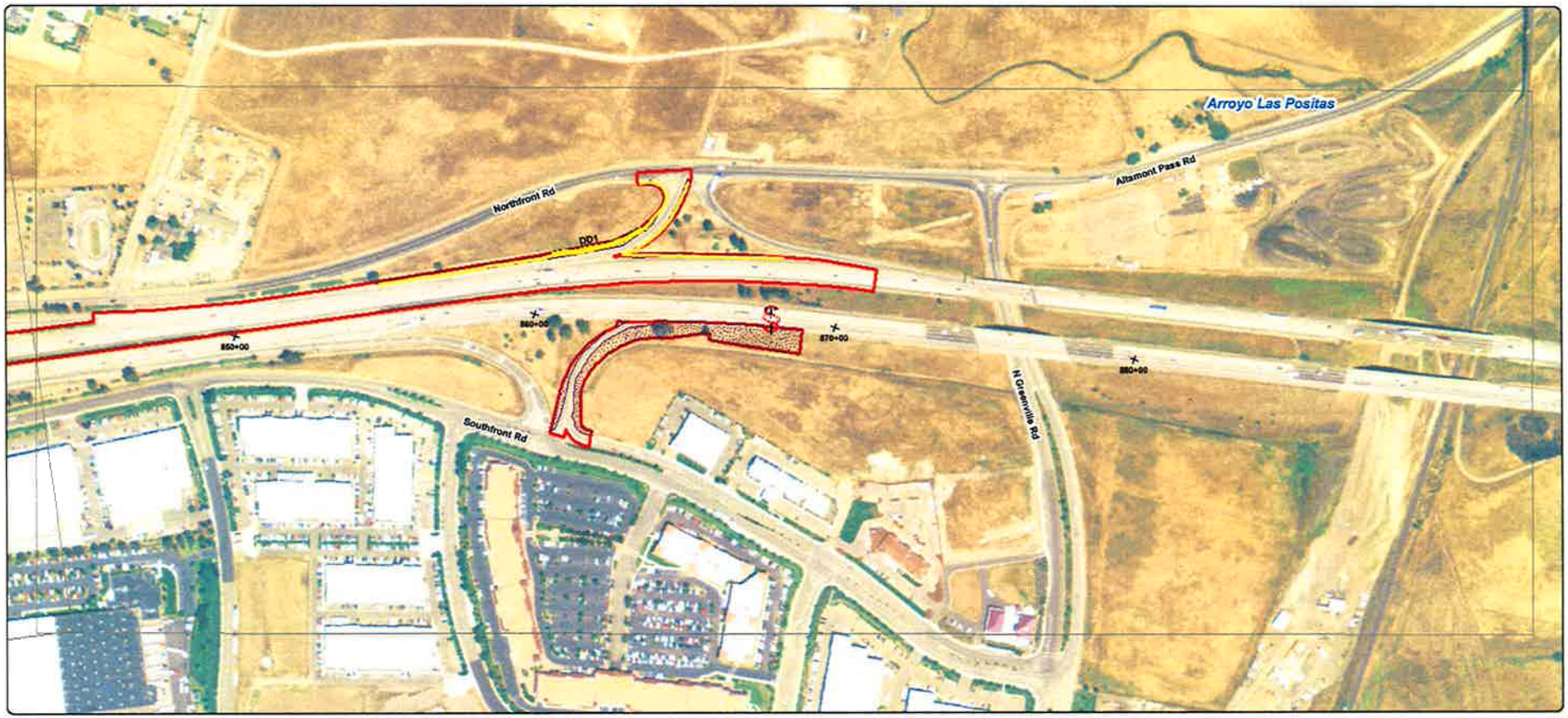

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ATTACHMENT 2

Attachment 2

CALIFORNIA DEPARTMENT OF FISH AND GAME
MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)
CALIFORNIA ENDANGERED SPECIES ACT

INCIDENTAL TAKE PERMIT NO. 2081-2010-026-03

PERMITTEE: **Alameda County Congestion Management Agency**

PROJECT: **Interstate 580 Westbound High Occupancy Vehicle Project**

PURPOSE OF THE MMRP

The purpose of the MMRP is to ensure that the impact minimization and mitigation measures required by the Department of Fish and Game (DFG) for the above-referenced Project are properly implemented, and thereby to ensure compliance with section 2081(b) of the Fish and Game Code and section 21081.6 of the Public Resources Code. A table summarizing the mitigation measures required by DFG is attached. This table is a tool for use in monitoring and reporting on implementation of mitigation measures, but the descriptions in the table do not supersede the mitigation measures set forth in the California Incidental Take Permit (ITP) and in attachments to the ITP, and the omission of a ITP requirement from the attached table does not relieve the Permittee of the obligation to ensure the requirement is performed.

OBLIGATIONS OF PERMITTEE

Mitigation measures must be implemented within the time periods indicated in the table that appears below. Permittee has the primary responsibility for monitoring compliance of all mitigation measures and for reporting to DFG on the progress in implementing those measures. These monitoring and reporting requirements are set forth in the ITP itself and are summarized at the front of the attached table.

VERIFICATION OF COMPLIANCE, EFFECTIVENESS

DFG may, at its sole discretion, verify compliance with any mitigation measure or independently assess the effectiveness of any mitigation measure.

TABLE OF MITIGATION MEASURES

The following items are identified for each mitigation measure: Mitigation Measure, Source, Implementation Schedule, Responsible Party, and Status/Date/Initials. The Mitigation Measure column summarizes the mitigation requirements of the ITP. The Source column identifies the ITP condition that sets forth the mitigation measure. The Implementation Schedule column shows the date or phase when each mitigation measure will be implemented. The Responsible Party column identifies the person or agency that is primarily responsible for implementing the mitigation measure. The Status/Date/Initials column shall be completed by the Permittee during preparation of each Status Report and the Final Mitigation Report, and must identify the implementation status of each mitigation measure, the date that status was determined, and the initials of the person determining the status.

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
BEFORE DISTURBING SOIL OR VEGETATION					
1	Before starting Covered Activities, Permittee shall designate a representative (Designated Representative) responsible for communications with DFG and overseeing compliance with this ITP. The Permittee shall notify DFG in writing before starting Covered Activities of the Designated Representative's name, business address, and contact information, and shall notify DFG in writing if a substitute Designated Representative is selected or identified at any time during the term of this ITP.	ITP Condition # 6.1	Before commencing Covered Activities/ Entire Project	Permittee	
2	Permittee shall submit to DFG in writing the name, qualifications, business address, and contact information of a biological monitor (Designated Biologist) at least 30 days before starting Covered Activities. Permittee shall ensure that the Designated Biologist is knowledgeable and experienced in the biology and natural history of the Covered Species. The Designated Biologist shall be responsible for monitoring Covered Activities to help minimize and fully mitigate or avoid the incidental take of individual Covered Species and to minimize disturbance of Covered Species' habitat. Permittee shall obtain DFG approval of the Designated Biologist before starting Covered Activities.	ITP Condition # 6.2	Before commencing Covered Activities	Permittee	
3	To ensure compliance with the Conditions of Approval of this ITP, the Designated Biologist shall have authority, through the Resident Engineer, to immediately stop any activity that is not in compliance with this ITP, and/or to order any reasonable measure to avoid the unauthorized take of an individual of the Covered Species.	ITP Condition #6.3	Before commencing Covered Activities/ Entire Project	Permittee	
4	The Designated Biologist shall maintain a construction-monitoring notebook on-site throughout the construction period which shall include a copy of this ITP with attachments and a list of signatures of all personnel who have successfully completed the education program. Permittee shall ensure a copy of the construction-monitoring notebook is available for review at the Project site upon request by DFG.	ITP Condition #6.5	Before commencing Covered Activities/ Entire Project	Permittee	
5	Permittee shall provide DFG staff with reasonable access to the Project, and mitigation lands under Permittee control, and shall otherwise fully cooperate with DFG efforts to verify compliance with or effectiveness of mitigation measures set forth in the ITP.	ITP Condition #6.13	Before commencing Covered Activities/ Entire Project	Permittee	
6	Permittee shall conduct an education program for all persons employed or otherwise working in the BSA before performing any work. The program shall consist of a presentation from the Designated Biologist that includes a discussion of the biology and general behavior of the Covered Species, information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to human activities, its status pursuant to CESA including legal protection, recovery efforts, penalties for violations and Project-specific protective measures described in this ITP. Permittee shall provide interpretation for non-English speaking workers, and the same instruction shall be provided for any new workers before their performing work in the BSA. Permittee shall maintain copies of this ITP at the worksite. Permittee shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry in the BSA. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. Permittee shall file these forms at the worksite offices and make them available to DFG upon request.	ITP Condition # 6.4	Before commencing Covered Activities/ Entire Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
7	Permittee shall initiate a trash abatement program before starting Covered Activities and shall continue the program for the duration of the Project. Permittee shall ensure that trash and food items are contained in closed (animal proof) containers and removed regularly (at least once a week) to avoid attracting opportunistic predators such as ravens, coyotes, and feral dogs.	ITP Condition # 6.6	Before commencing Covered Activities/ Entire Project	Permittee	
8	Permittee shall implement dust control measures during Covered Activities to facilitate visibility for monitoring of the Covered Species by the Designated Biologist. Permittee shall keep the amount of water used to the minimum amount needed, and shall not allow water to form puddles.	ITP Condition # 6.7	Before commencing Covered Activities/ Entire Project	Permittee	
9	Permittee shall prohibit use of erosion control materials potentially harmful to Covered Species and other species, such as mono-filament netting (erosion control matting) or similar material, in potential Covered Species' habitat.	ITP Condition #6.8	Before commencing Covered Activities/ Entire Project	Permittee	
10	Before starting Covered Activities along each part of the route in active construction, Permittee shall clearly delineate the boundaries of the Covered Activities Area with fencing, stakes or flags. Permittee shall restrict all Covered Activities to within the fenced, staked or flagged areas. Permittee shall maintain all fencing, stakes and flags until the completion of Covered Activities in the Covered Activities Area.	ITP Condition # 6.9	Before commencing Covered Activities/ Entire Project	Permittee	
11	Before beginning Covered Activities, Permittee shall construct a temporary barrier along the outer limits of grading and disturbance of the Covered Activities Area. The Designated Biologist shall inspect this area prior to installation of this barrier and if any Covered Species are observed the measures in Condition 8.8 shall be followed. The barrier shall consist of silt fencing at least three feet tall and buried to a depth of at least six inches below the soil surface. At no greater than 100-foot intervals and at the ends of the barrier, the barrier shall be constructed with a 90 degree angle and extend at least 5 feet away from the Covered Activities Area to redirect Covered Species on the outside of the barrier back to habitat areas. The barrier shall be designed to allow the Covered Species to leave the Covered Activities Area using a one-way funnel, ramp or other method approved by DFG. The barrier shall remain in place until all Covered Activities have been completed. The Designated Biologist shall inspect the barrier daily and the Permittee shall maintain and repair it as necessary to ensure that it is functional and is not impeding movement of Covered Species on the outer side of the fence. Any Covered Species found along the fence line shall be relocated in accordance with Condition 8.8. Refuge opportunities shall be provided along or near the outer side of the silt fence. Design of the barrier and refuge opportunities shall be approved by DFG prior to installation and prior to beginning Covered Activities.	ITP Condition #8.6	Before commencing Covered Activities/ Entire Project	Permittee	
12	The Designated Biologist shall complete walking surveys of the Covered Activities Area to be impacted prior to Covered Activities and shall follow earthmoving equipment to look for California tiger salamanders during initial site grading. If Covered Species are discovered by the Designated Biologist or anyone else, the Designated Biologist shall move the animal to a safe nearby location (e.g. mouth of ground-squirrel burrow outside of the construction area) and monitor it until it is determined that it is not imperiled by predators or other dangers.	ITP Condition #8.7	Before commencing Covered Activities/ Entire Project	Permittee	
13	The Designated Biologist shall relocate any Covered Species found within the Covered Activities Area to be impacted to an active rodent burrow system located no more than 300 feet outside of the BSA unless otherwise approved by DFG. Relocation areas shall be identified by the Designated Biologist based upon best suitable habitat available and approved by DFG prior to the start of Covered Activities.	ITP Condition #8.8	Before commencing Covered Activities/ Entire Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
14	The Designated Representative shall notify DFG 14 calendar days before starting Covered Activities and shall document compliance with all pre-Project Conditions of Approval before starting Covered Activities.	ITP Condition # 7.1	Before commencing Covered Activities	Permittee	
15	Permittee shall provide for the permanent protection and management of 56.88 acres of Habitat Management (HM) lands in the Eagle Ridge Preserve by recording a conservation easement on the HM lands pursuant to California Civil Code section 815, and calculating and depositing funds to manage the HM lands (Condition 9.2). Permanent protection and perpetual management of compensatory habitat must be complete before starting Covered Activities or within 18 months of the effective date of this ITP if Security is provided pursuant to Condition 10 below	ITP Condition # 9	Before commencing Covered Activities (or within 18 months of issuance of the ITP if Security is provided)	Permittee	
16	DFG has estimated the cost of acquisition, protection, and perpetual management of the HM lands, enhancement of mitigation land as follows: • Land acquisition costs for HM lands identified in Condition 9.2 below, estimated at $21,500/acre for 56.88 acres: $1,222,920. Land acquisition costs are estimated using local fair market current value for lands with habitat values meeting mitigation requirements; • Start-up costs for HM lands, including initial site protection and enhancement costs as described in Condition 9.2.5 below, estimated at $65,315; • Interim management period funding as described in Condition 9.2.6 and Condition 9.2.7 below, estimated at $61,087; • Long-term management funding as described in Condition 9.3 below, estimated at $3,994.00/acre for 56.88 acres: $227,232. The long-term management endowment fund is estimated initially for the purpose of providing Security to ensure implementation of HM land management; • Related transaction fees including but not limited to account set-up fees, administrative fees, title and documentation review and related title transactions, expenses incurred from other state agency reviews, and overhead related to transfer of HM Lands to DFG as described in Condition 9.4, estimated at $6,000.	ITP Conditions # 9.1	Before commencing Covered Activities (or within 18 months of issuance of the ITP if Security is provided)	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
17	To provide for the acquisition and protection of the HM lands, the Permittee shall: • Fee Title/Conservation Easement. Transfer fee title to the HM lands to DFG pursuant to terms approved by DFG. Alternatively, a DFG-approved non-profit organization qualified pursuant to California Government Code section 65965, or a DFG-approved public agency (collectively "approved entity") may act as grantee for a conservation easement over the HM lands, and an approved entity or a DFG-approved private entity may hold fee title to the HM lands. If an approved entity or DFG-approved private entity holds fee title, Permittee shall record a conservation easement in favor of DFG or other DFG-approved entity as grantee. If an approved entity holds a conservation easement, DFG shall be named third-party beneficiary. The Permittee shall obtain DFG approval of any conservation easement before its recordation; • HM Lands Approval. Obtain DFG approval of the HM lands before acquisition and/or transfer of the land by submitting, at least three months before acquisition and/or transfer of the HM lands, a formal Proposed Lands for Acquisition Form (see Attachment 2B) identifying the land to be purchased or property interest conveyed to an approved entity as mitigation for the Project's impacts on Covered Species; • HM Lands Documentation. Provide a recent preliminary title report, initial hazardous materials survey report, and other necessary documents (see Attachment 2A). All documents conveying the HM lands and all conditions of title are subject to the approval of DFG, and if applicable, the Wildlife Conservation Board and the Department of General Services; • Land Manager. Designate an interim and long-term land manager approved by DFG. The land manager may be the conservation easement grantee, land owner, or other party. Documents related to land management shall identify the land manager. Permittee shall notify DFG of any subsequent changes in the land manager within 30 days of the change. If DFG will hold fee title to the mitigation land, DFG will also act as long-term land manager unless otherwise specified.	ITP Condition 9.2, 9.2.1-9.2.4	Before commencing Covered Activities	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
17	• Provide for the implementation of start-up activities, including the initial site protection and enhancement of the HM lands. Start-up activities include, at a minimum: (1) preparing a revised Long-Term Resources Management Plan (LTRMP) for DFG approval (see Condition 9.2.6); (2) conducting a baseline biological assessment and land survey report within four months of recording or transfer; (3) developing and transferring Geographic Information Systems (GIS) data if applicable; (4) establishing initial fencing; (5) conducting litter removal; (6) conducting initial habitat restoration or enhancement, if applicable; and (7) installing signage. Permittee shall make the habitat enhancements to the 56.88-acre off-site conservation area to coincide with the initial site grading and construction activities for the Project site as follows: • One pond suitable for breeding by California tiger salamander will be constructed. As part of the full mitigation package for the Covered Species, in that the Covered Species makes use of and benefits from ground squirrel habitat, Permittee will use a portion of the dirt excavated from construction of the new pond to create small mounds around the pond to encourage ground squirrel colonization and potential den areas, and will locate such mounds in areas where no squirrel burrows currently exist; • Grazing management will be instituted that targets the maintenance of suitable dispersal and upland habitat for the Covered Species; • No rodent control will occur unless approved in advance in writing by DFG.	ITP Condition # 9.2.5, 9.2.5.1-9.2.5.3			
18	• The revised LTRMP shall include all necessary goals and tasks for site management, including but not limited to: (1) Land Manager responsibilities, (2) initial enhancement actions and costs, (3) initial and capital costs for the first 10 years including success criteria monitoring, (4) potential remedial measures and costs, and (5) endowment. The 10-year monitoring shall include measurable success criteria for population, metamorphosis, and hydroperiod of the Covered Species, fence replacement and maintenance, monitoring for trespass and trash removal, vegetation management, survey and monitoring schedules and methodologies, reporting, and detailed remedial measures and/or an adaptive management strategy. Before initiation of Covered Activities, the revised LTRMP shall be provided to DFG. Permittee shall obtain DFG approval of a final LTRMP in writing prior to initiating Covered Activities.	ITP Condition # 9.2.6	Before commencing Covered Activities	Permittee	
19	• The LTRMP shall require annual monitoring for predatory species. If bullfrogs or fish are detected in any of the Eagle Ridge Mitigation Area ponds the ponds shall be drained in September of the year of detection to reduce predation of individuals of the Covered Species. • The LTRMP shall specify remedial and or adaptive management measures and funding to address aquatic habitat modifications such as increasing pond depth, pond hydroperiod, and pond size; and/or terrestrial habitat modifications such as grazing and ground squirrel population, to be completed if any of the success criteria as described in the LTRMP and based on Condition 9.2.6.3 below are not achieved.	ITP Condition # 9.2.6.1 9.2.6.2	Before commencing Covered Activities	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
20	The LTRMP success criteria for the Preserve shall include: • Demonstration of an overall increasing population trend of the Covered Species over the first 10 years of monitoring. The success criteria shall specify the level of survey effort and the increasing population trend needed for a sustainable population • Demonstration of successful metamorphosis of the Covered Species on the Preserve. Successful metamorphosis shall be measured by comparison to a DFG approved reference site. The success criteria shall specify the level of survey effort and number of years that successful metamorphosis occurs as compared to the reference site • Demonstration that the hydroperiod in the created pond is suitable for successful breeding and metamorphosis of the Covered Species as compared to a DFG approved reference site.	ITP Condition # 9.2.6.3 9.2.6.3.1-9.2.6.3.3	Before commencing Covered Activities	Permittee	
21	Interim Management (Initial and Capital). Provide for the interim management of the HM lands. The interim management period shall be a minimum of 10 years from the date of HM land acquisition and protection and shall continue for at least three years after full funding of the Endowment and, as described in the LTRMP, expected annual management following start-up activities. Interim management period activities shall include fence repair, continuing trash removal, biological surveys (including the 10-year Covered Species monitoring described in Condition 9.2.6.3), site monitoring, and vegetation and invasive species management.	ITP Condition #9.2.7	Before commencing Covered Activities	Permittee	
22	If the Permittee will permanently protect and perpetually manage compensatory habitat as described in Condition 9.2, the Permittee shall ensure that the HM lands are perpetually managed, maintained, and monitored as described in the final management plan and conservation easement approved by DFG. After obtaining DFG approval of the HM lands, Permittee shall provide long-term management funding for the in-perpetuity management of the HM lands by establishing a long-term management fund (Endowment Fund) prior to permit expiration. The Endowment Fund is a sum of money, held in a DFG-authorized trust fund that provides funds for the perpetual management, maintenance, monitoring, and other activities on the HM lands consistent with the management plan(s) required by Condition 9.2.6. Endowment Fund as used in this ITP shall refer to the endowment deposit and all interest, dividends, other earnings, additions and appreciation thereon. After the interim management period, Permittee shall ensure that the designated long-term land manager implements the management and monitoring of the HM lands according to the final management plan. The long-term land manager shall be obligated to manage and monitor the HM lands in perpetuity to preserve their conservation values in accordance with this ITP, the conservation easement, and the final management plan. Such activities shall be funded through the Endowment Fund. Identify an Endowment Fund Manager.	ITP Condition #9.3	Before commencing Covered Activities	Permittee	
23	The Endowment Fund shall be held by NFWF or DFG;	ITP Condition #9.3.1	Before commencing Covered Activities	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
24	After obtaining DFG approval of the HM lands, long-term management plan, and Endowment Fund Manager, Permittee shall prepare a Property Analysis Record (PAR) or PAR-equivalent analysis (hereinafter "PAR") to calculate the amount of funding necessary to ensure the long-term management of the HM lands (Endowment Deposit Amount). The Permittee shall submit to DFG for review and approval the results of the PAR before transferring funds to the Endowment Fund Manager.	ITP Condition # 9.3.2	Before commencing Covered Activities	Permittee	
25	Permittee shall obtain the capitalization rate from the selected Endowment Fund Manager for use in calculating the PAR and adjust for any additional administrative, periodic, or annual fees.	ITP Condition #9.3.2.1	Before commencing Covered Activities	Permittee	
26	Permittee shall include in PAR assumptions the following buffers for endowment establishment and use that will substantially ensure long-term viability and security of the Endowment Fund: • 10 Percent Contingency. A 10 percent contingency shall be added to each endowment calculation to hedge against underestimation of the fund, unanticipated expenditures, inflation, or catastrophic events. • Three Years Delayed Spending. The endowment shall be established assuming spending will not occur for the first three years after full funding of the Endowment Fund. • Non-annualized Expenses. For all large capital expenses to occur periodically but not annually such as fence replacement or well replacement, payments shall be withheld from the annual disbursement until the year of anticipated need or upon request to Endowment Fund Manager and DFG.	ITP condition #9.3.2.2, 9.3.2.2.1-9.3.2.2.3	Before commencing Covered Activities	Permittee	
27	Permittee shall transfer the long-term endowment funds to the Endowment Fund Manager upon DFG approval of the Endowment Deposit Amount identified above. The approved Endowment Fund Manager may pool the Endowment Fund with other endowments for the operation, management, and protection of HM lands for local populations of the Covered Species but shall maintain separate accounting for each Endowment Fund.	ITP Condition #9.3.3	Before commencing Covered Activities	Permittee	
28	Permittee shall reimburse DFG for all reasonable expenses incurred by DFG such as transaction fees, account set-up fees, administrative fees, title and documentation review and related title transactions, expenses incurred from other state agency reviews, and overhead related to transfer of HM Lands to DFG.	ITP Condition # 9.4	Before commencing Covered Activities	Permittee	
29	The Permittee may proceed with Covered Activities only after the Permittee has ensured funding (Security) to complete any activity required by Condition 9 that has not been completed before Covered Activities begin.	ITP Condition # 10	Before commencing Covered Activities	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials

30	The Security shall be in the amount of $1,582,554. This amount is based on the cost estimates identified in Condition 9.1 above.
	• The Security shall be in the form of an funding assurance letter signed by the Deputy District Directors of Environmental Planning and Engineering and Project Management, or another form of Security approved in advance in writing by DFG's Office of the General Counsel or another mechanism approved in advance in writing by DFG's Office of the General Counsel.
	• The Security shall be provided to DFG before Covered Activities begin or within 30 days after the effective date of this ITP, whichever occurs first.
	• The Security shall be held by DFG or in a manner approved in advance in writing by DFG.
	• Security Transmittal. If DFG holds the Security, Permittee shall transmit it to DFG with a completed Mitigation Payment Transmittal Form (see Attachment 4) or by way of an approved instrument such as escrow, irrevocable letter of credit, or other.
	• Security Drawing. The Security shall allow DFG to draw on the principal sum if DFG, in its sole discretion, determines that the Permittee has failed to comply with the Conditions of Approval of this ITP.
	• The Security (or any portion of the Security then remaining) shall be released to the Permittee after all secured requirements have been met as evidenced by:
	  • Timely submission of all required reports;
	  • An on-site inspection by DFG; and
	  • Written approval from DFG.
	Even if Security is provided, the Permittee must complete the required acquisition, protection and transfer of all HM lands and record any required conservation easements no later than 18 months from the effective date of this ITP. DFG may require the Permittee to provide additional HM lands and/or additional funding to ensure the impacts of the taking are minimized and fully mitigated, as required by law, if the Permittee does not complete these requirements within the specified timeframe.
		ITP Condition # 10.1, 10.2, 10.3, 10.4 10.5 10.6 10.7	Before commencing Covered Activities	Permittee	

DURING CONSTRUCTION					
31	The Designated Representative shall immediately notify DFG in writing if it determines that the Permittee is not in compliance with any Condition of Approval of this ITP, including but not limited to any actual or anticipated failure to implement minimization and mitigation measures within the time periods indicated in this ITP and/or the MMRP. The Designated Representative shall report any non-compliance with the ITP to DFG within 24 hours.	ITP Condition #7.2	Entire Project	Permittee	
32	Permittee shall confine all earthwork and vegetation clearing within the Covered Activities Area to the period of April 15 to October 31.	ITP Condition #8.1	Entire Project	Permittee	
33	Permittee shall confine all work within riparian areas to period of June 15 to October 15	ITP Condition #8.2	Entire Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
34	Permittee shall confine all activities within ponds or pools to the period between August 31 and October 15. Permittee shall ensure that no activities occur at any time when California tiger salamander is in a breeding, larval, or migratory season. The Permittee shall monitor the National Weather Service (NWS) 72-hr forecast for the project area. If rain is predicted within 72 hours during project activity, all activities shall cease until no further rain is forecast. If the ponds/pools remain dry after the rain, the Permittee may continue activities.	ITP Condition #8.3	Entire Project	Permittee	
35	Permittee shall terminate all Covered Activities in the Covered Activities Area 30 minutes before sunset and shall not resume Covered Activities until 30 minutes after sunrise during the California tiger salamander migration/active season from November 1 to June 15. The Permittee shall use sunrise and sunset times established by the U.S. Naval Observatory Astronomical Applications Department for determining when Covered Activities shall terminate and resume.	ITP Condition #8.4	Entire Project	Permittee	
36	Permittee shall construct a retaining wall at the edge of the BSA adjacent to Emergent Wetland 3 to protect Emergent Wetland 3 and no additional encroachment or right-of-way acquisition will be considered at this location. Permittee shall extend the existing culvert that drains Emergent Wetland 3 through the retaining wall to maintain the existing hydrology. Permittee shall reroute existing down spouts that drain freeway runoff into Emergent Wetland 3 to improve water quality.	ITP Condition #8.5	Entire Project	Permittee	
37	Permittee shall at the end of each work day, create an escape ramp at each end of any open trench to allow any animals that may have become entrapped in the trench to climb out overnight. The ramp may be constructed of either dirt fill or wood planking or other suitable material that is placed at an angle no greater than 30 degrees.	ITP Condition #8.9	Entire Project	Permittee	
38	Permittee shall use tightly woven fiber netting or similar material for erosion control to ensure that Covered Species do not get trapped. Plastic mono-filament netting (erosion control matting) or similar material shall not be used within areas of potential Covered Species habitat as defined by the Designated Biologist.	ITP Condition #8.10	Entire Project	Permittee	
39	The Designated Biologist shall be on-site daily between October and June and twice weekly between July and September when Covered Activities occur. The Designated Biologist shall conduct compliance inspections to (1) minimize incidental take of the Covered Species; (2) check for compliance with all mitigation and avoidance measures; (3) check all exclusion zones; and (4) ensure that signs, stakes, and fencing are intact, and that Covered Activities are only occurring in the Covered Activities Area. The Designated Representative or Designated Biologist shall prepare weekly written observation and inspection records summarizing: oversight activities and compliance inspections, observations of Covered Species and their sign, survey results, and monitoring activities required by this ITP	ITP Condition # 7.3	Entire Project	Permittee	
40	Permittee shall conduct photo monitoring of the Covered Activities Area as shown on Attachment 1. Prior to commencement of work, Permittee shall establish a minimum of one photo point every 1/8 of a mile along the Covered Activities Area alignment or an alternative number of photo points that achieve the objectives below and are approved by DFG in writing. The photo points shall provide comprehensive views of the Covered Activities Area including areas where Covered Activities will occur. Prior to construction, Permittee shall photograph the Covered Activities Area from each of the established points, noting the direction and magnification of each photo. On a monthly basis, Permittee shall photograph the Covered Activities Area from established photo points using the same direction and magnification as pre-construction photos. Labeled copies of photographs taken at each photo point shall be provided to DFG as a component of monthly compliance reports (see Condition 7.5).	ITP Condition # 7.4	Entire Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
41	The Designated Representative or Designated Biologist shall compile the observation and inspection records identified in Condition 7.3 into a Monthly Compliance Report and submit it to DFG along with a copy of the MMRP table with notes showing the current implementation status of each mitigation measure. Quarterly Compliance Reports shall be submitted to DFG's Regional Office at the office listed in the Notices section of this ITP and via e-mail to DFG's Regional Representative. At the time of this ITP's approval, the DFG Regional Representative is Marcia Grefsrud (mgrefsrud@dfg.ca.gov). DFG may at any time increase the timing and number of compliance inspections and reports required under this provision depending upon the results of previous compliance inspections. If DFG determines the reporting schedule must be changed, DFG will notify Permittee in writing of the new reporting schedule.	ITP Condition #7.5	Entire Project	Permittee	
42	The Designated Biologist shall submit all observations of Covered Species to DFG's California Natural Diversity Database (CNDDB) within 60 calendar days of the observation and the Designated Biologist shall include copies of the submitted forms with the next Monthly Compliance Report or ASR, whichever is submitted first relative to the observation.	ITP Condition #7.7	Entire Project	Permittee	
43	Permittee shall provide DFG with an Annual Status Report (ASR) no later than December 31 of every year beginning with issuance of this ITP and continuing until DFG accepts the Final Mitigation Report identified below. Each ASR shall include, at a minimum: (1) a summary of all Monthly Compliance Reports for that year identified in Condition 7.5; (2) a general description of the status of the Covered Activities Area and Covered Activities, including actual or projected completion dates, if known; (3) a copy of the table in the MMRP with notes showing the current implementation status of each mitigation measure; (4) an assessment of the effectiveness of each completed or partially completed mitigation measure in avoiding, minimizing and mitigating Project impacts; (5) all available information about Project-related incidental take of the Covered Species; (6) an accounting of the number of acres subject to both temporary and permanent disturbance, both for the prior calendar year, and a total since ITP issuance; and (7) information about other Project impacts on the Covered Species.	ITP Condition # 7.6	Entire Project	Permittee	
44	Project-related personnel shall access the Project Area using existing routes, or routes identified in the Project Description, and shall not cross Covered Species' habitat outside of or en route to the BSA. Permittee shall restrict Project-related vehicle traffic to established roads, construction, staging, and parking areas. Permittee shall ensure that vehicle speeds do not exceed 15 mph to avoid Covered Species on or traversing the roads. If Permittee determines construction of routes for travel are necessary outside of the BSA, the Designated Representative shall contact DFG before carrying out such an activity. DFG may require an amendment to this ITP if additional take of Covered Species may result from Project modification.	ITP Condition #6.10	Entire Project	Permittee	
45	Permittee shall confine all Project-related parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities to the BSA using, to the extent possible, previously disturbed areas. Additionally, Permittee shall not use or cross Covered Species' habitat outside of the marked Covered Activities Area unless provided for as described in Condition 6.11 of this ITP.	ITP Condition # 6.11	Entire Project	Permittee	
46	Permittee shall immediately stop and following pertinent state and federal statutes and regulations arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills at the time of occurrence, or as soon as it is safe to do so. Permittee shall exclude the storage and handling of hazardous materials from the BSA and shall properly contain and dispose of any unused or leftover hazardous products off-site.	ITP Condition # 6.12	Entire Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
47	If a Covered Species is injured as a result of Project-related activities, the Designated Biologist shall immediately take it to a DFG approved wildlife rehabilitation or veterinary facility. Permittee shall identify the facility before starting Covered Activities. Permittee shall bear any costs associated with the care or treatment of such injured Covered Species. The Permittee shall notify DFG of the injury to the Covered Species immediately by telephone and e-mail followed by a written incident report as described in Condition 7.9. Notification shall include the name of the facility where the animal was taken.	ITP Condition #8.11	Entire Project	Permittee	
48	Permittee shall immediately notify the Designated Biologist if a Covered Species is killed or taken by a Project-related activity, or if a Covered Species is otherwise found dead or injured within the vicinity of the Project. The Designated Biologist or Designated Representative shall provide initial notification to DFG by calling the Regional Office at (707) 944-5500. The initial notification to DFG shall include information regarding the location, species, number of animals taken and the ITP Number. Following initial notification, Permittee shall send DFG a written report within 2 calendar days. The report shall include the date and time of the finding or incident, location of the animal or carcass, and if possible provide a photograph, explanation as to cause of take, and any other pertinent information.	ITP Condition # 7.9	Entire Project	Permittee	
POST-CONSTRUCTION					
49	Upon completion of Covered Activities, Permittee shall remove from the Project Area and properly dispose of all temporary fill and construction refuse, including, but not limited to, broken equipment parts, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, metal or plastic containers, and boxes.	ITP Condition # 6.14	Post-construction	Permittee	
50	No later than 45 days after completion of all mitigation measures, Permittee shall provide DFG with a Final Mitigation Report. The Designated Biologist shall prepare the Final Mitigation Report which shall include, at a minimum: (1) a summary of all Monthly Compliance Reports and all ASRs, (2) a copy of the table in the MMRP with notes showing when each of the mitigation measures was implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) beginning and ending dates of Covered Activities; (6) an assessment of the effectiveness of the ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects on the Covered Species; and (8) any other pertinent information.	ITP Condition # 7.8	Post-construction and after completion of mitigation	Permittee	

ATTACHMENT 2A-B

ATTACHMENT 2A

DEPARTMENT OF FISH AND GAME

HABITAT MANAGEMENT LAND ACQUISITION PACKAGE CHECKLIST FOR PROJECT APPLICANTS

The following checklist is provided to inform you of what documents are necessary to expedite Department processing of your Habitat Management Land acquisition proposal. Any land acquisition processing requests which are incomplete when received, will be returned. The Region contact will review and approve the document package and forward it to the Lands and Facilities Branch (LFB) Realty Services Coordinator with a request to process the land acquisition for formal acceptance.

To: _____
Carl Wilcox, Regional Manager, Bay Delta Region

From: _____
Frank Furger, Chief Deputy Director, Alameda County Congestion Management Agency

Phone: _____

Tracking #: 2081-2010-026-03

Project Name: Interstate 580 Westbound HOV Lane Project

Enclosed is the complete package for the ☐ Conservation Easement OR ☐ Grant Deed

Documents in this package include:

- ☐ Fully executed, approved as to form Conservation Easement Deed or Grant Deed.
  Date executed: _____
- ☐ Proposed Lands for Acquisition Form (PLFAF)
- ☐ Phase I Environmental Site Assessment Report. Date on report: _____
  (An existing report may be used, but it must be less than two years old.)
- ☐ Preliminary Title Report(s) for subject property is enclosed and has been reviewed for encumbrances and other easements. The title report must be less than six months old when final processing is conducted. Included are additional documents:
  - ☐ document(s) to support title exceptions
  - ☐ document(s) to explain title encumbrances
  - ☐ a plot or map of easements/encumbrances on the property
- ☐ Policy of Title Insurance (an existing title policy is not acceptable)
- ☐ County Assessor Parcel Map(s) for subject property
- ☐ Site Location Map (Site location with property boundaries outline on a USGS 1:24,000 scale topo)
- ☐ Final Permit or Agreement (or other appropriate instrument)
  Type of agreement: ☐ Bank Agreement ☐ Mitigation Agreement
  ☐ Permit _____ Other: _____
  (write in type of permit)
- ☐ Final Management Plan (if required prior to finalizing permit or agreement or if this package is for a Grant Deed)
- ☐ Biological Resources Report
- ☐ Draft Summary of Transactions ☐ hard copy ☐ electronic copy (both are required)

PROPOSED LANDS FOR ACQUISITION FORM ("PLFAF")

Date: _____

TO: Regional Representative

_____

_____

_____

Facsimile:

FROM: _____

_____

_____

_____

Applicant proposes that the following parcel of land be considered for approval by the Department as suitable for purposes of habitat management lands to replace the adverse environmental impacts of the Project:

Section	Township	Range	Number of Acres
_____	_____	_____	_____

Current Legal Owner(s), include Parcel Number(s):

_____

_____

_____

Location of Parcel:

_____

_____

_____

_____

_____

APPROVED ___ By: _____ DATE: _____

REJECTED ___

_____

Region

Explanation: _____

_____

_____

ATTACHMENT 3

IRREVOCABLE STANDBY LETTER OF CREDIT
NO. [***Number issued by financial institution***]

Issue Date: [***date***]

Beneficiary:

Department of Fish and Game
1416 Ninth Street, 12th Floor
Sacramento, CA 95814
Attn: HCPB Mitigation Account Coordinator

Amount: U.S. $[***dollar number***] [(***dollar amount***)]

Expiry: [***Date***] at our counters

Comment: Bank or Applicant will complete the heading (i.e., the information above this comment box). The heading will be subject to change by bank on a bank-by-bank basis. DFG will verify the amount and expiry date are correct.

Dear Sirs:

1. At the request and on the instruction of our customer, [***name of applicant***] ("Applicant"), we, [**Name of *financial institution***] ("Issuer"), hereby establish in favor of the beneficiary, the California Department of Fish and Game ("Department"), this irrevocable standby letter of credit ("Credit") in the principal sum of U.S. $[***dollar number***] [(***dollar amount***)] ("Principal Sum").

Comment: Bank or Applicant will complete.

Comment: Bank or Applicant will complete.

Comment: Applicant or DFG will insert amount. If the former, DFG will verify the amount is correct.

2. We are informed this Credit is and has been established for the benefit of the Department pursuant to the terms of the incidental take permit for the [***name of project***] issued by the Department to the Applicant on [***date***] (No. [***number***]) ("Permit").

Comment: Applicant or DFG should insert project name. If the former, DFG will verify the name is correct.

3. We are further informed that pursuant to the Permit, the Applicant has agreed to complete certain mitigation requirements, as set forth in Conditions [***numbers***] in the Permit ("Mitigation Requirements").

Comment: Applicant or DFG should insert date and number. If the former, DFG will verify the information is correct.

Comment: DFG will insert numbers.

4. We are finally informed that this Credit is intended by the Department and the Applicant to serve as a security device for the performance by the Applicant of the Mitigation Requirements.

5. The Department shall be entitled to draw upon this Credit only by presentation of a duly executed Certificate for Drawing ("Certificate") in the same form as Attachment A, which is attached hereto, at our office located at [***name and address of financial institution***].

Comment: Bank or Applicant will complete.

6. The Certificate shall be completed and signed by an "Authorized Representative" of the Department as defined in paragraph 12 below. Presentation by the

Department of a completed Certificate may be made in person or by registered mail, return receipt requested, or by overnight courier.

7. Upon presentation of a duly executed Certificate as above provided, payment shall be made to the Department, or to the account of the Department, in immediately available funds, as the Department shall specify.

8. If a demand for payment does not conform to the terms and conditions of this Credit, we shall give the Department prompt notice that the demand for payment was not effected in accordance with the terms and conditions of this Credit, state the reasons therefore, and await further instruction.

9. Upon being notified that the demand for payment was not effected in conformity with the Credit, the Department may correct any such non-conforming demand for payment under the terms and conditions stated herein.

10. All drawings under this Credit shall be paid with our funds. Each drawing honored by us hereunder shall reduce, *pro tanto*, the Principal Sum. By paying to the Department an amount demanded in accordance herewith, we make no representations as to the correctness of the amount demanded.

11. This Credit will be cancelled upon receipt by us of Certificate of Cancellation, which: (i) shall be in the form of Attachment B, which is attached hereto, and (ii) shall be completed and signed by an Authorized Representative of the Department, as defined in paragraph 12 below.

12. An "Authorized Representative" shall mean either the Director of the Department of Fish and Game, the General Counsel of the Department of Fish and Game, or a Regional Manager of the Department of Fish and Game.

13. This Credit shall be automatically extended without amendment for additional periods of one year from the present or any future expiration date hereof, unless at least sixty (60) days prior to any such date, we notify the Department in writing by registered mail, return receipt requested, or by overnight courier that we elect not to consider this Credit extended for any such period.

14. Communications with respect to this Credit shall be in writing and addressed to us at [**name and address of *financial institution***], specifically referring upon such writing to this credit by number. The address for notices with respect to this Credit shall be: (i) for the Department: Department of Fish and Game, Habitat Conservation Planning Branch, 1416 Ninth Street, 12th Floor, Sacramento, California 95814-2090 Attn: HCPB Mitigation Account Coordinator; and (ii) for the Applicant: [***name and address of applicant***].

Comment: Bank or Applicant will complete

15. This Credit may not be transferred.

16. This Credit is subject to the International Standby Practices 1998 ("ISP 98"). As to matters not covered by the ISP 98 and to the extent not inconsistent with the ISP 98, this credit shall be governed by and construed in accordance with the Uniform Commercial Code, Article 5 of the State of California.

Comment: Paragraph 16 is subject to change by bank on a bank-by-bank basis. OGC will review and approve final language.

17. This Credit shall, if not canceled, expire on [***expiration date***], or any extended expiration date.

Comment: Bank or Applicant, or DFG will complete. If the former, DFG will verify the date is correct.

18. We hereby agree with the Department that documents presented in compliance with the terms of this Credit will be duly honored upon presentation, as specified herein.

19. This Credit sets forth in full the terms of our undertaking. Such undertaking shall not in any way be modified, amended or amplified by reference to any document or instrument referred to herein or in which this Credit is referred to or to which this Credit relates and any such reference shall not be deemed to incorporate herein by reference any document or instrument.

[***Name of financial institution***]

By: _____
Name: _____
Title: _____

Comment: Bank will complete.

ATTACHMENT A

Comment: DFG will complete this Certificate if it determines that drawing is required.

IRREVOCABLE STANDBY LETTER OF CREDIT NO. [***Number issued by financial institution***]
CERTIFICATE FOR DRAWING

To:

[***Name and address of financial institution***]

Re: Incidental Take Permit No. [***permit number***]

The undersigned, a duly Authorized Representative of the Department of Fish and Game ("Department"), as defined in paragraph 12 in the above-referenced Irrevocable Standby Letter of Credit ("Credit"), hereby certifies to the Issuer that:

1. [***Insert one of the following statements:*** "In the opinion of the Department, the Applicant has failed to complete the Mitigation Requirements referenced in paragraph 3 of the Credit." ***or*** "As set forth in paragraph 13, the Issuer has informed the Department that the Credit will not be extended and the Applicant has not provided the Department with an equivalent security approved by the Department to replace the Credit."]

2. The undersigned is authorized under the terms of the Credit to present this Certificate as the sole means of demanding payment on the Credit.

3. The Department is therefore making a drawing under the Credit in amount of U.S. $_____.

4. The amount demanded does not exceed the Principal Sum of the Credit.

Therefore, the Department has executed and delivered this Certificate as of the ___day of _____, _____.

CALIFORNIA DEPARTMENT OF FISH AND GAME

BY: _____
[Insert one of the following: "DIRECTOR" ***or*** "GENERAL COUNSEL" ***or*** "REGIONAL MANAGER, [***NAME OF REGIONAL OFFICE***]"]

ATTACHMENT B

Comment: DFG will complete this Certificate if it determines the Letter of Credit may be canceled.

IRREVOCABLE LETTER OF CREDIT NO. [***Number issued by financial institution***]
CERTIFICATE FOR CANCELLATION

To:

[***Name of financial institution and address***]

Re: Incidental Take Permit No. [***permit number***]

The undersigned, a duly Authorized Representative of the California Department of Fish and Game ("Department"), as defined in the paragraph 12 in the above-referenced Irrevocable Standby Letter of Credit ("Credit"), hereby certifies to the Issuer that:

1. [***Insert one of the following statements:*** "The Applicant has presented documentary evidence of full compliance with the Mitigation Requirements referenced in paragraph 3 of the Credit." ***or*** "The natural expiration of this Credit has occurred."]

2. The Department therefore requests the cancellation of the Credit.

Therefore, the Department has executed and delivered this Certificate for Cancellation as of the ____ day of _____, _____.

CALIFORNIA DEPARTMENT OF FISH AND GAME

BY: _____
[Insert one of the following: "DIRECTOR" ***or*** "GENERAL COUNSEL" ***or*** "REGIONAL MANAGER, [***NAME OF REGIONAL OFFICE***]"]

ATTACHMENT 4

California Department of Fish and Game

Mitigation Payment Transmittal Form

Project Applicant Instructions: Please fill out and attach this form to payment. For conservation banks, also attach the Bill(s) of Sale for credits sold. One form may be used for multiple transactions, **BUT YOU MUST USE A SEPARATE FORM FOR EACH CHECK YOU TRANSMIT**. Make sure to include Project Name, Project Tracking Number, and FASB Mitigation Tracking Number (if available) on the attached payment type.

(1) **DATE:** _____

TO: Carl Wilcox
[DFG Regional Manager]
7329 Silverado Trail, Napa, CA 94558
[DFG Region Office Address]

(2) **FROM:** _____
Name

_____
Mailing Address

_____
City, State, Zip

_____
Telephone Number/FAX Number

(3) **RE:** I-580 Westbound HOV Project
[Project Name as appears on permit/agreement]

(4) **AGREEMENT/ACCOUNT INFORMATION:**
(Check the applicable type)

□ 2081 Permit □ Conservation Bank □ 1802 Agreement

□ 2835 NCCP □ Other _____

2081-2010-026-03
[Project Tracking Number]

_____
[FASB Mitigation Tracking Number (if available)]

Index _____ PCA _____

(5) PAYMENT TYPE (One check per form only): The following funds are being remitted in connection with the above referenced project:

Check information:

Total $_____ Check No. _____

Account No. _____ Bank Routing No. _____

a. Endowment: for Long-Term Management Subtotal $_____

b. Habitat Enhancement Subtotal $_____

c. Security:

1. Cash Refundable Security Deposit Subtotal $_____

2. Letter of Credit Subtotal $_____

1. Financial Institution: _____

2. Letter of Credit Number: _____

3. Date of Expiration: _____

SITE INVESTIGATION REPORT

I-580 WESTBOUND HOV LANE WIDENING PROJECT ALAMEDA COUNTY, CALIFORNIA

PREPARED FOR:
BKF ENGINEERS
4670 WILLOW ROAD, SUITE 250
PLEASANTON, CALIFORNIA

PREPARED BY:
GEOCON CONSULTANTS, INC.
6671 BRISA STREET
LIVERMORE, CALIFORNIA

GEOCON

GEOCON PROJECT No. E8474-06-01

NOVEMBER 2010

GEOCON
CONSULTANTS, INC.
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. E8474-06-01
November 8, 2010

Natalina Bernardi
BKF Engineers
4670 Willow Road, Suite 250
Pleasanton, California 94588

Subject: PRELIMINARY SITE INVESTIGATION REPORT
I-580 WESTBOUND HOV LANE WIDENING PROJECT
ALAMEDA COUNTY, CALIFORNIA

Dear Ms. Bernardi:

Geocon has performed environmental engineering services at the subject site in general accordance with the scope of work outlined in our revised workplan dated February 22, 2010, and with the recommendations provided in our *Summary of Sites that May Pose a Risk to the Proposed I-580 Westbound HOV Widening Project, San Ramon Road to Greenville Road, Alameda County, California*, dated May 13, 2010. The site investigation was performed along the shoulders and interchange within the project limits the Interstate 580 Westbound High Occupancy Vehicles (HOV) Lane Widening project in Alameda County, California.

The accompanying report summarizes the services performed including limited soil and groundwater sample collection from borings advanced using hand-auger and direct-push drilling equipment, and laboratory testing.

The contents of this report reflect the views of Geocon Consultants, Inc., who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

If there are any questions concerning the contents of this report, or if Geocon may be of further service, please contact the undersigned at your convenience.

Sincerely,

GEOCON CONSULTANTS, INC.

Lauren Vigliotti
Senior Staff Geologist

Richard Day, CEG, CHG
Project Manager

LJV:RWD

(8 + CD) Addressee

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PRELIMINARY SITE INVESTIGATION REPORT

1.0 INTRODUCTION

This Preliminary Site Investigation Report for the Interstate 580 (I-580) Westbound (WB) High Occupancy Vehicles (HOV) Lane Widening project was prepared by Geocon Consultants, Inc. at the request of BKF Engineers (BKF), and in general accordance with our revised workplan dated February 22, 2010, and with the recommendations provided in our *Summary of Sites that May Pose a Risk to the Proposed I-580 Westbound HOV Widening Project, San Ramon Road to Greenville Road, Alameda County, California*, dated May 13, 2010.

A draft Preliminary Site Investigation report, dated July 6, 2010, was prepared and submitted to Caltrans for review. This report considers and incorporates the Caltrans review comments dated August 17, 2010. The Caltrans review comments in the draft report and Geocon responses are included as Appendix A.

1.1 Project Description and Proposed Improvements

The site area consists of the WB I-580 shoulder interchanges, and bridge structures within the project limits in Alameda County, California. The project limits extend approximately 13 miles from west of San Ramon/Foothill Road Overcrossing in Dublin to west of Greenville Road Undercrossing in Livermore (the Site). The Site also includes I-580 eastbound (EB) interchanges and bridge structures extending from east of Hacienda Drive to Greenville Road. The project area consists of a west segment and an east segment. The west segment extends from the San Ramon Boulevard interchange to the Isabel Avenue interchange currently being constructed. The east segment extends from the Isabel Avenue interchange to the Greenville Road interchange.

The Alameda County Congestion Management Agency (ACCMA) is proposing to add a HOV lane to WB I-580; construct HOV preferential lanes on on-ramps at the Airway Boulevard, North Livermore Avenue, First Street, Vasco Road, and Greenville Road Interchanges; construct retaining walls; and widen bridge structures at the project location.

Widening of the following structures is proposed as part of the project:

1) Dougherty Undercrossing, Bridge No. 33-0150L (Bay Area Rapid Transit, BART station)
2) Tassajara Creek Bridge, No. 33-0015R/L
3) Arroyo Las Positas Creek Bridge, No. 33-0203
4) North Livermore Avenue Undercrossing, Bridge No. 33-0153
5) Arroyo Las Positas Bridge, No. 33-0085
6) Arroyo Seco Creek Box Culvert (No. 33-0066)

In addition, sign structures are proposed to be installed along the roadway shoulders at the Site, which will include cast-in-drilled-hole (CIDH) foundations installed to a maximum depth of 25 feet.

The proposed construction activities will be conducted within existing Caltrans ROW and at adjacent private properties proposed for partial acquisition (sliver-takes). Sampling was conducted on the shoulders and interchanges within the project limits of the I-580 WB HOV Lane Widening project in Alameda County, California. The site location is depicted on the Vicinity Map, Figure 1.

1.2 Purpose

The purpose of the proposed scope of services was to evaluate whether impacts due to aerially-deposited lead (ADL) exist in the surface and near surface soil and determine if other constituents of concern have impacted soil and groundwater at select areas at the Site. Accordingly, the information obtained from this investigation will be used by BKF to evaluate soil and groundwater reuse/disposal options.

The project also included surveys of bridge structures at the Site to assess the potential presence and quantity of asbestos and potential presence of lead paint prior to planned renovation activities. The results of the survey are provided in our report entitled *Asbestos and Lead-Containing Paint Survey, I-580 Westbound HOV Lane Widening Project, Alameda County, California*, dated July 7, 2010.

2.0 BACKGROUND

2.1 Initial Site Assessment Update

Geocon prepared a *Summary of Sites that May Pose a Risk to the Proposed I-580 WB HOV Widening Project* (ISA Update), dated May 13, 2010, that consisted of a current review of the environmental and regulatory status of facilities in the vicinity of the proposed I-580 WB HOV Widening project area.

Our review for the ISA Update included: *Preliminary Phase I Initial Site Assessment (ISA) Report* (Parikh Consultants, Inc, October 2006); *Environmental Data Resources (EDR) DataMap Environmental Atlas Report, San Ramon Road East to Greenville Road, Alameda County, California* (March 4, 2010); and information available on the State Water Resources Control Board (SWRCB) GeoTracker website (http://www.geotracker.swrcb.ca.gov/) pertaining to nearby sites that may pose a risk to the project area. Geocon also examined west and east segment Sign Plans depicting the proposed locations of sign structures that will require cast-in-drilled-hole (CIDH) pile installation where groundwater may be encountered.

Based on the current regulatory review, construction plans, and proposed ROW takes, Geocon recommended in the ISA Update that, in addition to the scope of work detailed in our Revised Workplan (February 22, 2010), groundwater samples be collected at the approximate locations of proposed sign structures as follows:

- I-580 WB adjacent to the Dougherty Road/Hopyard Road interchange for analysis of VOCs, BTEX, MTBE, TPHg, TPHd, and TPHmo.
- I-580 WB west of Hacienda Drive for analysis of BTEX, MTBE, TPHg, TPHd, and TPHmo
- I-580 WB near the Hacienda Drive offramp for analysis of BTEX, MTBE, TPHg, TPHd, and TPHmo
- I-580 WB near the Vasco Road offramp for analysis of BTEX, MTBE, TPHg, TPHd, and TPHmo

We also identified the Dublin Toyota underground storage tank (UST) site at 6450 Dublin Court, located directly north of I-580, as a potential risk to the proposed construction project, as investigations at the site indicate that MTBE-impacted groundwater appears to extend to the south beneath I-580.

Other sites in the vicinity of the proposed project that are listed in the EDR and Parikh's 2006 ISA are either 1) indicated as having only impacts to onsite soil, 2) not near proposed CIDH piles, or 3) too distant from the proposed construction activities to pose a risk to the project.

Caltrans provided concurrence on the ISA Update on June 15, 2010.

2.2 Hazardous Waste Determination Criteria

Regulatory criteria to classify a waste as California hazardous for handling and disposal purposes are contained in the CCR, Title 22, Division 4.5, Chapter 11, Article 3, §66261.24. Criteria to classify a waste as Resource, Conservation, and Recovery Act (RCRA) hazardous are contained in Chapter 40 of the Code of Federal Regulations (40 CFR), Section 261.

For waste containing metals, the waste is classified as California hazardous when: 1) the total metal content equals or exceeds the respective Total Threshold Limit Concentration (TTLC); or 2) the soluble metal content equals or exceeds the respective Soluble Threshold Limit Concentration (STLC) based on the standard Waste Extraction Test WET. A waste has the potential of exceeding the STLC when the waste's total metal content is greater than or equal to ten times the respective STLC value since the WET uses a 1:10 dilution ratio. Hence, when a total metal is detected at a concentration greater than or equal to ten times the respective STLC, and assuming that 100 percent of the total metals are soluble, soluble metal analysis is required. A material is classified as RCRA hazardous, or Federal hazardous, when the soluble metal content equals or exceeds the Federal regulatory level based on the Toxicity Characteristic Leaching Procedure (TCLP).

The above regulatory criteria are based on chemical concentrations. Wastes may also be classified as hazardous based on other criteria such as ignitability and corrosivity; however, for the purposes of this investigation, toxicity (i.e., lead concentrations) is the primary factor considered for waste classification since waste generated during the construction activities would not likely warrant testing for ignitability or other criteria. Waste that is classified as either California hazardous or RCRA hazardous requires management as a hazardous waste.

2.3 Risk-Based Screening Criteria

2.3.1 Environmental Screening Levels

The San Francisco Bay Regional Water Quality Control Board (SFRWQCB) has prepared a technical report entitled *Screening For Environmental Concerns At Sites With Contaminated Soil and Groundwater, Interim Final* (May 2008), which presents Environmental Screening Levels (ESLs) for soil, groundwater, soil gas, and surface water to assist in evaluating sites impacted by releases of hazardous chemicals. The ESLs are conservative values for more than 100 commonly detected contaminants, which may be used to compare with environmental data collected at a site. ESLs are strictly risk assessment tools and "not regulatory clean up standards." The presence of a chemical at concentrations in excess of an ESL does not necessarily indicate that adverse impacts to human health or the environment are occurring; this simply indicates that a potential for adverse risk may exist and that additional evaluation is or "may be" warranted (SFRWQCB, 2008).

The following ESL tables were for comparison: Table A – Shallow Soil (≤3 meters below ground surface; bgs) – Groundwater is a Current or Potential Source of Drinking Water and K-3 – Direct Exposure Trench/Construction Worker. The respective ESLs are listed at the end of Tables 3 to 6 for comparative purposes.

2.3.2 California Human Health Screening Levels

The California Environmental Protection Agency (Cal/EPA) has prepared technical reports entitled *Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties* (Cal/EPA, January 2005) and *Revised California Human Health Screening Levels for Lead* (Cal/EPA, September 2009), which present CHHSLs for soil, shallow soil gas, and indoor air to assist in evaluating sites impacted by releases of hazardous chemicals.

The CHHSLs are concentrations of 54 hazardous chemicals that Cal/EPA considers to be below thresholds of concern for risks to human health. The CHHSLs were developed by the Office of Environmental Health Hazard Assessment (OEHHA) on behalf of Cal/EPA. The thresholds of concern used to develop the CHHSLs are an excess lifetime cancer risk of one in a million and a hazard quotient or 1.0 for noncancer effects. Under most circumstances, the presence of a chemical at

concentrations below its respective CHHSL can be assumed to not pose a significant risk. The presence of a chemical at concentrations above a CHHSL does not indicate that adverse impacts to human health are occurring or will occur, but suggests that further evaluation is warranted (Cal/EPA, January 2005).

The following CHHSLs were used for comparison: Table 1 – California Human Health Screening Levels for Soil and Comparison to Other Potential Environmental Concerns (Cal/EPA, January 2005) and Table 3 – Comparison of 2005 CHHSLs to Revised CHHSLs (Cal/EPA, September 2009). The respective CHHSLs are listed at the end of Table 3 for comparative purposes.

2.3.3 EPA Regional Screening Levels

The United States Environmental Protection Agency (EPA) has developed Screening Levels for Chemical Contaminants at Superfund Sites which consist of screening levels/preliminary remediation goals for soil, groundwater, tapwater, and indoor air at residential and industrial properties. The following information was obtained from the "Regional Screening Levels for Chemical Contaminants at Superfund Sites" screening level/preliminary remediation goal website and associated User's Guide (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm, May 2010).

The purpose of the Screening Levels website is to provide default screening tables and a calculator to assist Remedial Project Managers (RPMs), On Scene Coordinators (OSC's), risk assessors and others involved in decision-making concerning Comprehensive Environmental Remediation Cleanup Liability Act (CERCLA) hazardous waste sites and to determine whether levels of contamination found at the site may warrant further investigation or site cleanup, or whether no further investigation or action may be required. Screening levels may be used when a potential site is initially investigated to determine if potentially significant levels of contamination are present to warrant further investigation.

The Screening Levels presented in the Generic Tables are chemical-specific concentrations for individual contaminants in air, drinking water and soil that may warrant further investigation or site cleanup and are not cleanup standards. Generic RSLs are based on default exposure parameters and factors that represent Reasonable Maximum Exposure (RME) conditions for long-term/chronic exposures and are based on the methods outlined in EPA's *Risk Assessment Guidance for Superfund (RAGs), Part B Manual* (1991) and *Soil Screening Guidance* documents (1996 and 2002). *RAGs Part B* provides guidance on using EPA toxicity values and exposure information to calculate risk-based screening levels. The *Soil Screening Guidance* documents expand upon *RAGS Part B*. Initially used at the scoping phase of a project using readily available information, risk-based screening levels generally are modified based on site-specific data gathered during the Remedial Investigation/Feasibility Study (RI/FS). Chemical-specific Screening Levels are from two general sources: (1) concentrations based on potential Applicable or Relevant and Appropriate Requirements (ARARs) and (2) concentrations based on risk assessment. ARARs include concentration limits set by other environmental regulations, such as Safe Drinking Water Act maximum contaminant levels (MCLs). The second source for Screening

Levels, and the focus of the Screening Levels website database tool, is risk-based calculations that set concentration limits using carcinogenic or systemic toxicity values under specific exposure conditions.

Generic Screening Levels are listed at the end of Table 3, for comparative purposes.

2.4 DTSC Variance

The DTSC issued a statewide Variance effective July 1, 2009, regarding the reuse of ADL-impacted soils within Caltrans right-of-way. Under the Variance, soil that is classified as a non-RCRA hazardous waste, based primarily on ADL content, may be suitable for reuse within Caltrans right-of-way. ADL soil that is classified as a RCRA hazardous waste is not eligible for reuse under the Variance and must be disposed of as a RCRA hazardous waste (Caltrans Type Z-3).

ADL soil reused under the Variance must always be at least 5 feet above the highest groundwater elevation and, depending on lead concentrations, must be covered with at least one foot of non-hazardous soil or a pavement structure. The ADL soil may not be placed in areas where it might contact groundwater or surface water (such as streams and rivers), and must be buried in locations that are protected from erosion that may result from storm water run-on and run-off.

Review of the statewide Variance indicates the following conditions regarding the reuse and management of ADL-impacted soil as fill material for construction and maintenance operations. If ADL soil meets the Variance criteria but is not intended to be reused within Caltrans right-of-way, then the excavated soil must be disposed of as a California hazardous waste (Caltrans Type Z-2). A copy of the Variance is presented as Appendix B.

Caltrans Type Y-1 - ADL soil exhibiting a total lead concentration less than or equal to 1,411 milligrams per kilogram (mg/kg), a DI-WET (WET using deionized water as extractant) lead concentration less than or equal to 1.5 milligrams per liter (mg/l), and a pH value greater than or equal to 5.5 may be reused within the same Caltrans corridor and must be covered with at least one foot of non-hazardous soil.

Caltrans Type Y-2 - ADL soil exhibiting a total lead concentration less than or equal to 1,411 mg/kg, a DI-WET lead concentration less than or equal to 1.5 mg/l, and a pH value greater than 5 and less than 5.5 may be reused within the same Caltrans corridor and must be covered and protected from infiltration by a pavement structure.

ADL soil exhibiting a total lead concentration less than or equal to 1,411 mg/kg, a DI-WET lead concentration greater than 1.5 mg/l and less than or equal to 150 mg/l, and a pH value greater than 5 may be reused within the same Caltrans corridor and must be covered and protected from infiltration by a pavement structure.

ADL soil exhibiting a total lead concentration greater than 1,411 mg/kg and less than or equal to 3,397 mg/kg, a DI-WET lead concentration less than or equal to 150 mg/l, and a pH value greater than 5 may be reused within the same Caltrans corridor and must be covered and protected from infiltration by a pavement structure.

Caltrans Type Z-2 - ADL soil exhibiting a total lead concentration greater than 3,397 mg/kg, a DI-WET lead concentration greater than 150 mg/l, or a pH value less than or equal to 5 is not eligible for reuse under the Variance and must be disposed of as a California hazardous waste.

Caltrans Type Z-3 - ADL soil exhibiting a TCLP lead concentration greater than or equal to 5 mg/l is not eligible for reuse under the Variance and must be disposed of as a RCRA hazardous waste.

3.0 SCOPE OF SERVICES

We performed the following scope of services:

3.1 Pre-field Activities

- Prepared a *Workplan* dated December 31, 2009 (revised February 22, 2010), that describes the requested scope of services and quality assurance/quality control (QA/QC) sampling and laboratory procedures. The *Workplan* was approved by BKF and concurrence was obtained from Caltrans via email dated March 3, 2010.
- Prepared a site-specific health and safety plan to provide guidelines on the use of personal protective equipment and the health and safety procedures implemented during the field activities.
- Retained the services of Advanced Technology Laboratories (ATL) to perform the sample analyses.
- Notified Underground Service Alert (USA) at least 48 hours prior to fieldwork.

3.2 Field Activities

Geocon performed the site investigation between March 17 and April 30, 2010, which consisted of the following field activities:

- Advanced 302 soil borings (B1 through B302) along the shoulders of I-580 WB (B1-B263) and EB (B264 through B303) using hand-auger and direct-push drilling techniques. Soil borings were advanced to a maximum depth of 2.5 feet.
- Advanced 33 soil borings (RW1, RW2, RW4 through RW29, and ST1 through ST5) at retaining walls and structures to a depth of 4.5 feet. Twelve borings were further advanced to attempt to collect grab-groundwater samples. The borings were advanced using hand-auger and direct-push drilling techniques.
- Advanced six borings (SS1 and SS1-R through SS5) at proposed sign structure locations to attempt to collect grab-groundwater samples using direct-push drilling techniques. Groundwater was encountered in borings SS1, SS1-R, SS2, and SS3 and grab-groundwater samples were collected. Groundwater was not encountered in borings SS4 or SS5; therefore grab-groundwater samples were not collected at these locations.
- Advanced 10 step-out soil borings (SO43 through SO47) east of the Vasco Road offramp from I-580 westbound using hand auger techniques. Soil samples were collected from depths of 0 to 0.5 foot and 1.0 to 1.5 feet.
- Collected a total of 970 soil samples for analysis of CAM 17 metals, petroleum hydrocarbon compounds, and pH.
- Collected a total of 11 grab-groundwater samples for analysis of CAM 17 metals and petroleum hydrocarbon compounds.
- Transported samples to ATL for analysis under standard chain-of-custody (COC) documentation.

4.0 INVESTIGATIVE METHODS

4.1 Sampling Procedures

Samples were collected from a total of 339 boring locations, which are shown on the Site Plan, Figures 2a through 2x. The boring locations were surveyed using Differential Global Positioning System (DGPS) equipment, and coordinates are presented on Table 1.

Soil samples from the hand auger were collected into new glass jars secured with Teflon-lined screw caps for CAM 17 metals and petroleum hydrocarbon compounds analyses. Soil samples collected using the direct-push rig were cut from the acetate liners at the desired depth interval and sealed with Teflon tape and plastic end caps. Soil samples for total lead analysis were collected into new re-sealable plastic bags. Grab-groundwater samples were collected using a clean stainless-steel bailer and dispensed into laboratory-supplied containers that were pre-preserved as needed.

Sample containers were labeled, placed into a chilled cooler, and transported to ATL using standard COC documentation. Shallow soil borings were backfilled to surface with soil cuttings; borings advanced to groundwater were backfilled with neat cement grout.

Geocon provided QA/QC procedures during the field activities. These procedures included washing the sampling equipment with a Liqui-Nox® solution followed by a double rinse with deionized water. Decontamination water was disposed to the ground surface within Caltrans right-of-way in a manner not to create runoff, away from drain inlets or potential water bodies.

4.2 Laboratory Analyses

Laboratory analyses performed by ATL were under standard seven-day turn-around-times. Reproductions of the laboratory reports and COC documentation are presented as Appendix C.

The soil samples were analyzed as follows:

- 735 samples for total lead using Environmental Protection Agency (EPA) Method 6010 ICAP.
- 245 samples for CAM 17 metals according to Title 22 CCR, EPA Test Methods 6010 ICAP and 7471A.
- 143 samples had total lead concentrations greater than 50 mg/kg (i.e., greater than ten times the STLC of 5.0 mg/l) and required further analysis for WET lead.
- 73 samples with WET lead concentrations greater than 5.0 mg/l were further analyzed for DI-WET lead.
- 54 samples with total lead concentrations exceeding 100 mg/kg and WET lead concentrations exceeding 5 mg/l were analyzed for TCLP lead using EPA Method 1311/7420.
- 33 samples for TPH as gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes (BTEX), and methyl-tert-butyl ether (MTBE) using EPA Test Method 8021B.
- 33 samples for TPH as diesel (TPHd) and as motor oil (TPHmo) using EPA Test Method 8015M.
- 97 samples for pH using EPA Method 9045.

The eleven grab-groundwater samples were analyzed for the following:

- CAM 17 metals according to Title 22 CCR, EPA Test Methods 6010 ICAP and 7471A.
- TPHg, BTEX, and MTBE using EPA Test Method 8021B.
- TPHd and TPHmo using EPA Test Method 8015M.

4.3 Laboratory QA/QC

QA/QC procedures were performed for each method of analysis with specificity for each analyte listed in the test method's QA/QC. The laboratory QA/QC procedures included the following:

- One method blank for every ten samples, batch of samples or type of matrix, whichever was more frequent.
- One sample analyzed in duplicate for every ten samples, batch of samples or type of matrix, whichever was more frequent.
- One spiked sample for every ten samples, batch of samples or type of matrix; whichever was more frequent, with spike made at ten times the detection limit or at the analyte level.

Prior to submitting the samples to the laboratories, the COC documentation was reviewed for accuracy and completeness (Appendix C).

5.0 INVESTIGATIVE RESULTS

5.1 Subsurface Conditions

Observations during field activities indicated that surface soil at the project location generally consist of gray and brown, gravelly sand and silty sand. Groundwater, where present, was encountered at depths between approximately 5.5 and 20 feet below ground surface (bgs). Groundwater was encountered in the borings as follows:

Boring ID	Approximate Depth to Groundwater (feet bgs)
RW1	9.3
RW15	10.1
RW17	15
RW19	9.6
RW21	19.7
RW24	11.9
RW26	20
SS1	7.5
SS1-R	25
SS2	17
SS3	8
SS4	>28 (not encountered)
SS5	>30 (not encountered)

5.2 Laboratory Analytical Results

A summary of the analytical results are presented in Tables 2 through 6. Reproductions of the laboratory reports and chain-of-custody documentation are presented as Appendix C.

5.2.1 ADL Borings

ADL borings were identified as B1 through B302.

- Total lead was reported at concentrations ranging from 2.9 to 530 mg/kg, with 141 samples exceeding 50 mg/kg (i.e., exceeding ten times the STLC of 5 mg/l).
- WET lead was reported at concentrations ranging from less than the laboratory reporting limit (<) of 0.25 to 57 mg/l.
- DI-WET lead was not detected above the laboratory reporting limit of 0.25 mg/l.
- TCLP lead was reported at concentrations ranging from 0.25 to 2.0 mg/l.
- The following metals were not detected above their respective laboratory reporting limits: antimony, beryllium, molybdenum, selenium, silver and thallium. Remaining CAM 17 metals were reported at concentrations less than ten times their respective STLCs.
- Soil pH values ranged from 6.2 to 8.9.

5.2.2 Retaining Wall and Structure Borings

Retaining Wall and Structure borings were identified as RW1, RW2, RW4 through RW29, and ST1 through ST5. A total of 33 of the 38 proposed structure borings were advanced. Borings identified in the revised workplan as RW3 and ST8 were not advanced due to inaccessibility. The boring identified in the revised workplan as RW30 was not advanced due to modifications to the construction plans at the Airway/Fallon Road interchange that were provided to us after the field work had been initiated.

The following is a summary of the analytical results for the retaining wall and structure borings.

Soil

- Total lead was reported at concentrations ranging from 1.3 mg/kg to 320 mg/kg, with six samples exceeding 50 mg/kg (i.e., exceeding ten times the STLC of 5 mg/l).
- WET lead was reported in the samples at concentrations ranging from 6.6 to 32 mg/l.
- DI-WET lead was not detected above the laboratory reporting limit of 0.25 mg/l.
- TCLP lead was reported at concentrations ranging from 0.30 to 2.1 mg/l.
- The following metals were not detected above their respective laboratory reporting limits: beryllium, selenium, silver, and thallium. Remaining CAM 17 metals were reported at concentrations less than ten times their respective STLCs.
- TPHg, BTEX, and MTBE were not detected above their respective laboratory reporting limits.
- TPHd was reported at concentrations ranging from <1.0 to 1,900 mg/kg.
- TPHmo was reported at concentrations ranging from <1.0 to 6,100 mg/kg.

Grab-Groundwater

Seven of the twelve proposed grab-groundwater samples were obtained from borings RW1, RW15, RW17, RW19, RW21, RW24, and RW26. Groundwater was not encountered in the following borings:

RW6 (advanced to refusal depth of 22 feet), RW9 (advanced to a depth of 28 feet), RW28 (advanced to a depth of 28 feet), ST2 (advanced to a depth of 24 feet), ST5 (advanced to a depth of 24 feet). Groundwater was encountered at depths between approximately 5.5 and 20 feet. The following summarizes the results of the grab-groundwater samples that were collected from the seven structure borings.

- CAM 17 metals were detected at concentrations above their respective ESLs for groundwater that is a Current or Potential Source of Drinking Water (SFRWQCB, Table A).
- TPHg and BTEX were not detected above their respective laboratory reporting limits.
- MTBE was detected above the laboratory reporting limit in one sample (RW1-GW) at a concentration of 0.94 micrograms per liter (µg/l).
- TPHd was detected above the laboratory reporting limits at concentrations ranging from 0.056 to 0.19 mg/l.
- TPHmo was detected above the laboratory reporting limits at concentrations ranging from 0.066 to 0.25 mg/l.

5.2.3 Sign Structure Borings

Sign Structure borings were identified as SS1, SS1-R, and SS2 through SS5. Grab-groundwater samples were obtained from borings SS1, SS1-R, SS2, and SS3. Groundwater was not encountered in borings SS4 and SS5, which were advanced to depths of 28 feet below ground surface (bgs) and 30 feet bgs, respectively. Groundwater was encountered in borings SS1, SS1-R, SS2, and SS3 at depths between approximately 7.5 and 25 feet (see Section 5.1). The following summarizes the results of the grab-groundwater samples that were collected from the four borings.

- CAM 17 metals were detected at concentrations above their respective ESLs for groundwater that is a Current or Potential Source of Drinking Water (SFRWQCB, Table A).
- TPH, MTBE or BTEX were not detected above their respective laboratory reporting limits.

5.3 Laboratory Quality Assurance/Quality Control

We reviewed the QA/QC results provided with the laboratory analytical reports. The data indicate non-detect results for the method blanks.

Surrogate recovery was diluted out of several samples. The relative percent differences (RPDs) of the duplicate samples for a number of the analyses were outside criteria. The RPDs for several of the matrix spike duplicate samples for the analyses were outside criteria. The Case Narratives in the laboratory reports state that each analytical batch was validated by the laboratory control sample

(LCS). The data showed acceptable recoveries and RPDs for the remainder of the duplicates and matrix spikes. Dilution was necessary for several analyses due to sample matrix.

Based on this limited data review, no additional qualifications of the soil data are necessary, and the data are of sufficient quality for the purposes of this report.

5.4 Statistical Evaluation for Lead Detected in Soil Samples

The lead data for the Site were treated as 10 sample populations for statistical evaluation that consisted of the following:

A) Westbound shoulder and ramps from San Ramon Road to Dougherty Road - borings B1-B29

B) Westbound shoulder and ramps from Dougherty Road to Airway Boulevard - borings B30-B140, RW1-RW7, ST1, and ST2

C) Westbound shoulder and ramps from Airway Boulevard to N. Livermore Avenue – borings B141-B175, B178, B179, and RW8-RW14

D) Westbound shoulder and ramps from N. Livermore Avenue to First Street - borings B176-B217, RW15-RW28, and ST4

E) Westbound shoulder and ramps from First Street to Greenville Road - borings B218-B263

F) Eastbound shoulder between Hacienda Drive and Santa Rita Road - Borings B264-B268 and ST3

G) Eastbound shoulder and onramp at N. Livermore Avenue Interchange - Borings B269-B278 and ST5

H) Eastbound onramp at First Street - borings B279-B287

I) Eastbound onramp at Vasco Road - borings B288-B296

J) Eastbound onramp at Greenville Road - borings B297-B302, and RW29

Statistical methods were applied to the total lead data to evaluate: 1) the upper confidence limits (UCLs) of the arithmetic means of the total lead concentrations for each sampling depth; and 2) if an acceptable correlation between total and WET lead concentrations exists that would allow the prediction of WET lead concentrations based on calculated UCLs.

5.4.1 Calculating the UCLs for the Arithmetic Mean

The upper one-sided 90% and 95% UCLs of the arithmetic mean are defined as the values that, when calculated repeatedly for randomly drawn subsets of site data, equal or exceed the true mean 90% and 95% of the time, respectively. Statistical confidence limits are the classical tool for addressing uncertainties of a distribution mean. The UCLs of the arithmetic mean concentration are used as the mean concentrations because it is not possible to know the true mean due to the essentially infinite number of soil samples that could be collected from a site. The UCLs therefore account for

uncertainties due to limited sampling data. As data become less limited at a site, uncertainties decrease, and the UCLs move closer to the true mean.

Non-parametric bootstrap techniques were used to calculate the UCLs. For those samples in which total lead was not detected at concentrations exceeding the laboratory reporting limit, a value equal to one-half of the detection limit was used in the UCL calculation. The bootstrap test results are included in Appendix D. The following tables present the calculated UCLs and statistics for each data set.

Westbound Shoulder and Ramps from San Ramon Rd to Dougherty Rd - borings B1-B29

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	83.6	91.1	60.9	10	490
1.0 to 1.5	26.3	27.5	22.2	2.5	81
2.0 to 2.5	29.4	31.7	20.6	2.5	160

Westbound Shoulder and Ramps from Dougherty Rd to Airway Blvd – borings B30-B140, RW1-RW7, ST1, and ST2

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	30.4	31.1	27.6	2.5	120
1.0 to 1.5	21.9	22.9	18	2.5	320
2.0 to 2.5	20.6	21.2	17.9	2.5	110

Westbound Shoulder and Ramps from Airway Blvd to N. Livermore Ave – borings B141-B175, B178, B179, and RW8-RW14

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	88.6	93.8	69.7	2.5	520
1.0 to 1.5	28.8	30.2	22.4	2.5	130
2.0 to 2.5	17.0	18.1	12.7	2.5	120

Westbound Shoulder and Ramps from N. Livermore Ave to First St – borings B176-B217, RW15-RW28, and ST4

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	75.2	78.0	64.5	5.0	250
1.0 to 1.5	33.5	35.5	26.4	2.5	170
2.0 to 2.5	19.4	21.1	13.9	2.5	150

Westbound Shoulder and Ramps from First St to Greenville Rd - borings B218-B263

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	158.7	165.5	131.1	8.9	530
1.0 to 1.5	41.6	45.3	28.5	2.5	480
2.0 to 2.5	15.2	16.0	31.3	15	76

Eastbound Shoulder between Hacienda Dr and Santa Rita Rd – borings B264-B268, and ST3

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	42.3	45.8	31.3	15	76
1.0 to 1.5	13.3	13.7	12	8.8	15
2.0 to 2.5	19.9	21.1	16.2	7.9	27

Eastbound Shoulder and Onramp at N. Livermore Ave Interchange – borings B269-B278 and ST5

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	106.3	117.4	68.3	2.5	320
1.0 to 1.5	23.1	25.4	15.9	4.8	66
2.0 to 2.5	101.4	116.4	58.8	2.5	370

Eastbound Onramp at First St - borings B279-B287

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	44.6	48.4	31.6	2.5	110
1.0 to 1.5	21.4	22.7	16.9	5.0	34
2.0 to 2.5	72.5	79.7	43.7	6.0	220

Eastbound Onramp at Vasco Rd - borings B288-B296

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	111.9	122	82.3	22	250
1.0 to 1.5	58.7	64	38.4	2.5	160
2.0 to 2.5	9.5	10	7.4	2.5	18

Eastbound Onramp at Greenville Rd - borings B297-B302, and RW29

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	15.7	16.7	12.5	7.0	24
1.0 to 1.5	10.3	10.8	8.2	2.5	17
2.0 to 2.5	11.8	12.5	9.2	21	5.3

5.4.2 Correlation of Total and WET Lead

Total and corresponding WET lead concentrations are bivariate data with a linear structure. This linear structure should allow for the prediction of WET lead concentrations based on the UCLs calculated above in Section 5.4.1.

To estimate the degree of interrelation between total and corresponding WET lead values (x and y, respectively), the *correlation coefficient [r]* is used. The correlation coefficient is a ratio that ranges from +1 to –1. A *correlation coefficient* of +1 indicates a perfect direct relationship between two variables; a *correlation coefficient* of –1 indicates that one variable changes inversely with relation to the other. Between the two extremes is a spectrum of less-than-perfect relationships, including zero, which indicates the lack of any sort of linear relationship at all. The *correlation coefficient* was calculated for the 143 (x, y) data points (i.e., soil samples analyzed for both total lead [x] and WET lead [y]) that were collected at the Site. The resulting *coefficient of determination* (r^2) equaled 0.7449, which yields a corresponding *correlation coefficient* (r) of 0.8631.

For the *correlation coefficient* that indicates a linear relationship between total and WET lead concentrations, it is possible to compute the line of dependence or a best-fit line between the two variables. A least squares method was used to find the equation of a best-fit line (regression line) by forcing the y-intercept equal to zero since that is a known point. The equation of the regression line was determined to be $y = 0.0611(x)$, where x represents total lead concentrations and y represents predicted WET lead concentrations.

This equation was used to estimate the expected WET lead concentrations for the UCLs calculated in for samples collected from the Site (see Section 5.4.1). Regression analysis results and a scatter plot depicting the (x, y) data points along with the regression line are included in Appendix D. The predicted WET lead concentrations are summarized in Tables 7a through 7j.

6.0 CONCLUSIONS

Waste classifications are evaluated based on the 90% UCL of the lead content for the relevant excavation depths; this has historically been considered sufficient to satisfy a good faith effort by the EPA as discussed in SW-846. Risk assessment characterization is based on the 95% UCL of the lead content in the waste for the relevant depths; this is in accordance with the Risk Assessment Guidance for Superfund (RAGS) Volume 1 Documentation for Exposure Assessment. Per Caltrans, the 90% UCLs are to be used to evaluate onsite reuse and the 95% UCLs are to be used to evaluate offsite disposal.

6.1 Predicted Waste Classification Based on Lead Results - Soil

6.1.1 Westbound Shoulder and Ramps from San Ramon Rd to Dougherty Rd

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs for data collected from this portion of the Site. The total and WET lead calculations are summarized in Table 7a.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Predicted Waste Classification
0 to 1.0 foot	84	**5.1**	91	**Hazardous**
Underlying soil (1.0 to 2.5 feet)	*27*	*1.7*	*29*	*Non-Hazardous*
0 to 2.0 feet	55	*3.4*	59	Non-Hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, soil excavated to a depth of 1.0 foot would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentration is greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results, excavated soil would not be classified as a RCRA hazardous waste. Underlying soil below a depth of 1.0 foot would be classified as non-hazardous. If excavations extend to 2.0 feet or greater and is managed as a whole, soil will be classified as non-hazardous.

Based on the reported DI-WET results, soil excavated from the surface to a depth of 1.0 foot may be reused onsite (as Caltrans Type Y-1) in accordance with the DTSC Variance by placing the excavated soil under clean fill or pavement.

6.1.2 Westbound Shoulder and Ramps from Dougherty Rd to Airway Blvd

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs for data collected from this portion of the Site. The total and WET lead calculations are summarized in Table 7b.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Predicted Waste Classification
0 to 1.0 foot	30	1.9	31	Non-Hazardous
Underlying soil (1.0 to 2.5 feet)	*21*	*1.3*	*22*	*Non-Hazardous*

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, excavated soil would be classified as non-hazardous since the predicted WET lead concentrations are less than the lead STLC of 5.0 mg/l.

6.1.3 Westbound Shoulder and Ramps from Airway Blvd to N. Livermore Ave

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs for data collected from this portion of the Site. The total and WET lead calculations are summarized in Table 7c.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Predicted Waste Classification
0 to 1.0 foot	89	**5.4**	94	**Hazardous**
Underlying soil (1.0 to 2.5 feet)	*25*	*1.5*	*26*	*Non-Hazardous*
0 to 2.0 feet	59	3.6	62	Non-Hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, soil excavated to a depth of 1.0 foot would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentration is greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results, excavated soil would not be classified as a RCRA hazardous waste. Underlying soil below a depth of 1.0 foot would be classified as non-hazardous. If excavations extend to 2.0 feet or greater and is managed as a whole, soil will be classified as non-hazardous.

Based on the reported DI-WET results, soil excavated from the surface to a depth of 1.0 foot may be reused onsite (as Caltrans Type Y-1) in accordance with the DTSC Variance by placing the excavated soil under clean fill or pavement.

6.1.4 Westbound Shoulder and Ramps from N. Livermore Ave to First St

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs for data collected from this portion of the Site. The total and WET lead calculations are summarized in Table 7d.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Predicted Waste Classification
0 to 1.0 foot	75	4.6	78	Non-Hazardous
Underlying soil (1.0 to 2.5 feet)	*29*	*1.8*	*31*	*Non-Hazardous*

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, excavated soil would be classified as non-hazardous since the predicted WET lead concentrations are less than the lead STLC of 5.0 mg/l.

6.1.5 Westbound Shoulder and Ramps from First St to Greenville Rd

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs for data collected from this portion of the Site. The total and WET lead calculations are summarized in Table 7e.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Predicted Waste Classification
0 to 1.0 foot	159	**9.7**	166	**Hazardous**
Underlying soil (1.0 to 2.5 feet)	*33*	*2.0*	*36*	*Non-Hazardous*
0 to 2.0 feet	100	**6.1**	105	**Hazardous**
Underlying soil (2.0 to 2.5 feet)	*15*	*0.9*	*16*	*Non-Hazardous*
0 to 2.5 feet	83	***5.1***	90	**Hazardous**

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, soil excavated to a depth of 1.0 foot would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentration is greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results, excavated soil would not be

classified as a RCRA hazardous waste. Underlying soil below a depth of 1.0 foot would be classified as non-hazardous. If excavations extend to 2.5 feet or greater and is managed as a whole, soil will be classified as California hazardous waste.

Based on the initial lead results, we collected samples from five step-out borings (SO43 to SO47) at depths of 0 to 0.5 foot and 1.0 to 1.5 feet. The step-out borings were advanced within Caltrans right-of-way as far from the edge-of-pavement (EOP) as possible, which was approximately 15 feet from the EOP. The total lead results of the step-out boring samples indicate that ADL is present at hazardous concentrations over the entire horizontal extent of existing Caltrans ROW in this area, to a depth of approximately 2.0 feet.

Based on the reported DI-WET results, soil excavated from the surface to a depth of 2.5 feet may be reused onsite (as Caltrans Type Y-1) in accordance with the DTSC Variance by placing the excavated soil under clean fill or pavement.

6.1.6 Eastbound Shoulder between Hacienda Dr and Santa Rita Rd

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and maximum concentrations for data collected from this portion of the Site. The total and WET lead calculations are summarized in Table 7f.

Excavation Depth	90% UCL/ Maximum Total Lead (mg/kg)	Predicted WET Lead (mg/l)	95% UCL Maximum Total Lead (mg/kg)	Predicted Waste Classification
0 to 1.0 foot	42	2.6	46	Non-Hazardous
Underlying soil (1.0 to 2.5 feet)	*16*	*0.9*	*16*	*Non-Hazardous*

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, excavated soil would be classified as non-hazardous since the predicted WET lead concentrations are less than the lead STLC of 5.0 mg/l.

6.1.7 Eastbound Shoulder and Onramp at N. Livermore Ave interchange

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the maximum total lead concentrations for data collected from this portion of the Site. The total and WET lead calculations are summarized in Table 7g.

Excavation Depth	Maximum Total Lead (mg/kg)	Maximum Predicted WET Lead (mg/l)	Predicted Waste Classification
0 to 1.0 foot	320	**20**	**Hazardous**
Underlying soil (1.0 to 2.5 feet)	*167*	***10***	***Hazardous***
0 to 2.0 feet	193	**12**	**Hazardous**
Underlying soil (2.0 to 2.5 feet)	*370*	***23***	***Hazardous***
0 to 2.5 feet	228	***14***	**Hazardous**

Based on the data presented in the above table, soil excavated to a depth of 2.5 feet would be classified as a California hazardous waste since the maximum-predicted WET lead concentration is greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results, excavated soil would not be classified as a RCRA hazardous waste.

Based on the reported DI-WET results, soil excavated from the surface to a depth of 2.5 feet may be reused onsite (as Caltrans Type Y-1) in accordance with the DTSC Variance by placing the excavated soil under clean fill or pavement.

6.1.8 Eastbound Onramp at First St

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs for data collected from this portion of the Site. The total and WET lead calculations are summarized in Table 7h.

Excavation Depth	90% UCL/ Maximum Total Lead (mg/kg)	Predicted WET Lead (mg/l)	95% UCL Maximum Total Lead (mg/kg)	Predicted Waste Classification
0 to 1.0 foot	45	2.7	48	Non-Hazardous
Underlying soil (1.0 to 2.0 feet)	*38*	*2.3*	*42*	*Non-Hazardous*

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, excavated soil would be classified as non-hazardous since the predicted WET lead concentrations are less than the lead STLC of 5.0 mg/l.

6.1.9 Eastbound Onramp at Vasco Rd

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs for data collected from this portion of the Site. The total and WET lead calculations are summarized in Table 7i.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Predicted Waste Classification
0 to 1.0 foot	112	**6.8**	122	**Hazardous**
Underlying soil (1.0 to 2.5 feet)	*42*	*2.6*	*46*	*Non-Hazardous*
0 to 2.0 feet	85	**5.2**	93	**Hazardous**
Underlying soil (1.0 to 2.5 feet)	*9.5*	*0.6*	*10*	*Non-Hazardous*
0 to 2.5 feet	70	4.3	78	Non-Hazardous

Based on the data presented in the above table, soil excavated to a depth of 1.0 foot would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentration is greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results, excavated soil would not be classified as a RCRA hazardous waste. Underlying soil below a depth of 1.0 foot would be classified as non-hazardous. If excavations extend to 2.5 feet or greater and is managed as a whole, soil will be classified as non-hazardous.

Based on the reported DI-WET results, soil excavated from the surface to a depth of 2.0 feet may be reused onsite (as Caltrans Type Y-1) in accordance with the DTSC Variance by placing the excavated soil under clean fill or pavement.

6.1.10 Eastbound Onramp at Greenville Rd

The following table summarizes the predicted waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs for data collected from this portion of the Site. The total and WET lead calculations are summarized in Table 7j.

Excavation Depth	90% UCL/ Maximum Total Lead (mg/kg)	Predicted WET Lead (mg/l)	95% UCL Maximum Total Lead (mg/kg)	Predicted Waste Classification
0 to 1.0 foot	16	1.0	17	Non-Hazardous
Underlying soil (1.0 to 2.0 feet)	*11*	*0.7*	*11*	*Non-Hazardous*

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data presented in the above table, excavated soil would be classified as non-hazardous since the predicted WET lead concentrations are less than the lead STLC of 5.0 mg/l.

6.2 Soil

6.2.1 CAM 17 Metals

The CAM 17 metals concentrations reported in soil samples collected along the Eastbound I-580 project corridor were compared to risk-based screening levels (ESLs, Table A, SFRWQCB, May 2008 and CHHSLs, Table 1, January 2005). Arsenic, lead, vanadium, and zinc were the only metals with reported concentrations greater than their respective screening levels in the soil samples collected at the Site. Arsenic was detected at concentrations between 1.0 and 31 mg/kg, exceeding the residential soil-screening criteria of 0.07 mg/kg and the commercial/industrial land use soil-screening criteria of 0.24 mg/kg for shallow soil (≤3 meters; SFRWQCB, Table A). Vanadium was reported in the soil samples at concentrations between 4.0 mg/kg and 59 mg/kg, exceeding the residential land use ESL of 16 mg/kg for shallow soil. Zinc was reported above the residential and commercial/industrial land use ESLs of 600 mg/kg in one sample (RW16-0 at a concentration of 660 mg/kg).

Upper one-sided 95% UCLs were calculated for the full set of arsenic, vanadium, and zinc data collected at the Site. The 95% UCLs were compared with risk-based screening criteria and with published background levels typically present in California soils as presented in *Background Concentrations of Trace and Major Elements in California Soils* (Kearney Foundation of Soil Science, Division of Agriculture and Natural Resources, University of California, March 1996). The bootstrap results are included in Appendix D. The calculated standard bootstrap UCLs, ESLs and published background concentrations are summarized in the table below:

95% UCLs, Risk-Based Screening Criteria and Published Background Concentrations for Arsenic and Vanadium

Metal	95% UCL	Residential Soil-Screening Criteria	Commercial/ Industrial Soil-Screening Criteria	Direct Exposure Construction Worker ESL[3]	Published Background Mean[4]	Published Background Range[4]
Arsenic[1]	3.1	0.07	0.24	15	3.5	0.6 to 11.0
Lead[1]	370*	80	320	750	23.9	12.4 to 97.1
Vanadium[2]	27.3	16	200	770	112	39 to 288
Zinc[2]	101.3	600	600	230,000	149	88 to 236

Concentrations reported in milligrams per kilogram (mg/kg)

* Maximum total lead value used for characterization at the eastbound shoulder and onramp at the North Livermore Avenue interchange. Lead concentrations for the entire site ranged from non detectable (2.5 mg/kg) to 530 mg/kg. The 95% upper confidence limits for the average lead concentrations for the various decision units ranged from 16.7 to 165.5 mg/kg.

[1] The soil-screening criteria for arsenic is from the Cal/EPA Office of Environmental Health Hazard Assessment's *Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties;* dated January 2005; Table 1, "California Human Health Screening Levels for Soil and Comparison to Other Potential Environmental Concerns."

[2] The soil-screening criteria for zinc is from the SFBRWQCB's *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater;* (Revised May 2008); Table A, "Environmental Screening Levels (ESLs) Shallow Soils (≤3m bgs) Groundwater is Current or Potential Source of Drinking Water."

[3] The direct exposure soil-screening levels for construction workers are from the SFBRWQCB's *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater;* (Revised May 2008); Table K-3, "Direct Exposure Soil Screening Levels Construction/Trench Worker Exposure Scenario."

[4] Kearney Foundation of Soil Science, March 1996

The 95% UCLs for arsenic, vanadium and zinc are within the published background ranges. The SFRWQCB *November 2007 Update to Environmental Screening Levels (ESLs) Technical Document* states that ambient background concentrations of arsenic typically exceed risk-based screening levels. In such instances, it may be more appropriate to compare site data to regionally specific established background levels. As a rule, Cal/EPA generally does not require cleanup of metals in soil to concentrations less than background levels. In such instances, it may be more appropriate to compare site data to regionally specific established background levels.

6.2.2 Petroleum Hydrocarbon Compounds

TPHd was reported in the surface samples collected from retaining wall and structure borings at concentrations up to 1,900 mg/kg, with 17 of the 33 results exceeding the residential and commercial/industrial land use ESLs of 83 mg/kg. The calculated 95% UCL for TPHd is 282.5 mg/kg, which exceeds the residential and commercial/industrial land use ESLs; however is less than the direct-exposure construction worker ESL of 4,200 mg/kg (RWQCB's ESL Table K-3.

TPHmo was reported in the surface samples collected from retaining wall and structure borings at concentrations ranging from <1.0 to 6,100 mg/kg, with 20 of the 33 results exceeding the residential land use ESL of 370 mg/kg. Three samples had reported concentrations exceeding the commercial/industrial land use ESL of 2,500 mg/kg. The calculated 95% UCL for TPHmo is 1,130 mg/kg, which exceeds the residential land use ESL; however is less than the commercial/industrial and direct-exposure construction worker ESLs of 2,500 mg/kg and 12,000 mg/kg, respectively (RWQCB's ESL Tables A and K-3).

In general, surface soil along the extent of the I-580 project corridor appears to contain TPHd and TPHmo at concentrations exceeding ESLs, with the exception of WB I-580 onramp at Airway Boulevard (borings RW6 and RW7).

Reuse or disposal of excavated soil may be restricted based on TPHd and TPHmo content.

6.3 Grab-Groundwater

Eleven grab-groundwater samples were collected at selected retaining wall boring locations (seven) and at proposed sign structure locations (four), as shown on the Site Plans, Figures 2a-x.

6.3.1 CAM 17 Metals

CAM 17 metals, with the exception of silver, were reported in the grab-groundwater samples at concentrations exceeding their respective ESLs for groundwater and surface water (RWQCB's ESL Tables A and F).

Groundwater encountered during the construction project may require special handling and/or treatment prior to disposal or discharge based on CAM 17 metals concentrations.

6.3.2 Petroleum Hydrocarbon Compounds

Analytes were reported in the grab-groundwater samples at concentrations below their respective ESLs for groundwater that is not a current/potential drinking water source (Table B). Sample RW15-GW (located approximately 500 feet east of the Eastbound I-580 N. Livermore Avenue offramp, Figure 2q) had reported concentrations of TPHd and TPHmo of 0.19 mg/l and 0.25 mg/l, respectively, exceeding the ESLs of 0.10 mg/l for groundwater that is a current or potential drinking water source (RWQCB's ESL Table A).

Sample RW19-GW (located approximately 300 feet west of Arroyo Las Positas Creek, Figure 2r) had a reported TPHmo concentration of 0.10 mg/l, which is equal to the ESL for groundwater that is a current or potential drinking water source (RWQCB's ESL Table A). No other analytes were reported at concentrations above ESLs.

Groundwater encountered during the construction project may require special handling and/or treatment prior to disposal or discharge based on TPHd and TPHmo concentrations.

Based on groundwater investigations related to the (former) Dublin Toyota UST site at 6450 Dublin Court, located directly north of I-580 and boring SS5 (Figure 2d), MTBE-impacted groundwater extends beneath I-580. A copy of the groundwater plume maps obtained from the *Feasibility Study/Corrective Action Plan*, prepared by Gribi Associates and dated September 15, 2010, is included as Appendix E. Therefore, groundwater encountered in this area, including during CIDH pile installation for proposed sign structure E shown in Sign Plan S-7, may contain TPH and MTBE.

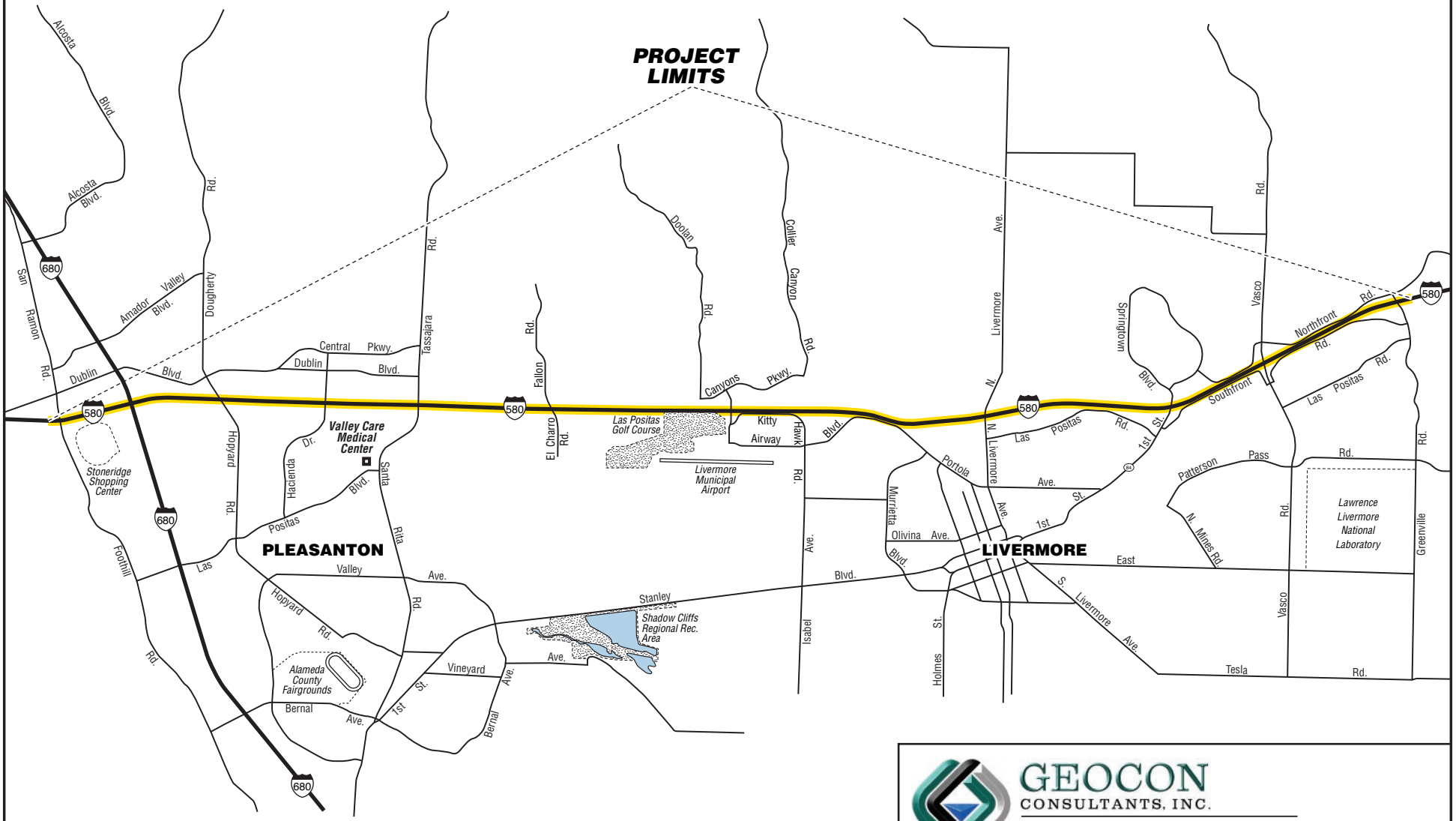
6.4 Worker Protection

Per Caltrans' requirements, the contractor(s) should prepare a project-specific health and safety plan to prevent or minimize worker exposure to impacted soil and groundwater. The plan should include protocols for environmental and personnel monitoring, requirements for personal protective equipment, and other health and safety protocols and procedures for the handling of soil and groundwater.

7.0 REPORT LIMITATIONS

This report has been prepared exclusively for BKF Engineers. The information contained herein is only valid as of the date of the field sampling and will require an update to reflect additional information obtained.

This report is not a comprehensive site characterization and should not be construed as such. The findings as presented in this report are predicated on the results of the limited sampling and laboratory testing performed. In addition, the information obtained is not intended to address potential impacts related to sources other than those specified herein. Therefore, the report should be deemed conclusive with respect to only the information obtained. We make no warranty, express or implied, with respect to the content of this report or any subsequent reports, correspondence or consultation. Geocon strived to perform the services summarized herein in accordance with the local standard of care in the geographic region at the time the services were rendered.



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I-580 Westbound HOV Lane Widening Project

Alameda County, California

VICINITY MAP

E8474-06-01	November 2010	Figure 1

SAN RAMON RD

FOOTHILL RD

B1 B2 B3 B4 B5 B6 B7 B8

Matchline

LEGEND:

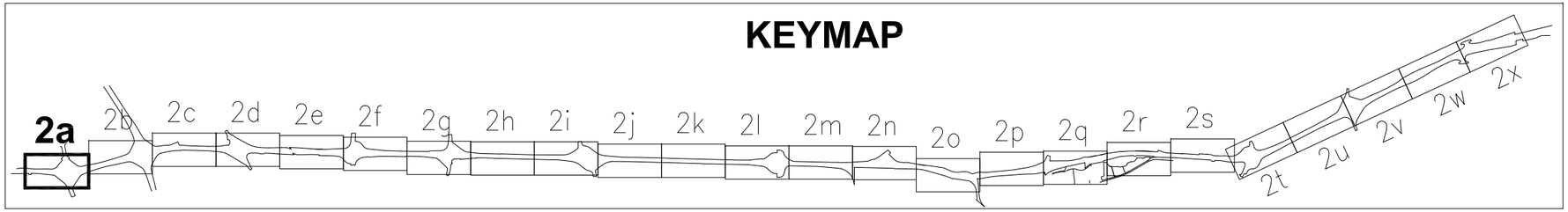
- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater

N

0 100 200

SCALE: feet

KEYMAP



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I-580 Westbound HOV Lane Widening Project

Alameda County, California

SITE PLAN

GEOCON Proj. No. E8474-06-01

EA No.

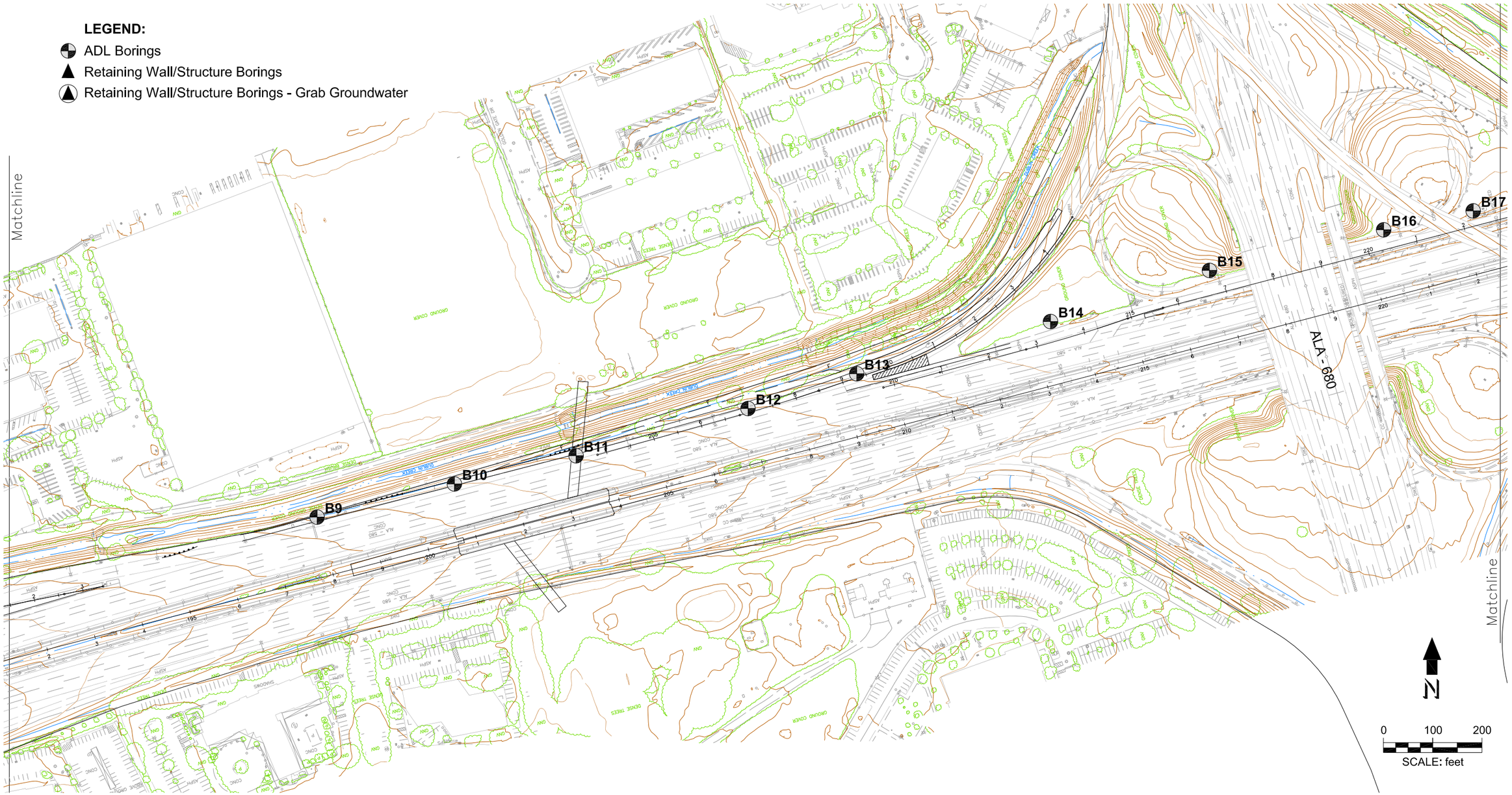
November 2010

Figure 2a

SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater



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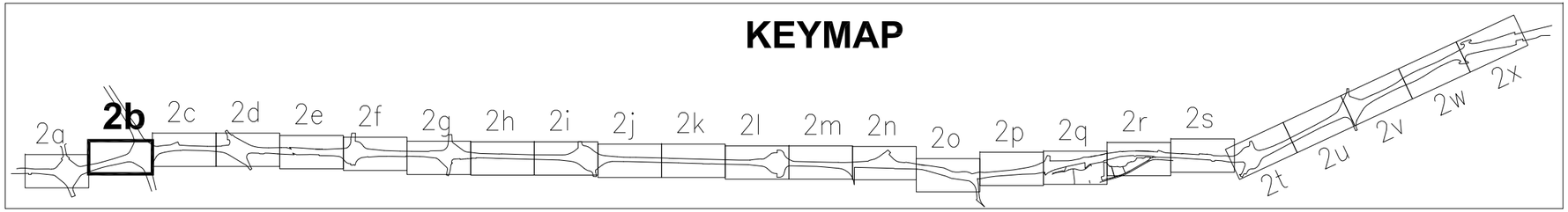

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Alameda County, California

SITE PLAN

GEOCON Proj. No. E8474-06-01

EA No.

November 2010

Figure 2b

SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater

B18 B19 B20 B21 B22 B23 B24 B25 B26

Matchline

Matchline

0 100 200

SCALE: feet

N

KEYMAP

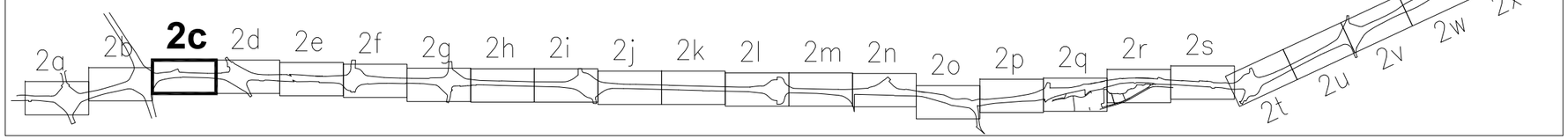

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Figure 2c

SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater

Matchline

DOUGHERTY RD

HOPYARD RD

SS5 B27 B28 B29 B30 B31 SS4 B32 B33 B34 B35 B36 B37 RW1 B38 B39 B40 RW2

Matchline

N

0 100 200

SCALE: feet

KEYMAP

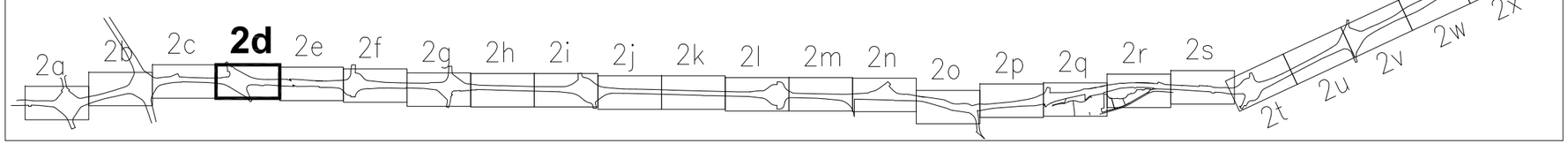

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Figure 2d

SITE0810

Matchline

Matchline

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater

B41 B42 B43 B44 B45 B46 B47 B48 SS3 B49

N

0 100 200

SCALE: feet

KEYMAP

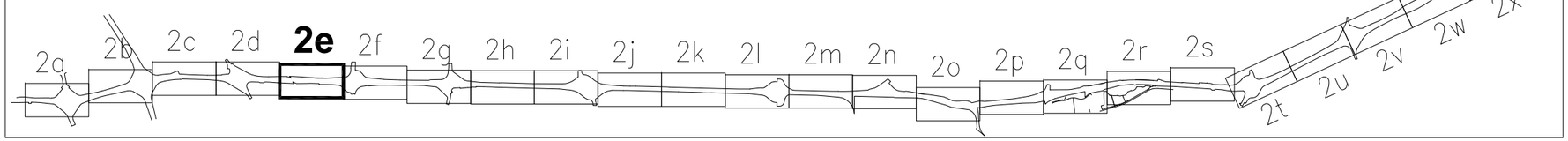

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Figure 2e

SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater

Matchline

HACIENDA DR

B50 B51 RW4 B52 B53 B54 B55 B56 B57 SS2 B58 B59 B60 B6

B264 B265 B266

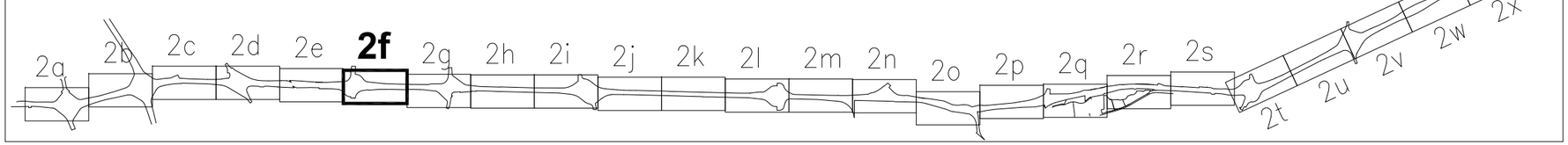
Matchline

N

0 100 200

SCALE: feet

KEYMAP



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SITE PLAN

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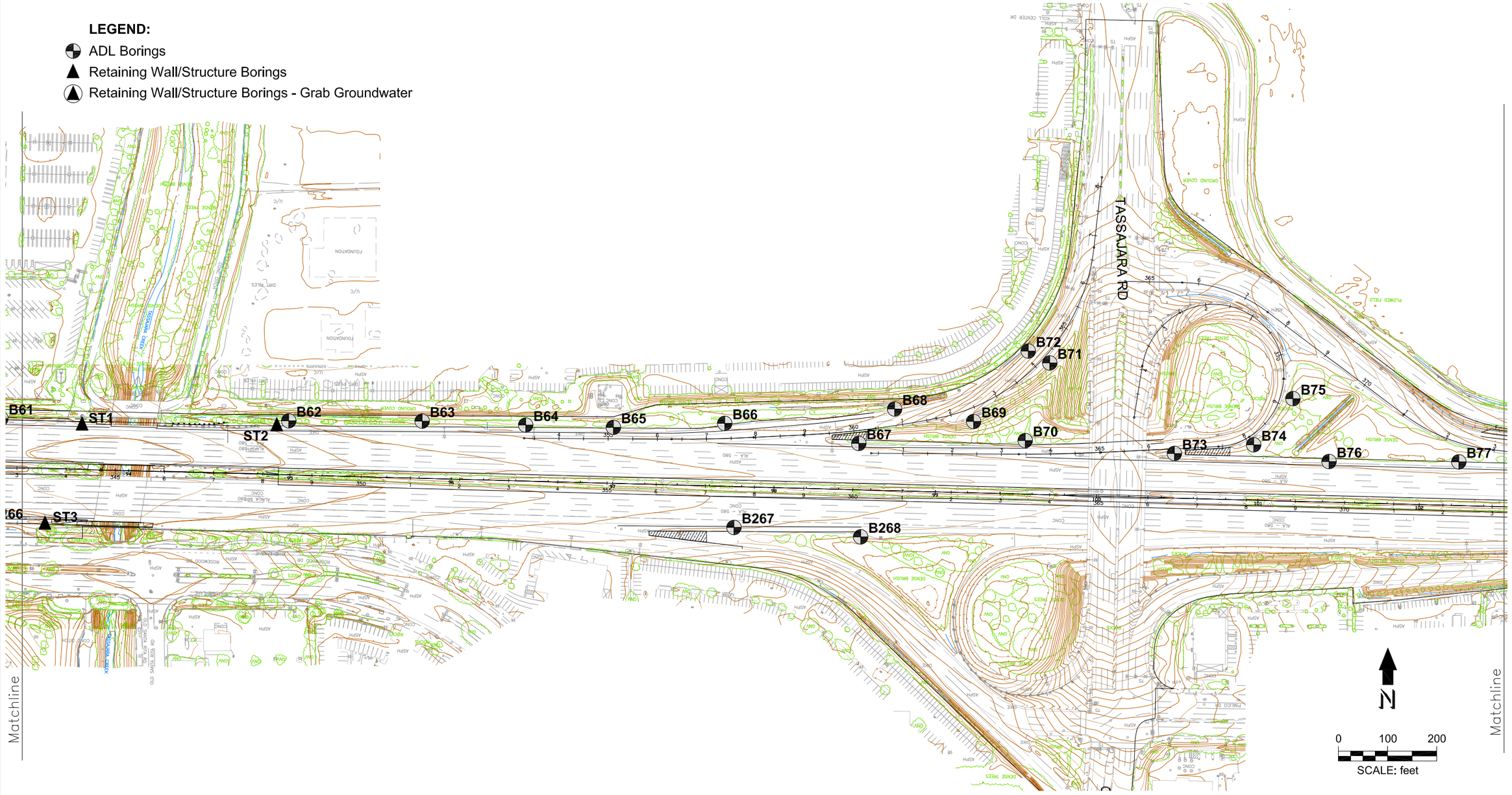
Figure 2f

SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater



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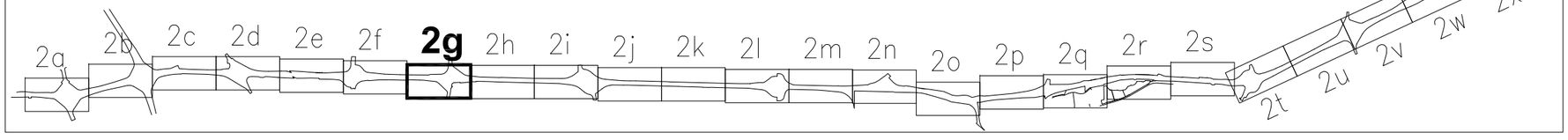

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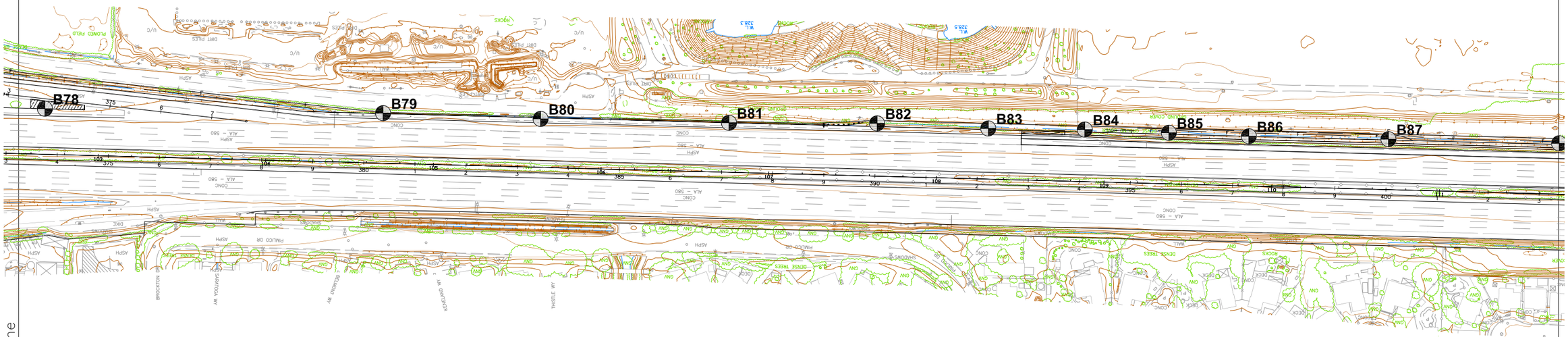
Figure 2g

SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater

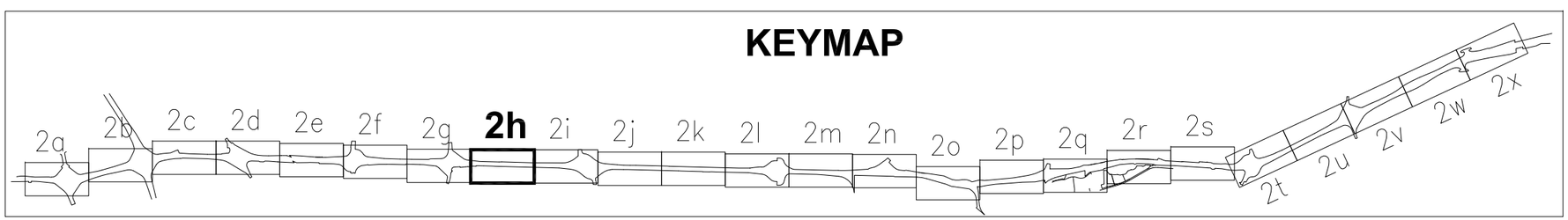


N

0 100 200

SCALE: feet

KEYMAP



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SITE PLAN

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Figure 2h

SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater

B88 B89 B90 B91 B92 B93 B94 B95 B96 B97 B98 B99 B100 B101 B1 RW5

CROAK RD

EL CHARRO RD

Matchline

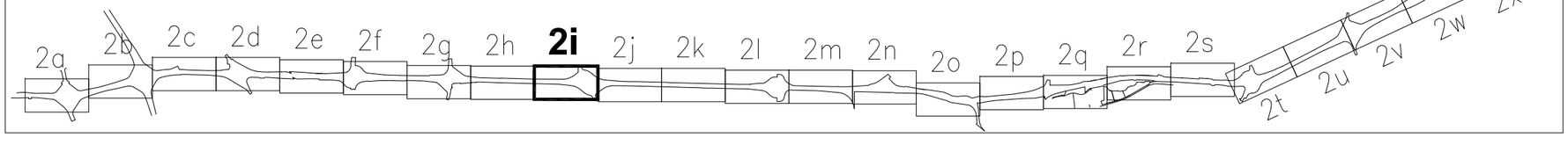
Matchline

N

0 100 200

SCALE: feet

KEYMAP



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SITE PLAN

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November 2010

Figure 2i

SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater

Matchline

Matchline

DUBLIN CITY LIMITS
ALAMEDA COUNTY

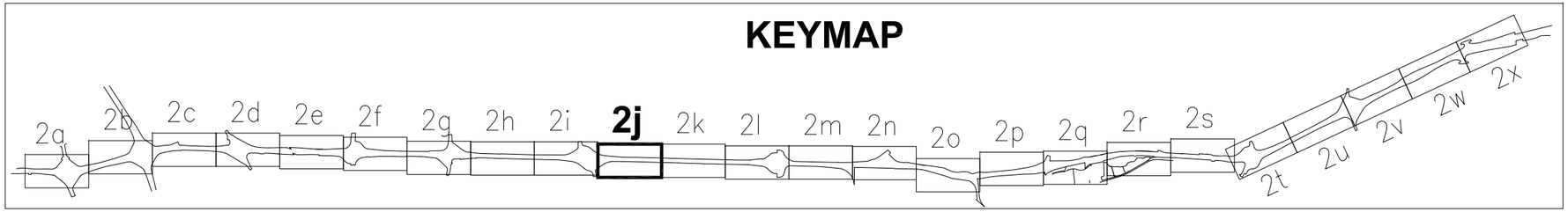
B102 B103 B104 B105 B106 B107 B108 B109 B110 B111 B112 B113 B114 B115

N

0 100 200

SCALE: feet

KEYMAP



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Alameda County, California

SITE PLAN

GEOCON Proj. No. E8474-06-01

EA No.

November 2010

Figure 2j

SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater

Matchline

Matchline

15

B116

B117

B118

B119

B120

B121

B122

B123

B124

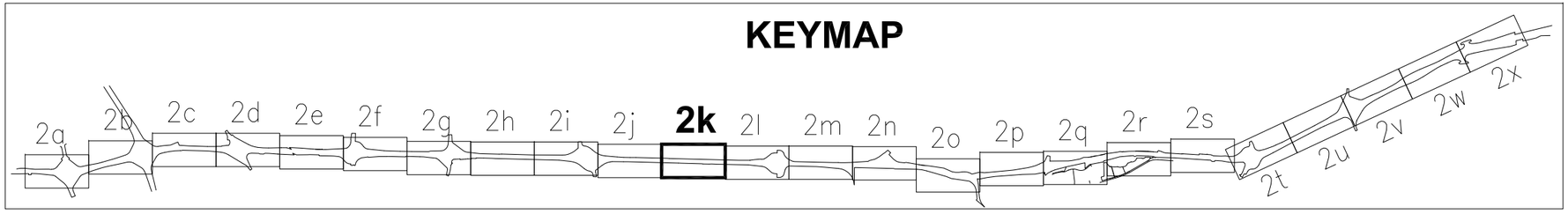
B125

N

0 100 200

SCALE: feet

KEYMAP



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Alameda County, California

SITE PLAN

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Figure 2k

SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater

Matchline

Matchline

B126 B127 B128 B129 B130 RW6 B131 B132 B133 RW7 B134 B135 B136

AIRWAY BLVD

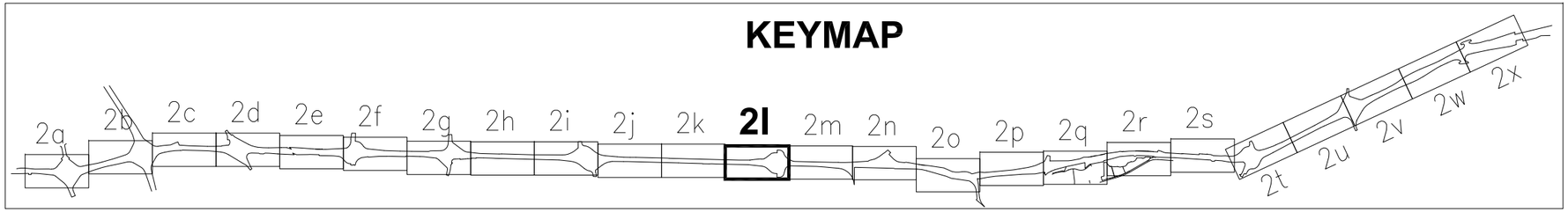
ALA - 84

N

0 100 200

SCALE: feet

KEYMAP



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SITE PLAN

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November 2010

Figure 2l

SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater

B137 B138 B139 B140 B141 B142 B143 B144 B145 B146

Matchline

N

0 100 200

SCALE: feet

Matchline

KEYMAP

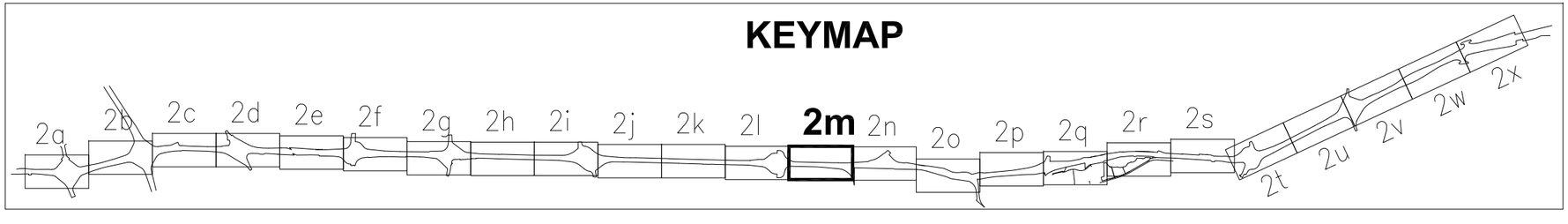

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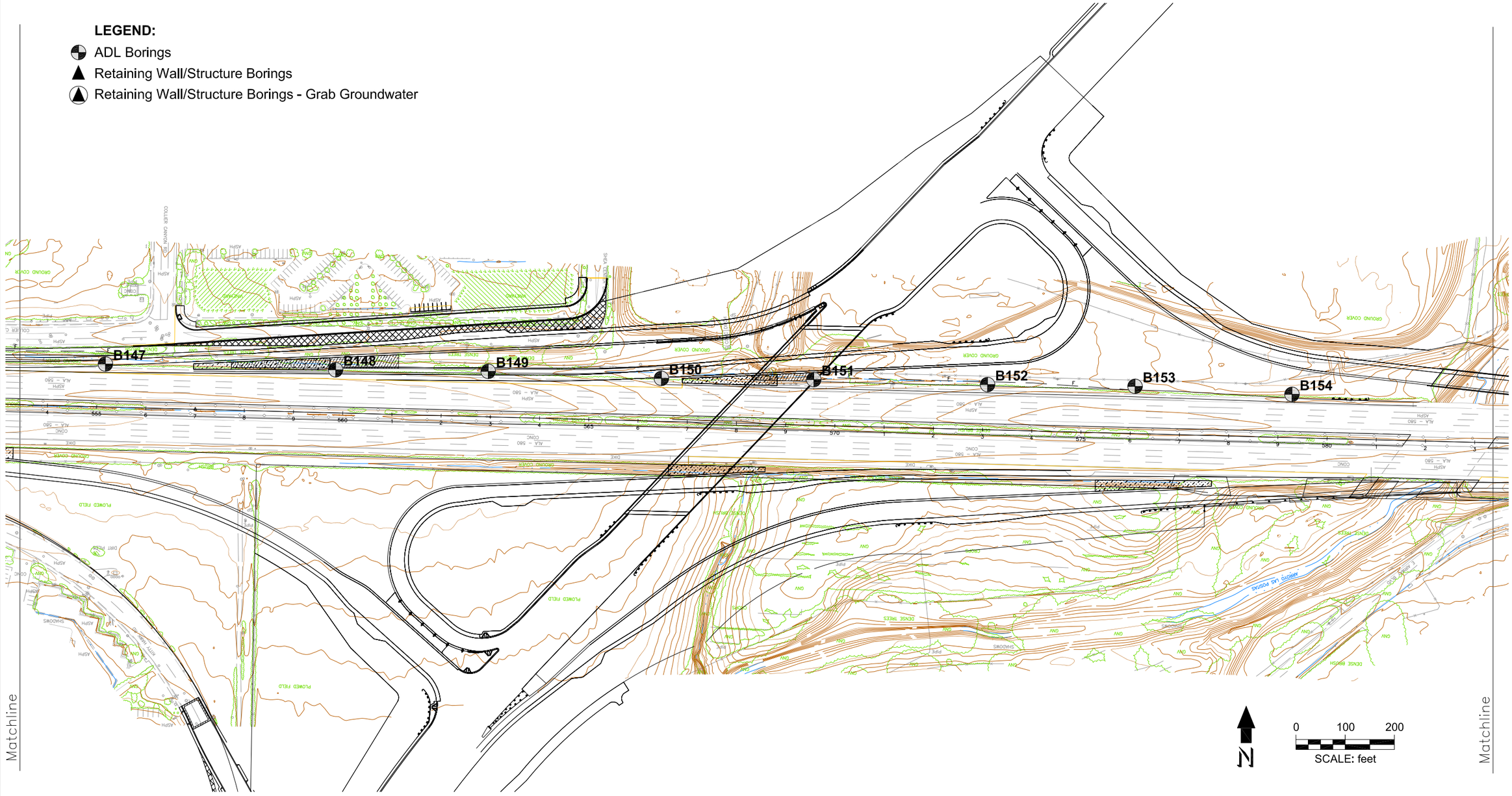
Figure 2m

SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater



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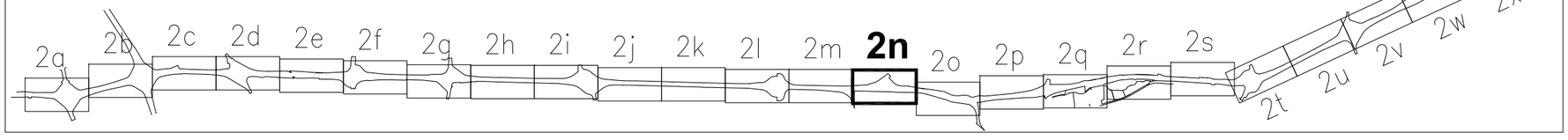

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Alameda County, California

SITE PLAN

GEOCON Proj. No. E8474-06-01

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November 2010

Figure 2n

SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater

B155 B156 B157 RW8 B158 B159 B160 B161 B162 B163 B164 B165

Matchline

Matchline

LIVERMORE CITY LIMITS
ALAMEDA COUNTY

LIVERMORE CITY LIMITS
ALAMEDA COUNTY

E AIRWAY BLVD

SUTTER ST

VIA DESTE

VIA SAN JOSE

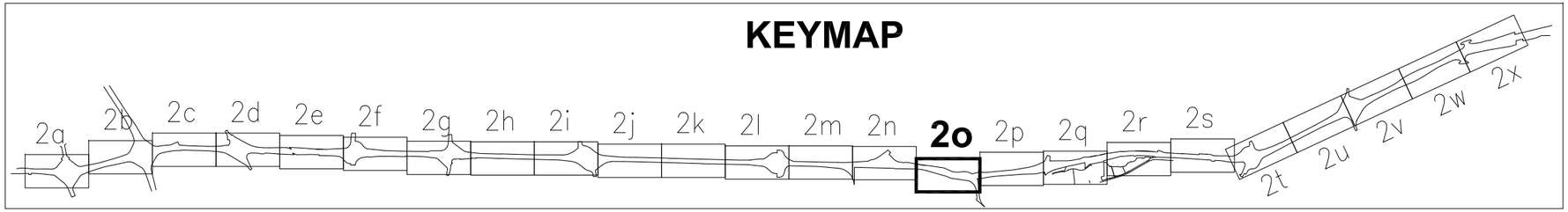
CRISTOBAL

N

0 100 200

SCALE: feet

KEYMAP



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Alameda County, California

SITE PLAN

GEOCON Proj. No. E8474-06-01

EA No.

November 2010

Figure 2o

SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater

B166 B167 RW9 B168 RW10 B169 RW11 B170 B171 RW12 B172 B173 RW13 B174 B175 B269 B270

Matchline

Matchline

N

0 100 200

SCALE: feet

KEYMAP

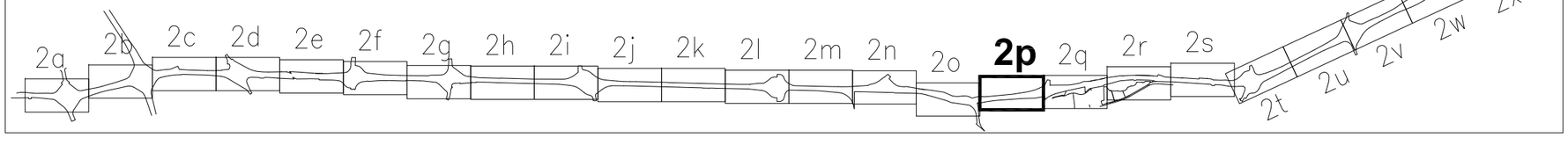

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Figure 2p

SITE0810

Matchline

N LIVERMORE AVE

B179
B178
ST4
B177
RW14
B176
B271
ST5
B272
B273
B274
B275
B277
B276
B278
B180
B181
B182
B183
RW15
B184
B185
RW16
B186
RW17
B187

N LIVERMORE AVE

Matchline

LEGEND:

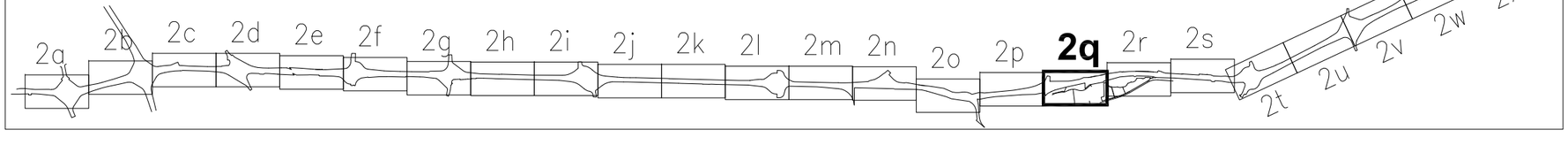
- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater

N

0 100 200

SCALE: feet

KEYMAP



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SITE PLAN

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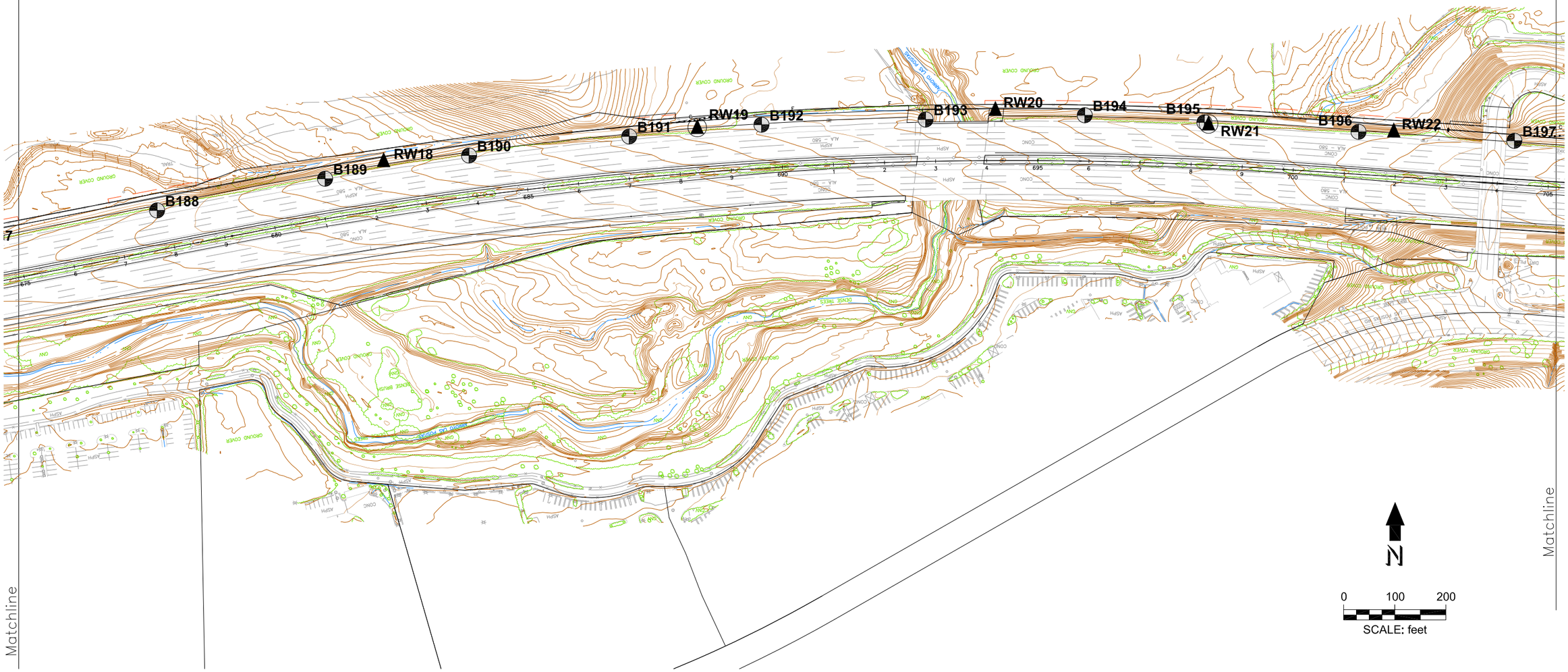
Figure 2q

SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater



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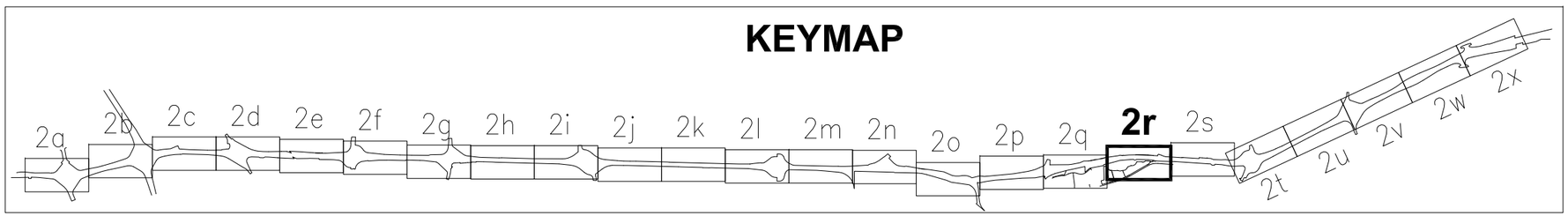

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SITE PLAN

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Figure 2r

SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater

Matchline

B198 RW23 B199 B200 RW24 RW25 B201 B202 B203 B204 RW26 B205 B206 B207 RW27

Matchline

N

0 100 200

SCALE: feet

KEYMAP

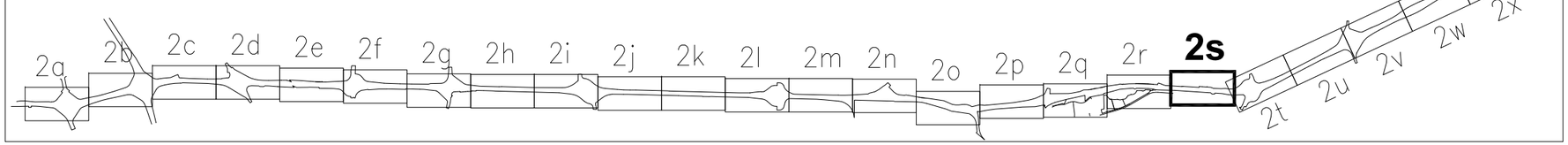

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Figure 2s

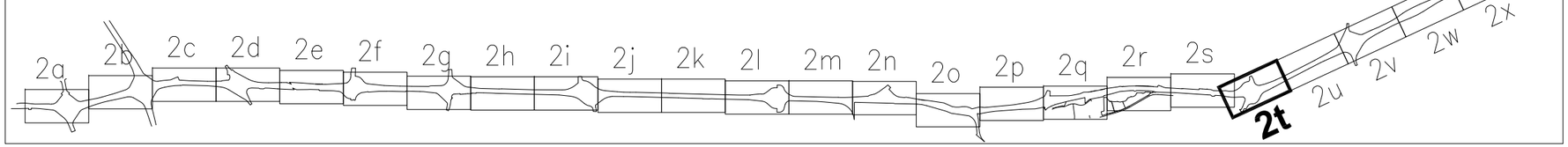
SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater

RW27
B208
B209
B210
B211
B212
B213
B214
RW28
B215
B218
B216
B217
B219
B220
B285
B286
B287
B284
B283
B280
B282
B279
B281
1ST ST
VN BLVD
Matchline
Matchline
0 100 200
SCALE: feet

KEYMAP



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SITE PLAN

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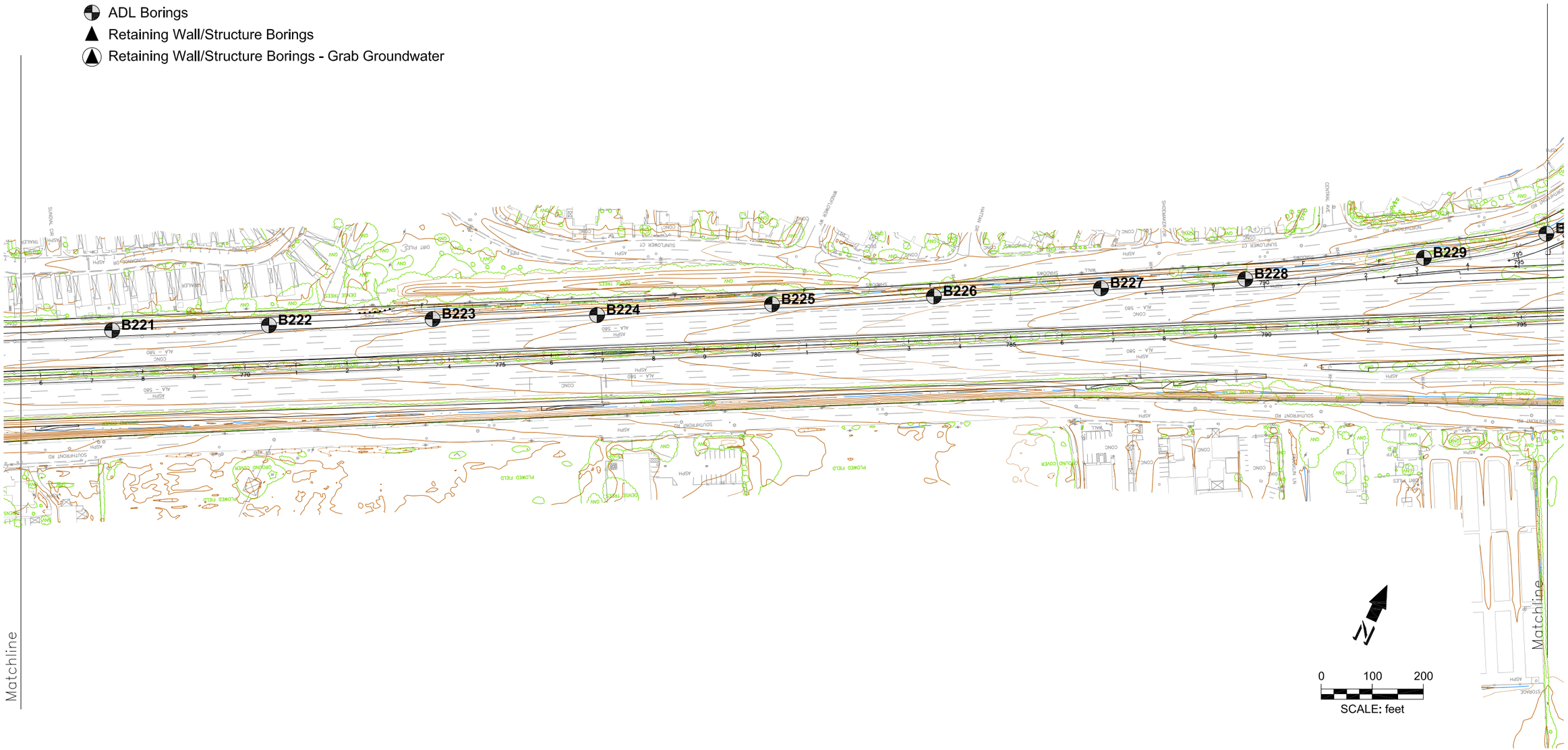
Figure 2t

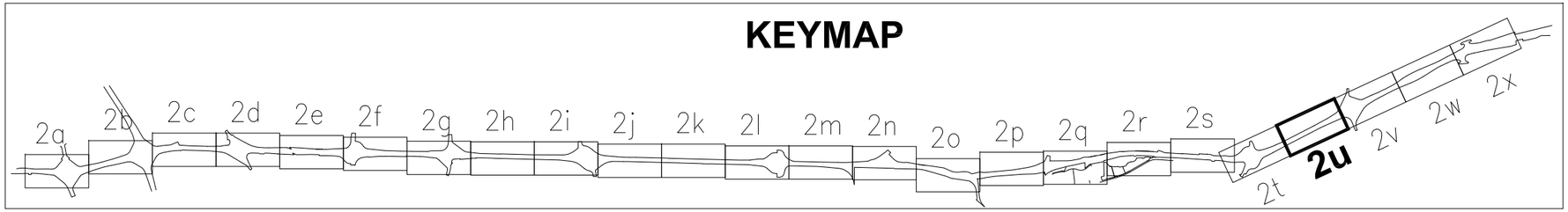
SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater



KEYMAP



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SITE PLAN

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Figure 2u

SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater
- Step-out Boring

N VASCO RD

S VASCO RD

B230 B231 B232 B233 B234 B235 B236 B237 SS1 B238 B239 B240 SO43 SS1-R B241 SO44 B242 SO45 B243 SO46 B244 B290 B291 B292 B293 B294 B295 B296 B288 B289

Matchline

Matchline

N

0 100 200

SCALE: feet

KEYMAP

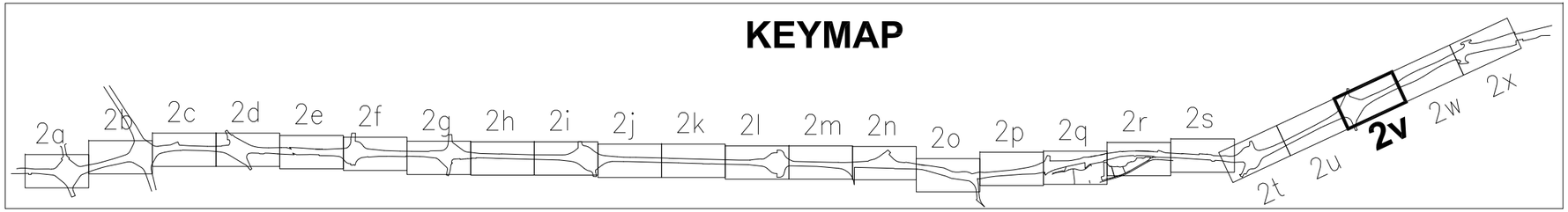

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Figure 2v

SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater
- Step-out Boring

SO47
B245
B246
B247
B248
B249
B250
B251
B252
B253
B254
B255
244

Matchline

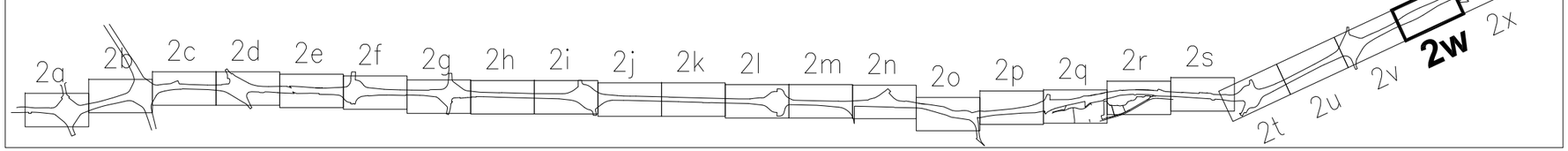
Matchline

N

0 100 200

SCALE: feet

KEYMAP



GEOCON CONSULTANTS, INC.
6671 BRISA STREET, LIVERMORE, CA 94550; PHONE 925 371-5900 - FAX 925 371-5915

I-580 Westbound HOV Lane Widening Project

Alameda County, California

SITE PLAN

GEOCON Proj. No. E8474-06-01

EA No.

November 2010

Figure 2w

SITE0810

LEGEND:

- ADL Borings
- Retaining Wall/Structure Borings
- Retaining Wall/Structure Borings - Grab Groundwater

B256 B257 B258 B259 B260 B261 B262 B263 B297 B298 B299 B300 B301 RW29 B302

GREENVILLE RD

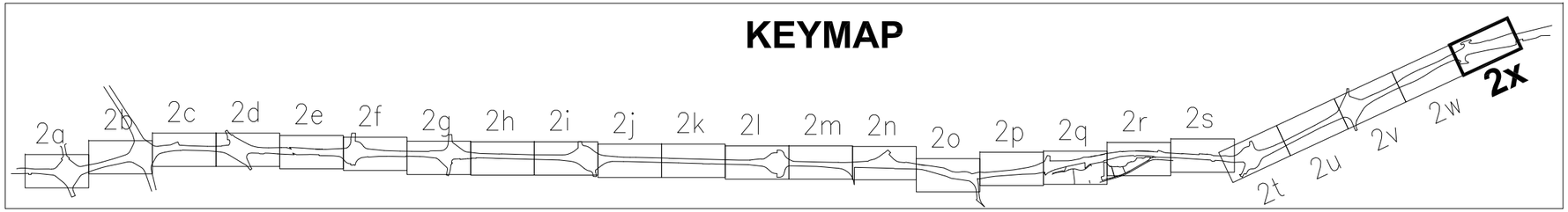
Matchline

0 100 200

SCALE: feet

N

KEYMAP



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I-580 Westbound HOV Lane Widening Project

Alameda County, California

SITE PLAN

GEOCON Proj. No. E8474-06-01

EA No.

November 2010

Figure 2x

SITE0810

TABLE 1
Boring Coordinates
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Boring	Northing	Easting
B1	2,080,036.586	6,145,516.734
B2	2,080,031.184	6,145,801.282
B3	2,080,025.917	6,146,104.092
B4	2,080,046.676	6,146,408.651
B5	2,080,050.133	6,146,598.732
B6	2,080,080.584	6,146,840.104
B7	2,080,128.929	6,147,055.157
B8	2,080,193.886	6,147,331.061
B9	2,080,418.636	6,148,063.975
B10	2,080,485.985	6,148,342.721
B11	2,080,543.186	6,148,589.808
B12	2,080,639.087	6,148,938.879
B13	2,080,709.709	6,149,159.598
B14	2,080,815.671	6,149,552.988
B15	2,080,919.430	6,149,875.753
B16	2,081,001.825	6,150,229.386
B17	2,081,040.254	6,150,411.247
B18	2,081,113.713	6,150,653.372
B19	2,081,236.293	6,151,333.073
B20	2,081,237.059	6,151,637.530
B21	2,081,228.933	6,151,923.512
B22	2,081,223.792	6,152,283.153
B23	2,081,210.958	6,152,566.913
B24	2,081,209.719	6,152,866.478
B25	2,081,193.802	6,153,137.460
B26	2,081,196.923	6,153,261.260
B27	2,081,195.567	6,153,710.157
B28	2,081,204.917	6,154,086.174
B29	2,081,300.472	6,154,243.363
B30	2,081,169.159	6,154,336.336
B31	2,081,134.017	6,154,730.760
B32	2,081,134.580	6,155,050.615
B33	2,081,121.940	6,155,274.375
B34	2,081,261.525	6,155,135.055
B35	2,081,188.685	6,155,352.113
B36	2,081,116.801	6,155,431.804
B37	2,081,127.713	6,155,695.796
B38	2,081,121.879	6,155,848.788
B39	2,081,115.320	6,156,041.227
B40	2,081,120.828	6,156,350.385
B41	2,081,118.510	6,156,947.903
B42	2,081,113.303	6,157,273.297
B43	2,081,124.528	6,157,492.590
B44	2,081,093.160	6,157,828.958
B45	2,081,077.136	6,158,167.185
B46	2,081,044.152	6,158,495.485
B47	2,081,039.612	6,158,794.129
B48	2,081,036.065	6,159,082.997
B49	2,081,045.280	6,159,393.609
B50	2,081,029.074	6,159,727.013
B51	2,081,014.732	6,160,031.509
B52	2,080,997.791	6,160,403.033
B53	2,081,158.905	6,160,466.255
B54	2,081,134.843	6,160,565.600
B55	2,080,991.388	6,160,695.477
B56	2,081,020.172	6,160,851.744
B57	2,080,975.603	6,161,113.761
B58	2,080,978.806	6,161,513.808
B59	2,080,970.888	6,161,843.995

TABLE 1
Boring Coordinates
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Boring	Northing	Easting
B60	2,080,950.633	6,162,191.835
B61	2,080,946.922	6,162,459.946
B62	2,080,942.243	6,163,044.951
B63	2,080,941.664	6,163,316.176
B64	2,080,933.627	6,163,526.710
B65	2,080,929.000	6,163,705.037
B66	2,080,937.087	6,163,931.323
B67	2,080,896.336	6,164,203.859
B68	2,080,966.352	6,164,276.697
B69	2,080,940.937	6,164,437.323
B70	2,080,902.077	6,164,542.178
B71	2,081,059.936	6,164,592.028
B72	2,081,084.176	6,164,548.377
B73	2,080,875.867	6,164,845.488
B74	2,080,893.531	6,165,006.617
B75	2,080,987.350	6,165,086.464
B76	2,080,859.472	6,165,159.865
B77	2,080,858.762	6,165,423.708
B78	2,080,855.334	6,165,567.238
B79	2,080,846.588	6,166,228.774
B80	2,080,835.390	6,166,536.856
B81	2,080,827.720	6,166,905.403
B82	2,080,826.562	6,167,195.095
B83	2,080,816.749	6,167,412.555
B84	2,080,814.548	6,167,601.349
B85	2,080,808.250	6,167,765.836
B86	2,080,801.459	6,167,922.299
B87	2,080,795.796	6,168,195.380
B88	2,080,787.693	6,168,529.195
B89	2,080,778.533	6,168,761.638
B90	2,080,770.557	6,169,055.145
B91	2,080,763.458	6,169,357.135
B92	2,080,757.546	6,169,584.379
B93	2,080,757.974	6,169,841.818
B94	2,080,819.615	6,170,422.302
B95	2,080,757.617	6,170,374.198
B96	2,080,730.781	6,170,536.027
B97	2,080,797.890	6,170,493.766
B98	2,080,913.732	6,170,627.373
B99	2,080,729.520	6,170,821.344
B100	2,080,738.062	6,171,135.923
B101	2,080,788.964	6,171,366.162
B102	2,080,698.514	6,171,486.462
B103	2,080,962.002	6,171,570.629
B104	2,080,692.043	6,171,769.586
B105	2,080,803.690	6,171,824.149
B106	2,080,688.492	6,171,987.569
B107	2,080,731.641	6,172,098.615
B108	2,080,704.288	6,172,370.626
B109	2,080,684.027	6,172,674.177
B110	2,080,676.227	6,172,935.012
B111	2,080,665.132	6,173,250.592
B112	2,080,662.639	6,173,533.436
B113	2,080,653.989	6,173,856.746
B114	2,080,633.515	6,174,136.182
B115	2,080,625.206	6,174,443.537
B116	2,080,616.745	6,174,774.380
B117	2,080,608.548	6,175,121.252
B118	2,080,600.782	6,175,369.086

TABLE 1
Boring Coordinates
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Boring	Northing	Easting
B119	2,080,593.256	6,175,680.339
B120	2,080,585.649	6,175,952.157
B121	2,080,579.596	6,176,253.715
B122	2,080,570.964	6,176,552.185
B123	2,080,564.523	6,176,844.520
B124	2,080,556.544	6,177,115.022
B125	2,080,551.412	6,177,438.037
B126	2,080,543.107	6,177,732.085
B127	2,080,538.425	6,178,038.700
B128	2,080,531.740	6,178,326.979
B129	2,080,519.400	6,178,639.554
B130	2,080,530.212	6,178,924.067
B131	2,080,509.030	6,179,400.099
B132	2,080,583.463	6,179,528.825
B133	2,080,509.107	6,179,640.158
B134	2,080,643.981	6,179,839.388
B135	2,080,507.819	6,179,974.911
B136	2,080,535.744	6,180,319.886
B137	2,080,480.164	6,180,526.777
B138	2,080,611.249	6,180,673.012
B139	2,080,467.994	6,180,799.831
B140	2,080,462.053	6,181,138.960
B141	2,080,515.731	6,181,328.911
B142	2,080,451.534	6,181,933.030
B143	2,080,444.517	6,182,299.478
B144	2,080,421.589	6,182,732.710
B145	2,080,430.052	6,183,039.748
B146	2,080,412.013	6,183,376.593
B147	2,080,394.346	6,183,703.351
B148	2,080,382.722	6,184,170.933
B149	2,080,379.533	6,184,480.912
B150	2,080,365.188	6,184,832.678
B151	2,080,362.852	6,185,142.193
B152	2,080,352.617	6,185,495.146
B153	2,080,349.064	6,185,794.785
B154	2,080,332.857	6,186,113.540
B155	2,080,321.731	6,186,592.016
B156	2,080,317.087	6,186,806.907
B157	2,080,310.108	6,187,099.595
B158	2,080,247.261	6,187,431.272
B159	2,080,179.120	6,187,713.098
B160	2,080,106.470	6,187,972.682
B161	2,080,038.583	6,188,250.392
B162	2,079,950.628	6,188,550.041
B163	2,079,904.336	6,188,865.711
B164	2,079,853.451	6,188,984.091
B165	2,079,839.890	6,189,306.477
B166	2,079,844.852	6,189,584.771
B167	2,079,873.839	6,189,902.003
B168	2,079,927.894	6,190,369.509
B169	2,079,949.210	6,190,677.434
B170	2,079,979.075	6,190,937.295
B171	2,080,008.192	6,191,253.072
B172	2,080,034.807	6,191,585.175
B173	2,080,080.499	6,191,897.876
B174	2,080,113.407	6,192,239.942
B175	2,080,169.345	6,192,553.509
B176	2,080,168.259	6,192,717.635
B177	2,080,237.827	6,193,077.838

TABLE 1
Boring Coordinates
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Boring	Northing	Easting
B178	2,080,345.721	6,192,978.735
B179	2,080,500.741	6,193,108.730
B180	2,080,300.180	6,193,418.534
B181	2,080,365.212	6,193,715.773
B182	2,080,424.823	6,193,761.760
B183	2,080,481.179	6,194,273.390
B184	2,080,524.833	6,194,555.508
B185	2,080,575.030	6,194,834.273
B186	2,080,639.977	6,195,152.686
B187	2,080,698.564	6,195,450.422
B188	2,080,766.060	6,195,814.671
B189	2,080,828.065	6,196,143.333
B190	2,080,873.478	6,196,424.937
B191	2,080,910.784	6,196,738.241
B192	2,080,933.656	6,196,996.972
B193	2,080,943.906	6,197,318.053
B194	2,080,952.204	6,197,629.378
B195	2,080,938.381	6,197,863.317
B196	2,080,919.822	6,198,164.941
B197	2,080,902.243	6,198,469.742
B198	2,080,891.838	6,198,641.857
B199	2,080,871.650	6,198,956.898
B200	2,080,852.663	6,199,223.816
B201	2,080,832.602	6,199,550.228
B202	2,080,814.684	6,199,800.395
B203	2,080,797.440	6,200,095.827
B204	2,080,773.962	6,200,411.202
B205	2,080,753.568	6,200,720.903
B206	2,080,733.961	6,201,017.816
B207	2,080,721.692	6,201,315.384
B208	2,080,707.253	6,201,633.340
B209	2,080,713.004	6,201,891.180
B210	2,080,711.297	6,202,139.674
B211	2,080,711.564	6,202,268.751
B212	2,080,874.082	6,202,424.721
B213	2,080,939.343	6,202,633.623
B214	2,081,145.542	6,202,721.596
B215	2,081,032.288	6,202,774.812
B216	2,080,937.225	6,203,482.914
B217	2,081,054.499	6,203,761.306
B218	2,080,961.895	6,203,314.304
B219	2,081,213.060	6,204,084.494
B220	2,081,311.639	6,204,289.720
B221	2,081,461.625	6,204,583.029
B222	2,081,600.180	6,204,857.115
B223	2,081,746.641	6,205,142.267
B224	2,081,889.803	6,205,430.577
B225	2,082,053.404	6,205,732.112
B226	2,082,201.400	6,206,012.605
B227	2,082,354.133	6,206,302.181
B228	2,082,489.677	6,206,550.441
B229	2,082,674.996	6,206,849.736
B230	2,082,819.170	6,207,046.998
B231	2,082,962.641	6,207,148.214
B232	2,083,248.737	6,207,284.854
B233	2,083,559.031	6,207,433.260
B234	2,082,810.450	6,207,194.314
B235	2,082,919.555	6,207,410.613
B236	2,083,026.911	6,207,599.969

TABLE 1
Boring Coordinates
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Boring	Northing	Easting
B237	2,083,132.129	6,207,840.837
B238	2,083,257.081	6,208,069.349
B239	2,083,385.896	6,208,326.370
B240	2,083,557.269	6,208,636.522
B241	2,083,679.718	6,208,837.294
B242	2,083,817.154	6,209,134.926
B243	2,083,955.840	6,209,407.914
B244	2,084,091.650	6,209,679.009
B245	2,084,245.460	6,209,965.607
B246	2,084,397.692	6,210,241.257
B247	2,084,585.106	6,210,509.816
B248	2,084,596.171	6,210,581.525
B249	2,084,604.305	6,210,678.669
B250	2,084,745.577	6,210,959.997
B251	2,084,886.170	6,211,233.507
B252	2,084,975.746	6,211,276.777
B253	2,085,105.578	6,211,575.855
B254	2,085,236.579	6,211,869.201
B255	2,085,384.693	6,212,154.057
B256	2,085,530.079	6,212,434.487
B257	2,085,686.805	6,212,724.687
B258	2,085,838.564	6,213,001.354
B259	2,085,830.957	6,213,071.687
B260	2,085,976.589	6,213,126.553
B261	2,086,029.973	6,213,183.827
B262	2,085,934.653	6,213,323.800
B263	2,086,046.294	6,213,673.965
B264	2,080,748.206	6,161,853.239
B265	2,080,740.075	6,162,122.491
B266	2,080,734.973	6,162,422.624
B267	2,080,725.468	6,163,950.054
B268	2,080,706.328	6,164,207.613
B269	2,079,897.543	6,192,082.212
B270	2,079,948.692	6,192,408.606
B271	2,079,977.876	6,192,569.062
B272	2,080,041.828	6,192,922.042
B273	2,080,011.379	6,193,274.457
B274	2,080,058.370	6,193,438.074
B275	2,080,119.018	6,193,467.910
B276	2,080,151.096	6,193,718.962
B277	2,080,168.633	6,193,633.501
B278	2,080,232.387	6,194,049.452
B279	2,080,214.875	6,202,940.234
B280	2,080,283.525	6,202,943.727
B281	2,080,330.760	6,203,206.474
B282	2,080,330.655	6,203,128.793
B283	2,080,572.225	6,203,346.823
B284	2,080,526.105	6,203,262.066
B285	2,080,724.995	6,203,418.006
B286	2,080,758.216	6,203,566.267
B287	2,080,859.591	6,203,809.472
B288	2,082,563.280	6,207,928.716
B289	2,082,604.586	6,208,030.052
B290	2,082,804.133	6,208,106.467
B291	2,082,816.573	6,208,154.290
B292	2,082,985.104	6,208,210.884
B293	2,083,139.441	6,208,382.070
B294	2,083,219.708	6,208,420.648
B295	2,083,340.367	6,208,676.116

TABLE 1
Boring Coordinates
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Boring	Northing	Easting
B296	2,083,586.431	6,209,126.502
B297	2,085,272.268	6,213,047.015
B298	2,085,312.526	6,213,087.476
B299	2,085,488.207	6,213,038.883
B300	2,085,486.242	6,213,084.749
B301	2,085,602.311	6,213,103.875
B302	2,085,735.996	6,213,554.577
RW1	2,081,098.730	6,155,714.062
RW2	2,081,127.188	6,156,385.165
RW3	Not Advanced	
RW4	2,081,020.012	6,160,211.526
RW5	2,080,928.958	6,171,515.969
RW6	2,080,537.689	6,179,166.354
RW7	2,080,703.625	6,179,925.511
RW8	2,080,267.899	6,187,346.853
RW9	2,079,866.091	6,189,807.168
RW10	2,079,900.403	6,190,264.535
RW11	2,079,944.062	6,190,752.960
RW12	2,080,007.672	6,191,343.281
RW13	2,080,077.714	6,191,963.345
RW14	2,080,172.821	6,192,596.448
RW15	2,080,494.977	6,194,450.092
RW16	2,080,605.678	6,194,979.970
RW17	2,080,678.637	6,195,337.091
RW18	2,080,854.148	6,196,257.842
RW19	2,080,928.333	6,196,871.289
RW20	2,080,958.990	6,197,454.550
RW21	2,080,935.182	6,197,871.506
RW22	2,080,916.829	6,198,233.779
RW23	2,080,848.256	6,199,228.545
RW24	2,080,875.632	6,198,828.541
RW25	2,080,834.873	6,199,547.041
RW26	2,080,752.408	6,200,659.750
RW27	2,080,702.359	6,201,512.738
RW28	2,081,147.842	6,202,780.170
RW29	2,085,693.007	6,213,414.099
RW30	Not Advanced	
SS1	2,083,184.511	6,207,817.891
SS1-R	2,083,715.584	6,208,888.667
SS2	2,080,977.964	6,161,495.039
SS3	2,081,044.130	6,159,216.438
SS4	2,081,131.388	6,154,858.953
SS5	2,081,174.520	6,153,610.227
ST1	2,080,930.691	6,162,624.882
ST2	2,080,928.780	6,163,020.613
ST3	2,080,728.884	6,162,549.402
ST4	2,080,250.032	6,192,971.264
ST5	2,080,014.260	6,192,738.402

Coordinates are shown in feet, NAD83, Zone 3

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B1-0	0	490	23	<0.25	1.7	---
B1-1	1	29	---	---	---	---
B1-2	2	22	---	---	---	7.6
B2-0	0	180	15	<0.25	2.0	---
B2-1	1	40	---	---	---	---
B2-2	2	11	---	---	---	---
B3-0	0	35	---	---	---	---
B3-1	1	6.7	---	---	---	7.1
B3-2	2	9.5	---	---	---	---
B4-0	0	96	5.1	<0.25	---	---
B4-1	1	7.8	---	---	---	---
B4-2	2	6.8	---	---	---	---
B5-0	0	39	---	---	---	---
B5-1	1	7.2	---	---	---	---
B5-2	2	6.2	---	---	---	---
B6-0	0	71	3.0	---	---	7.2
B6-1	1	5.5	---	---	---	---
B6-2	2	6.3	---	---	---	---
B7-0	0	17	---	---	---	---
B7-1	1	17	---	---	---	---
B7-2	2	6.9	---	---	---	---
B8-0	0	25	---	---	---	---
B8-1	1	19	---	---	---	---
B8-2	2	5.6	---	---	---	---
B9-0	0	27	---	---	---	---
B9-1	1	16	---	---	---	---
B9-2	2	9.1	---	---	---	---
B10-0	0	68	2.6	---	---	---
B10-1	1	20	---	---	---	---
B10-2	2	5.8	---	---	---	6.2
B11-0	0	12	---	---	---	---
B11-1	1	17	---	---	---	---
B11-2	2	20	---	---	---	---
B12-0	0	50	1.3	---	---	---
B12-1	1	8.6	---	---	---	---
B12-2	2	5.3	---	---	---	---
B13-0	0	14	---	---	---	---
B13-1	1	20	---	---	---	7.6
B13-2	2	120	2.7	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B14-0	0	38	---	---	---	---
B14-1	1	<5.0	---	---	---	---
B14-2	2	6.6	---	---	---	---
B15-0	0	43	---	---	---	---
B15-1	1	81	6.0	<0.25	---	---
B15-2	2	23	---	---	---	---
B16-0	0	10	---	---	---	---
B16-1	1	35	---	---	---	---
B17-0	0	41	---	---	---	---
B17-1	1	27	---	---	---	8.0
B18-0	0	260	11	<0.25	0.28	---
B18-1	1	10	---	---	---	---
B18-2	2	7.7	---	---	---	---
B19-0	0	26	---	---	---	---
B19-1	1	36	---	---	---	---
B19-2	2	32	---	---	---	---
B20-0	0	30	---	---	---	7.8
B20-1	1	42	---	---	---	---
B20-2	2	7.7	---	---	---	---
B21-0	0	18	---	---	---	---
B21-1	1	14	---	---	---	---
B21-2	2	20	---	---	---	---
B22-0	0	22	---	---	---	---
B22-1	1	25	---	---	---	---
B22-2	2	6.3	---	---	---	---
B23-0	0	26	---	---	---	---
B23-1	1	12	---	---	---	---
B23-2	2	10	---	---	---	---
B24-0	0	25	---	---	---	---
B24-1	1	8.9	---	---	---	---
B24-2	2	5.5	---	---	---	8.5
B25-0	0	31	---	---	---	---
B25-1	1	53	1.0	---	---	---
B25-2	2	<5.0	---	---	---	---
B26-0	0	22	---	---	---	---
B26-1	1	<5.0	---	---	---	---
B27-0	0	16	---	---	---	7.1
B27-1	1	12	---	---	---	---
B27-2	2	6.5	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B28-0	0	18	---	---	---	---
B28-1	1	30	---	---	---	---
B28-2	2	160	7.9	<0.25	<0.25	---
B29-0	0	16	---	---	---	---
B29-1	1	39	---	---	---	---
B29-2	2	12	---	---	---	---
B30-0	0	32	---	---	---	---
B30-1	1	88	3.3	---	---	---
B30-2	2	9.2	---	---	---	---
B31-0	0	27	---	---	---	---
B31-1	1	16	---	---	---	---
B31-2	2	20	---	---	---	7.2
B32-0	0	13	---	---	---	---
B32-1	1	9.3	---	---	---	---
B32-1.5	2	5.7	---	---	---	---
B33-0	0	17	---	---	---	---
B33-1	1	20	---	---	---	---
B33-2	2	25	---	---	---	---
B34-0	0	18	---	---	---	8.0
B34-1	1	56	2.8	---	---	---
B34-1.5	1.5	5.1	---	---	---	---
B35-0	0	22	---	---	---	---
B35-1	1	<5.0	---	---	---	---
B35-2	2	10	---	---	---	---
B36-0	0	22	---	---	---	---
B36-1	1	31	---	---	---	---
B36-2	2	31	---	---	---	---
B37-0	0	13	---	---	---	---
B37-1	1	16	---	---	---	---
B37-2	2	11	---	---	---	---
B38-0	0	27	---	---	---	---
B38-1	1	17	---	---	---	8.3
B38-2	2	33	---	---	---	---
B39-0	0	17	---	---	---	---
B39-1	1	<5.0	---	---	---	---
B39-2	2	8.3	---	---	---	---
B40-0	0	25	---	---	---	---
B40-1	1	21	---	---	---	---
B40-2	2	13	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B41-0	0	26	---	---	---	---
B41-1	1	19	---	---	---	---
B41-2	2	25	---	---	---	---
B42-0	0	18	---	---	---	---
B42-1	1	17	---	---	---	---
B42-2	2	19	---	---	---	8.0
B43-0	0	<5.0	---	---	---	---
B43-1	1	<5.0	---	---	---	---
B43-2	2	<5.0	---	---	---	---
B44-0	0	<5.0	---	---	---	---
B44-1	1	<5.0	---	---	---	---
B44-2	2	3.0	---	---	---	---
B45-0	0	4.6	---	---	---	7.0
B45-1	1	<5.0	---	---	---	---
B45-2	2	7.1	---	---	---	---
B46-0	0	28	---	---	---	---
B46-1	1	5.4	---	---	---	---
B46-2	2	5.5	---	---	---	---
B47-0	0	14	---	---	---	---
B47-1	1	6.3	---	---	---	---
B47-2	2	5.2	---	---	---	---
B48-0	0	21	---	---	---	---
B48-1	1	<5.0	---	---	---	---
B48-2	2	<5.0	---	---	---	---
B49-0	0	14	---	---	---	---
B49-1	1	<5.0	---	---	---	8.3
B49-2	2	6.3	---	---	---	---
B50-0	0	37	---	---	---	---
B50-1	1	11	---	---	---	---
B50-2	2	11	---	---	---	8.0
B51-0	0	51	1.6	---	---	---
B51-1	1	5.2	---	---	---	---
B51-2	2	8.3	---	---	---	---
B52-0	0	21	---	---	---	---
B52-1	1	5.3	---	---	---	---
B52-2	2	5.5	---	---	---	7.4
B53-0	0	8.9	---	---	---	---
B53-1	1	9.6	---	---	---	---
B53-2	2	6.0	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B54-0	0	17	---	---	---	---
B54-1	1	<5.0	---	---	---	---
B54-2	2	11	---	---	---	---
B55-0	0	78	2.9	---	---	7.6
B55-1	1	6.8	---	---	---	---
B55-2	2	6.6	---	---	---	---
B56-0	0	21	---	---	---	---
B56-1	1	26	---	---	---	---
B56-2	2	15	---	---	---	---
B57-0	0	47	---	---	---	---
B57-1	1	8.9	---	---	---	---
B57-2	2	9.3	---	---	---	---
B58-0	0	20	---	---	---	---
B58-1	1	16	---	---	---	---
B58-2	2	5.8	---	---	---	---
B59-0	0	12	---	---	---	---
B59-1	1	<5.0	---	---	---	7.2
B59-2	2	7.7	---	---	---	---
B60-0	0	17	---	---	---	---
B60-1	1	3.6	---	---	---	---
B60-2	2	15	---	---	---	---
B61-0	0	14	---	---	---	---
B61-1	1	8.1	---	---	---	---
B61-2	2	110	6.0	<0.25	0.32	---
B62-0	0	25	---	---	---	---
B62-1	1	38	---	---	---	---
B62-2	2	92	0.47	---	---	---
B63-0	0	52	2.8	---	---	---
B63-1	1	7.1	---	---	---	---
B63-2	2	<5.0	---	---	---	7.9
B64-0	0	58	2.6	---	---	---
B64-1	1	<5.0	---	---	---	---
B64-2	2	5.4	---	---	---	---
B65-0	0	100	2.9	---	---	---
B65-1	1	6.5	---	---	---	---
B65-2	2	<5.0	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B66-0	0	19	---	---	---	7.6
B66-1	1	6.3	---	---	---	---
B66-2	2	5.8	---	---	---	---
B67-0	0	33	---	---	---	---
B67-1	1	24	---	---	---	7.9
B67-2	2	13	---	---	---	---
B68-0	0	38	---	---	---	---
B68-1	1	9.3	---	---	---	7.7
B68-2	2	<5.0	---	---	---	---
B69-0	0	18	---	---	---	---
B69-1	1	24	---	---	---	---
B69-2	2	35	---	---	---	---
B70-0	0	120	5.5	<0.25	0.28	---
B70-1	1	5.7	---	---	---	---
B70-2	2	5.5	---	---	---	---
B71-0	0	26	---	---	---	---
B71-1	1	11	---	---	---	---
B71-2	2	11	---	---	---	---
B72-0	0	22	---	---	---	8.0
B72-1	1	7.9	---	---	---	---
B72-2	2	23	---	---	---	---
B73-0	0	62	1.3	---	---	---
B73-1	1	33	---	---	---	---
B73-2	2	8.2	---	---	---	---
B74-0	0	18	---	---	---	---
B74-1	1	28	---	---	---	---
B74-2	2	6.9	---	---	---	---
B75-0	0	12	---	---	---	---
B75-1	1	15	---	---	---	---
B75-2	2	37	---	---	---	7.7
B76-0	0	60	5.4	<0.25	---	---
B76-1	1	17	---	---	---	---
B76-2	2	6.4	---	---	---	---
B77-0	0	110	3.8	---	---	---
B77-1	1	53	2.3	---	---	---
B77-2	2	8.6	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B78-0	0	97	4.9	---	---	7.8
B78-1	1	10	---	---	---	---
B78-2	2	9.2	---	---	---	---
B79-0	0	33	---	---	---	---
B79-1	1	23	---	---	---	---
B79-2	2	56	1.7	---	---	---
B80-0	0	18	---	---	---	---
B80-1	1	5.6	---	---	---	---
B80-2	2	6.6	---	---	---	---
B81-0	0	15	---	---	---	---
B81-1	1	7.9	---	---	---	---
B81-2	2	65	2.3	---	---	---
B82-0	0	13	---	---	---	---
B82-1	1	6.7	---	---	---	---
B82-2	2	50	1.5	---	---	---
B83-0	0	15	---	---	---	---
B83-1	1	43	---	---	---	7.8
B83-2	2	42	---	---	---	---
B84-0	0	30	---	---	---	---
B84-1	1	23	---	---	---	---
B84-2	2	76	2.9	---	---	---
B85-0	0	18	---	---	---	---
B85-1	1	40	---	---	---	---
B85-2	2	56	2.8	---	---	---
B86-0	0	35	---	---	---	---
B86-1	1	<5.0	---	---	---	---
B86-2	2	75	3.0	---	---	---
B87-0	0	16	---	---	---	---
B87-1	1	9.5	---	---	---	---
B87-2	2	20	---	---	---	8.2
B88-0	0	27	---	---	---	---
B88-1	1	17	---	---	---	---
B88-2	2	26	---	---	---	---
B89-0	0	33	---	---	---	---
B89-1	1	49	---	---	---	---
B89-2	2	22	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B90-0	0	8.4	---	---	---	8.8
B90-1	1	8.1	---	---	---	---
B90-2	2	94	2.1	---	---	---
B91-0	0	26	---	---	---	---
B91-1	1	<5.0	---	---	---	---
B91-2	2	6.4	---	---	---	---
B92-0	0	7.9	---	---	---	---
B92-1	1	8.1	---	---	---	---
B92-2	2	36	---	---	---	---
B93-0	0	67	3.2	---	---	---
B93-1	1	8.6	---	---	---	---
B93-2	2	45	---	---	---	---
B94-0	0	14	---	---	---	---
B94-1	1	11	---	---	---	8.7
B94-2	2	7.5	---	---	---	---
B95-0	0	15	---	---	---	---
B95-1	1	8.4	---	---	---	8.6
B95-2	2	11	---	---	---	---
B96-0	0	28	---	---	---	---
B96-1	1	320	0.33	---	---	---
B96-2	2	14	---	---	---	---
B97-0	0	21	---	---	---	---
B97-1	1	10	---	---	---	---
B97-2	2	19	---	---	---	---
B98-0	0	6.7	---	---	---	---
B98-1	1	12	---	---	---	---
B98-1.5	1.5	7.2	---	---	---	---
B99-0	0	84	3.8	---	---	---
B99-1	1	9.0	---	---	---	---
B99-2	2	7.9	---	---	---	---
B100-0	0	16	---	---	---	---
B100-1	1	41	---	---	---	---
B100-2	2	56	3.2	---	---	8.0
B101-0	0	<5.0	---	---	---	---
B101-1	1	<5.0	---	---	---	---
B101-2	2	5.6	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B102-0	0	64	0.50	---	---	---
B102-1	1	15	---	---	---	---
B102-2	2	6.4	---	---	---	---
B103-0	0	20	---	---	---	---
B103-1	1	7.6	---	---	---	---
B103-2	2	5.8	---	---	---	---
B104-0	0	27	---	---	---	---
B104-1	1	5.5	---	---	---	---
B104-2	2	6.2	---	---	---	---
B105-0	0	16	---	---	---	8.4
B105-1	1	5.9	---	---	---	---
B105-2	2	<5.0	---	---	---	---
B106-0	0	36	---	---	---	---
B106-1	1	5.5	---	---	---	8.1
B106-2	2	5.4	---	---	---	---
B107-0	0	17	---	---	---	---
B107-1	1	9.1	---	---	---	---
B107-2	2	6.5	---	---	---	---
B108-0	0	14	---	---	---	---
B108-1	1	9.4	---	---	---	---
B108-2	2	6.1	---	---	---	---
B109-0	0	9.6	---	---	---	---
B109-1	1	34	---	---	---	---
B109-2	2	24	---	---	---	8.5
B110-0	0	13	---	---	---	---
B110-1	1	12	---	---	---	---
B110-2	2	17	---	---	---	---
B111-0	0	10	---	---	---	---
B111-1	1	15	---	---	---	---
B111-2	2	46	---	---	---	---
B112-0	0	11	---	---	---	---
B112-1	1	5.1	---	---	---	---
B112-2	2	8.9	---	---	---	---
B113-0	0	6.9	---	---	---	---
B113-1	1	8.3	---	---	---	8.9
B113-2	2	15	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B114-0	0	55	2.1	---	---	---
B114-1	1	59	2.5	---	---	---
B114-2	2	8.4	---	---	---	---
B115-0	0	23	---	---	---	---
B115-1	1	29	---	---	---	---
B115-2	2	8.0	---	---	---	---
B116-0	0	48	---	---	---	---
B116-1	1	18	---	---	---	---
B116-2	2	5.4	---	---	---	---
B117-0	0	18	---	---	---	7.3
B117-1	1	47	---	---	---	---
B117-2	2	6.3	---	---	---	---
B118-0	0	18	---	---	---	---
B118-1	1	18	---	---	---	---
B118-2	2	4.8	---	---	---	---
B119-0	0	24	---	---	---	---
B119-1	1	6.9	---	---	---	---
B119-2	2	37	---	---	---	---
B120-0	0	120	13	<0.25	<0.25	---
B120-1	1	8.6	---	---	---	---
B120-2	2	5.5	---	---	---	7.6
B121-0	0	21	---	---	---	---
B121-1	1	9.4	---	---	---	---
B121-2	2	9.5	---	---	---	---
B122-0	0	21	---	---	---	---
B122-1	1	6.7	---	---	---	---
B122-2	2	6.5	---	---	---	---
B123-0	0	22	---	---	---	---
B123-1	1	33	---	---	---	---
B123-2	2	20	---	---	---	---
B124-0	0	22	---	---	---	---
B124-1	1	10	---	---	---	8.0
B124-2	2	56	2.6	---	---	---
B125-0	0	28	---	---	---	---
B125-1	1	37	---	---	---	---
B125-2	2	23	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B126-0	0	27	---	---	---	---
B126-1	1	22	---	---	---	---
B126-2	2	6.0	---	---	---	---
B127-0	0	23	---	---	---	---
B127-1	1	21	---	---	---	---
B127-2	2	9.7	---	---	---	---
B128-0	0	32	---	---	---	7.1
B128-1	1	25	---	---	---	---
B128-2	2	11	---	---	---	7.2
B129-0	0	31	---	---	---	---
B129-1	1	51	2.6	---	---	---
B129-2	2	5.3	---	---	---	---
B130-0	0	46	---	---	---	---
B130-1	1	6.7	---	---	---	---
B130-2	2	5.3	---	---	---	---
B131-0	0	31	---	---	---	---
B131-1	1	12	---	---	---	---
B131-2	2	5.5	---	---	---	8.3
B132-0	0	6.9	---	---	---	---
B132-1	1	5.7	---	---	---	---
B132-2	2	<5.0	---	---	---	---
B133-0	0	29	---	---	---	---
B133-1	1	5.6	---	---	---	7.9
B133-2	2	9.8	---	---	---	---
B134-0	0	8.9	---	---	---	---
B134-1	1	<5.0	---	---	---	---
B134-2	2	5.5	---	---	---	---
B135-0	0	13	---	---	---	---
B135-1	1	<5.0	---	---	---	---
B135-2	2	4.1	---	---	---	---
B136-0	0	4.6	---	---	---	8.0
B136-1	1	5.0	---	---	---	---
B136-2	2	<5.0	---	---	---	---
B137-0	0	51	1.9	---	---	---
B137-1	1	7.6	---	---	---	---
B137-2	2	<5.0	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B138-0	0	<5.0	---	---	---	---
B138-1	1	5.0	---	---	---	---
B138-2	2	<5.0	---	---	---	---
B139-0	0	24	---	---	---	---
B139-1	1	18	---	---	---	---
B139-2	2	11	---	---	---	---
B140-0	0	29	---	---	---	---
B140-1	1	5.2	---	---	---	---
B140-2	2	4.6	---	---	---	7.5
B141-0	0	8.1	---	---	---	---
B141-1	1	<5.0	---	---	---	---
B141-2	2	<5.0	---	---	---	---
B142-0	0	21	---	---	---	---
B142-1	1	43	---	---	---	---
B142-2	2	8.4	---	---	---	---
B143-0	0	38	---	---	---	---
B143-1	1	6.6	---	---	---	6.4
B143-2	2	5.7	---	---	---	---
B144-0	0	14	---	---	---	---
B144-1	1	21	---	---	---	---
B144-2	2	5.7	---	---	---	---
B145-0	0	29	---	---	---	---
B145-1	1	29	---	---	---	---
B145-2	2	23	---	---	---	---
B146-0	0	17	---	---	---	7.8
B146-1	1	37	---	---	---	---
B146-2	2	6.1	---	---	---	---
B147-0	0	39	---	---	---	---
B147-1	1	130	5.9	<0.25	<0.25	---
B147-2	2	9.1	---	---	---	---
B148-0	0	7.6	---	---	---	---
B148-1	1	6.0	---	---	---	---
B148-2	2	19	---	---	---	---
B149-0	0	33	---	---	---	---
B149-1	1	19	---	---	---	---
B149-2	2	<5.0	---	---	---	---
B150-0	0	29	---	---	---	---
B150-1	1	<5.0	---	---	---	---
B150-2	2	5.0	---	---	---	8.2

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B151-0	0	86	5.7	<0.25	---	---
B151-1	1	81	3.0	---	---	---
B151-2	2	120	5.9	<0.25	<0.25	---
B152-0	0	22	---	---	---	---
B152-1	1	16	---	---	---	---
B152-2	2	5.1	---	---	---	---
B153-0	0	17	---	---	---	---
B153-1	1	5.9	---	---	---	7.4
B153-2	2	<5.0	---	---	---	---
B154-0	0	43	---	---	---	---
B154-1	1	<5.0	---	---	---	---
B154-2	2	<5.0	---	---	---	---
B155-0	0	160	11	<0.25	<0.25	---
B155-1	1	120	3.2	---	---	---
B155-2	2	30	---	---	---	---
B156-0	0	160	<0.25	---	---	8.2
B156-1	1	7.4	---	---	---	---
B156-2	2	<5.0	---	---	---	---
B157-0	0	81	8.0	<0.25	---	---
B157-1	1	57	4.1	---	---	---
B157-2	2	<5.0	---	---	---	---
B158-0	0	54	1.4	---	---	---
B158-1	1	12	---	---	---	---
B158-2	2	16	---	---	---	---
B159-0	0	270	23	<0.25	0.67	---
B159-1	1	78	8.2	<0.25	---	---
B159-2	2	14	---	---	---	---
B160-0	0	110	6.0	<0.25	0.31	---
B160-1	1	17	---	---	---	---
B160-2	2	13	---	---	---	8.0
B161-0	0	66	4.3	---	---	---
B161-1	1	9.5	---	---	---	---
B161-2	2	26	---	---	---	---
B162-0	0	520	39	<0.25	1.1	---
B162-1	1	7.3	---	---	---	---
B162-1.5	1.5	<5.0	---	---	---	---
B163-0	0	72	3.3	---	---	---
B163-1	1	6.4	---	---	---	7.3
B163-2	2	<5.0	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B164-0	0	310	17	<0.25	0.92	---
B164-1	1	10	---	---	---	---
B164-2	2	11	---	---	---	---
B165-0	0	230	17	<0.25	1.6	---
B165-1	1	17	---	---	---	---
B165-2	2	10	---	---	---	---
B166-0	0	39	---	---	---	8.2
B166-1	1	13	---	---	---	---
B166-2	2	<5.0	---	---	---	---
B167-0	0	30	---	---	---	---
B167-1	1	12	---	---	---	---
B167-2	2	7.4	---	---	---	---
B168-0	0	33	---	---	---	---
B168-1	1	27	---	---	---	---
B168-2	2	<5.0	---	---	---	---
B169-0	0	<5.0	---	---	---	---
B169-1	1	<5.0	---	---	---	---
B169-2	2	16	---	---	---	---
B170-0	0	9.0	---	---	---	---
B170-1	1	<5.0	---	---	---	---
B170-1.5	1.5	11	---	---	---	8.3
B171-0	0	50	2.1	---	---	---
B171-1	1	16	---	---	---	---
B171-2	2	10	---	---	---	---
B172-0	0	93	12	<0.25	---	---
B172-1	1	7.9	---	---	---	---
B172-2	2	11	---	---	---	---
B173-0	0	130	6.4	<0.25	<0.25	---
B173-1	1	18	---	---	---	8.1
B173-2	2	12	---	---	---	---
B174-0	0	36	---	---	---	---
B174-1	1	5.8	---	---	---	---
B174-2	2	23	---	---	---	---
B175-0	0	37	---	---	---	---
B175-1	1	<5.0	---	---	---	---
B175-2	2	2.9	---	---	---	---
B176-0	0	34	---	---	---	7.6
B176-1	1	<5.0	---	---	---	---
B176-2	2	<5.0	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B177-0	0	140	10	<0.25	0.25	---
B177-1	1	57	2.9	---	---	---
B177-2	2	12	---	---	---	---
B178-0	0	11	---	---	---	---
B178-1	1	4.6	---	---	---	---
B178-2	2	6.2	---	---	---	---
B179-0	0	7.1	---	---	---	---
B179-1	1	5.5	---	---	---	---
B179-2	2	5.4	---	---	---	---
B180-0	0	22	---	---	---	---
B180-1	1	7.4	---	---	---	8.0
B180-2	2	6.6	---	---	---	---
B181-0	0	27	---	---	---	---
B181-1	1	5.2	---	---	---	---
B181-2	2	<5.0	---	---	---	---
B182-0	0	14	---	---	---	8.0
B182-1	1	9.6	---	---	---	---
B182-2	2	6.4	---	---	---	---
B183-0	0	23	---	---	---	---
B183-1	1	8.7	---	---	---	---
B183-2	2	5.2	---	---	---	---
B184-0	0	150	12	<0.25	0.29	---
B184-1	1	6.4	---	---	---	---
B184-2	2	5.3	---	---	---	---
B185-0	0	18	---	---	---	---
B185-1	1	6.7	---	---	---	---
B185-2	2	5.5	---	---	---	8.1
B186-0	0	6.8	---	---	---	---
B186-1	1	<5.0	---	---	---	---
B186-2	2	<5.0	---	---	---	---
B187-0	0	35	---	---	---	---
B187-1	1	14	---	---	---	---
B187-2	2	<5.0	---	---	---	---
B188-0	0	42	---	---	---	---
B188-1	1	8.3	---	---	---	---
B188-2	2	5.0	---	---	---	---
B189-0	0	49	---	---	---	---
B189-1	1	72	3.1	---	---	---
B189-2	2	16	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B190-0	0	54	2.8	---	---	---
B190-1	1	17	---	---	---	---
B190-2	2	28	---	---	---	---
B191-0	0	50	3.0	---	---	---
B191-1	1	170	8.6	<0.25	0.42	8.1
B191-2	2	<5.0	---	---	---	---
B192-0	0	230	2.4	---	---	---
B192-1	1	7.2	---	---	---	---
B192-2	2	<5.0	---	---	---	---
B193-0	0	150	8.5	<0.25	0.29	---
B193-1	1	25	---	---	---	---
B193-2	2	8.0	---	---	---	---
B194-0	0	37	---	---	---	---
B194-1	1	8.7	---	---	---	---
B194-2	2	9.0	---	---	---	---
B195-0	0	87	2.9	---	---	---
B195-1	1	27	---	---	---	---
B195-2	2	12	---	---	---	---
B196-0	0	34	---	---	---	---
B196-1	1	5.4	---	---	---	---
B196-2	2	10	---	---	---	7.9
B197-0	0	18	---	---	---	---
B197-1	1	7.1	---	---	---	---
B197-2	2	7.9	---	---	---	---
B198-0	0	37	---	---	---	---
B198-1	1	37	---	---	---	---
B198-2	2	6.0	---	---	---	---
B199-0	0	41	---	---	---	---
B199-1	1	22	---	---	---	---
B199-2	2	15	---	---	---	---
B200-0	0	77	5.0	<0.25	---	---
B200-1	1	6.5	---	---	---	---
B200-2	2	<5.0	---	---	---	---
B201-0	0	47	---	---	---	7.5
B201-1	1	7.5	---	---	---	---
B201-2	2	<5.0	---	---	---	---
B202-0	0	52	6.4	<0.25	---	---
B202-1	1	18	---	---	---	7.9
B202-2	2	6.6	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B203-0	0	47	---	---	---	---
B203-1	1	39	---	---	---	---
B203-2	2	99	3.3	---	---	---
B204-0	0	250	16	<0.25	1.4	---
B204-1	1	120	0.75	---	---	---
B204-2	2	6.2	---	---	---	---
B205-0	0	49	---	---	---	---
B205-1	1	15	---	---	---	---
B205-2	2	9.6	---	---	---	---
B206-0	0	110	5.6	<0.25	0.44	---
B206-1	1	8.5	---	---	---	---
B206-2	2	5.9	---	---	---	---
B207-0	0	99	12	<0.25	---	7.8
B207-1	1	120	5.2	<0.25	0.34	---
B207-2	2	150	8.9	<0.25	0.37	7.9
B208-0	0	85	7.5	<0.25	---	---
B208-1	1	8.1	---	---	---	---
B208-2	2	9.2	---	---	---	---
B209-0	0	150	7.3	<0.25	0.36	---
B209-1	1	<5.0	---	---	---	---
B209-2	2	5.0	---	---	---	---
B210-0	0	190	14	<0.25	<0.25	---
B210-1	1	29	---	---	---	---
B210-2	2	8.4	---	---	---	---
B211-0	0	210	13	<0.25	0.32	---
B211-1	1	5.5	---	---	---	---
B211-2	2	13	---	---	---	---
B212-0	0	5.4	---	---	---	---
B212-1	1	5.4	---	---	---	---
B212-2	2	5.1	---	---	---	---
B213-0	0	11	---	---	---	---
B213-1	1	8.8	---	---	---	8.0
B213-2	2	7.9	---	---	---	---
B214-0	0	20	---	---	---	---
B214-1	1	15	---	---	---	---
B214-2	2	28	---	---	---	---
B215-0	0	41	---	---	---	---
B215-1	1	8.9	---	---	---	---
B215-2	2	6.2	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B216-0	0	17	---	---	---	---
B216-1	1	44	---	---	---	---
B216-2	2	5.3	---	---	---	---
B217-0	0	70	10	<0.25		---
B217-1	1	47	---	---	---	---
B217-1.5	1.5	46	---	---	---	---
B218-0	0	74	2.7	---	---	---
B218-1	1	13	---	---	---	---
B218-2	2	7.3	---	---	---	7.7
B219-0	0	150	13	<0.25	0.36	---
B219-1	1	15	---	---	---	---
B219-2	2	9.1	---	---	---	---
B220-0	0	11	---	---	---	---
B220-1	1	18	---	---	---	---
B220-2	2	7.7	---	---	---	---
B221-0	0	17	---	---	---	---
B221-1	1	6.9	---	---	---	---
B221-2	2	47	---	---	---	---
B222-0	0	30	---	---	---	---
B222-1	1	43	---	---	---	---
B222-2	2	8.9	---	---	---	---
B223-0	0	50	3.1	---	---	8.0
B223-1	1	25	---	---	---	---
B223-2	2	29	---	---	---	---
B224-0	0	85	6.8	<0.25	---	7.9
B224-1	1	48	---	---	---	8.0
B224-2	2	9.5	---	---	---	---
B225-0	0	48	---	---	---	---
B225-1	1	480	25	<0.25	0.77	8.0
B225-2	2	14	---	---	---	---
B226-0	0	46	---	---	---	---
B226-1	1	27	---	---	---	7.9
B227-0	0	50	9.8	<0.25	---	---
B227-1	1	18	---	---	---	---
B227-2	2	7.8	---	---	---	---
B228-0	0	290	16	<0.25	0.33	---
B228-1	1	19	---	---	---	---
B228-2	2	5.7	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B229-0	0	530	57	<0.25	0.74	---
B229-1	1	10	---	---	---	7.0
B229-2	2	5.0	---	---	---	---
B230-0	0	35	---	---	---	---
B230-1	1	7.1	---	---	---	---
B230-2	2	6.9	---	---	---	---
B231-0	0	32	---	---	---	---
B231-1	1	19	---	---	---	---
B231-2	2	42	---	---	---	---
B232-0	0	28	---	---	---	---
B232-1	1	13	---	---	---	---
B232-2	2	18	---	---	---	8.1
B233-0	0	35	---	---	---	---
B233-1	1	7.7	---	---	---	---
B233-2	2	10	---	---	---	---
B234-0	0	180	13	<0.25	<0.25	---
B234-1	1	41	---	---	---	---
B234-2	2	5.3	---	---	---	---
B235-0	0	120	8.5	<0.25	0.32	---
B235-1	1	5.6	---	---	---	---
B235-2	2	<5.0	---	---	---	6.8
B236-0	0	180	14	<0.25	0.41	---
B236-1	1	5.6	---	---	---	---
B236-2	2	5.6	---	---	---	---
B237-0	0	530	37	<0.25	0.93	---
B237-1	1	14	---	---	---	---
B237-2	2	9.3	---	---	---	---
B238-0	0	120	5.4	<0.25	<0.25	---
B238-1	1	46	---	---	---	---
B238-2	2	6.6	---	---	---	7.5
B239-0	0	72	2.4	---	---	---
B239-1	1	27	---	---	---	---
B239-2	2	11	---	---	---	---
B240-0	0	360	20	<0.25	0.41	---
B240-1	1	8.3	---	---	---	---
B240-2	2	7.4	---	---	---	---
B241-0	0	220	13	<0.25	<0.25	---
B241-1	1	34	---	---	---	8.3
B241-2	2	6.5	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B242-0	0	130	7.5	<0.25	0.28	---
B242-1	1	<5.0	---	---	---	---
B242-2	2	6.2	---	---	---	---
B243-0	0	64	3.0	---	---	---
B243-1	1	11	---	---	---	---
B243-2	2	5.0	---	---	---	---
B244-0	0	73	4.0	---	---	---
B244-1	1	84	6.0	<0.25	---	---
B244-2	2	8.6	---	---	---	7.5
B245-0	0	45	---	---	---	---
B245-1	1	8.8	---	---	---	---
B245-2	2	7.3	---	---	---	---
B246-0	0	20	---	---	---	---
B246-1	1	<5.0	---	---	---	---
B246-2	2	42	---	---	---	---
B247-0	0	14	---	---	---	---
B247-1	1	<5.0	---	---	---	7.7
B247-2	2	7.5	---	---	---	---
B248-0	0	13	---	---	---	---
B248-1	1	8.0	---	---	---	---
B248-2	2	7.6	---	---	---	---
B249-0	0	290	4.8	---	---	---
B249-1	1	<5.0	---	---	---	---
B249-2	2	10	---	---	---	---
B250-0	0	360	21	<0.25	0.37	---
B250-1	1	17	---	---	---	---
B250-2	2	8.3	---	---	---	---
B251-0	0	510	41	<0.25	0.93	---
B251-1	1	8.3	---	---	---	---
B251-2	2	7.5	---	---	---	---
B252-0	0	31	---	---	---	---
B252-1	1	7.4	---	---	---	---
B252-2	2	7.7	---	---	---	---
B253-0	0	48	---	---	---	8.3
B253-1	1	19	---	---	---	---
B253-2	2	7.4	---	---	---	---
B254-0	0	120	5.1	<0.25	<0.25	---
B254-1	1	13	---	---	---	---
B254-2	2	7.5	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B255-0	0	29	---	---	---	---
B255-1	1	13	---	---	---	---
B255-2	2	27	---	---	---	---
B256-0	0	72	5.9	<0.25	---	---
B256-1	1	54	2.5	---	---	---
B256-2	2	15	---	---	---	8.1
B257-0	0	80	7.9	<0.25	---	---
B257-1	1	16	---	---	---	---
B257-2	2	12	---	---	---	---
B258-0	0	63	2.5	---	---	---
B258-1	1	7.5	---	---	---	---
B258-2	2	7.0	---	---	---	---
B259-0	0	46	---	---	---	---
B259-1	1	47	---	---	---	8.5
B259-2	2	52	1.7	---	---	---
B260-0	0	8.9	---	---	---	---
B260-1	1	7.0	---	---	---	---
B260-2	2	6.5	---	---	---	---
B261-0	0	49	---	---	---	---
B261-1	1	6.8	---	---	---	---
B261-2	2	6.7	---	---	---	---
B262-0	0	440	33	<0.25	0.77	7.9
B262-1	1	7.1	---	---	---	---
B262-2	2	32	---	---	---	---
B263-0	0	230	20	<0.25	0.43	---
B263-1	1	16	---	---	---	---
B263-2	2	11	---	---	---	---
B264-0	0	23	---	---	---	---
B264-1	1	14	---	---	---	---
B264-2	2	19	---	---	---	---
B265-0	0	18	---	---	---	---
B265-1	1	15	---	---	---	7.8
B265-2	2	27	---	---	---	---
B266-0	0	18	---	---	---	---
B266-1	1	10	---	---	---	---
B266-2	2	16	---	---	---	---
B267-0	0	76	1.8	---	---	---
B267-1	1	12	---	---	---	---
B267-2	2	11	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B268-0	0	38	---	---	---	---
B268-1	1	8.8	---	---	---	---
B268-2	2	7.9	---	---	---	---
B269-0	0	30	---	---	---	7.9
B269-1	1	24	---	---	---	---
B269-2	2	11	---	---	---	---
B270-0	0	210	12	<0.25	0.43	---
B270-1	1	5.4	---	---	---	---
B270-2	2	15	---	---	---	---
B271-0	0	17	---	---	---	---
B271-1	1	13	---	---	---	---
B271-2	2	370	24	<0.25	0.50	---
B272-0	0	84	4.0	---	---	---
B272-1	1	8.3	---	---	---	---
B272-2	2	11	---	---	---	7.9
B273-0	0	7.3	---	---	---	---
B273-1	1	4.8	---	---	---	---
B273-2	2	5.4	---	---	---	---
B274-0	0	<5.0	---	---	---	8.1
B274-1	1	14	---	---	---	---
B274-2	2	130	7.4	<0.25	0.28	---
B275-0	0	24	---	---	---	---
B275-1	1	9.7	---	---	---	---
B275-2	2	<5.0	---	---	---	---
B276-0	0	320	14	<0.25		---
B276-1	1	66	1.4	---	---	---
B276-2	2	6.0	---	---	---	---
B277-0	0	7.9	---	---	---	---
B277-1	1	5.6	---	---	---	---
B277-2	2	10	---	---	---	---
B278-0	0	18	---	---	---	8.2
B278-1	1	8.5	---	---	---	8.1
B278-2	2	27	---	---	---	8.2
B279-0	0	25	---	---	---	---
B279-1	1	29	---	---	---	---
B279-2	2	24	---	---	---	---
B280-0	0	31	---	---	---	8.0
B280-1	1	6.6	---	---	---	---
B280-2	2	6.0	---	---	---	---
B281-0	0	47	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B281-1	1	16	---	---	---	---
B281-2	2	19	---	---	---	---
B282-0	0	8.0	---	---	---	---
B282-1	1	19	---	---	---	---
B282-2	2	72	1.1	---	---	---
B283-0	0	110	5.5	<0.25	0.27	---
B283-1	1	7.2	---	---	---	---
B283-2	2	12	---	---	---	---
B284-0	0	10	---	---	---	---
B284-1	1	6.9	---	---	---	---
B284-2	2	7.2	---	---	---	---
B285-0	0	<5.0	---	---	---	---
B285-1	1	28	---	---	---	8.0
B285-2	2	9.8	---	---	---	---
B286-0	0	36	---	---	---	---
B286-1	1	34	---	---	---	---
B286-2	2	23	---	---	---	---
B287-0	0	15	---	---	---	---
B287-1	1	5.0	---	---	---	---
B287-2	2	220	12	<0.25	0.40	---
B288-0	0	95	4.7	---	---	---
B288-1	1	11	---	---	---	---
B288-2	2	<5.0	---	---	---	---
B289-0	0	52	4.1	---	---	---
B289-1	1	<5.0	---	---	---	---
B289-2	2	<5.0	---	---	---	---
B290-0	0	250	4.7	---	---	7.2
B290-1	1	160	3.4	---	---	---
B290-2	2	7.2	---	---	---	---
B291-0	0	47	---	---	---	---
B291-1	1	67	3.1	---	---	---
B291-2	2	8.2	---	---	---	---
B292-0	0	150	16	<0.25	<0.25	---
B292-1	1	6.6	---	---	---	---
B292-2	2	18	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B293-0	0	61	2.1	---	---	---
B293-1	1	27	---	---	---	---
B293-2	2	5.1	---	---	---	---
B294-0	0	22	---	---	---	7.9
B294-1	1	37	---	---	---	---
B294-2	2	13	---	---	---	---
B295-0	0	36	---	---	---	---
B295-1	1	<5.0	---	---	---	---
B295-2	2	5.4	---	---	---	---
B296-0	0	28	---	---	---	---
B296-1	1	32	---	---	---	---
B296-2	2	5.0	---	---	---	---
B297-0	0	7.3	---	---	---	---
B297-1	1	5.8	---	---	---	7.3
B297-2	2	5.3	---	---	---	---
B298-0	0	7.3	---	---	---	---
B298-1	1	6.0	---	---	---	---
B298-2	2	5.5	---	---	---	---
B299-0	0	24	---	---	---	---
B299-1	1	<5.0	---	---	---	---
B299-2	2	5.6	---	---	---	---
B300-0	0	21	---	---	---	---
B300-1	1	5.9	---	---	---	---
B300-2	2	7.5	---	---	---	8.6
B301-0	0	7.0	---	---	---	---
B301-1	1	10	---	---	---	---
B301-2	2	7.8	---	---	---	---
B302-0	0	9.8	---	---	---	---
B302-1	1	17	---	---	---	---
B302-2	2	21	---	---	---	8.1
RW1-0	0	23	---	---	---	---
RW1-4	4	33	---	---	---	---
RW2-0	0	19	---	---	---	---
RW2-4	4	60	6.6	<0.25	---	---
RW4-0	0	7.9	---	---	---	---
RW4-4	4	5.1	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
RW5-0	0	9.9	---	---	---	---
RW5-4	4	5.6	---	---	---	---
RW6-0	0	10	---	---	---	---
RW6-4	4	4.1	---	---	---	---
RW7-0	0	11	---	---	---	---
RW7-4	4	4.0	---	---	---	---
RW8-0	0	22	---	---	---	---
RW8-4	4	10	---	---	---	---
RW9-0	0	12	---	---	---	---
RW9-4	4	3.0	---	---	---	---
RW10-0	0	4.1	---	---	---	---
RW10-4	4	5.7	---	---	---	---
RW11-0	0	20	---	---	---	---
RW11-4	4	2.0	---	---	---	---
RW12-0	0	45	---	---	---	---
RW12-4	4	2.2	---	---	---	---
RW13-0	0	37	---	---	---	---
RW13-4	4	4.3	---	---	---	---
RW14-0	0	12	---	---	---	---
RW14-4	4	15	---	---	---	---
RW15-0	0	11	---	---	---	---
RW15-4	4	5.5	---	---	---	---
RW16-0	0	110	28	<0.25	0.30	---
RW16-4	4	4.9	---	---	---	---
RW17-0	0	36	---	---	---	---
RW17-4	4	24	---	---	---	---
RW18-0	0	29	---	---	---	---
RW18-4	4	5.4	---	---	---	---
RW19-0	0	31	---	---	---	---
RW19-4	4	3.4	---	---	---	---
RW20-0	0	130	32	<0.25	0.98	---
RW20-4	4	5.1	---	---	---	---
RW21-0	0	5.3	---	---	---	---
RW21-4	4	5.2	---	---	---	---
RW22-0	0	5.0	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
RW22-4	4	4.3	---	---	---	---
RW23-0	0	110	7.3	<0.25	0.35	---
RW23-4	4	4.6	---	---	---	---
RW24-0	0	93	21	<0.25	2.1	---
RW24-4	4	6.5	---	---	---	---
RW25-0	0	15	---	---	---	---
RW25-4	4	4.6	---	---	---	---
RW26-0	0	43	---	---	---	---
RW26-4	4	320	22	<0.25	0.39	---
RW27-0	0	48	---	---	---	---
RW27-4	4	4.0	---	---	---	---
RW28-0	0	10	---	---	---	---
RW28-4	4	5.1	---	---	---	---
RW29-0	0	11	---	---	---	---
RW29-1	1	10	---	---	---	---
RW29-2	2	12	---	---	---	---
RW29-4	4	6.0	---	---	---	---
SO43-0	0	35	---	---	---	---
SO43-1	1	11	---	---	---	---
SO44-0	0	250	---	---	---	---
SO44-1	1	110	---	---	---	---
SO45-0	0	120	---	---	---	---
SO45-1	1	38	---	---	---	---
SO46-0	0	130	---	---	---	---
SO46-1	1	18	---	---	---	---
SO47-0	0	47	---	---	---	---
SO47-1	1	15	---	---	---	---
ST1-0	0	37	---	---	---	---
ST1-4	4	5.4	---	---	---	---
ST2-0	0	22	---	---	---	---
ST2-4	4	1.3	---	---	---	---
ST3-0	0	15	---	---	---	---
ST3-4	4	19	---	---	---	---

TABLE 2
Summary of Lead and pH Results
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP Lead (mg/l)	pH
ST4-0	0	41	---	---	---	---
ST4-4	4	3.1	---	---	---	---
ST5-0	0	30	---	---	---	---
ST5-4	4	3.7	---	---	---	---

Notes:

mg/kg = Milligrams per kilogram
mg/l = Milligrams per liter
WET = Waste Extraction Test using citric acid as the extraction fluid
DI-WET = Waste Extraction Test using deionized water as the extraction fluid
TCLP = Toxicity Characteristic Leaching Procedure
<5.0 = Analyte was not detected above the laboratory reporting limit
--- = Not analyzed

TABLE 3
Summary of CAM17 Metals Results - Soil
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury
B1-0	0	<2.0	6.4	110	<1.0	<1.0	30	6.8	41	490	<1.0	32	<1.0	<1.0	<1.0	27	150	<0.10
B3-1	1	<2.0	5.7	80	<1.0	<1.0	33	12	23	6.7	<1.0	37	<1.0	<1.0	<1.0	40	50	<0.10
B5-2	2	<2.0	5.0	90	<1.0	<1.0	33	9.6	21	6.2	<1.0	33	<1.0	<1.0	<1.0	37	50	<0.10
B6-0	0	<2.0	4.6	90	<1.0	<1.0	29	7.4	23	71	<1.0	33	<1.0	<1.0	<1.0	27	110	<0.10
B8-1	1	<2.0	<1.0	78	<1.0	<1.0	25	6.1	12	19	<1.0	30	<1.0	<1.0	<1.0	22	31	<0.10
B10-2	2	<2.0	4.4	72	<1.0	<1.0	30	9.5	19	5.8	<1.0	31	<1.0	<1.0	<1.0	35	42	<0.10
B11-0	0	<2.0	4.5	92	<1.0	<1.0	34	11	25	20	<1.0	36	<1.0	<1.0	<1.0	39	63	<0.10
B13-1	1	<2.0	<1.0	93	<1.0	<1.0	35	9.6	19	20	<1.0	46	<1.0	<1.0	<1.0	31	53	<0.10
B15-2	2	<2.0	1.1	110	<1.0	<1.0	35	7.5	13	23	<1.0	40	<1.0	<1.0	<1.0	24	41	0.11
B17-1	1	<2.0	<1.0	130	<1.0	<1.0	22	5.6	17	27	<1.0	29	<1.0	<1.0	<1.0	15	100	<0.10
B19-2	2	<2.0	<1.0	120	<1.0	<1.0	32	8.5	20	32	<1.0	35	<1.0	<1.0	<1.0	34	43	<0.10
B20-0	0	<2.0	1.8	160	<1.0	<1.0	37	9.5	19	30	<1.0	42	<1.0	<1.0	<1.0	34	69	<0.10
B22-1	1	<2.0	<1.0	120	<1.0	<1.0	32	7.0	12	25	<1.0	37	<1.0	<1.0	<1.0	26	96	<0.10
B24-2	2	<2.0	1.4	170	<1.0	<1.0	27	8.6	12	5.5	<1.0	29	<1.0	<1.0	<1.0	36	31	<0.10
B25-0	0	<2.0	1.3	140	<1.0	<1.0	45	9.8	29	31	<1.0	46	<1.0	<1.0	<1.0	30	500	<0.10
B27-0	0	<2.0	<1.0	140	<1.0	<1.0	43	8.1	20	16	<1.0	34	<1.0	<1.0	<1.0	27	160	<0.10
B29-1	1	<2.0	<1.0	100	<1.0	<1.0	37	9.7	20	39	<1.0	47	<1.0	<1.0	<1.0	29	43	<0.10
B30-0	0	<2.0	<1.0	170	<1.0	<1.0	34	7.7	41	32	2.2	38	<1.0	<1.0	<1.0	24	260	<0.10
B31-2	2	<2.0	4.7	150	<1.0	<1.0	29	9.1	20	20	<1.0	40	<1.0	<1.0	<1.0	28	43	<0.10
B32-1	1	<2.0	4.8	53	<1.0	<1.0	18	5.0	7.7	13	<1.0	18	<1.0	<1.0	<1.0	18	34	<0.10
B34-1.5	1.5	<2.0	2.6	40	<1.0	<1.0	16	3.1	7.0	5.1	<1.0	20	<1.0	<1.0	<1.0	16	15	<0.10
B35-0	0	<2.0	6.0	170	<1.0	<1.0	34	7.2	56	22	<1.0	41	<1.0	<1.0	<1.0	29	380	<0.10
B37-1	1	<2.0	3.9	120	<1.0	<1.0	24	6.9	18	16	<1.0	35	<1.0	<1.0	<1.0	25	75	<0.10
B39-2	2	<2.0	2.8	79	<1.0	<1.0	61	13	29	8.3	<1.0	45	<1.0	<1.0	<1.0	28	54	<0.10
B40-0	0	<2.0	5.2	130	<1.0	<1.0	31	8.1	28	25	<1.0	41	<1.0	<1.0	<1.0	28	150	<0.10
B42-1	1	<2.0	31	120	<1.0	<1.0	26	7.7	19	25	<1.0	29	<1.0	<1.0	<1.0	34	48	<0.10
B44-2	2	<2.0	2.9	68	<1.0	<1.0	27	6.4	14	3.0	<1.0	62	<1.0	<1.0	<1.0	16	25	<0.10
B45-0	0	<2.0	2.7	160	<1.0	<1.0	23	5.8	19	4.6	<1.0	33	<1.0	<1.0	<1.0	17	42	<0.10
B47-1	1	<2.0	5.2	160	<1.0	<1.0	25	9.2	19	6.3	<1.0	26	<1.0	<1.0	<1.0	38	36	<0.10
B49-2	2	<2.0	5.3	130	<1.0	<1.0	25	10	20	6.3	<1.0	28	<1.0	<1.0	<1.0	40	38	<0.10
B50-1	1	<2.0	2.6	110	<1.0	<1.0	25	8.1	17	11	1.6	33	<1.0	<1.0	<1.0	29	51	<0.10
B52-2	2	<2.0	3.4	160	<1.0	<1.0	19	7.8	12	5.5	<1.0	20	<1.0	<1.0	<1.0	33	31	<0.10
B53-0	0	<4.0	2.7	79	<2.0	<2.0	24	9.2	14	8.9	<1.0	27	<1.0	<1.0	<1.0	31	46	<0.10
B55-1	1	<2.0	4.4	150	<2.0	<1.0	23	9.9	19	6.8	<1.0	29	<1.0	<1.0	<1.0	31	43	<0.10

TABLE 3
Summary of CAM17 Metals Results - Soil
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury
B57-2	2	<2.0	3.7	140	<1.0	<1.0	34	11	22	9.3	<1.0	62	<1.0	<1.0	<1.0	28	47	<0.10
B58-0	0	<2.0	1.5	110	<2.0	<1.0	25	7.2	14	20	<1.0	53	<1.0	<1.0	<1.0	22	41	<0.10
B60-1	1	<2.0	<1.0	58	<1.0	<1.0	26	6.3	13	3.6	<1.0	65	<1.0	<1.0	<1.0	16	27	<0.10
B62-2	2	<2.0	1.7	120	<1.0	<1.0	21	7.4	15	92	<1.0	30	<1.0	<1.0	<1.0	29	45	<0.10
B63-0	0	<2.0	1.2	130	<1.0	<1.0	26	7.9	19	52	<1.0	39	<1.0	<1.0	<1.0	25	67	<0.10
B65-1	1	<2.0	2.2	120	<1.0	<1.0	20	7.2	12	6.5	<1.0	24	<1.0	<1.0	<1.0	27	31	<0.10
B67-2	2	<2.0	1.3	87	<1.0	<1.0	23	7.1	13	13	<1.0	36	<1.0	<1.0	<1.0	20	33	<0.10
B68-1	1	<2.0	5.6	180	<1.0	<1.0	29	9.2	17	9.3	<1.0	31	<1.0	<1.0	<1.0	44	40	<0.10
B70-0	0	<2.0	<1.0	120	<1.0	<1.0	25	5.9	34	120	1.6	33	<1.0	<1.0	<1.0	21	210	<0.10
B72-0	0	<2.0	4.5	140	<1.0	<1.0	28	7.5	16	22	<1.0	34	<1.0	<1.0	<1.0	34	41	<0.10
B74-1	1	<2.0	<1.0	76	<1.0	<1.0	26	6.2	15	28	<1.0	43	<1.0	<1.0	<1.0	20	43	<0.10
B76-2	2	<2.0	3.5	130	<1.0	<1.0	22	9.5	15	6.4	<1.0	28	<1.0	<1.0	<1.0	33	38	<0.10
B77-0	0	<2.0	<1.0	85	<1.0	<1.0	26	6.0	29	110	1.1	39	<1.0	<1.0	<1.0	18	97	<0.10
B79-2	2	<2.0	6.0	140	<1.0	<1.0	28	7.6	18	56	<1.0	34	<1.0	<1.0	<1.0	36	53	<0.10
B80-1	1	<2.0	1.1	170	<1.0	<1.0	26	6.0	11	5.6	<1.0	23	<1.0	<1.0	<1.0	26	33	<0.10
B82-2	2	<2.0	2.2	160	<1.0	<1.0	25	8.4	20	50	<1.0	36	<1.0	<1.0	<1.0	25	88	<0.10
B83-0	0	<2.0	<1.0	100	<1.0	<1.0	25	6.9	19	15	1.2	38	<1.0	<1.0	<1.0	22	81	0.12
B85-1	1	<2.0	<1.0	98	<1.0	<1.0	26	6.2	24	40	<1.0	45	<1.0	<1.0	<1.0	19	84	<0.10
B87-2	2	<2.0	1.5	130	<1.0	<1.0	25	8.9	15	20	<1.0	74	<1.0	<1.0	<1.0	23	45	<0.10
B88-0	0	<2.0	1.8	150	<1.0	<1.0	29	8.5	16	27	<1.0	44	<1.0	<1.0	<1.0	26	49	0.54
B90-1	1	<2.0	4.0	210	<1.0	<1.0	26	10	16	8.1	<1.0	35	<1.0	<1.0	<1.0	37	37	<0.10
B92-2	2	<2.0	2.2	140	<1.0	<1.0	21	7.5	14	36	<1.0	31	<1.0	<1.0	<1.0	17	54	<0.10
B93-0	0	<2.0	<1.0	150	<1.0	<1.0	29	7.1	33	67	1.7	43	<1.0	<1.0	<1.0	23	110	<0.10
B94-0	0	<2.0	1.9	130	<1.0	<1.0	32	8.4	16	14	<1.0	55	<1.0	<1.0	<1.0	24	37	<0.10
B96-1	1	<2.0	1.6	150	<1.0	1.0	30	7.9	27	320	<1.0	41	<1.0	<1.0	<1.0	26	150	<0.10
B98-1.5	1.5	<2.0	<1.0	81	<1.0	<1.0	24	6.2	20	7.2	<1.0	38	<1.0	<1.0	<1.0	18	49	<0.10
B99-2	2	<2.0	1.9	110	<1.0	<1.0	23	8.3	12	7.9	<1.0	36	<1.0	<1.0	<1.0	23	31	<0.10
B100-0	0	<2.0	2.4	160	<1.0	<1.0	23	7.7	15	16	<1.0	33	<1.0	<1.0	<1.0	28	38	<0.10
B103-1	1	<2.0	2.3	150	<1.0	<1.0	35	9.5	17	7.6	<1.0	47	<1.0	<1.0	<1.0	31	43	<0.10
B104-1	1	<2.0	1.9	110	<1.0	<1.0	35	9.9	17	5.5	<1.0	66	<1.0	<1.0	<1.0	24	35	<0.10
B107-0	0	<2.0	3.4	170	<1.0	<1.0	33	10	17	17	<1.0	42	<1.0	<1.0	<1.0	36	42	<0.10
B108-2	2	<2.0	2.4	160	<1.0	<1.0	25	7.9	14	6.1	<1.0	38	<1.0	<1.0	<1.0	18	32	<0.10
B110-1	1	<2.0	2.5	210	<1.0	<1.0	34	9.1	16	12	<1.0	52	<1.0	<1.0	<1.0	30	41	<0.10
B112-0	0	<2.0	2.8	150	<1.0	<1.0	29	9.1	15	11	<1.0	44	<1.0	<1.0	<1.0	31	39	<0.10

TABLE 3
Summary of CAM17 Metals Results - Soil
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury
B113-2	2	<2.0	1.1	91	<1.0	<1.0	11	6.8	7.6	15	<1.0	20	<1.0	<1.0	<1.0	13	27	<0.10
B115-1	1	<2.0	2.4	140	<1.0	<1.0	28	8.4	18	29	<1.0	38	<1.0	<1.0	<1.0	25	46	<0.10
B117-0	0	<2.0	<1.0	130	<1.0	<1.0	21	5.3	33	18	1.6	26	<1.0	<1.0	<1.0	19	180	<0.10
B118-2	2	<2.0	1.7	94	<1.0	<1.0	18	8.6	7.0	4.8	<1.0	28	<1.0	<1.0	<1.0	24	17	<0.10
B120-1	1	<2.0	2.8	200	<1.0	<1.0	24	9.6	12	8.6	<1.0	34	<1.0	<1.0	<1.0	26	25	<0.10
B122-0	0	<2.0	<1.0	120	<1.0	<1.0	38	6.6	27	21	1.0	34	<1.0	<1.0	<1.0	27	120	<0.10
B123-2	2	<2.0	2.1	130	<1.0	<1.0	22	8.8	15	20	<1.0	29	<1.0	<1.0	<1.0	23	70	<0.10
B125-1	1	<2.0	1.7	170	<1.0	<1.0	22	6.3	19	37	<1.0	25	<1.0	<1.0	<1.0	25	93	<0.10
B127-0	0	<2.0	<1.0	120	<1.0	<1.0	19	6.2	27	23	1.6	29	<1.0	<1.0	<1.0	19	170	<0.10
B128-2	2	<2.0	1.8	110	<1.0	<1.0	18	4.7	10	11	<1.0	19	<1.0	<1.0	<1.0	17	20	<0.10
B130-1	1	<2.0	2.1	130	<1.0	<1.0	16	8.1	8.7	6.7	<1.0	18	<1.0	<1.0	<1.0	22	16	<0.10
B131-0	0	<2.0	2.6	130	<1.0	<1.0	21	5.0	32	31	<1.0	28	<1.0	<1.0	<1.0	21	150	<0.10
B133-1	1	<2.0	2.5	160	<1.0	<1.0	19	6.5	12	5.6	<1.0	25	<1.0	<1.0	<1.0	25	25	<0.10
B135-2	2	<2.0	2.7	92	<1.0	<1.0	21	6.5	9.3	4.1	<1.0	21	<1.0	<1.0	<1.0	31	21	<0.10
B136-0	0	<2.0	2.8	130	<1.0	<1.0	18	6.5	10	4.6	<1.0	26	<1.0	<1.0	<1.0	26	24	<0.10
B138-1	1	<2.0	6.2	220	<1.0	<1.0	28	7.7	17	5.0	<1.0	34	<1.0	<1.0	<1.0	28	36	<0.10
B140-2	2	<2.0	1.5	130	<1.0	<1.0	12	5.4	7.6	4.6	<1.0	16	<1.0	<1.0	<1.0	16	14	<0.10
B141-0	0	<2.0	2.8	170	<1.0	<1.0	20	6.5	17	8.1	<1.0	29	<1.0	<1.0	<1.0	26	83	<0.10
B143-1	1	<2.0	2.5	180	<1.0	<1.0	18	7.3	11	6.6	<1.0	22	<1.0	<1.0	<1.0	26	23	<0.10
B145-2	2	<2.0	3.2	160	<1.0	<1.0	21	8.0	14	23	<1.0	31	<1.0	<1.0	<1.0	26	42	<0.10
B146-0	0	<2.0	2.9	120	<1.0	<1.0	18	4.8	25	17	<1.0	27	<1.0	<1.0	<1.0	19	140	<0.10
B148-1	1	<2.0	1.2	140	<1.0	<1.0	14	6.1	9.8	6.0	<1.0	21	<1.0	<1.0	<1.0	11	15	<0.10
B150-2	2	<2.0	3.0	130	<1.0	<1.0	20	7.6	11	5.0	<1.0	28	<1.0	<1.0	<1.0	25	22	<0.10
B151-0	0	<2.0	4.8	200	<1.0	<1.0	27	6.7	47	86	<1.0	35	<1.0	<1.0	<1.0	23	590	0.12
B153-1	1	<2.0	1.7	190	<1.0	<1.0	53	11	22	5.9	<1.0	90	<1.0	<1.0	<1.0	27	37	0.14
B155-2	2	<2.0	2.2	160	<1.0	<1.0	30	9.3	16	30	<1.0	55	<1.0	<1.0	<1.0	27	78	<0.10
B156-0	0	<2.0	2.2	130	<1.0	<1.0	26	6.9	29	160	1.3	55	<1.0	<1.0	<1.0	21	140	<0.10
B158-1	1	<2.0	1.4	100	<1.0	<1.0	30	8.5	14	12	<1.0	75	<1.0	<1.0	<1.0	17	41	<0.10
B160-2	2	<2.0	2.2	120	<1.0	<1.0	29	7.4	12	13	<1.0	63	<1.0	<1.0	<1.0	20	35	<0.10
B161-0	0	<2.0	1.1	140	<1.0	<1.0	21	7.3	46	66	3.0	25	<1.0	<1.0	<1.0	16	360	<0.10
B163-1	1	<2.0	1.2	79	<1.0	<1.0	38	8.5	15	6.4	<1.0	87	<1.0	<1.0	<1.0	13	29	<0.10
B165-2	2	<2.0	4.6	200	<1.0	<1.0	26	7.7	13	10	<1.0	43	<1.0	<1.0	<1.0	24	32	<0.10
B166-0	0	<2.0	<1.0	94	<1.0	<1.0	21	5.6	22	39	1.2	33	<1.0	<1.0	<1.0	18	76	<0.10
B168-1	1	<2.0	2.7	200	<1.0	<1.0	21	7.8	15	27	<1.0	31	<1.0	<1.0	<1.0	32	41	<0.10

TABLE 3
Summary of CAM17 Metals Results - Soil
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury
B170-1.5	1.5	<2.0	3.9	230	<1.0	<1.0	18	6.5	12	11	<1.0	58	<1.0	<1.0	<1.0	18	53	<0.10
B171-0	0	<2.0	26	220	<1.0	<1.0	39	14	26	50	6.0	91	<1.0	<1.0	<1.0	27	98	<0.10
B173-1	1	<2.0	6.9	200	<1.0	<1.0	24	10	24	18	<1.0	33	<1.0	<1.0	<1.0	34	65	<0.10
B175-2	2	<2.0	<1.0	37	<1.0	<1.0	28	6.6	8.0	2.9	<1.0	32	<1.0	<1.0	<1.0	20	25	<0.10
B176-0	0	<2.0	1.4	160	<1.0	<1.0	27	6.3	36	34	2.9	32	<1.0	<1.0	<1.0	22	160	<0.10
B178-1	1	<2.0	<1.0	59	<1.0	<1.0	21	6.4	8.3	4.6	<1.0	28	<1.0	<1.0	<1.0	18	28	<0.10
B179-0	0	<2.0	2.8	240	<1.0	<1.0	21	7.1	9.7	7.1	<1.0	26	<1.0	<1.0	<1.0	28	29	<0.10
B181-0	0	<2.0	1.4	150	<1.0	<1.0	43	11	43	27	7.7	60	<1.0	<1.0	<1.0	21	220	<0.10
B182-0	0	<2.0	4.9	140	<1.0	<1.0	23	9.1	21	14	<1.0	27	<1.0	<1.0	<1.0	35	87	<0.10
B184-0	0	<2.0	2.9	160	<1.0	<1.0	25	7.7	210	150	1.0	34	<1.0	<1.0	<1.0	28	150	<0.10
B187-0	0	<2.0	2.2	190	<1.0	<1.0	26	6.3	43	35	1.9	31	<1.0	<1.0	<1.0	24	190	<0.10
B188-0	0	<2.0	1.7	160	<1.0	<1.0	25	5.8	41	42	2.9	29	<1.0	<1.0	<1.0	23	200	<0.10
B190-0	0	<2.0	2.0	170	<1.0	<1.0	24	6.2	48	54	3.6	27	<1.0	<1.0	<1.0	24	230	0.35
B193-0	0	<2.0	2.5	160	<1.0	1.4	39	6.6	64	150	3.4	37	<1.0	<1.0	<1.0	24	240	0.10
B194-0	0	<2.0	1.0	120	<1.0	<1.0	18	4.3	29	37	1.3	25	<1.0	<1.0	<1.0	15	150	<0.10
B196-0	0	<2.0	1.1	140	<1.0	<1.0	31	7.9	44	34	3.6	42	<1.0	<1.0	<1.0	23	210	<0.10
B198-0	0	<2.0	5.4	220	<1.0	<1.0	21	8.8	28	37	<1.0	27	<1.0	<1.0	<1.0	34	88	<0.10
B199-0	0	<2.0	<1.0	120	<1.0	<1.0	26	6.5	69	41	4.6	36	<1.0	<1.0	<1.0	21	250	<0.10
B202-0	0	<2.0	2.3	200	<1.0	1.1	32	7.1	60	52	2.7	34	<1.0	<1.0	<1.0	26	220	0.12
B203-0	0	<2.0	1.3	160	<1.0	<1.0	33	11	120	47	3.7	36	<1.0	<1.0	<1.0	27	530	0.14
B205-0	0	<2.0	2.1	150	<1.0	<1.0	30	6.8	46	49	2.2	31	<1.0	<1.0	<1.0	25	200	<0.10
B207-0	0	<2.0	1.8	160	<1.0	<1.0	34	8.5	26	99	1.2	51	<1.0	<1.0	<1.0	27	110	<0.10
B208-0	0	<2.0	1.5	99	<1.0	<1.0	26	5.5	14	85	<1.0	47	<1.0	<1.0	<1.0	14	67	<0.10
B211-0	0	<2.0	4.8	170	<1.0	<1.0	21	7.1	30	210	1.3	28	<1.0	<1.0	<1.0	23	220	<0.10
B212-0	0	<2.0	3.4	230	<1.0	<1.0	21	9.0	15	5.4	<1.0	26	<1.0	<1.0	<1.0	31	35	0.23
B214-0	0	<2.0	7.4	210	<1.0	<1.0	17	8.2	18	20	<1.0	23	<1.0	<1.0	<1.0	29	62	<0.10
B217-0	0	<2.0	1.9	160	<1.0	<1.0	28	6.1	96	70	5.1	31	<1.0	<1.0	<1.0	22	290	0.15
B218-0	0	<2.0	7.2	220	<1.0	<1.0	22	8.6	18	74	<1.0	30	<1.0	<1.0	<1.0	29	68	<0.10
B220-0	0	<2.0	3.5	120	<1.0	<1.0	23	7.8	15	11	<1.0	29	<1.0	<1.0	<1.0	24	31	<0.10
B221-0	0	<2.0	3.0	160	<1.0	<1.0	25	7.8	20	17	<1.0	29	<1.0	<1.0	<1.0	26	58	<0.10
B223-0	0	<2.0	2.4	140	<1.0	<1.0	25	7.4	45	50	1.1	38	<1.0	<1.0	<1.0	23	93	0.35
B225-0	0	<2.0	1.3	110	<1.0	<1.0	27	6.0	43	48	2.0	30	<1.0	<1.0	<1.0	22	190	<0.10
B226-0	0	<2.0	<1.0	160	<1.0	<1.0	35	8.2	47	46	2.6	39	<1.0	<1.0	<1.0	30	210	<0.10
B227-0	0	<2.0	1.6	150	<1.0	<1.0	35	7.6	51	50	2.6	37	<1.0	<1.0	<1.0	32	160	<0.10

TABLE 3
Summary of CAM17 Metals Results - Soil
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury
B229-0	0	<2.0	1.1	140	<1.0	<1.0	27	7.7	25	530	8.8	29	<1.0	<1.0	<1.0	27	160	<0.10
B232-0	0	<2.0	<1.0	150	<1.0	<1.0	28	8.7	25	28	2.4	43	<1.0	<1.0	<1.0	29	120	<0.10
B233-0	0	<2.0	1.8	140	<1.0	<1.0	29	9.6	17	35	<1.0	36	<1.0	<1.0	<1.0	33	53	<0.10
B235-0	0	<2.0	<1.0	130	<1.0	<1.0	32	7.4	32	120	2	37	<1.0	<1.0	<1.0	25	160	<0.10
B237-0	0	4.3	4.2	180	<1.0	1.2	40	8.9	46	530	1.7	63	<1.0	<1.0	<1.0	28	270	<0.10
B238-0	0	<2.0	<1.0	240	<1.0	1.2	34	8.4	64	120	2.4	32	<1.0	<1.0	<1.0	39	390	<0.10
B240-0	0	<2.0	9.1	160	<1.0	1.2	35	8.9	50	360	1.8	36	<1.0	<1.0	<1.0	43	240	<0.10
B241-0	0	<2.0	<1.0	170	<1.0	<1.0	33	7.2	51	220	4.2	35	<1.0	<1.0	<1.0	29	190	<0.10
B244-0	0	<2.0	<1.0	140	<1.0	<1.0	36	8.0	30	73	1.7	55	<1.0	<1.0	<1.0	30	180	<0.10
B246-0	0	<2.0	1.0	100	<1.0	<1.0	28	7.9	41	20	<1.0	35	<1.0	<1.0	<1.0	33	200	<0.10
B247-0	0	<2.0	2.3	130	<1.0	<1.0	24	11	21	14	<1.0	32	<1.0	<1.0	<1.0	51	48	0.15
B250-0	0	<2.0	<1.0	120	<1.0	1.1	23	11	36	360	<1.0	29	<1.0	<1.0	<1.0	59	130	0.26
B252-0	0	<2.0	<1.0	160	<1.0	<1.0	29	8.7	29	31	1.2	38	<1.0	<1.0	<1.0	27	120	<0.10
B253-0	0	<2.0	2.8	170	<1.0	<1.0	28	10	27	48	1.0	36	<1.0	<1.0	<1.0	42	110	<0.10
B255-0	0	<2.0	4.4	170	<1.0	<1.0	28	11	25	29	1.0	30	<1.0	<1.0	<1.0	45	98	<0.10
B256-0	0	<2.0	1.0	160	<1.0	<1.0	44	8.8	35	72	1.3	62	<1.0	<1.0	<1.0	27	160	<0.10
B257-0	0	<2.0	3.1	150	<1.0	<1.0	28	6.3	47	80	<1.0	29	<1.0	<1.0	<1.0	28	190	<0.10
B259-0	0	<2.0	5.1	110	<1.0	<1.0	18	7.1	27	46	<1.0	24	<1.0	<1.0	<1.0	49	63	<0.10
B260-0	0	<2.0	5.0	110	<1.0	<1.0	17	11	16	8.9	<1.0	17	<1.0	<1.0	<1.0	36	28	<0.10
B262-0	0	<2.0	6.3	140	<1.0	<1.0	26	9.3	49	440	<1.0	29	<1.0	<1.0	<1.0	44	200	<0.10
B263-0	0	<2.0	5.9	150	<1.0	<1.0	25	8.7	60	230	<1.0	29	<1.0	<1.0	<1.0	39	94	<0.10
B265-0	0	<2.0	1.4	110	<1.0	<1.0	27	7.0	31	18	1.3	35	<1.0	<1.0	<1.0	23	140	<0.10
B266-2	2	<2.0	2.1	110	<1.0	<1.0	22	8.1	14	16	<1.0	34	<1.0	<1.0	<1.0	24	34	<0.10
B268-1	1	<2.0	3.1	35	<1.0	<1.0	37	11	20	8.8	<1.0	37	<1.0	<1.0	<1.0	45	53	<0.10
B270-0	0	<2.0	2.1	140	<1.0	<1.0	28	8.1	19	210	<1.0	57	<1.0	<1.0	<1.0	23	99	<0.10
B271-2	2	<2.0	5.1	190	<1.0	<1.0	39	9.0	45	370	2.1	58	<1.0	<1.0	<1.0	28	250	<0.10
B273-1	1	<2.0	3.0	240	<1.0	<1.0	28	7.6	18	4.8	2.6	26	<1.0	<1.0	<1.0	31	39	<0.10
B275-1	1	<2.0	<1.0	190	<1.0	<1.0	36	9.3	14	10	<1.0	70	<1.0	<1.0	<1.0	27	35	<0.10
B278-0	0	<2.0	3.8	150	<1.0	<1.0	20	6.4	16	18	<1.0	33	<1.0	<1.0	<1.0	23	35	<0.10
B278-1	1	<2.0	3.2	210	<1.0	<1.0	24	6.6	13	8.5	<1.0	28	<1.0	<1.0	<1.0	22	23	<0.10
B278-2	2	<2.0	3.1	150	<1.0	<1.0	22	6.2	15	27	<1.0	35	<1.0	<1.0	<1.0	21	38	<0.10
B280-0	0	<2.0	<1.0	150	<1.0	<1.0	32	7.1	26	31	<1.0	37	<1.0	<1.0	<1.0	27	130	<0.10
B282-2	2	<2.0	1.5	170	<1.0	<1.0	43	8.6	15	72	<1.0	41	<1.0	<1.0	<1.0	31	68	<0.10
B285-1	1	<2.0	5.7	180	<1.0	<1.0	31	10	25	28	<1.0	33	<1.0	<1.0	<1.0	44	68	<0.10

TABLE 3
Summary of CAM17 Metals Results - Soil
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury
B289-0	0	<2.0	<1.0	92	<1.0	<1.0	23	7.3	15	52	<1.0	34	<1.0	<1.0	<1.0	27	62	<0.10
B290-2	2	<2.0	<1.0	130	<1.0	<1.0	19	8.6	11	7.2	<1.0	19	<1.0	<1.0	<1.0	26	21	<0.10
B292-1	1	<2.0	1.3	480	<1.0	<1.0	27	7.6	14	6.6	<1.0	29	<1.0	<1.0	<1.0	31	31	<0.10
B294-0	0	<2.0	<1.0	130	<1.0	<1.0	25	10	15	22	<1.0	31	<1.0	<1.0	<1.0	26	47	<0.10
B295-2	2	<2.0	1.3	140	<1.0	<1.0	24	8.5	13	5.4	<1.0	29	<1.0	<1.0	<1.0	24	28	<0.10
B297-1	1	<2.0	2.2	89	<1.0	<1.0	21	9.3	12	5.8	<1.0	25	<1.0	<1.0	<1.0	34	26	<0.10
B299-0	0	<2.0	2.5	150	<1.0	<1.0	24	10	18	24	<1.0	27	<1.0	<1.0	<1.0	42	61	0.38
B300-2	2	<2.0	7.2	100	<1.0	<1.0	29	10	37	7.5	<1.0	29	<1.0	<1.0	<1.0	45	72	0.47
B301-2	2	<2.0	6.1	83	<1.0	<1.0	31	12	30	7.8	<1.0	26	<1.0	<1.0	<1.0	47	63	0.82
RW1-0	0	<2.0	1.6	95	<1.0	<1.0	25	6.6	15	23	<1.0	37	<1.0	<1.0	<1.0	22	50	<0.10
RW1-4	4	<2.0	1.4	51	<1.0	<1.0	26	6.5	12	33	<1.0	38	<1.0	<1.0	<1.0	17	35	<0.10
RW2-0	0	<2.0	2.5	100	<1.0	<1.0	27	7.5	18	19	<1.0	37	<1.0	<1.0	<1.0	26	50	<0.10
RW2-4	4	<2.0	1.5	85	<1.0	<1.0	26	6.7	18	60	<1.0	37	<1.0	<1.0	<1.0	20	45	<0.10
RW4-0	0	<2.0	2.4	110	<2.0	<1.0	24	7.5	17	7.9	<1.0	39	<1.0	<1.0	<1.0	26	62	<0.10
RW4-4	4	<2.0	2.7	120	<1.0	<1.0	19	8.3	12	5.1	<1.0	21	<1.0	<1.0	<1.0	32	31	<0.10
RW5-0	0	<2.0	2.0	140	<1.0	<1.0	28	8.2	14	9.9	<1.0	39	<1.0	<1.0	<1.0	29	35	<0.10
RW5-4	4	<2.0	1.9	130	<1.0	<1.0	30	7.3	13	5.6	<1.0	41	<1.0	<1.0	<1.0	30	32	<0.10
RW6-0	0	<2.0	1.6	210	<1.0	<1.0	20	7.2	17	10	<1.0	25	<1.0	<1.0	<1.0	25	100	<0.10
RW6-4	4	<2.0	3.6	130	<1.0	<1.0	19	7.0	6.4	4.1	<1.0	22	<1.0	<1.0	<1.0	27	19	<0.10
RW7-0	0	<2.0	1.4	170	<1.0	<1.0	21	8.0	11	11	<1.0	27	<1.0	<1.0	<1.0	29	53	<0.10
RW7-4	4	<2.0	<1.0	96	<1.0	<1.0	24	7.2	6.1	4.0	<1.0	23	<1.0	<1.0	<1.0	44	27	<0.10
RW8-0	0	<2.0	2.2	180	<1.0	<1.0	24	7.6	19	22	<1.0	31	<1.0	<1.0	<1.0	29	57	<0.10
RW8-4	4	<2.0	1.0	130	<1.0	<1.0	33	9.4	15	10	<1.0	76	<1.0	<1.0	<1.0	20	36	<0.10
RW9-0	0	<2.0	1.7	160	<1.0	<1.0	28	12	15	12	<1.0	54	<1.0	<1.0	<1.0	25	190	<0.10
RW9-4	4	<2.0	4.6	250	<1.0	<1.0	20	6.1	8.5	3.0	<1.0	26	<1.0	<1.0	<1.0	29	20	<0.10
RW10-0	0	<2.0	<1.0	82	<1.0	<1.0	18	5.2	14	4.1	1.4	34	<1.0	<1.0	<1.0	20	25	<0.10
RW10-4	4	<2.0	2.6	150	<1.0	<1.0	25	6.9	10	5.7	<1.0	30	<1.0	<1.0	<1.0	27	24	<0.10
RW11-0	0	<2.0	1.4	130	<1.0	<1.0	25	5.9	27	20	2.3	36	<1.0	<1.0	<1.0	22	160	<0.10
RW11-4	4	<2.0	7.3	100	<1.0	<1.0	21	6.8	10	2.0	<1.0	93	<1.0	<1.0	<1.0	13	15	<0.10
RW12-0	0	<2.0	1.6	120	<1.0	<1.0	22	5.5	53	45	2.4	37	<1.0	<1.0	<1.0	21	150	0.10
RW12-4	4	<2.0	7.0	57	<1.0	<1.0	14	4.8	6.3	2.2	<1.0	30	<1.0	<1.0	<1.0	12	18	<0.10
RW13-0	0	<2.0	<1.0	120	<1.0	<1.0	32	6.6	52	37	3.8	36	<1.0	<1.0	<1.0	24	180	<0.10
RW13-4	4	<2.0	<1.0	93	<1.0	<1.0	44	7.8	12	4.3	<1.0	52	<1.0	<1.0	<1.0	20	32	<0.10
RW14-0	0	<2.0	1.2	95	<1.0	<1.0	16	6.6	16	12	<1.0	27	<1.0	<1.0	<1.0	23	31	<0.10

TABLE 3
Summary of CAM17 Metals Results - Soil
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury
RW14-4	4	<2.0	5.5	320	<1.0	<1.0	23	9.5	14	15	<1.0	31	<1.0	<1.0	<1.0	27	33	<0.10
RW15-0	0	<2.0	3.6	210	<1.0	<1.0	21	8.1	10	11	<1.0	30	<1.0	<1.0	<1.0	31	25	<0.10
RW15-4	4	<2.0	2.1	130	<1.0	<1.0	30	8.2	13	5.5	<1.0	40	<1.0	<1.0	<1.0	28	33	<0.10
RW16-0	0	<2.0	4.7	120	<1.0	<1.0	19	6.6	190	110	<1.0	22	<1.0	<1.0	<1.0	30	660	<0.10
RW16-4	4	<2.0	5.4	420	<1.0	<1.0	16	8.5	16	4.9	<1.0	21	<1.0	<1.0	<1.0	33	32	<0.10
RW17-0	0	<2.0	2.8	72	<1.0	<1.0	26	6.5	19	36	<1.0	64	<1.0	<1.0	<1.0	14	32	<0.10
RW17-4	4	<2.0	2.4	150	<1.0	<1.0	21	6.4	14	24	<1.0	29	<1.0	<1.0	<1.0	26	28	<0.10
RW18-0	0	<2.0	3.8	140	<1.0	<1.0	42	6.6	73	29	1.2	44	<1.0	<1.0	<1.0	22	210	<0.10
RW18-4	4	<2.0	4.5	89	<1.0	<1.0	15	5.7	11	5.4	<1.0	15	<1.0	<1.0	<1.0	37	28	<0.10
RW19-0	0	<2.0	4.3	180	<1.0	<1.0	32	6.1	89	31	1.2	34	<1.0	<1.0	<1.0	23	200	0.15
RW19-4	4	<2.0	2.4	110	<1.0	<1.0	17	3.5	10	3.4	<1.0	20	<1.0	<1.0	<1.0	21	21	<0.10
RW20-0	0	<2.0	3.2	99	<1.0	<1.0	22	6.1	38	130	<1.0	34	<1.0	<1.0	<1.0	24	99	<0.10
RW20-4	4	<2.0	4.0	130	<1.0	<1.0	34	10	19	5.1	<1.0	85	<1.0	<1.0	<1.0	27	30	<0.10
RW21-0	0	<2.0	2.8	62	<1.0	<1.0	23	4.9	18	5.3	<1.0	37	<1.0	<1.0	<1.0	14	24	<0.10
RW21-4	4	<2.0	3.1	260	<1.0	<1.0	17	7.3	15	5.2	<1.0	26	<1.0	<1.0	<1.0	23	26	<0.10
RW22-0	0	<2.0	3.1	71	<1.0	<1.0	24	6.2	17	5.0	<1.0	40	<1.0	<1.0	<1.0	17	29	<0.10
RW22-4	4	<2.0	4.0	180	<1.0	<1.0	16	6.7	16	4.3	<1.0	22	<1.0	<1.0	<1.0	24	29	<0.10
RW23-0	0	<2.0	3.4	110	<1.0	<1.0	24	5.8	23	110	<1.0	36	<1.0	<1.0	<1.0	24	71	<0.10
RW23-4	4	<2.0	3.6	98	<1.0	<1.0	6.2	5.2	6.8	4.6	<1.0	9.4	<1.0	<1.0	<1.0	19	12	<0.10
RW24-0	0	<2.0	3.9	68	<1.0	<1.0	25	6.3	20	93	<1.0	41	<1.0	<1.0	<1.0	19	44	<0.10
RW24-4	4	<2.0	3.8	390	<1.0	<1.0	15	11	16	6.5	<1.0	25	<1.0	<1.0	<1.0	29	28	<0.10
RW25-0	0	<2.0	3.6	120	<1.0	<1.0	32	8.7	17	15	<1.0	62	<1.0	<1.0	<1.0	19	34	<0.10
RW25-4	4	<2.0	2.8	160	<1.0	<1.0	34	6.8	14	4.6	<1.0	47	<1.0	<1.0	<1.0	20	31	0.43
RW26-0	0	<2.0	3.3	96	<1.0	<1.0	45	5.7	48	43	<1.0	48	<1.0	<1.0	<1.0	20	120	<0.10
RW26-4	4	<2.0	3.3	230	<1.0	<1.0	24	8.4	28	320	<1.0	67	<1.0	<1.0	<1.0	20	91	<0.10
RW-27-0	0	<2.0	1.8	73	<1.0	<1.0	16	4.7	13	48	<1.0	29	<1.0	<1.0	<1.0	22	26	<0.10
RW27-4	4	<2.0	<1.0	130	<1.0	<1.0	48	9.3	14	4.0	<1.0	56	<1.0	<1.0	<1.0	22	28	<0.10
RW-28-0	0	<2.0	<1.0	120	<1.0	<1.0	23	6.7	19	10	<1.0	36	<1.0	<1.0	<1.0	21	77	<0.10
RW28-4	4	<2.0	5.1	290	<1.0	<1.0	16	7.8	14	5.1	<1.0	23	<1.0	<1.0	<1.0	30	31	<0.10
RW29-0	0	<2.0	1.5	160	<1.0	<1.0	34	8.3	13	11	<1.0	42	<1.0	<1.0	<1.0	28	42	<0.10
RW29-4	4	<2.0	<1.0	120	<1.0	<1.0	25	6.5	8.9	6.0	<1.0	33	<1.0	<1.0	<1.0	20	23	<0.10
ST1-0	0	<2.0	2.3	110	<1.0	<1.0	29	8.0	21	37	<1.0	41	<1.0	<1.0	<1.0	25	530	<0.10
ST1-4	4	<2.0	1.0	74	<1.0	<1.0	29	7.7	13	5.4	<1.0	42	<1.0	<1.0	<1.0	19	29	<0.10
ST2-0	0	<2.0	<1.0	140	<1.0	<1.0	32	7.1	36	22	2.1	40	<1.0	<1.0	<1.0	24	170	<0.10

TABLE 3
Summary of CAM17 Metals Results - Soil
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury
ST2-4	4	<2.0	<1.0	17	<1.0	<1.0	6.3	1.5	<2.0	1.3	<1.0	5.6	<1.0	<1.0	<1.0	4.0	11	<0.10
ST3-0	0	<2.0	2.3	130	<1.0	<1.0	22	7.7	20	15	<1.0	29	<1.0	<1.0	<1.0	27	92	<0.10
ST3-4	4	<2.0	2.6	130	<1.0	<1.0	23	8.4	15	19	<1.0	30	<1.0	<1.0	<1.0	30	65	<0.10
ST4-0	0	<2.0	6.9	170	<1.0	<1.0	26	8.7	13	41	2.9	36	<1.0	<1.0	<1.0	33	63	<0.10
ST4-4	4	<2.0	1.0	100	<1.0	<1.0	20	9.5	5.9	3.1	<1.0	33	<1.0	<1.0	<1.0	17	21	<0.10
ST5-0	0	<2.0	2.6	110	<1.0	<1.0	22	8.2	19	30	<1.0	28	<1.0	<1.0	<1.0	34	58	<0.10
ST5-4	4	<2.0	3.3	170	<1.0	<1.0	23	6.8	10	3.7	<1.0	31	<1.0	<1.0	<1.0	26	27	<0.10
ESLs																		
Residential Land Use		6.3	0.39	750	4.0	1.7	750	40	230	200	40	150	10	20	1.3	16	600	1.3
Comm/Ind Land Use		40	1.6	1500	8.0	7.4	750	80	230	750	40	150	10	40	16	200	600	10
Construction Worker Exp		310	15	2,600	98	39	1,200,000	94	310,000	750	3,900	260	3,900	3,900	62	770	230,000	58
CHHSLs																		
Residential		30	0.07	5,200	150	1.7	10,000	660	3,000	80	380	1,600	380	380	5.0	530	---	18
Commercial/Industrial		380	0.24	63,000	1,700	7.5	10,000	3,200	38,000	320	4,800	16,000	4,800	4,800	63	6,700	---	180
RSLs																		
Residential		31	0.39	15,000	160	70	12,000	23	3,100	400	390	1,500	390	390	---	5.5	23,000	5.6
Commercial/Industrial		410	1.6	190,000	2,000	800	1.5.E+06	300	41,000	800	5,100	20,000	5,100	5,100	---	72	310,000	34
Protection of Groundwater		0.66	0.0013	300	58	1.4	9.9.E+07	0.49	51	14	3.7	48	0.95	1.6	0.14	2.6	680	0.03

Notes:

Results are shown in milligrams per kilogram (mg/kg)

< = Not detected above the laboratory reporting limit

ESLs = Environmental Screening Levels, Tables A and K-3, SFRWQCB, Revised May 2008

CHHSLs = California Human-Health Screening Levels for Soil, able 1, Cal/EPA, January 2005

RSLs = Regional Screening Levels (RSLs) Summary Table, U.S. EPA, May 17, 2010

Screening levels for chromium are for Chromium III, as there is no standard for total chromium

RSLs for Protection of Groundwater are Risk-Based Soil Screening Levels (SSLs), except for lead, which is an Maximum Contaminant Level (MCL)-based SSL.

TABLE 4
Summary of Organics Results - Soil
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (ft)	TPHg (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	BTEX (µg/kg)	MTBE (µg/kg)
RW1-0	0	---	34	390	---	---
RW1-4	4	<1.0	---	---	ND	<5.0
RW2-0	0	---	140	800	---	---
RW2-4	4	<1.0	---	---	ND	<5.0
RW4-0	0	<1.0	90	550	ND	<5.0
RW4-4	4	<1.0	<1.0	<1.0	ND	<5.0
RW5-0	0	---	260	1,400	---	---
RW5-4	4	<1.0	---	---	ND	<5.0
RW6-0	0	---	7.7	31	---	---
RW6-4	4	<1.0	---	---	ND	<5.0
RW7-0	0	---	21	100	---	---
RW7-4	4	<1.0	---	---	ND	<5.0
RW8-0	0	---	130	750	---	---
RW8-4	4	<1.0	---	---	ND	<5.0
RW9-0	0	---	10	25	---	---
RW9-4	4	<1.0	---	---	ND	<5.0
RW10-0	0	---	5.0	<1.0	---	---
RW10-4	4	<1.0	---	---	ND	<5.0
RW11-0	0	---	220	740	---	---
RW11-4	4	<1.0	---	---	ND	<5.0
RW12-0	0	---	140	500	---	---
RW12-4	4	<1.0	---	---	ND	<5.0
RW13-0	0	---	120	420	---	---
RW13-4	4	<1.0	---	---	ND	<5.0
RW14-0	0	---	5.9	3.4	---	---
RW14-4	4	<1.0	---	---	ND	<5.0
RW15-0	0	---	24	80	---	---
RW15-4	4	<1.0	---	---	ND	<5.0
RW16-0	0	---	68	400	---	---
RW16-4	4	<1.0	---	---	ND	<5.0
RW17-0	0	---	14	18	---	---
RW17-4	4	<1.0	---	---	ND	<5.0
RW18-0	0	---	35	73	---	---
RW18-4	4	<1.0	---	---	ND	<5.0
RW19-0	0	---	220	800	---	---
RW19-4	4	<1.0	---	---	ND	<5.0
RW20-0	0	---	320	1,200	---	---
RW20-4	4	<1.0	---	---	ND	<5.0
RW21-0	0	---	8.3	18	---	---
RW21-4	4	<1.0	---	---	ND	<5.0

TABLE 4
Summary of Organics Results - Soil
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Sample Depth (ft)	TPHg (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	BTEX (µg/kg)	MTBE (µg/kg)
RW22-0	0	---	260	920	---	---
RW22-4	4	<1.0	---	---	ND	<5.0
RW23-0	0	---	430	1,400	---	---
RW23-4	4	<1.0	---	---	ND	<5.0
RW24-0	0	---	6.1	15	---	---
RW24-4	4	<1.0	---	---	ND	<5.0
RW25-0	0	---	9.6	24	---	---
RW25-4	4	<1.0	---	---	ND	<5.0
RW26-0	0	---	880	4,000	---	---
RW26-4	4	<1.0	---	---	ND	<5.0
RW-27-0	0	---	1,900	6,100	---	---
RW27-4	4	<1.0	---	---	ND	<5.0
RW-28-0	0	---	220	730	---	---
RW28-4	4	<1.0	---	---	ND	<5.0
RW29-0	0	---	430	2,700	---	---
RW29-4	4	<1.0	---	---	ND	<5.0
ST1-0	0	---	26	580	---	---
ST1-4	4	<1.0	---	---	ND	<5.0
ST2-0	0	---	96	680	---	---
ST2-4	4	<1.0	---	---	ND	<5.0
ST3-0	0	---	12	64	---	---
ST3-4	4	<1.0	---	---	ND	<5.0
ST4-0	0	---	24	81	---	---
ST4-4	4	<1.0	---	---	ND	<5.0
ST5-0	0	---	100	700	---	---
ST5-4	4	<1.0	---	---	ND	<5.0
ESLs						
Residential Land Use		83	83	370	---	23
Comm/Ind Land Use		83	83	2,500	---	23
Construction Worker Exposure		4,200	4,200	12,000	---	2.8E+06

Notes:

mg/kg = Milligrams per kilogram
ug/kg = Micrograms per kilogram
MTBE = Methyl-tert-butyl ether
BTEX = Benzene, toluene, ethylbenzene, and xylenes
--- = Not analyzed or not applicable
ND = Not detected above the laboratory reporting limit
< = Not detected at or above the stated laboratory reporting limit
ESLs = Environmental Screening Levels, Tables A and K-3, SFRWQCB, Revised May 2008
TPHg = Total Petroleum Hydrocarbons as gasoline
TPHd = Total Petroleum Hydrocarbons as diesel
TPHmo = Total Petroleum Hydrocarbons as motor oil

TABLE 5
Summary of CAM17 Metals Results - Groundwater
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury (ug/l)
RW1-GW	0.045	0.32	14	0.021	0.03	3.9	1.0	2.1	0.55	<0.025	4.3	<0.050	<0.015	<0.075	4.8	5.1	1.8
RW15-GW	0.025	0.38	11	<0.0030	0.016	1.3	0.59	1.1	0.31	0.10	2.4	0.018	<0.0030	<0.015	1.7	4.6	9.7
RW17-GW	0.0088	0.032	1.6	<0.0030	0.0064	0.89	0.27	0.4	0.24	0.057	1.6	0.04	<0.0030	<0.015	1.8	0.67	1.6
RW19-GW	0.015	0.13	3.1	0.0058	0.010	1.1	0.40	0.7	0.34	0.049	1.1	<0.010	<0.0030	<0.015	1.3	1.8	0.80
RW21-GW	0.043	1.8	16	<0.015	0.043	4.7	2.4	2.3	0.59	0.14	28	0.24	<0.015	<0.015	4.8	3.4	4.7
RW24-GW	0.018	0.076	8.3	0.0077	0.013	1.2	0.39	0.7	0.47	0.049	2.5	0.013	<0.0030	<0.015	0.89	1.8	<0.20
RW26-GW	0.082	0.21	25	<0.0030	0.036	6.4	1.6	2.6	1.2	0.15	18	0.033	<0.0030	<0.015	2.9	3.9	5.2
SS1-GW	0.025	0.091	9.5	0.0044	0.013	1.3	0.34	0.7	0.20	0.029	1.3	0.021	<0.0030	0.023	1.4	1.9	2.3
SS2-GW	0.022	0.12	5.8	<0.0030	0.013	1.7	0.43	0.9	0.27	0.031	1.6	<0.010	<0.0030	<0.015	2.2	2.0	1.2
SS3-GW	0.01	0.063	2.9	<0.0030	0.006	0.78	0.20	0.46	0.13	0.016	0.78	<0.010	<0.0030	<0.015	1.1	1.1	0.90
ESLs																	
GW is current/potential source	0.006	0.036	1.0	0.00053	0.00025	0.05	0.003	0.0031	0.0025	0.035	0.0082	0.005	0.00019	0.002	0.015	0.081	0.025
GW not current/potential source	0.030	0.036	1.0	0.00053	0.00025	0.18	0.003	0.0031	0.0025	0.24	0.0082	0.005	0.00019	0.004	0.019	0.081	0.025
Surface Water - Freshwater	0.006	0.00014	1.0	0.0027	0.00025	0.05	0.003	0.009	0.0025	0.035	0.052	0.005	0.00034	0.002	0.015	0.12	0.025
Surface Water - Marine	0.5	0.00014	1.0	0.00053	0.0093	0.18	0.003	0.0031	0.0056	0.24	0.0082	0.071	0.00019	0.004	0.019	0.081	0.025
Surface Water - Estuarine	0.03	0.00014	1.0	0.00053	0.00025	0.18	0.003	0.0031	0.0025	0.24	0.0082	0.005	0.00019	0.004	0.019	0.081	0.025

Notes:

Data are shown in units of milligrams per liter (mg/l), except for mercury, which is shown in units of microgram per liter (ug/l)

< = Not detected above the stated laboratory reporting limit

--- = Not Analyzed or Not Applicable

ESLs = Environmental Screening Levels, Tables A, B, & F, SFRWQCB, May 2008

TABLE 6
Summary of Organics Results - Groundwater
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Sample ID	TPHg (mg/l)	TPHd (mg/l)	TPHmo (mg/l)	BTEX (µg/l)	MTBE (µg/l)
RW1-GW	<0.050	<0.056	<0.056	ND	0.94
RW15-GW	<0.050	0.19	0.25	ND	<0.50
RW17-GW	<0.050	0.056	<0.056	ND	<0.50
RW19-GW	<0.050	0.080	0.10	ND	<0.50
RW21-GW	<0.050	0.067	<0.067	ND	<0.50
RW24-GW	<0.050	0.062	<0.062	ND	<0.50
RW26-GW	<0.050	0.071	0.066	ND	<0.50
SS1-GW	<0.050	<0.062	<0.062	ND	<0.50
SS2-GW	<0.050	<0.062	<0.062	ND	<0.50
SS3-GW	<0.050	<0.053	<0.053	ND	<0.50
ESLs					
GW is current/potential source	0.10	0.10	0.10	---	5.0
GW not current/potential source	0.21	0.21	0.21	---	1,800
Surface Water - Freshwater	0.10	0.10	0.10	---	5.0
Surface Water - Marine	0.21	0.21	0.21	---	180
Surface Water - Estuarine	0.21	0.21	0.21	---	180

Notes:

mg/l = Milligrams per liter
µg/l = Micrograms per liter
TPHg = Total Petroleum Hydrocarbons as gasoline
TPHd = Total Petroleum Hydrocarbons as diesel
TPHmo = Total Petroleum Hydrocarbons as motor oil
BTEX = Benzene, toluene, ethylbenzene, and xylenes
MTBE = Methyl-tert-butyl ether
--- = Not Analyzed or Not Applicable
< = Not detected above the stated laboratory reporting limit
ESLs = Environmental Screening Levels, Tables A, B, & F, SFRWQCB, May 2008

TABLE 7a
SUMMARY OF LEAD STATISTICAL ANALYSIS
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Westbound Shoulder from San Ramon Road to Dougherty Road
(Borings B1-B29)

TOTAL LEAD UCLs

	Total Lead (mg/kg)	
	90% UCL	**95% UCL**
0 to 0.5 ft.	83.6	91.1
1.0 to 1.5 ft.	26.3	27.5
2.0 to 2.5 ft.	29.4	31.7

EXCAVATION SCENARIOS

	Weighted Averages		
	90% UCL		95% UCL
Excavation Depth	**Total Lead (mg/kg)**	**WET Lead (mg/l)**	**Total Lead (mg/kg)**
0 to 1 ft	84	5.1	91
Underlying Soil (1 to 2.5 ft.)	*27*	*1.7*	*29*
0 to 2 ft	55	3.4	59
Underlying Soil (2 to 2.5 ft.)	*29*	*1.8*	*32*
0 to 2.5 ft.	50	3.0	58

Notes:

Weighted average values are based upon calculated UCLs for each depth interval.

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.

Regression Line Slope: $y =$ 0.06106 x

TABLE 7b
SUMMARY OF LEAD STATISTICAL ANALYSIS
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Westbound Shoulder from Dougherty Road to Airway Boulevard
(Borings B30-B140, RW1-RW7, ST1 and ST2)

TOTAL LEAD UCLs

	Total Lead (mg/kg)	
	90% UCL	**95% UCL**
0 to 0.5 ft.	30.4	31.1
1.0 to 1.5 ft.	21.9	22.9
2.0 to 2.5 ft.	20.6	21.2

EXCAVATION SCENARIOS

	Weighted Averages		
	90% UCL		95% UCL
Excavation Depth	**Total Lead (mg/kg)**	**WET Lead (mg/l)**	**Total Lead (mg/kg)**
0 to 1 ft	30	1.9	31
Underlying Soil (1 to 2.5 ft.)	*21*	*1.3*	*22*
0 to 2 ft	26	1.6	27
Underlying Soil (2 to 2.5 ft.)	*21*	*1.3*	*21*
0 to 2.5 ft.	25	1.5	29

Notes:

Weighted average values are based upon calculated UCLs for each depth interval.

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.

Regression Line Slope: $y =$ 0.06106 x

TABLE 7c
SUMMARY OF LEAD STATISTICAL ANALYSIS
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Westbound Shoulder from Airway Boulevard to N. Livermore Avenue
(Borings B141-B175, B178, B179, and RW8-RW14)

TOTAL LEAD UCLs

	Total Lead (mg/kg)	
	90% UCL	**95% UCL**
0 to 0.5 ft.	88.6	93.8
1.0 to 1.5 ft.	28.8	30.2
2.0 to 2.5 ft.	17.0	18.1

EXCAVATION SCENARIOS

	Weighted Averages		
	90% UCL		95% UCL
Excavation Depth	**Total Lead (mg/kg)**	**WET Lead (mg/l)**	**Total Lead (mg/kg)**
0 to 1 ft	89	5.4	94
Underlying Soil (1 to 2.5 ft.)	*25*	*1.5*	*26*
0 to 2 ft	59	3.6	62
Underlying Soil (2 to 2.5 ft.)	*17*	*1.0*	*18*
0 to 2.5 ft.	50	3.1	56

Notes:

Weighted average values are based upon calculated UCLs for each depth interval.

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.

Regression Line Slope: $y =$ 0.06106 x

TABLE 7d
SUMMARY OF LEAD STATISTICAL ANALYSIS
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Westbound Shoulder from N. Livermore Avenue to First Street
(Borings B176-B217, RW15-RW28, and ST4)

TOTAL LEAD UCLs

	Total Lead (mg/kg)	
	90% UCL	**95% UCL**
0 to 0.5 ft.	75.2	78.0
1.0 to 1.5 ft.	33.5	35.5
2.0 to 2.5 ft.	19.4	21.1

EXCAVATION SCENARIOS

	Weighted Averages		
	90% UCL		95% UCL
Excavation Depth	**Total Lead (mg/kg)**	**WET Lead (mg/l)**	**Total Lead (mg/kg)**
0 to 1 ft	75	4.6	78
Underlying Soil (1 to 2.5 ft.)	*29*	*1.8*	*31*
0 to 2 ft	54	3.3	57
Underlying Soil (2 to 2.5 ft.)	*19*	*1.2*	*21*
0 to 2.5 ft.	47	2.9	52

Notes:

Weighted average values are based upon calculated UCLs for each depth interval.

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.

Regression Line Slope: $y = 0.06106\ x$

TABLE 7e
SUMMARY OF LEAD STATISTICAL ANALYSIS
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Westbound Shoulder from First Street to Greenville Road
(Borings B218-B263)

TOTAL LEAD UCLs

	Total Lead (mg/kg)	
	90% UCL	**95% UCL**
0 to 0.5 ft.	158.7	165.5
1.0 to 1.5 ft.	41.6	45.3
2.0 to 2.5 ft.	15.2	16.0

EXCAVATION SCENARIOS

	Weighted Averages		
	90% UCL		95% UCL
Excavation Depth	**Total Lead (mg/kg)**	**WET Lead (mg/l)**	**Total Lead (mg/kg)**
0 to 1 ft	159	9.7	166
Underlying Soil (1 to 2.5 ft.)	*33*	*2.0*	*36*
0 to 2 ft	100	6.1	105
Underlying Soil (2 to 2.5 ft.)	*15*	*0.9*	*16*
0 to 2.5 ft.	83	5.1	90

Notes:

Weighted average values are based upon calculated UCLs for each depth interval.

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.

Regression Line Slope: $y = 0.06106\ x$

TABLE 7f
SUMMARY OF LEAD STATISTICAL ANALYSIS
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Eastbound Shoulder between Hacienda Drive and Santa Rita Road
(Borings B264-B268, and ST3)

TOTAL LEAD UCLs

	Total Lead (mg/kg)	
	90% UCL	**95% UCL**
0 to 0.5 ft.	42.3	45.8
1.0 to 1.5 ft.	13.3	13.7
2.0 to 2.5 ft.	19.9	21.1

EXCAVATION SCENARIOS

	Weighted Averages		
	90% UCL		95% UCL
Excavation Depth	**Total Lead (mg/kg)**	**WET Lead (mg/l)**	**Total Lead (mg/kg)**
0 to 1 ft	42	2.6	46
Underlying Soil (1 to 2.5 ft.)	*16*	*0.9*	*16*
0 to 2 ft	28	1.7	30
Underlying Soil (2 to 2.5 ft.)	*20*	*1.2*	*21*
0 to 2.5 ft.	26	1.6	31

Notes:

Weighted average values are based upon calculated UCLs for each depth interval.

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.

Regression Line Slope: $y = 0.06106\ x$

TABLE 7g
SUMMARY OF LEAD STATISTICAL ANALYSIS
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Eastbound Shoulder at N. Livermore Avenue Interchange and onramp
(Borings B269-B278, and ST5)

TOTAL LEAD MAXIMUMS

	Total Lead (mg/kg)
0 to 0.5 ft.	320
1.0 to 1.5 ft.	66
2.0 to 2.5 ft.	370

EXCAVATION SCENARIOS

	Weighted Averages MAXIMUMS	
Excavation Depth	**Total Lead (mg/kg)**	**WET Lead (mg/l)**
0 to 1 ft	320	20
Underlying Soil (1 to 2.5 ft.)	*167*	*10*
0 to 2 ft	193	12
Underlying Soil (2 to 2.5 ft.)	*370*	*23*
0 to 2.5 ft.	228	14

Notes:

Weighted average values are based upon maximum concentrations for each depth interval.

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.

Regression Line Slope: $y = 0.06106\ x$

TABLE 7h
SUMMARY OF LEAD STATISTICAL ANALYSIS
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Eastbound I-580 onramp at First Street
(Borings B279-B287)

TOTAL LEAD UCLs

	Total Lead (mg/kg)	
	90% UCL	**95% UCL**
0 to 0.5 ft.	44.6	48.4
1.0 to 1.5 ft.	21.4	22.7
2.0 to 2.5 ft.	72.5	79.7

EXCAVATION SCENARIOS

	Weighted Averages		
	90% UCL		95% UCL
Excavation Depth	**Total Lead (mg/kg)**	**WET Lead (mg/l)**	**Total Lead (mg/kg)**
0 to 1 ft	45	2.7	48
Underlying Soil (1 to 2.5 ft.)	*38*	*2.3*	*42*
0 to 2 ft	33	2.0	36
Underlying Soil (2 to 2.5 ft.)	*73*	*4.4*	*80*
0 to 2.5 ft.	41	2.5	55

Notes:

Weighted average values are based upon calculated UCLs for each depth interval.

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.

Regression Line Slope: $y = 0.06106\ x$

TABLE 7i
SUMMARY OF LEAD STATISTICAL ANALYSIS
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Eastbound I-580 onramp at Vasco Road
(Borings B288-B296)

TOTAL LEAD UCLs

	Total Lead (mg/kg)	
	90% UCL	**95% UCL**
0 to 0.5 ft.	111.9	122.0
1.0 to 1.5 ft.	58.7	64.0
2.0 to 2.5 ft.	9.5	10.0

EXCAVATION SCENARIOS

	Weighted Averages		
	90% UCL		95% UCL
Excavation Depth	**Total Lead (mg/kg)**	**WET Lead (mg/l)**	**Total Lead (mg/kg)**
0 to 1 ft	112	6.8	122
Underlying Soil (1 to 2.5 ft.)	*42*	*2.6*	*46*
0 to 2 ft	85	5.2	93
Underlying Soil (2 to 2.5 ft.)	*9.5*	*0.6*	*10*
0 to 2.5 ft.	70	4.3	78

Notes:

Weighted average values are based upon calculated UCLs for each depth interval.

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.

Regression Line Slope: $y = 0.06106\ x$

TABLE 7j
SUMMARY OF LEAD STATISTICAL ANALYSIS
I-580 Westbound HOV Lane Widening Project
Alameda County, California

Eastbound I-580 onramp at Greenville Road
(Borings B297-B302, and RW29)

TOTAL LEAD UCLs

	Total Lead (mg/kg)	
	90% UCL	**95% UCL**
0 to 0.5 ft.	15.7	16.7
1.0 to 1.5 ft.	10.3	10.8
2.0 to 2.5 ft.	11.8	12.5

EXCAVATION SCENARIOS

	Weighted Averages		
	90% UCL		95% UCL
Excavation Depth	**Total Lead (mg/kg)**	**WET Lead (mg/l)**	**Total Lead (mg/kg)**
0 to 1 ft	16	1.0	17
Underlying Soil (1 to 2.5 ft.)	*11*	*0.7*	*11*
0 to 2 ft	13	0.8	14
Underlying Soil (2 to 2.5 ft.)	*12*	*0.7*	*13*
0 to 2.5 ft.	13	0.8	15

Notes:

Weighted average values are based upon calculated UCLs for each depth interval.

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

* = WET lead concentrations are predicted using slope of regression line, where y = predicted WET lead and x = total lead.

Regression Line Slope: $y = 0.06106\ x$

APPENDIX A

State of California

Toy Angeles
Business, Transportation and Housing Agency

Memorandum

To: Office Of Design Alameda II
Attn: Sotero Angeles/Wing Lok C.R. Wilson

From: DEPARTMENT OF TRANSPORTATION
Office of Environmental Engineering

Date: 8/17/2010
File: 04-ALA-580-R8.2/R21.4
29082_
CONSTRUCT I-580 WB HOV
LANE,INCLUDE

Subject: Priliminary Site Investigation Report (received on 7/15/2010)

Comments from the Air/Noise/Energy Branch
Not applicable.

Comments from the Hazardous Waste Branch

1) The transmittal letter for the report states that the investigation was in accordance with Geocon's workplan dated February 22, 2010. Note, however, that Geocon's update to the original initial site assessment was not completed until May 13, 2010. Geocon's May 13, 2010 letter report entitled "Summary of Sites that May Pose a Risk to the Proposed I-580 Westbound HOV Widening Project, San Ramon Road to Greenville Road, Alameda County, California" (Summary of Sites) includes recommendations for sampling 6 areas where chemicals of concern could be encountered during the excavation work required to install new overhead sign structures. The transmittal letter for this site investigation report should also state that it is in compliance with the recommendations made within Geocon's "Summary of Sites." It does not appear, given the information in the draft site investigation report, that the site investigation work was done in accordance with the recommendations within the "Summary of Sites" and that there were numerous deviations from the workplan.

2) Section 1.2, "Purpose," introduces the abbreviation "ADL" without defining it. While the Hazardous Waste Branch (HWB) knows what ADL stands for, some other users of this report may not.

3) Section 2.1, "Initial Site Assessment Update," lists 4 out of the 6 proposed sign-structure test sites referenced in Geocon's May 13, 2010 "Summary of Sites"; however, it is missing the one site with the highest potential to impact the subject project - the location of sign structure "E" shown on west segment sign plan S-7 attached to Geocon's "Summary of Sites" - which is down gradient from the Dublin Toyota leaking underground storage tank. Note that Geocon recommends sampling at this sign location within the text of their "Summary of Sites" but failed to include this item in their "Recommendations" section. This was brought Geocon's attention in a May 18, 2010 e-mail from Peter Altherr to Ms. Lauren Vigliotti.

4) Section 2.3, "Risk-Based Screening Criteria," discusses the Regional Water Quality Control Board's (RWQCB) environmental screening levels (ESLs) and California EPA's Office of Environmental Health Hazard Assessment's (OEHHA) California human health screening levels (CHHSLs); however, it should also include a discussion on U.S. EPA's regional screening levels (RSLs). The U.S. EPA's RSLs are applicable for work in EPA Region IX. Note that the U.S. EPA's RSLs for certain metals, such as chromium VI and cobalt, are actually lower than the respective risk-based screening criteria promulgated by OEHHA and the RWQCB; RSLs are also available for the different xylene isomers, which are not defined by either the OEHHA or the RWQCB. Some of the RSLs for volatile organic compounds (VOCs) are lower than the screening levels promulgated by the OEHHA or the RWQCB. VOCs are among the listed chemicals of potential concern for this project.

5) Section 2.4, "DTSC Variance," mentions the various types of soil-management categories that are used by Caltrans to manage lead-contaminated soil. Note that Caltrans standard special provisions (SSPs) use a hyphen in the designation; i.e., "type Y-1" instead of "Type Y1." Please change the category descriptions used in this report such that they are consistent with the terms used in the SSPs. Note that this comment was previously provided to Geocon Consultants in a May 3, 2010 e-mail from Peter Altherr to Mr. Rick Day regarding project E8435-06-31.

6) Section 5.0, "Investigative Results," is missing a discussion on the laboratory results for the samples from the borings at the proposed sign structure locations; i.e., borings SS1 to SS4. Note that the discussion should also explain why Geocon did not drill boring SS5 for sign structure "E" shown on west segment sign plan S-7.

7) Section 5.4, "Statistical Evaluation for Lead Detected in Soil Samples," defines the 10 decision-management groups for lead-contaminated roadside soil. The use of statistics for environmental decision making requires that enough data be collected to be able to perform a technically sound statistical analysis for soil-handling decisions. Statisticians

generally state that at least 30 samples must be obtained from within a given population in order to make technically sound estimates of the characteristics of the general population. Caltrans (2007) ADL guidance states: "As a rule of thumb, to allow for the optimal use of statistics in data analysis a sufficient number of soil samples (20 to 30) should be collected to allow the use of statistics to describe the soils to be excavated." Note that the number of samples in the following decision-management units all have 10 or fewer samples for each layer of soil:

Unit F: Eastbound shoulder between Hacienda Drive and Santa Rita Road; number of samples, n, =5
Unit G: Eastbound shoulder and on-ramp at N. Livermore Avenue interchange; n=10
Unit H: Eastbound on-ramp at First Street; n=8
Unit I: Eastbound on-ramp at Vasco Road; n=8
Unit J: Eastbound on-ramp at Greenville Road; n=6

Many regulatory agencies will require the use of the maximum observed value as the representative "average," in lieu of the 95% upper confidence limit (UCL) of the mean, for data sets that have too few samples to conduct a technically sound statistical analysis (see section 2.5.1.4, "Exposure Point Concentrations," in DTSC's Preliminary Endangerment Assessment Guidance Manual, reprinted June 1999). The use of the maximum observed concentration instead of the 95% UCL of the mean can change the predicted waste classification. For example, the draft report's predicted average Waste Extraction Test lead concentration for the 0-to-1-foot-deep strata at the eastbound on-ramp at First Street is 2.7 mg/l (non-hazardous); however, the use of the maximum observed lead value (110 mg/kg) yields a predicted "average" WET lead value of 6.7 mg/l, which would change the predicted waste classification to hazardous.

Geocon is advised to either redefine their decision management units (such that they have enough representative samples) or to use the maximum observed concentration for those decision units with less than 20 representative samples.

8) Section 7.0, "Report Limitations," should include a discussion on the limitations associated with relying on the results of a statistical analysis that has been performed using less than 30 representative samples of any given population.

9) The boring locations for the overhead sign structures shown below are all off target by at least 50 feet, some by as much as 1200 feet.

a) SS1 on figure 2v is 1200 feet from sign "N" shown on sign plan S-23.
b) SS2 on figure 2f is 50 feet from sign "M" shown on sign plan S-13.
c) SS3 on figure 2e is 200 feet from sign "K" shown on sign plan S-11.
d) SS4 on figure 2d is 100 feet from sign "G" shown on sign plan S-8.
e) SS5 for sign "H" shown on sign plan S-9 was not drilled.
f) SS6 for sign "E" shown on sign plan S-7 was not drilled.

10) The site investigation report should include the boring logs for all of the samples shown in table 6. These logs should also indicate the depth to groundwater, if encountered, and the depths of all soil samples.

11) The site investigation report should include a discussion on all of the deviations from the workplan. Here are a few of the deviations that the HWB discovered in this draft report (these items are in addition to those mentioned in comment 9):

a) Boring RW1 was moved from left of station 277+75 to 275+25.
b) Boring RW2 was moved over 400 feet west of the location shown on the workplan maps.
c) Borings RW3 and RW30 were not completed.
d) Boring ST-3 was apparently completed but its location is not shown on the boring location map.
e) Borings ST-6, ST-7, and ST-8 were not drilled, but ST-7 is still shown on figure 2g.
f) Step-out borings SO-1 to SO-42 were shown on the workplan maps but no samples were collected at these locations.
g) Boring RW-26 was originally planned for station 734+75 but was actually drilled at station 726+25.

12) Many figures in the report, e.g., the boring location maps, would be much easier to reference if some integral local streets names were labeled, such as at interchanges.

Reviewed by: Chris Wilson (ph: 286-5647) / Peter Altherr (ph: 286-4668)
Date:

Geocon Response to Comments

The following responses pertain to the Memorandum from the Department of Transportation - Office of Environmental Engineering, dated 8/17/2010, for File: 04-ALA-580R8.2/R21.4 29082_CONSTRUCT I-580 WB HOV LANE,INCLUDE, Subject: Preliminary Site Investigation (PSI) Report (received on 7/15/2010).

1) Added the following language to the transmittal letter and report: "Geocon performed environmental engineering services at the subject site in general accordance with the scope of work outlined in our revised workplan dated February 22, 2010 and in general compliance with our *Summary of Sites that May Pose a Risk to the Proposed I-580 Westbound HOV Widening Project, San Ramon Road to Greenville Road, Alameda County, California*, dated May 13, 2010."

2) Added definition of aerially deposited lead (ADL) in Section 1.2.

3) Geocon remobilized to the Site on August 2, 2010, to attempt to collect a grab-groundwater sample at the location of proposed overhead sign structure E shown on sign plan S-7. The boring was advanced to a depth of 30 feet; however, groundwater was not encountered and a grab-groundwater sample could not be collected. Geocon confirmed with BKF Engineers that the proposed pile depth at this location is 25 feet. The results of the boring and further discussion of the Dublin Toyota UST site have been included in Sections 5.2.3 and 6.3.2, respectively.

4) Added Regional Screening Levels (RSLs) as a screening criterion in the PSI report.

5) A hyphen has been added to the various soil management categories (i.e., Y-1, Y-2, Z-2, and Z-3).

6) Added Section 5.2.3, Sign Structure Borings, to the PSI Report to specifically address these results.

7) Geocon uses the Standard Bootstrap method (using USEPA ProUCL software) to calculate Upper Confidence Limits (UCLs), which is consistent with Geocon's existing Caltrans Contract No. 04A2912 for hazardous waste investigations. Geocon also generally attempts to collect 10 or more sample values for each decision management group (i.e., dataset); however; the collection of smaller datasets is reasonable for smaller improvements (e.g., ramp widening and maintenance vehicle pullouts). In these instances, Geocon may rely on smaller data sets to calculate standard bootstrap UCLs.

The UCL calculation method and minimum sample populations used for the I-580 WB HOV Lane project are the same as those used for the State Route 280 Ramp Improvements project that was performed directly for the Office of Environmental Engineering. For the State Route 280 Ramp Improvements project, maximum concentrations were used for datasets with fewer than five unique values and UCLs were calculated and used for the sample populations ranging from 6 to 12, as follows:

n=6
Westborough Blvd, 0.5 to 1 ft

n=7
Hickey Blvd, 1 to 1.5 ft

n=12
Avalon Drive, 0 to 0.5 ft; Hickey Blvd, 0 to 0.5 ft; and Westborough Blvd, 0 to 0.5 ft

It is noted that in their comments, Caltrans incorrectly reported the sample populations (n) for Units F to J, as follows:

Unit	Incorrect "n"	Correct "n"
F	5	6
G	10	11
H	8	9
I	8	9
J	6	7

Geocon re-examined the five datasets (Units F to J) in question and conclude the following:

Unit F (Eastbound Shoulder between Hacienda Drive and Santa Rita Road)
The use of UCLs and maximum concentrations both results in a predicted waste classification of non-hazardous for all sample depth.

No revisions made to PSI report.

Unit G (Eastbound Shoulder at N. Livermore Avenue Interchange and Onramp)
The use of UCLs and maximum concentrations both result in the 0 to 1 ft and 2 to 2.5 ft intervals being classified as hazardous based on predicted WET concentrations, and the 1 to 2 ft interval being classified as non-hazardous. Due to the irregular distribution of reported lead concentrations (i.e., concentrations do not appear to decrease with depth), Geocon agrees to use maximum concentrations for this area to provide a conservative estimate of lead impacts.

The PSI report has been revised to incorporate maximum concentrations for this area.

Unit H (Eastbound Onramp at First Street)
Review of the 0 to 1 ft data shows that eight of nine samples had total lead concentrations ranging from <5 mg/kg to 47 mg/kg, and one sample with a reported total lead concentration of 110 mg/kg. Review of the 2 to 2.5 ft data shows that eight of nine samples had total lead

concentrations ranging from 6.0 mg/kg to 72 mg/kg, and one sample with a reported total lead concentration of 220 mg/kg.

Geocon performed outlier tests using ProUCL and determined that the maximum concentrations of 110 mg/kg in the 0 to 1 ft interval and 220 mg/kg in the 2 to 2.5 ft interval are considered outliers at the 10% and 5% significance levels. The use of these maximum values over-estimates predicted WET lead concentrations and is not representative of site conditions.

As shown in Table 7h, a total lead concentration of 41 mg/kg is predicted for the 0 to 2.5 ft excavation depth scenario, which is a weighted average calculated using the individual layer 90% UCLs, where each layer had a sample population of nine. For comparison, the 90% UCL for the combined data set comprised of a population of 27, is 41.5 mg/kg. Accordingly, a non-hazardous classification for this area is appropriate.

No revisions made to PSI report.

Unit I (Eastbound Onramp at Vasco Road)

Review of the data for the 1 to 2 ft sample interval shows that only two of nine samples had a total lead concentration greater than 50 mg/kg, with reported WET lead concentrations of 3.1 and 3.4 mg/l in these two samples. The maximum total lead concentration results in an over-estimated predicted WET lead concentration of 9.77 mg/l for this sample interval. A non-hazardous classification based on the UCL-predicted WET lead concentration of 3.58 mg/l for the 1 to 2 ft interval is considered to be more representative.

As shown in Table 7i, a 90% UCL-predicted WET lead concentration of 4.3 mg/l, based on a total lead concentration of 70 mg/kg, is predicted for the 0 to 2.5 ft excavation depth scenario, which is a weighted average calculated using the individual layer 90% UCLs, where each layer had a sample population of nine. For comparison, the 90% UCL for the combined data set comprised of a population of 27, is 56.5 mg/kg (corresponding to a predicted WET lead concentration of 3.45 mg/l). Accordingly, a non-hazardous classification for this area is appropriate.

No revisions made to PSI report.

Unit J (Eastbound Onramp at Greenville Road)

The use of UCLs and maximum concentrations both results in a predicted waste classification of non-hazardous for all sample depths.

No revisions made to PSI report.

8) A discussion of the statistical limitations is not warranted as the UCL calculation method and sample populations used for this PSI are consistent with current projects being performed directly for Office of Environmental Engineering.

9) The purpose of the sign structure (SS) grab-groundwater samples was to evaluate whether nearby known release sites pose a risk to the construction project. Therefore, the borings were advanced in the field at safe and accessible locations that were between each identified nearby release site and the proposed sign structure. This applies to all of the SS borings, along with the following additional responses:

   a) Geocon remobilized to the project site on August 2, 2010, and collected grab-groundwater sample SS1-R at the proposed sign structure N location, shown on Site Plan Figure 2v and sign plan S-23. The SS1 results have been incorporated into the PSI report.

   e) Boring RW1 was advanced to groundwater near proposed sign H shown on sign plan S-8 and Geocon Site Plan Figure 2d. SS5 was not a proposed boring ID in the workplan.

   f) See Response 3 above.

10) The purpose of the investigation was to "evaluate whether impacts due to aerially-deposited lead (ADL) exist in the surface and near surface soil and determine if other constituents of concern have impacted soil and groundwater at select areas at the Site." Due to the primary purpose of the investigation and the direct-push drilling methods for deeper borings (i.e., continuous push to target depth for grab-groundwater sampling), field boring logs were not prepared. Geocon has incorporated approximate depths to first encountered groundwater (see Section 5.1) and a description of general soil conditions in the PSI report.

11) We have added to the PSI report a discussion of: 1) deviations from our revised workplan and 2) *Summary of Sites that May Pose a Risk to the Proposed I-580 Westbound HOV Widening Project (*see Sections 3.2, 5.2.2,

   a) Boring RW1 was shifted west due to inaccessibility and safety, and is located 70 feet west of the proposed retaining wall.

   b) Boring RW2 was shifted in the field due to inaccessibility, as its proposed location was on an un-accessible portion of I-580 near the Dublin BART station. RW2 was advanced as close as possible to the proposed location, which was on the north side of the metal beam guardrail, necessitating the use of a hand auger.

   c) Boring RW3 was not advanced as its proposed location was on an un-accessible portion of I-580 near the Dublin BART station. Boring RW30 was not advanced as project plans had been modified between the time the revised Workplan was submitted and the initiation of fieldwork. Therefore, boring RW30 was deleted.

   d) The boring labeled ST7 on Geocon Site Plan Figure 2g was a typographic error and has been corrected to ST3.

e) The revised workplan figures contained typographic errors to the ST boring numbers, such that there were two borings labeled ST7, and no borings labeled ST3, ST4 or ST5. Only six ST borings were proposed; five were completed and one was deleted in the field due to numerous subsurface utilities in the area. See Response 11.d above addressing ST7.

f) Step-out borings SO1 through SO42 were not collected in accordance with our revised Workplan stating: "Based on the results of the initial shoulder samples, up to 48 step-out boring locations (SO1 through SO48) will be advanced along portions of the roadway shoulder, approximately 15 to 20 feet from the EOP, where additional auxiliary lane widening is proposed." The analytical results and statistical analysis indicated that the portion of the project site is non-hazardous where additional widening was proposed between proposed borings SO1 through SO42. Accordingly, step-out borings were not needed to delineate the lateral extent of ADL impacts.

Note that, in accordance with our revised Workplan, step-out borings SO43 through SO47 were advanced, as the initial analytical results and statistical analysis indicated that this portion of the project site contained soil that would be classified as California hazardous waste (see Section 6.1.5).

12) The Site Plans have been revised to show names of roadways at I-580 interchanges.

APPENDIX B

California Environmental Protection Agency
Department of Toxic Substances Control

VARIANCE

Applicant Names:

State of California
Department of Transportation
(Caltrans)
1120 N Street
Sacramento, California 95814

Variance No. V09HQSCD006

Effective Date: July 1, 2009

Expiration Date: July 1, 2014

Modification History:

Pursuant to California Health and Safety Code, Section 25143, the Department of Toxic Substances Control hereby issues the attached Variance consisting of 9 pages to the Department of Transportation.

Beverly Rikala
Team Leader, Operating Facilities Team
Department of Toxic Substances Control

Date: 6/30/09

1. INTRODUCTION.

a) Pursuant to Health and Safety Code, section 25143, the California Department of Toxic Substances Control (DTSC) grants this variance to the applicant below for waste considered to be hazardous solely because of its lead concentrations and as further specified herein.

b) DTSC hereby grants this variance only from the requirements specified herein and only in accordance with all terms and conditions specified herein.

2. IDENTIFYING INFORMATION.

APPLICANT/OWNER/OPERATOR

State of California
Department of Transportation, (Caltrans)
All Districts

3. TYPE OF VARIANCE.

Generation, Manifest, Transportation, Storage and Disposal.

4. ISSUANCE AND EXPIRATION DATES.

DATE ISSUED: July 1, 2009 EXPIRATION DATE: July 1, 2014

5. APPLICABLE STATUTES AND REGULATIONS. The hazardous waste that is the subject of this variance is fully regulated under Health and Safety Code, section 25100, et seq. and California Code of Regulations, title 22, division 4.5 except as specifically identified in Section 8 of this variance.

6. DEFINITION. For purposes of this variance, "lead-contaminated soil(s)" shall mean soil that meets the criteria for hazardous waste but contains less than 3397 mg/kg total lead and is hazardous primarily because of aerially-deposited lead contamination associated with exhaust emissions from the operation of motor vehicles.

7. FINDINGS/DETERMINATIONS. DTSC has determined that the variance applicant meets the requirements set forth in Health and Safety Code, section 25143 for a variance from specific regulatory requirements as outlined in Section 8 of this variance. The specific determinations and findings made by DTSC are as follows:

a) Caltrans intends to excavate, stockpile, transport, bury and cover large volumes of soil associated with highway construction projects. In the more urbanized highway corridors around the State this soil is contaminated with lead, primarily due to historic emissions from automobile exhausts. In situ sampling and laboratory testing has shown that some of the soil contains concentrations of lead in excess of State regulatory thresholds, and thus any generated waste from disturbance of the soil

would be regulated as hazardous waste. Such soil contains a Total Threshold Limit Concentration (TTLC) of 1000 milligrams per kilogram (mg/kg) or more lead and/or it meets or exceeds the Soluble Threshold Limit Concentration (STLC) for lead of 5 milligrams per liter (mg/l). A Human Health Risk Assessment prepared for this variance concludes that soil contaminated with elevated concentrations of lead can be managed in a way that presents no significant risk to human health.

b) The lead-contaminated soil will be placed only in Caltrans' right-of-way. Depending on concentration levels, the wastes will be covered with a minimum thickness of one (1) foot of non-hazardous soil or asphalt/concrete cover and will always be at least five (5) feet above the highest groundwater elevation. Caltrans will assure that proper health and safety procedures will be followed for workers, including any persons engaged in maintenance work in areas where the waste has been buried and covered.

c) DTSC finds and requires that the lead-contaminated soil excavated, stockpiled, transported, buried and covered pursuant to this variance is a non-RCRA hazardous waste, and that the waste management activity is insignificant as a potential hazard to human health and safety and the environment, when managed in accordance with the conditions, limitations and other requirements specified in this variance.

8. PROVISIONS WAIVED.

Provided Caltrans meets the terms and conditions of this variance, DTSC waives the hazardous waste management requirements of Health and Safety Code, Chapter 6.5 and California Code of Regulations, title 22 for the lead-contaminated soil that Caltrans reuses in projects that would require Caltrans to obtain a permit for a disposal facility and any other generator requirements that concern the transportation, manifesting, storage and land disposal of hazardous waste.

9. SPECIFIC CONDITIONS, LIMITATIONS AND OTHER REQUIREMENTS.

In order for the provisions discussed in section 8 to be waived, lead-contaminated soil must not exceed the contaminant concentrations discussed below and Caltrans management practices must meet all the following conditions:

a) Caltrans implementation of this variance shall comply with all applicable state laws and regulations for water quality control, water quality control plans, waste discharge requirements (including storm water permits), and others issued by the State Water Resources Control Board (SWRCB) and/or a California Regional Water Quality Control Board (RWQCB). Caltrans shall provide written notification to the appropriate RWQCB at least 30 days prior to advertisement for bids of projects that involve invocation of this variance, or as otherwise negotiated with the SWRCB or appropriate RWQCB.

b) The waivers in this variance shall only be applied to lead-contaminated soil that is not a RCRA hazardous waste and is hazardous primarily because of aerially-

deposited lead contamination associated with exhaust emissions from the operation of motor vehicles. The variance is not applicable to any other hazardous waste.

c) Soil containing 1.5 mg/l extractable lead or less (based on a modified waste extraction test using deionized water as the extractant) and 1411 mg/kg or less total lead may be used as fill provided that the lead-contaminated soil is placed a minimum of five (5) feet above the maximum historic water table elevation and covered with at least one (1) foot of nonhazardous soil that will be maintained by Caltrans to prevent future erosion.

d) Soil containing 150 mg/L extractable lead or less (based on a modified waste extraction test using deionized water as the extractant) and 3397 mg/kg or less total lead may be used as fill provided that the lead-contaminated soils are placed a minimum of five (5) feet above the maximum historic water table elevation and protected from infiltration by a pavement structure which will be maintained by Caltrans.

e) Lead-contaminated soil with a pH less than 5.5 but greater than 5.0 shall only be used as fill material under the paved portion of the roadway. Lead-contaminated soil with a pH at or less than 5.0 shall be managed as a hazardous waste.

f) For each project that has the potential to generate waste by disturbing lead-contaminated soil (as defined in 6), Caltrans shall conduct sampling and analysis to adequately characterize the soils containing aerially deposited lead in the areas of planned excavation along the project route. Such sampling and analysis shall include the Toxicity Characteristic Leaching Procedure (TCLP) as prescribed by the United States Environmental Protection Agency to determine whether concentrations of contaminants in soil exceed federal criteria for classification as a hazardous waste.

g) Lead-contaminated soil managed pursuant to this variance shall not be moved outside the designated corridor boundaries (see paragraph t) below. All lead-contaminated soil not buried and covered within the same Caltrans corridor where it originated is not eligible for management under this variance and shall be managed as a hazardous waste.

h) Lead-contaminated soil managed pursuant to this variance shall not be placed in areas where it would become in contact with groundwater or surface water (such as streams and rivers).

i) Lead-contaminated soil managed pursuant to this variance shall be buried and covered only in locations that are protected from erosion that may result from storm water run-on and run-off.

j) The lead-contaminated soil shall be buried and covered in a manner that will prevent accidental or deliberate breach of the asphalt, concrete, and/or cover soil.

k) The presence of lead-contaminated soil shall be incorporated into the projects' as-built drawings. The as-built drawings shall be annotated with the location, representative analytical data, and volume of lead-contaminated soil. The as-built drawings shall also state the depth of the cover. These as-built drawings shall be retained by Caltrans.

l) Caltrans shall ensure that no other hazardous wastes, other than the lead-contaminated hazardous waste soil, are placed in the burial areas.

m) Lead-contaminated soil shall not be buried within ten (10) feet of culverts or locations subject to frequent worker exposure.

n) Excavated lead-contaminated soil not placed into the designated area (fill area, roadbed area) by the end of the working day shall be stockpiled and covered with sheets of polyethylene or at least one foot of non-hazardous soil. The lead-contaminated soil, while stockpiled or under transport, shall be protected from contacting surface water and from being dislodged or transported by wind or storm water. The stockpile covers shall be inspected at least once a week and within 24 hours after rainstorms. If the lead-contaminated soil is stockpiled for more than 4 days from the time of excavation, Caltrans shall restrict public access to the stockpile by using barriers that meet the safety requirements of the construction zone. The lead-contaminated soil shall be stockpiled for no more than 90 days from the time the soil is first excavated. If the contaminated soil is stockpiled beyond the 90 day limit Caltrans shall:

1. notify DTSC in writing of the 90 day exceedance and expected date of removal;
2. perform weekly inspections of the stockpiled material to ensure that there is adequate protection from run-on, runoff, public access, and wind dispersion; and
3. notify DTSC on weekly basis of the stockpile status until the stockpile is removed.

The lead-contaminated soil shall be stockpiled for no more than 180 days from the time the soil is first excavated.

o) Caltrans shall ensure that all stockpiling of lead-contaminated soil remains within the project area of the specified corridor. Stockpiling of lead-contaminated soil within the specified corridor, but outside the project area, is prohibited.

p) Caltrans shall conduct confirmatory sampling of any stockpile area in areas not known or expected to contain lead-contaminated soil after removal of the lead-contaminated soil to ensure that contamination has not been left behind or has not migrated from the stockpiled material to the surrounding soils.

q) Caltrans shall stockpile lead-contaminated soil only on high ground (i.e. no sump areas or low points) so that stockpiled soil will not come in contact with surface

water run-on or run-off.

r) Caltrans shall not stockpile lead-contaminated soil in environmentally and ecologically sensitive areas.

s) Caltrans shall ensure that storm/rain run-off that has come into contact with stockpiled lead-contaminated soil will not flow to storm drains, inlets, or waters of the State.

t) Caltrans may dispose of the lead-contaminated soil only within the operating right-of-way of an existing highway, as defined in Streets and Highways Code, section 23. Caltrans may move lead-contaminated soil from one Caltrans project to another Caltrans project only if the lead-contaminated soil remains within the same designated corridor.

Caltrans shall record any movement of lead-contaminated soil by using a bill of lading. The bill of lading must contain: 1) the US DOT description including shipping name, hazard class and ID number; 2) handling codes; 3) quantity of material; 4) volume of material; 5) date of shipment; 6) origin and destination of shipment; and 7) any specific handling instructions. The bill of lading shall be referenced in and kept on file with the project's as-built drawings. The lead-contaminated soil must be kept covered during transportation.

u) For each specific corridor where this variance is to be implemented, all of the following information shall be submitted in writing to DTSC at least five (5) days before construction of any project begins:

1. plan drawing designating the boundaries of the corridor where lead-contaminated soils will be excavated, stockpiled, buried and covered;

2. a list of the Caltrans projects that the corridor encompasses;

3. a list of Caltrans contractors that will be conducting any phase of work on any project affected by this variance;

4. duration of corridor construction;

5. location where sampling and analytical data used to make lead concentration level determinations are kept (e.g. a particular Caltrans project file);

6. name and phone number (including area code) of project resident engineer and project manager;

7. location where Caltrans and contractor health and safety plan and records are kept;

8. location of project special provisions (including page or section number) for soil excavation, transportation, stockpile, burial and placement of cover material;

9. location of project drawings (including drawing page number) for soil excavation, burial and placement of cover in plan and cross section (for example, "The project plans are located at the resident engineer's office located at 5th and Main Streets, City of Fresno, See pages xxxxx of contract xxxx");

10. updated information if a Caltrans project within the corridor is added, changed or deleted; and

11. type of environmental document prepared for each project, date of adoption, document title, Clearing House number and where the document is available for review. A copy of the Caltrans Categorical Exemption, Categorical Exclusion Form, or if filed, the Notice of Exemption for any project shall be submitted to the DTSC Headquarters Project Manager.

v) Changes in location of lead-contaminated soil placement, quantities or protection measures (field changes) shall be noted in the resident engineer's project log within five (5) days of the field change.

w) Caltrans shall ensure that field changes are in compliance with the requirements of this variance.

x) Operational procedures described in the California Environmental Quality Act (CEQA) Special Initial Study shall be followed by Caltrans for activities conducted under this variance.

y) Caltrans shall implement appropriate health and safety procedures to protect its employees and the public, and to prevent or minimize exposure to potentially hazardous wastes. A project-specific health and safety plan must be prepared and implemented. The monitoring and exposure standards shall be based on construction standards for exposure to lead in California Code of Regulations, title 8, section 1532.1.

z) Caltrans shall provide a district Coordinator for this variance. This Coordinator will be the primary point of contact for information flowing to, or received from, DTSC regarding any matter or submission under this variance. Caltrans shall promptly notify DTSC of the name of Coordinator and any change in the Coordinator.

aa) Caltrans shall conduct regular inspections, consistent with Caltrans' Maintenance Division's current Pavement Inspection and Slope Inspection programs, of the locations where lead-contaminated soil has been buried and/or covered pursuant to this variance. If site inspection reveals deterioration of cover so that conditions in the variance are not met, Caltrans shall repair or replace the cover.

bb) Caltrans shall develop and implement a record keeping mechanisms to record and retain permanent records of all locations where lead-contaminated soil has been buried per this variance. The records shall be made available to DTSC.

cc) If areas subject to the terms of this variance are sold, relinquished or abandoned (including roadways), all future property owners shall be notified in writing in advance by Caltrans of the requirements of this variance, and Caltrans shall provide the owner with a copy of the variance. A copy of such a notice shall be sent to DTSC and contain the corridor location and project. Caltrans shall also disclose to DTSC and the new owner the location of areas where lead-contaminated soil has been buried. Future property owners shall be subject to the same requirements as Caltrans.

dd) For the purposes of informing the public about instances where the variance is implemented, Caltrans shall:

1. maintain current fact sheets at all Caltrans resident engineer offices and the Caltrans District office. Caltrans shall make the fact sheets available to anyone expressing an interest in variance-related work.

2. maintain a binder(s) containing copies of all reports submitted to DTSC at the District office. Caltrans shall ensure that the binders are readily accessible to the public.

3. carry out the following actions when it identifies additional projects:

(A) notify the public via a display advertisement in a newspaper of general circulation in that area.

(B) update and distribute the fact sheet to the mailing list and repository locations.

ee) Lead-contaminated soil may be buried only in areas where access is limited or where lead-contaminated soil is covered and contained by a pavement structure.

ff) Dust containing lead-contaminated soil must be controlled. Water or dust palliative may be applied to control dust. If visible dust migration occurs, all excavation, stockpiling and truck loading and burying must be stopped. The granting of this variance confers no relief on Caltrans from compliance with the laws, regulations and requirements enforced by any local air district or the California Air Resources Board.

gg) Sampling and analysis is required to show the lead-contaminated soil meets the variance criteria. All sampling and analysis must be conducted in accordance with the appropriate methods specified in U.S. EPA SW-846.

hh) DTSC retains the right to require Caltrans or any future owner to remove, and properly dispose of, lead-contaminated soil in the event DTSC determines it is necessary for protection of public health, safety or the environment.

ii) DTSC finds that some projects involving lead-contaminated soil are joint projects between Caltrans and other government entities. In these joint projects, Caltrans may not be the lead agency implementing the project although Caltrans is still involved if the project occurs on its right-of-way.

Caltrans may invoke this variance for joint projects where Caltrans and local government entity are involved provided that 1) the project is within the Caltrans Right-of-Way; 2) Caltrans reviews/ oversees all phases of the project including design, contracting, environmental assessment, construction, operation, and maintenance; and 3) Caltrans oversees the project to verify all variance conditions are complied with. Caltrans will be fully responsible for the variance notification and implementation in these joint projects.

jj) All correspondence shall be directed to the following office:

Hazardous Waste Permitting
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, CA 95826

Attn: Caltrans Lead Variance Notification Unit

10. DISCLAIMER.

a) The issuance of this variance does not relieve Caltrans of the responsibility for compliance with Health and Safety Code, chapter 6.5, or the regulations adopted thereunder, and any other laws and regulations other than those specifically identified in Section 8 of this variance. Caltrans is subject to all terms and conditions herein. The granting of this variance confers no relief from compliance with any federal, State or local requirements other than those specifically provided herein.

b) The issuance of this variance does not release Caltrans from any liability associated with the handling of hazardous waste, except as specifically provided herein and subject to all terms and conditions of this variance.

11. VARIANCE MODIFICATION OR REVOCATION. This variance is subject to review at the discretion of DTSC and may be modified or revoked by DTSC upon change of ownership and at any other time pursuant to Health and Safety Code, section 25143.

12. CEQA DETERMINATION. DTSC adopted a Negative Declaration on June 30, 2009.

Approved:

6/30/09
Date

Beverly Rikala
Operating Facilities Team
Department of Toxic Substances Control

APPENDIX C

March 26, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 110816

RE: I-580 WB HOV LANE, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on March 19, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I-580 WB HOV LANE, E8474-06-01
Lab Order: 110816

CASE NARRATIVE

Analytical Comments for Method 6010

Matrix Spike (MS) and /or Matrix Spike Duplicate (MSD) are/is outside recovery criteria for samples 110816-019AMSD, 110830-001AMS and 110830-001AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

RPD for Duplicate (DUP) is outside criteria for samples 110816-019ADUP and 110816-021ADUP ; however, the Laboratory Control Sample (LCS) validated the analytical batch.

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 3/26/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	110816
Project:	I-580 WB HOV LANE, E8474-06-01	**Date Received**	3/19/2010 9:10:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
110816-002A	B263-1	16	mg/Kg	62824	5.0	1	3/17/2010	3/24/2010
110816-003A	B263-2	11	mg/Kg	62824	5.0	1	3/17/2010	3/24/2010
110816-005A	B262-1	7.1	mg/Kg	62824	5.0	1	3/17/2010	3/24/2010
110816-006A	B262-2	32	mg/Kg	62824	5.0	1	3/17/2010	3/24/2010
110816-007A	B261-0	49	mg/Kg	62824	5.0	1	3/17/2010	3/24/2010
110816-008A	B261-1	6.8	mg/Kg	62824	5.0	1	3/17/2010	3/24/2010
110816-009A	B261-2	6.7	mg/Kg	62824	5.0	1	3/17/2010	3/24/2010
110816-011A	B260-1	7.0	mg/Kg	62824	5.0	1	3/17/2010	3/24/2010
110816-012A	B260-2	6.5	mg/Kg	62824	5.0	1	3/17/2010	3/24/2010
110816-014A	B259-1	47	mg/Kg	62824	5.0	1	3/17/2010	3/24/2010
110816-015A	B259-2	52	mg/Kg	62824	5.0	1	3/17/2010	3/24/2010
110816-016A	B258-0	63	mg/Kg	62824	5.0	1	3/17/2010	3/24/2010
110816-017A	B258-1	7.5	mg/Kg	62824	5.0	1	3/17/2010	3/24/2010
110816-018A	B258-2	7.0	mg/Kg	62824	5.0	1	3/17/2010	3/24/2010
110816-020A	B257-1	16	mg/Kg	62824	5.0	1	3/17/2010	3/24/2010
110816-021A	B257-2	12	mg/Kg	62824	5.0	1	3/17/2010	3/24/2010
110816-023A	B256-1	54	mg/Kg	62825	5.0	1	3/17/2010	3/24/2010
110816-024A	B256-2	15	mg/Kg	62825	5.0	1	3/17/2010	3/24/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 3/26/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	110816
Project:	I-580 WB HOV LANE, E8474-06-01	**Date Received**	3/19/2010 9:10:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
110816-026A	B255-1	13	mg/Kg	62825	5.0	1	3/17/2010	3/24/2010
110816-027A	B255-2	27	mg/Kg	62825	5.0	1	3/17/2010	3/24/2010
110816-028A	B254-0	120	mg/Kg	62825	5.0	1	3/17/2010	3/24/2010
110816-029A	B254-1	13	mg/Kg	62825	5.0	1	3/17/2010	3/24/2010
110816-030A	B254-2	7.5	mg/Kg	62825	5.0	1	3/17/2010	3/24/2010
110816-032A	B253-1	19	mg/Kg	62825	5.0	1	3/17/2010	3/24/2010
110816-033A	B253-2	7.4	mg/Kg	62825	5.0	1	3/17/2010	3/24/2010
110816-035A	B252-1	7.4	mg/Kg	62825	5.0	1	3/17/2010	3/24/2010
110816-036A	B252-2	7.7	mg/Kg	62825	5.0	1	3/17/2010	3/24/2010
110816-037A	B251-0	510	mg/Kg	62825	5.0	1	3/17/2010	3/24/2010
110816-038A	B251-1	8.3	mg/Kg	62825	5.0	1	3/17/2010	3/24/2010
110816-039A	B251-2	7.5	mg/Kg	62825	5.0	1	3/17/2010	3/24/2010
110816-041A	B250-1	17	mg/Kg	62825	5.0	1	3/17/2010	3/24/2010
110816-042A	B250-2	8.3	mg/Kg	62825	5.0	1	3/17/2010	3/24/2010
110816-043A	B249-0	290	mg/Kg	62825	5.0	1	3/17/2010	3/24/2010
110816-044A	B249-1	ND	mg/Kg	62825	5.0	1	3/17/2010	3/24/2010
110816-045A	B249-2	10	mg/Kg	62825	5.0	1	3/17/2010	3/24/2010
110816-046A	B248-0	13	mg/Kg	62825	5.0	1	3/17/2010	3/24/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 3/26/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	110816
Project:	I-580 WB HOV LANE, E8474-06-01	**Date Received**	3/19/2010 9:10:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
110816-047A	B248-1	8.0	mg/Kg	62826	5.0	1	3/17/2010	3/24/2010
110816-048A	B248-2	7.6	mg/Kg	62826	5.0	1	3/17/2010	3/24/2010
110816-049A	B242-0	130	mg/Kg	62826	5.0	1	3/17/2010	3/24/2010
110816-050A	B242-1	ND	mg/Kg	62826	5.0	1	3/17/2010	3/24/2010
110816-051A	B242-2	6.2	mg/Kg	62826	5.0	1	3/17/2010	3/24/2010
110816-053A	B247-1	ND	mg/Kg	62826	5.0	1	3/17/2010	3/24/2010
110816-054A	B247-2	7.5	mg/Kg	62826	5.0	1	3/17/2010	3/24/2010
110816-056A	B246-1	ND	mg/Kg	62826	5.0	1	3/17/2010	3/24/2010
110816-057A	B246-2	42	mg/Kg	62826	5.0	1	3/17/2010	3/24/2010
110816-058A	B245-0	45	mg/Kg	62826	5.0	1	3/17/2010	3/24/2010
110816-059A	B245-1	8.8	mg/Kg	62826	5.0	1	3/17/2010	3/24/2010
110816-060A	B245-2	7.3	mg/Kg	62826	5.0	1	3/17/2010	3/24/2010
110816-062A	B244-1	84	mg/Kg	62826	5.0	1	3/17/2010	3/24/2010
110816-063A	B244-2	8.6	mg/Kg	62826	5.0	1	3/17/2010	3/24/2010
110816-064A	B243-0	64	mg/Kg	62826	5.0	1	3/17/2010	3/24/2010
110816-065A	B243-1	11	mg/Kg	62826	5.0	1	3/17/2010	3/24/2010
110816-066A	B243-2	5.0	mg/Kg	62826	5.0	1	3/17/2010	3/24/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 3/26/2010

ANALYTICAL RESULTS

pH
EPA 9045C

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	110816
Project:	I-580 WB HOV LANE, E8474-06-01	**Date Received**	3/19/2010 9:10:00 AM
Project No:		**Matrix:**	Soil
Analyte:	pH	**Analyst:**	CBB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
110816-004A	B262-0	7.9	pH Units	R119404	0.10	1	3/17/2010	3/24/2010
110816-014A	B259-1	8.5	pH Units	R119404	0.10	1	3/17/2010	3/24/2010
110816-024A	B256-2	8.1	pH Units	R119404	0.10	1	3/17/2010	3/24/2010
110816-031A	B253-0	8.3	pH Units	R119404	0.10	1	3/17/2010	3/24/2010
110816-053A	B247-1	7.7	pH Units	R119404	0.10	1	3/17/2010	3/24/2010
110816-063A	B244-2	7.5	pH Units	R119404	0.10	1	3/17/2010	3/24/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B263-0
Lab Order:	110816	**Collection Date:**	3/17/2010
Project:	I-580 WB HOV LANE, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110816-001A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100324F	QC Batch: 62856			PrepDate:	3/24/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	3/24/2010 04:04 PM
Arsenic	5.9	1.0		mg/Kg	1	3/24/2010 04:04 PM
Barium	150	1.0		mg/Kg	1	3/24/2010 04:04 PM
Beryllium	ND	1.0		mg/Kg	1	3/24/2010 04:04 PM
Cadmium	ND	1.0		mg/Kg	1	3/24/2010 04:04 PM
Chromium	25	1.0		mg/Kg	1	3/24/2010 04:04 PM
Cobalt	8.7	1.0		mg/Kg	1	3/24/2010 04:04 PM
Copper	60	2.0		mg/Kg	1	3/24/2010 04:04 PM
Lead	230	1.0		mg/Kg	1	3/24/2010 04:04 PM
Molybdenum	ND	1.0		mg/Kg	1	3/24/2010 04:04 PM
Nickel	29	1.0		mg/Kg	1	3/24/2010 04:04 PM
Selenium	ND	1.0		mg/Kg	1	3/24/2010 04:04 PM
Silver	ND	1.0		mg/Kg	1	3/24/2010 04:04 PM
Thallium	ND	1.0		mg/Kg	1	3/24/2010 04:04 PM
Vanadium	39	1.0		mg/Kg	1	3/24/2010 04:04 PM
Zinc	94	1.0		mg/Kg	1	3/24/2010 04:04 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100325C	QC Batch: 62851			PrepDate:	3/24/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/25/2010 11:40 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B262-0
Lab Order:	110816	**Collection Date:**	3/17/2010
Project:	I-580 WB HOV LANE, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110816-004A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100324F	QC Batch: 62856			PrepDate:	3/24/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	3/24/2010 04:06 PM
Arsenic	6.3	1.0		mg/Kg	1	3/24/2010 04:06 PM
Barium	140	1.0		mg/Kg	1	3/24/2010 04:06 PM
Beryllium	ND	1.0		mg/Kg	1	3/24/2010 04:06 PM
Cadmium	ND	1.0		mg/Kg	1	3/24/2010 04:06 PM
Chromium	26	1.0		mg/Kg	1	3/24/2010 04:06 PM
Cobalt	9.3	1.0		mg/Kg	1	3/24/2010 04:06 PM
Copper	49	2.0		mg/Kg	1	3/24/2010 04:06 PM
Lead	440	1.0		mg/Kg	1	3/24/2010 04:06 PM
Molybdenum	ND	1.0		mg/Kg	1	3/24/2010 04:06 PM
Nickel	29	1.0		mg/Kg	1	3/24/2010 04:06 PM
Selenium	ND	1.0		mg/Kg	1	3/24/2010 04:06 PM
Silver	ND	1.0		mg/Kg	1	3/24/2010 04:06 PM
Thallium	ND	1.0		mg/Kg	1	3/24/2010 04:06 PM
Vanadium	44	1.0		mg/Kg	1	3/24/2010 04:06 PM
Zinc	200	1.0		mg/Kg	1	3/24/2010 04:06 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100325D	QC Batch: 62852			PrepDate:	3/24/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/25/2010 12:27 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B260-0
Lab Order:	110816	**Collection Date:**	3/17/2010
Project:	I-580 WB HOV LANE, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110816-010A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100324F	QC Batch: 62856			PrepDate:	3/24/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	3/24/2010 04:08 PM
Arsenic	5.0	1.0		mg/Kg	1	3/24/2010 04:08 PM
Barium	110	1.0		mg/Kg	1	3/24/2010 04:08 PM
Beryllium	ND	1.0		mg/Kg	1	3/24/2010 04:08 PM
Cadmium	ND	1.0		mg/Kg	1	3/24/2010 04:08 PM
Chromium	17	1.0		mg/Kg	1	3/24/2010 04:08 PM
Cobalt	11	1.0		mg/Kg	1	3/24/2010 04:08 PM
Copper	16	2.0		mg/Kg	1	3/24/2010 04:08 PM
Lead	8.9	1.0		mg/Kg	1	3/24/2010 04:08 PM
Molybdenum	ND	1.0		mg/Kg	1	3/24/2010 04:08 PM
Nickel	17	1.0		mg/Kg	1	3/24/2010 04:08 PM
Selenium	ND	1.0		mg/Kg	1	3/24/2010 04:08 PM
Silver	ND	1.0		mg/Kg	1	3/24/2010 04:08 PM
Thallium	ND	1.0		mg/Kg	1	3/24/2010 04:08 PM
Vanadium	36	1.0		mg/Kg	1	3/24/2010 04:08 PM
Zinc	28	1.0		mg/Kg	1	3/24/2010 04:08 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100325D	QC Batch: 62852			PrepDate:	3/24/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/25/2010 12:29 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B259-0
Lab Order:	110816	**Collection Date:**	3/17/2010
Project:	I-580 WB HOV LANE, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110816-013A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100324F	QC Batch: 62856			PrepDate:	3/24/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	3/24/2010 04:10 PM
Arsenic	5.1	1.0		mg/Kg	1	3/24/2010 04:10 PM
Barium	110	1.0		mg/Kg	1	3/24/2010 04:10 PM
Beryllium	ND	1.0		mg/Kg	1	3/24/2010 04:10 PM
Cadmium	ND	1.0		mg/Kg	1	3/24/2010 04:10 PM
Chromium	18	1.0		mg/Kg	1	3/24/2010 04:10 PM
Cobalt	7.1	1.0		mg/Kg	1	3/24/2010 04:10 PM
Copper	27	2.0		mg/Kg	1	3/24/2010 04:10 PM
Lead	46	1.0		mg/Kg	1	3/24/2010 04:10 PM
Molybdenum	ND	1.0		mg/Kg	1	3/24/2010 04:10 PM
Nickel	24	1.0		mg/Kg	1	3/24/2010 04:10 PM
Selenium	ND	1.0		mg/Kg	1	3/24/2010 04:10 PM
Silver	ND	1.0		mg/Kg	1	3/24/2010 04:10 PM
Thallium	ND	1.0		mg/Kg	1	3/24/2010 04:10 PM
Vanadium	49	1.0		mg/Kg	1	3/24/2010 04:10 PM
Zinc	63	1.0		mg/Kg	1	3/24/2010 04:10 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100325D	QC Batch: 62852			PrepDate:	3/24/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/25/2010 12:36 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B257-0
Lab Order:	110816	**Collection Date:**	3/17/2010
Project:	I-580 WB HOV LANE, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110816-019A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100324F	QC Batch: 62856			PrepDate:	3/24/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	3/24/2010 04:16 PM
Arsenic	3.1	1.0		mg/Kg	1	3/24/2010 04:16 PM
Barium	150	1.0		mg/Kg	1	3/24/2010 04:16 PM
Beryllium	ND	1.0		mg/Kg	1	3/24/2010 04:16 PM
Cadmium	ND	1.0		mg/Kg	1	3/24/2010 04:16 PM
Chromium	28	1.0		mg/Kg	1	3/24/2010 04:16 PM
Cobalt	6.3	1.0		mg/Kg	1	3/24/2010 04:16 PM
Copper	47	2.0		mg/Kg	1	3/24/2010 04:16 PM
Lead	80	1.0		mg/Kg	1	3/24/2010 04:16 PM
Molybdenum	ND	1.0		mg/Kg	1	3/24/2010 04:16 PM
Nickel	29	1.0		mg/Kg	1	3/24/2010 04:16 PM
Selenium	ND	1.0		mg/Kg	1	3/24/2010 04:16 PM
Silver	ND	1.0		mg/Kg	1	3/24/2010 04:16 PM
Thallium	ND	1.0		mg/Kg	1	3/24/2010 04:16 PM
Vanadium	28	1.0		mg/Kg	1	3/24/2010 04:16 PM
Zinc	190	1.0		mg/Kg	1	3/24/2010 04:16 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100325D	QC Batch: 62852			PrepDate:	3/24/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/25/2010 12:38 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B256-0
Lab Order:	110816	**Collection Date:**	3/17/2010
Project:	I-580 WB HOV LANE, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110816-022A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100324D	QC Batch: 62857			PrepDate:	3/24/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	3/24/2010 03:54 PM
Arsenic	1.0	1.0		mg/Kg	1	3/24/2010 03:54 PM
Barium	160	1.0		mg/Kg	1	3/24/2010 03:54 PM
Beryllium	ND	1.0		mg/Kg	1	3/24/2010 03:54 PM
Cadmium	ND	1.0		mg/Kg	1	3/24/2010 03:54 PM
Chromium	44	1.0		mg/Kg	1	3/24/2010 03:54 PM
Cobalt	8.8	1.0		mg/Kg	1	3/24/2010 03:54 PM
Copper	35	2.0		mg/Kg	1	3/24/2010 03:54 PM
Lead	72	1.0		mg/Kg	1	3/24/2010 03:54 PM
Molybdenum	1.3	1.0		mg/Kg	1	3/24/2010 03:54 PM
Nickel	62	1.0		mg/Kg	1	3/24/2010 03:54 PM
Selenium	ND	1.0		mg/Kg	1	3/24/2010 03:54 PM
Silver	ND	1.0		mg/Kg	1	3/24/2010 03:54 PM
Thallium	ND	1.0		mg/Kg	1	3/24/2010 03:54 PM
Vanadium	27	1.0		mg/Kg	1	3/24/2010 03:54 PM
Zinc	160	1.0		mg/Kg	1	3/24/2010 03:54 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100325D	QC Batch: 62852			PrepDate:	3/24/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/25/2010 12:40 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B255-0
Lab Order:	110816	**Collection Date:**	3/17/2010
Project:	I-580 WB HOV LANE, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110816-025A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100324D	QC Batch: 62857			PrepDate:	3/24/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	3/24/2010 03:59 PM
Arsenic	4.4	1.0		mg/Kg	1	3/24/2010 03:59 PM
Barium	170	1.0		mg/Kg	1	3/24/2010 03:59 PM
Beryllium	ND	1.0		mg/Kg	1	3/24/2010 03:59 PM
Cadmium	ND	1.0		mg/Kg	1	3/24/2010 03:59 PM
Chromium	28	1.0		mg/Kg	1	3/24/2010 03:59 PM
Cobalt	11	1.0		mg/Kg	1	3/24/2010 03:59 PM
Copper	25	2.0		mg/Kg	1	3/24/2010 03:59 PM
Lead	29	1.0		mg/Kg	1	3/24/2010 03:59 PM
Molybdenum	1.0	1.0		mg/Kg	1	3/24/2010 03:59 PM
Nickel	30	1.0		mg/Kg	1	3/24/2010 03:59 PM
Selenium	ND	1.0		mg/Kg	1	3/24/2010 03:59 PM
Silver	ND	1.0		mg/Kg	1	3/24/2010 03:59 PM
Thallium	ND	1.0		mg/Kg	1	3/24/2010 03:59 PM
Vanadium	45	1.0		mg/Kg	1	3/24/2010 03:59 PM
Zinc	98	1.0		mg/Kg	1	3/24/2010 03:59 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100325D	QC Batch: 62852			PrepDate:	3/24/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/25/2010 12:42 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B253-0
Lab Order:	110816	**Collection Date:**	3/17/2010
Project:	I-580 WB HOV LANE, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110816-031A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100324D	QC Batch: 62857			PrepDate:	3/24/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	3/24/2010 04:04 PM
Arsenic	2.8	1.0		mg/Kg	1	3/24/2010 04:04 PM
Barium	170	1.0		mg/Kg	1	3/24/2010 04:04 PM
Beryllium	ND	1.0		mg/Kg	1	3/24/2010 04:04 PM
Cadmium	ND	1.0		mg/Kg	1	3/24/2010 04:04 PM
Chromium	28	1.0		mg/Kg	1	3/24/2010 04:04 PM
Cobalt	10	1.0		mg/Kg	1	3/24/2010 04:04 PM
Copper	27	2.0		mg/Kg	1	3/24/2010 04:04 PM
Lead	48	1.0		mg/Kg	1	3/24/2010 04:04 PM
Molybdenum	1.0	1.0		mg/Kg	1	3/24/2010 04:04 PM
Nickel	36	1.0		mg/Kg	1	3/24/2010 04:04 PM
Selenium	ND	1.0		mg/Kg	1	3/24/2010 04:04 PM
Silver	ND	1.0		mg/Kg	1	3/24/2010 04:04 PM
Thallium	ND	1.0		mg/Kg	1	3/24/2010 04:04 PM
Vanadium	42	1.0		mg/Kg	1	3/24/2010 04:04 PM
Zinc	110	1.0		mg/Kg	1	3/24/2010 04:04 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100325D	QC Batch: 62852			PrepDate:	3/24/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/25/2010 12:44 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B252-0
Lab Order:	110816	**Collection Date:**	3/17/2010
Project:	I-580 WB HOV LANE, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110816-034A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100324D	QC Batch: 62857			PrepDate:	3/24/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	3/24/2010 04:08 PM
Arsenic	ND	1.0		mg/Kg	1	3/24/2010 04:08 PM
Barium	160	1.0		mg/Kg	1	3/24/2010 04:08 PM
Beryllium	ND	1.0		mg/Kg	1	3/24/2010 04:08 PM
Cadmium	ND	1.0		mg/Kg	1	3/24/2010 04:08 PM
Chromium	29	1.0		mg/Kg	1	3/24/2010 04:08 PM
Cobalt	8.7	1.0		mg/Kg	1	3/24/2010 04:08 PM
Copper	29	2.0		mg/Kg	1	3/24/2010 04:08 PM
Lead	31	1.0		mg/Kg	1	3/24/2010 04:08 PM
Molybdenum	1.2	1.0		mg/Kg	1	3/24/2010 04:08 PM
Nickel	38	1.0		mg/Kg	1	3/24/2010 04:08 PM
Selenium	ND	1.0		mg/Kg	1	3/24/2010 04:08 PM
Silver	ND	1.0		mg/Kg	1	3/24/2010 04:08 PM
Thallium	ND	1.0		mg/Kg	1	3/24/2010 04:08 PM
Vanadium	27	1.0		mg/Kg	1	3/24/2010 04:08 PM
Zinc	120	1.0		mg/Kg	1	3/24/2010 04:08 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100325D	QC Batch: 62852			PrepDate:	3/24/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/25/2010 12:46 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B250-0
Lab Order:	110816	**Collection Date:**	3/17/2010
Project:	I-580 WB HOV LANE, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110816-040A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100324D	QC Batch: 62857			PrepDate:	3/24/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	3/24/2010 04:13 PM
Arsenic	ND	1.0		mg/Kg	1	3/24/2010 04:13 PM
Barium	120	1.0		mg/Kg	1	3/24/2010 04:13 PM
Beryllium	ND	1.0		mg/Kg	1	3/24/2010 04:13 PM
Cadmium	1.1	1.0		mg/Kg	1	3/24/2010 04:13 PM
Chromium	23	1.0		mg/Kg	1	3/24/2010 04:13 PM
Cobalt	11	1.0		mg/Kg	1	3/24/2010 04:13 PM
Copper	36	2.0		mg/Kg	1	3/24/2010 04:13 PM
Lead	360	1.0		mg/Kg	1	3/24/2010 04:13 PM
Molybdenum	ND	1.0		mg/Kg	1	3/24/2010 04:13 PM
Nickel	29	1.0		mg/Kg	1	3/24/2010 04:13 PM
Selenium	ND	1.0		mg/Kg	1	3/24/2010 04:13 PM
Silver	ND	1.0		mg/Kg	1	3/24/2010 04:13 PM
Thallium	ND	1.0		mg/Kg	1	3/24/2010 04:13 PM
Vanadium	59	1.0		mg/Kg	1	3/24/2010 04:13 PM
Zinc	130	1.0		mg/Kg	1	3/24/2010 04:13 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100325D	QC Batch: 62852			PrepDate:	3/24/2010	Analyst: **IL**
Mercury	0.26	0.10		mg/Kg	1	3/25/2010 12:48 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B247-0
Lab Order:	110816	**Collection Date:**	3/17/2010
Project:	I-580 WB HOV LANE, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110816-052A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100324D	QC Batch: 62857			PrepDate:	3/24/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	3/24/2010 04:25 PM
Arsenic	2.3	1.0		mg/Kg	1	3/24/2010 04:25 PM
Barium	130	1.0		mg/Kg	1	3/24/2010 04:25 PM
Beryllium	ND	1.0		mg/Kg	1	3/24/2010 04:25 PM
Cadmium	ND	1.0		mg/Kg	1	3/24/2010 04:25 PM
Chromium	24	1.0		mg/Kg	1	3/24/2010 04:25 PM
Cobalt	11	1.0		mg/Kg	1	3/24/2010 04:25 PM
Copper	21	2.0		mg/Kg	1	3/24/2010 04:25 PM
Lead	14	1.0		mg/Kg	1	3/24/2010 04:25 PM
Molybdenum	ND	1.0		mg/Kg	1	3/24/2010 04:25 PM
Nickel	32	1.0		mg/Kg	1	3/24/2010 04:25 PM
Selenium	ND	1.0		mg/Kg	1	3/24/2010 04:25 PM
Silver	ND	1.0		mg/Kg	1	3/24/2010 04:25 PM
Thallium	ND	1.0		mg/Kg	1	3/24/2010 04:25 PM
Vanadium	51	1.0		mg/Kg	1	3/24/2010 04:25 PM
Zinc	48	1.0		mg/Kg	1	3/24/2010 04:25 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100325D	QC Batch: 62852			PrepDate:	3/24/2010	Analyst: **IL**
Mercury	0.15	0.10		mg/Kg	1	3/25/2010 12:23 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B246-0
Lab Order:	110816	**Collection Date:**	3/17/2010
Project:	I-580 WB HOV LANE, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110816-055A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100324D	QC Batch: 62857			PrepDate:	3/24/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	3/24/2010 04:30 PM
Arsenic	1.0	1.0		mg/Kg	1	3/24/2010 04:30 PM
Barium	100	1.0		mg/Kg	1	3/24/2010 04:30 PM
Beryllium	ND	1.0		mg/Kg	1	3/24/2010 04:30 PM
Cadmium	ND	1.0		mg/Kg	1	3/24/2010 04:30 PM
Chromium	28	1.0		mg/Kg	1	3/24/2010 04:30 PM
Cobalt	7.9	1.0		mg/Kg	1	3/24/2010 04:30 PM
Copper	41	2.0		mg/Kg	1	3/24/2010 04:30 PM
Lead	20	1.0		mg/Kg	1	3/24/2010 04:30 PM
Molybdenum	ND	1.0		mg/Kg	1	3/24/2010 04:30 PM
Nickel	35	1.0		mg/Kg	1	3/24/2010 04:30 PM
Selenium	ND	1.0		mg/Kg	1	3/24/2010 04:30 PM
Silver	ND	1.0		mg/Kg	1	3/24/2010 04:30 PM
Thallium	ND	1.0		mg/Kg	1	3/24/2010 04:30 PM
Vanadium	33	1.0		mg/Kg	1	3/24/2010 04:30 PM
Zinc	200	1.0		mg/Kg	1	3/24/2010 04:30 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100325A	QC Batch: 62853			PrepDate:	3/24/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/25/2010 10:20 AM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B244-0
Lab Order:	110816	**Collection Date:**	3/17/2010
Project:	I-580 WB HOV LANE, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110816-061A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100324D	QC Batch: 62857			PrepDate:	3/24/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	3/24/2010 04:35 PM
Arsenic	ND	1.0		mg/Kg	1	3/24/2010 04:35 PM
Barium	140	1.0		mg/Kg	1	3/24/2010 04:35 PM
Beryllium	ND	1.0		mg/Kg	1	3/24/2010 04:35 PM
Cadmium	ND	1.0		mg/Kg	1	3/24/2010 04:35 PM
Chromium	36	1.0		mg/Kg	1	3/24/2010 04:35 PM
Cobalt	8.0	1.0		mg/Kg	1	3/24/2010 04:35 PM
Copper	30	2.0		mg/Kg	1	3/24/2010 04:35 PM
Lead	73	1.0		mg/Kg	1	3/24/2010 04:35 PM
Molybdenum	1.7	1.0		mg/Kg	1	3/24/2010 04:35 PM
Nickel	55	1.0		mg/Kg	1	3/24/2010 04:35 PM
Selenium	ND	1.0		mg/Kg	1	3/24/2010 04:35 PM
Silver	ND	1.0		mg/Kg	1	3/24/2010 04:35 PM
Thallium	ND	1.0		mg/Kg	1	3/24/2010 04:35 PM
Vanadium	30	1.0		mg/Kg	1	3/24/2010 04:35 PM
Zinc	180	1.0		mg/Kg	1	3/24/2010 04:35 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100325A	QC Batch: 62853			PrepDate:	3/24/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/25/2010 10:23 AM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-62856** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/24/2010** RunNo: **119438**
Client ID: **PBS** Batch ID: **62856** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/24/2010** SeqNo: **1902859**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	0.035	1.0									
Chromium	ND	1.0									
Cobalt	0.015	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	0.035	1.0									
Selenium	ND	1.0									
Silver	0.027	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-62856** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/24/2010** RunNo: **119438**
Client ID: **LCSS** Batch ID: **62856** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/24/2010** SeqNo: **1902860**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	40.035	2.0	50.00	0	80.1	80	120				
Arsenic	42.921	1.0	50.00	0	85.8	80	120				
Barium	47.499	1.0	50.00	0	95.0	80	120				
Beryllium	45.750	1.0	50.00	0	91.5	80	120				
Cadmium	44.598	1.0	50.00	0.03487	89.1	80	120				
Chromium	45.872	1.0	50.00	0	91.7	80	120				
Cobalt	47.488	1.0	50.00	0.01451	94.9	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-62856** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/24/2010** RunNo: **119438**
Client ID: **LCSS** Batch ID: **62856** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/24/2010** SeqNo: **1902860**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	47.097	2.0	50.00	0	94.2	80	120				
Lead	47.391	1.0	50.00	0	94.8	80	120				
Molybdenum	46.708	1.0	50.00	0	93.4	80	120				
Nickel	45.994	1.0	50.00	0.03505	91.9	80	120				
Selenium	42.959	1.0	50.00	0	85.9	80	120				
Silver	45.290	1.0	50.00	0.02650	90.5	80	120				
Thallium	43.415	1.0	50.00	0	86.8	80	120				
Vanadium	46.563	1.0	50.00	0	93.1	80	120				
Zinc	44.611	1.0	50.00	0	89.2	80	120				

Sample ID: **110816-019ADUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/24/2010** RunNo: **119438**
Client ID: **B257-0** Batch ID: **62856** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/24/2010** SeqNo: **1902871**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.639	2.0						1.087	0	20	
Arsenic	3.669	1.0						3.102	16.8	20	
Barium	151.598	1.0						150.8	0.549	20	
Beryllium	ND	1.0						0	0	20	
Cadmium	0.534	1.0						0.4955	0	20	
Chromium	26.093	1.0						27.95	6.88	20	
Cobalt	6.622	1.0						6.340	4.34	20	
Copper	42.021	2.0						47.43	12.1	20	
Lead	116.016	1.0						79.66	37.2	20	R
Molybdenum	3.762	1.0						0	200	20	R
Nickel	33.793	1.0						28.92	15.5	20	
Selenium	0.532	1.0						0.5922	0	20	
Silver	0.270	1.0						0.2684	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	28.439	1.0						27.55	3.17	20	
Zinc	191.717	1.0						192.1	0.222	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **110816-019AMS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/24/2010** RunNo: **119438**
Client ID: **B257-0** Batch ID: **62856** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/24/2010** SeqNo: **1902872**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	86.292	2.0	125.0	1.087	68.2	32	105				
Arsenic	108.431	1.0	125.0	3.102	84.3	49	106				
Barium	266.235	1.0	125.0	150.8	92.4	31	133				
Beryllium	106.396	1.0	125.0	0	85.1	56	106				
Cadmium	99.329	1.0	125.0	0.4955	79.1	51	103				
Chromium	135.764	1.0	125.0	27.95	86.2	45	114				
Cobalt	110.018	1.0	125.0	6.340	82.9	52	106				
Copper	154.155	2.0	125.0	47.43	85.4	54	125				
Lead	189.501	1.0	125.0	79.66	87.9	34	126				
Molybdenum	102.793	1.0	125.0	0	82.2	54	106				
Nickel	135.653	1.0	125.0	28.92	85.4	45	111				
Selenium	107.004	1.0	125.0	0.5922	85.1	47	104				
Silver	113.536	1.0	125.0	0.2684	90.6	56	112				
Thallium	96.697	1.0	125.0	0	77.4	46	101				
Vanadium	141.361	1.0	125.0	27.55	91.0	54	114				
Zinc	321.550	1.0	125.0	192.1	104	28	125				

Sample ID: **110816-019AMSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/24/2010** RunNo: **119438**
Client ID: **B257-0** Batch ID: **62856** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/24/2010** SeqNo: **1902873**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	83.850	2.0	125.0	1.087	66.2	32	105	86.29	2.87	20	
Arsenic	105.952	1.0	125.0	3.102	82.3	49	106	108.4	2.31	20	
Barium	292.002	1.0	125.0	150.8	113	31	133	266.2	9.23	20	
Beryllium	108.379	1.0	125.0	0	86.7	56	106	106.4	1.85	20	
Cadmium	100.065	1.0	125.0	0.4955	79.7	51	103	99.33	0.738	20	
Chromium	138.539	1.0	125.0	27.95	88.5	45	114	135.8	2.02	20	
Cobalt	111.045	1.0	125.0	6.340	83.8	52	106	110.0	0.929	20	
Copper	181.272	2.0	125.0	47.43	107	54	125	154.2	16.2	20	
Lead	169.645	1.0	125.0	79.66	72.0	34	126	189.5	11.1	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits

Calculations are based on raw values

- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **110816-019AMSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/24/2010** RunNo: **119438**
Client ID: **B257-0** Batch ID: **62856** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/24/2010** SeqNo: **1902873**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	103.023	1.0	125.0	0	82.4	54	106	102.8	0.224	20	
Nickel	135.806	1.0	125.0	28.92	85.5	45	111	135.7	0.113	20	
Selenium	108.376	1.0	125.0	0.5922	86.2	47	104	107.0	1.27	20	
Silver	112.930	1.0	125.0	0.2684	90.1	56	112	113.5	0.535	20	
Thallium	97.330	1.0	125.0	0	77.9	46	101	96.70	0.653	20	
Vanadium	141.753	1.0	125.0	27.55	91.4	54	114	141.4	0.277	20	
Zinc	361.934	1.0	125.0	192.1	136	28	125	321.5	11.8	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-62857** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/24/2010** RunNo: **119440**
Client ID: **PBS** Batch ID: **62857** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/24/2010** SeqNo: **1902902**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	ND	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	ND	1.0									

Sample ID: **110830-001A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/24/2010** RunNo: **119440**
Client ID: **ZZZZZZ** Batch ID: **62857** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/24/2010** SeqNo: **1902917**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	153.658	20						151.1	1.65	20	
Arsenic	2.905	10						3.726	0	20	
Barium	107.271	10						102.1	4.91	20	
Beryllium	ND	10						0	0	20	
Cadmium	2905.819	10						2852	1.86	20	
Chromium	10157.169	10						9949	2.07	20	
Cobalt	6.288	10						6.142	0	20	
Copper	1857.319	20						1799	3.19	20	
Lead	82.321	10						82.62	0.363	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **110830-001A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/24/2010** RunNo: **119440**
Client ID: **ZZZZZZ** Batch ID: **62857** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/24/2010** SeqNo: **1902917**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	6.223	10						5.360	0	20	
Nickel	7939.289	10						7655	3.64	20	
Selenium	ND	10						0	0	20	
Silver	35.351	10						33.67	4.86	20	
Thallium	2.734	10						2.646	0	20	
Vanadium	ND	10						0	0	20	
Zinc	2354.203	10						2316	1.62	20	

Sample ID: **110830-001A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/24/2010** RunNo: **119440**
Client ID: **ZZZZZZ** Batch ID: **62857** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/24/2010** SeqNo: **1902918**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	247.996	20	125.0	151.1	77.5	32	105				
Arsenic	106.372	10	125.0	3.726	82.1	49	106				
Barium	208.683	10	125.0	102.1	85.2	31	133				
Beryllium	110.938	10	125.0	0	88.8	56	106				
Cadmium	3164.800	10	125.0	2852	250	51	103				S
Chromium	9493.071	10	125.0	9949	-364	45	114				S
Cobalt	117.154	10	125.0	6.142	88.8	52	106				
Copper	1939.096	20	125.0	1799	112	54	125				
Lead	190.128	10	125.0	82.62	86.0	34	126				
Molybdenum	106.921	10	125.0	5.360	81.2	54	106				
Nickel	7539.767	10	125.0	7655	-92.4	45	111				S
Selenium	100.288	10	125.0	0	80.2	47	104				
Silver	207.848	10	125.0	33.67	139	56	112				S
Thallium	105.724	10	125.0	2.646	82.5	46	101				
Vanadium	101.354	10	125.0	0	81.1	54	114				
Zinc	2497.008	10	125.0	2316	145	28	125				S

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **110830-001A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/24/2010** RunNo: **119440**
Client ID: **ZZZZZZ** Batch ID: **62857** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/24/2010** SeqNo: **1902919**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	248.495	20	125.0	151.1	77.9	32	105	248.0	0.201	20	
Arsenic	100.437	10	125.0	3.726	77.4	49	106	106.4	5.74	20	
Barium	206.736	10	125.0	102.1	83.7	31	133	208.7	0.938	20	
Beryllium	107.515	10	125.0	0	86.0	56	106	110.9	3.13	20	
Cadmium	3017.601	10	125.0	2852	132	51	103	3165	4.76	20	S
Chromium	9802.586	10	125.0	9949	-117	45	114	9493	3.21	20	S
Cobalt	112.866	10	125.0	6.142	85.4	52	106	117.2	3.73	20	
Copper	1903.880	20	125.0	1799	83.8	54	125	1939	1.83	20	
Lead	188.350	10	125.0	82.62	84.6	34	126	190.1	0.939	20	
Molybdenum	102.530	10	125.0	5.360	77.7	54	106	106.9	4.19	20	
Nickel	7855.123	10	125.0	7655	160	45	111	7540	4.10	20	S
Selenium	96.204	10	125.0	0	77.0	47	104	100.3	4.16	20	
Silver	139.803	10	125.0	33.67	84.9	56	112	207.8	39.1	20	R
Thallium	102.028	10	125.0	2.646	79.5	46	101	105.7	3.56	20	
Vanadium	97.650	10	125.0	0	78.1	54	114	101.4	3.72	20	
Zinc	2331.863	10	125.0	2316	12.4	28	125	2497	6.84	20	S

Sample ID: **LCS-62857** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/24/2010** RunNo: **119440**
Client ID: **LCSS** Batch ID: **62857** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/24/2010** SeqNo: **1902920**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	45.499	2.0	50.00	0	91.0	80	120				
Arsenic	44.414	1.0	50.00	0	88.8	80	120				
Barium	49.183	1.0	50.00	0	98.4	80	120				
Beryllium	47.981	1.0	50.00	0	96.0	80	120				
Cadmium	46.665	1.0	50.00	0	93.3	80	120				
Chromium	47.840	1.0	50.00	0	95.7	80	120				
Cobalt	48.414	1.0	50.00	0	96.8	80	120				
Copper	49.131	2.0	50.00	0	98.3	80	120				
Lead	47.442	1.0	50.00	0	94.9	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-62857** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/24/2010** RunNo: **119440**
Client ID: **LCSS** Batch ID: **62857** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/24/2010** SeqNo: **1902920**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	47.994	1.0	50.00	0	96.0	80	120				
Nickel	46.921	1.0	50.00	0	93.8	80	120				
Selenium	42.933	1.0	50.00	0	85.9	80	120				
Silver	47.214	1.0	50.00	0	94.4	80	120				
Thallium	46.060	1.0	50.00	0	92.1	80	120				
Vanadium	48.888	1.0	50.00	0	97.8	80	120				
Zinc	45.527	1.0	50.00	0	91.1	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-62824A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119422**
Client ID: **PBS**	Batch ID: **62824**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902532**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-62824**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119422**
Client ID: **LCSS**	Batch ID: **62824**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902533**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	293.662	5.0	250.0	0	117	80	120				

Sample ID: **110816-008A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119422**
Client ID: **B261-1**	Batch ID: **62824**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902544**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	6.223	5.0						6.814	9.07	20	

Sample ID: **110816-008A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119422**
Client ID: **B261-1**	Batch ID: **62824**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902545**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	238.817	5.0	250.0	6.814	92.8	34	126				

Sample ID: **MB-62824B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119422**
Client ID: **PBS**	Batch ID: **62824**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902546**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.142	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **110816-021A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119422**
Client ID: **B257-2**	Batch ID: **62824**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902557**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	9.837	5.0						12.13	20.9	20	R

Sample ID: **110816-021A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119422**
Client ID: **B257-2**	Batch ID: **62824**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902558**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	259.666	5.0	250.0	12.13	99.0	34	126				

Sample ID: **110816-021A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119422**
Client ID: **B257-2**	Batch ID: **62824**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902559**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	221.514	5.0	250.0	12.13	83.8	34	126	259.7	15.9	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-62825A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119423**
Client ID: **PBS**	Batch ID: **62825**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902562**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-62825**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119423**
Client ID: **LCSS**	Batch ID: **62825**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902563**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	289.147	5.0	250.0	0	116	80	120				

Sample ID: **110816-035A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119423**
Client ID: **B252-1**	Batch ID: **62825**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902574**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	6.551	5.0						7.424	12.5	20	

Sample ID: **110816-035A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119423**
Client ID: **B252-1**	Batch ID: **62825**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902575**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	230.475	5.0	250.0	7.424	89.2	34	126				

Sample ID: **MB-62825B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119423**
Client ID: **PBS**	Batch ID: **62825**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902576**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **110816-046A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119423**
Client ID: **B248-0**	Batch ID: **62825**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902587**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	13.172	5.0						12.80	2.89	20	

Sample ID: **110816-046A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119423**
Client ID: **B248-0**	Batch ID: **62825**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902588**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	248.117	5.0	250.0	12.80	94.1	34	126				

Sample ID: **110816-046A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119423**
Client ID: **B248-0**	Batch ID: **62825**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902589**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	233.571	5.0	250.0	12.80	88.3	34	126	248.1	6.04	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-62826A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119429**
Client ID: **PBS**	Batch ID: **62826**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902672**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-62826**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119429**
Client ID: **LCSS**	Batch ID: **62826**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902673**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	280.029	5.0	250.0	0	112	80	120				

Sample ID: **110816-058A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119429**
Client ID: **B245-0**	Batch ID: **62826**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902684**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	51.953	5.0						45.43	13.4	20	

Sample ID: **110816-058A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119429**
Client ID: **B245-0**	Batch ID: **62826**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902685**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	276.961	5.0	250.0	45.43	92.6	34	126				

Sample ID: **MB-62826B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119429**
Client ID: **PBS**	Batch ID: **62826**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902686**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **110817-003A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119429**
Client ID: **ZZZZZZ**	Batch ID: **62826**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902696**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	13.066	5.0						13.67	4.49	20	

Sample ID: **110817-003A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119429**
Client ID: **ZZZZZZ**	Batch ID: **62826**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902697**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	209.293	5.0	250.0	13.67	78.3	34	126				

Sample ID: **110817-003A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/23/2010**	RunNo: **119429**
Client ID: **ZZZZZZ**	Batch ID: **62826**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/24/2010**	SeqNo: **1902698**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	211.821	5.0	250.0	13.67	79.3	34	126	209.3	1.20	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-62851**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **3/24/2010**	RunNo: **119465**
Client ID: **PBS**	Batch ID: **62851**	TestNo: **EPA 7471A**		Analysis Date: **3/25/2010**	SeqNo: **1903519**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-62851**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **3/24/2010**	RunNo: **119465**
Client ID: **LCSS**	Batch ID: **62851**	TestNo: **EPA 7471A**		Analysis Date: **3/25/2010**	SeqNo: **1903520**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.870	0.10	0.8300	0	105	80	120				

Sample ID: **110816-001A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **3/24/2010**	RunNo: **119465**
Client ID: **B263-0**	Batch ID: **62851**	TestNo: **EPA 7471A**		Analysis Date: **3/25/2010**	SeqNo: **1903521**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.888	0.10	0.8300	0.04598	101	70	130				

Sample ID: **110816-001A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **3/24/2010**	RunNo: **119465**
Client ID: **B263-0**	Batch ID: **62851**	TestNo: **EPA 7471A**		Analysis Date: **3/25/2010**	SeqNo: **1903522**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.887	0.10	0.8300	0.04598	101	70	130	0.8881	0.130	20	

Sample ID: **110816-001A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **3/24/2010**	RunNo: **119465**
Client ID: **B263-0**	Batch ID: **62851**	TestNo: **EPA 7471A**		Analysis Date: **3/25/2010**	SeqNo: **1903524**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.043	0.10						0.04598	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-62852**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **3/24/2010**	RunNo: **119470**
Client ID: **PBS**	Batch ID: **62852**	TestNo: **EPA 7471A**		Analysis Date: **3/25/2010**	SeqNo: **1903601**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-62852**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **3/24/2010**	RunNo: **119470**
Client ID: **LCSS**	Batch ID: **62852**	TestNo: **EPA 7471A**		Analysis Date: **3/25/2010**	SeqNo: **1903602**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.888	0.10	0.8300	0	107	80	120				

Sample ID: **110816-052A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **3/24/2010**	RunNo: **119470**
Client ID: **B247-0**	Batch ID: **62852**	TestNo: **EPA 7471A**		Analysis Date: **3/25/2010**	SeqNo: **1903603**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.894	0.10	0.8300	0.1531	89.3	70	130				

Sample ID: **110816-052A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **3/24/2010**	RunNo: **119470**
Client ID: **B247-0**	Batch ID: **62852**	TestNo: **EPA 7471A**		Analysis Date: **3/25/2010**	SeqNo: **1903604**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.888	0.10	0.8300	0.1531	88.6	70	130	0.8942	0.681	20	

Sample ID: **110816-052A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **3/24/2010**	RunNo: **119470**
Client ID: **B247-0**	Batch ID: **62852**	TestNo: **EPA 7471A**		Analysis Date: **3/25/2010**	SeqNo: **1903606**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.151	0.10						0.1531	1.51	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-62853**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **3/24/2010**	RunNo: **119456**
Client ID: **PBS**	Batch ID: **62853**	TestNo: **EPA 7471A**		Analysis Date: **3/25/2010**	SeqNo: **1903290**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-62853**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **3/24/2010**	RunNo: **119456**
Client ID: **LCSS**	Batch ID: **62853**	TestNo: **EPA 7471A**		Analysis Date: **3/25/2010**	SeqNo: **1903291**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.762	0.10	0.8300	0	91.9	80	120				

Sample ID: **110830-001A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **3/24/2010**	RunNo: **119456**
Client ID: **ZZZZZZ**	Batch ID: **62853**	TestNo: **EPA 7471A**		Analysis Date: **3/25/2010**	SeqNo: **1903292**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.895	0.10	0.8300	0	108	70	130				

Sample ID: **110830-001A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **3/24/2010**	RunNo: **119456**
Client ID: **ZZZZZZ**	Batch ID: **62853**	TestNo: **EPA 7471A**		Analysis Date: **3/25/2010**	SeqNo: **1903293**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.892	0.10	0.8300	0	108	70	130	0.8948	0.269	20	

Sample ID: **110830-001A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **3/24/2010**	RunNo: **119456**
Client ID: **ZZZZZZ**	Batch ID: **62853**	TestNo: **EPA 7471A**		Analysis Date: **3/25/2010**	SeqNo: **1903295**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 9045_S

Sample ID: **110817-047ADUP** SampType: **DUP** TestCode: **9045_S** Units: **pH Units** Prep Date: RunNo: **119404**
Client ID: **ZZZZZZ** Batch ID: **R119404** TestNo: **EPA 9045C** Analysis Date: **3/24/2010** SeqNo: **1902059**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.140	0.10						7.170	0.419	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____

Logged By: _____ Date: 3/19/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: GSO

Sample Condition Upon Receipt:
1. CHILLED 5.4 Y ☑ N ☐ 4. SEALED Y ☐ N ☑
2. HEADSPACE (VOA) NA Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☐ N ☐
3. CONTAINER INTACT Y ☑ N ☐ 6. PRESERVED Y ☐ N ☑

Client: GEOCON CONSULTANTS, INC.
Attn: LAUREN VIGLIOTTI
Address: 6671 Brisa Street
City Livermore State CA Zip Code 94550
TEL: (925) 371-5900
FAX: (925) 371-5915

Project Name: I-580 WB HOV LANE
Project #: E8474-06-01
Sampler: (Printed Name) CHRIS GIUNTOLI (Signature)

Relinquished by: (Signature and Printed Name) Date: 3/18/10 Time: 1645
Received by: (Signature and Printed Name) Priscilla Cook Date: 3/19/10 Time: 9:10am
Relinquished by: (Signature and Printed Name) Date: Time:
Received by: (Signature and Printed Name) Date: Time:
Relinquished by: (Signature and Printed Name) Date: Time:
Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
CGIUNTOLI 3/17/10
Print Name Date
Signature

Send Report To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State _____ Zip _____

Bill To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:
ANALYZE EACH SAMPLE SEPARATELY
DO NOT COMPOSITE SAMPLES

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides) | 8082 (PCB) | 8260B (Volatiles) | 8270C (BNA) | 6010B (Total Metal) | 8015B (GRO) / BTEX | 8015B (DRO) | 8021 (BTEX) | TITLE 22 (CAM 17 (6010 / 7000)) | TOTAL LEAD | pH

SPECIFY APPROPRIATE MATRIX: SOIL | WATER | GROUND WATER | WASTEWATER

PRESERVATION

Q A / Q C: RTNE ☐ CT ☒ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	TAT	Container(s): #	Type	PRESERVATION	REMARKS
	110816-1	B263-0	3/17/10		E	1	G J	C	
	-2,3	B263-1,-2				2	P B		
	-4	B262-0				1	G J		
	-5,6	B262-1,-2				2	P B		
	-7,8,9	B261-0,-1,-2				3	P B		
	-10	B260-0				1	G J		
	-11,12	B260-1,-2				2	P B		
	-13	B259-0				1	G J		
	-14	B259-1				1	P B		
	-15	B259-2				1	P B		

- TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr | B= Emergency Next workday | C= Critical 2 Workdays | D= Urgent 3 Workdays | E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____

Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: GSO

Sample Condition Upon Receipt: 1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐ 2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐ 3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON CONSULTANTS, INC.
Attn: LAUREN VIGLIOTTI
Address: 6671 Brisa Street
City Livermore State CA Zip Code 94550
TEL: (925) 371-5900
FAX: (925) 371-5915

Project Name: I-580 WB HOV LANE
Project #: EB474-06-01
Sampler: (Printed Name) CGIUNTOLI (Signature)

Relinquished by: (Signature and Printed Name) — Date: 3/18/10 Time: 1645 — Received by: (Signature and Printed Name) Priscilla Cook Date: 3/19/10 Time: 9:10am

Relinquished by: (Signature and Printed Name) — Date: Time: — Received by: (Signature and Printed Name) Date: Time:

Relinquished by: (Signature and Printed Name) — Date: Time: — Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter: CGIUNTOLI (Print Name) 3/17/10 (Date) (Signature)

Send Report To: Attn: _____ Co: SAME AS ABOVE Address _____ City _____ State _____ Zip _____

Bill To: Attn: _____ Co: SAME AS ABOVE Address _____ City _____ State _____ Zip _____

Special Instructions/Comments:
ANALYZE EACH SAMPLE SEPARATELY
DO NOT COMPOSITE SAMPLES

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides) | 8082 (PCB) | 8260B (Volatiles) | 8270C (BNA) | 6010B (Total Metal) | 8015B (GRO) / BTEX | 8015B (DRO) | 8021 (BTEX) | TITLE 22 (CAM 17 (6010 / 7000)) | TOTAL LEAD | PH

SPECIFY APPROPRIATE MATRIX: SOIL | WATER | GROUND WATER | WASTEWATER

PRESERVATION

Q A / Q C: RTNE ☐ CT ☒ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	TAT	Container(s): #	Type	PRESERVATION	REMARKS
	210816-16,17,18	B258-0,-1,-2	3/17/10		E	3	P B	C	
	-19	B257-0				1	G J		
	-20,21	B257-1,-2				2	P B		
	-22	B256-0				1	G J		
	-23	B256-1				1	P B		
	-24	B256-2				1	P B		
	-25	B255-0				1	G J		
	-26,27	B255-1,-2				2	P B		
	-28,29,30	B254-0,-1,-2				3	P B		

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____
Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: GSO

Sample Condition Upon Receipt
1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON CONSULTANTS, INC. | Address: 6671 Brisa Street | TEL: (925) 371-5900
Attn: LAUREN VIGLIOTTI | City Livermore State CA Zip Code 94550 | FAX: (925) 371-5915

Project Name: I-580 WB HOV LANE | Project #: E8474-06-01 | Sampler: (Printed Name) CHRIS GIUNTOLI (Signature)

Relinquished by: (Signature and Printed Name) [signature] Date: 3/18/10 Time: 1645 Received by: (Signature and Printed Name) [signature] Date: 3/19/10 Time: 9:10
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter: GIUNTOLI 3/17/10 (Print Name / Date) [signature] (Signature)

Send Report To: Attn: _____ Co: SAME AS ABOVE Address _____ City _____ State _____ Zip _____

Bill To: Attn: _____ Co: SAME AS ABOVE Address _____ City _____ State _____ Zip _____

Special Instructions/Comments:
ANALYZE EACH SAMPLE SEPARATELY
DO NOT COMPOSITE SAMPLES

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- Records : $1.00 / ATL workorder / mo (after 1 year)

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SPECIFY APPROPRIATE MATRIX: SOIL | WATER | GROUND WATER | WASTEWATER

PRESERVATION

Q A / Q C: RTNE ☐ CT ☒ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	TAT	Container(s): #	Type	PRESERVATION	REMARKS
	110816-31	B253-0	3/17/10		E	1	G J	C	
	-34, 33	B253-1, -2				2	P B		
	-34	B252-0				1	G J		
	-35, 36	B252-1, -2				2	P B		
	-37, 38, 39	B251-0, -1, -2				3	P B		
	-40	B250-0				1	G J		
	-41, 42	B250-1, -2				2	P B		
	-43, 44, 45	B249-0, -1, -2				3	P B		
	-46, 47, 48	B248-0, -1, -2				3	P B		
	-49, 50, 51	B242-0, -1, -2				3	P B		

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr | B= Emergency Next workday | C= Critical 2 Workdays | D= Urgent 3 Workdays | E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____

Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: GSO

Sample Condition Upon Receipt: 1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐ 2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐ 3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON CONSULTANTS, INC.	Address: 6671 Brisa Street		TEL: (925) 371-5900
Attn: LAUREN VIGLIOTTI	City Livermore	State CA Zip Code 94550	FAX: (925) 371-5915

Project Name: I-580 WB HOV LANE Project #: EB474-06-01 Sampler: (Printed Name) CHRIS GIUNTOLI (Signature)

Relinquished by: (Signature and Printed Name)	Date: 3/18/10	Time: 1645	Received by: (Signature and Printed Name)	Date: 3/19/10	Time: 9:00
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter: CGIUNTOLI (Print Name) 3/17/10 (Date) (Signature)

Send Report To: Attn: _____ Co: SAME AS ABOVE Address _____ City _____ State _____ Zip _____

Bill To: Attn: _____ Co: SAME AS ABOVE Address _____ City _____ State _____ Zip _____

Special Instructions/Comments: ANALYZE EACH SAMPLE SEPARATELY DO NOT COMPOSITE SAMPLES

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SPECIFY APPROPRIATE MATRIX: SOIL, WATER, GROUND WATER, WASTEWATER

PRESERVATION

Q A / Q C: RTNE ☐ CT ☒ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	TAT	Container(s): #	Type	PRESERVATION	REMARKS
	110815-51	B247-0	3/17/10		E	1	GJ	C	
	-53	B247-1				1	PB		
	-54	B247-2				1	PB		
	-55	B246-0				1	GJ		
	-56,57	B246-1,-2				2	PB		
	-58,59,60	B245-0,-1,-2				3	PB		
	-61	B244-0				1	GJ		
	-62	B244-1				1	PB		
	-63	B244-2				1	PB		
	-64,65,66	B243-0,-1,-2				3	PB		

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

April 05, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 110816

RE: I-580 WB HOV LANE, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on March 19, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I-580 WB HOV LANE, E8474-06-01
Lab Order: 110816

CASE NARRATIVE

Analytical Comments for Method 7420

Dilution was necessary for samples 110816-001A, 110816-004A, 110816-037A and 110816-040A, due to sample matrix.

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 4/5/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (STLC)
WET/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	110816
Project:	I-580 WB HOV LANE, E8474-06-01	**Date Received**	3/19/2010 9:10:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
110816-001A	B263-0	20	mg/L	62999	2.5	10	3/17/2010	4/1/2010
110816-004A	B262-0	33	mg/L	62999	2.5	10	3/17/2010	4/1/2010
110816-015A	B259-2	1.7	mg/L	62999	0.25	1	3/17/2010	4/1/2010
110816-016A	B258-0	2.5	mg/L	62999	0.25	1	3/17/2010	4/1/2010
110816-019A	B257-0	7.9	mg/L	62999	0.25	1	3/17/2010	4/1/2010
110816-022A	B256-0	5.9	mg/L	62999	0.25	1	3/17/2010	4/1/2010
110816-023A	B256-1	2.5	mg/L	62999	0.25	1	3/17/2010	4/1/2010
110816-028A	B254-0	5.1	mg/L	62999	0.25	1	3/17/2010	4/1/2010
110816-037A	B251-0	41	mg/L	62999	2.5	10	3/17/2010	4/1/2010
110816-040A	B250-0	21	mg/L	62999	2.5	10	3/17/2010	4/1/2010
110816-043A	B249-0	4.8	mg/L	62999	0.25	1	3/17/2010	4/1/2010
110816-049A	B242-0	7.5	mg/L	62999	0.25	1	3/17/2010	4/1/2010
110816-061A	B244-0	4.0	mg/L	62999	0.25	1	3/17/2010	4/1/2010
110816-062A	B244-1	6.0	mg/L	62999	0.25	1	3/17/2010	4/1/2010
110816-064A	B243-0	3.0	mg/L	62999	0.25	1	3/17/2010	4/1/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-62999A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **3/30/2010**	RunNo: **119735**
Client ID: **PBS**	Batch ID: **62999**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/1/2010**	SeqNo: **1908615**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-62999**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **3/30/2010**	RunNo: **119735**
Client ID: **LCSS**	Batch ID: **62999**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/1/2010**	SeqNo: **1908616**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.143	0.25	5.000	0	103	80	120				

Sample ID: **110816-040A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **3/30/2010**	RunNo: **119735**
Client ID: **B250-0**	Batch ID: **62999**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/1/2010**	SeqNo: **1908627**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	20.130	2.5						20.64	2.49	20	

Sample ID: **110816-040A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **3/30/2010**	RunNo: **119735**
Client ID: **B250-0**	Batch ID: **62999**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/1/2010**	SeqNo: **1908628**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	25.609	2.5	5.000	20.64	99.4	80	120				

Sample ID: **MB-62999B**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **3/30/2010**	RunNo: **119735**
Client ID: **PBS**	Batch ID: **62999**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/1/2010**	SeqNo: **1908629**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **110816-064A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **3/30/2010**	RunNo: **119735**
Client ID: **B243-0**	Batch ID: **62999**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/1/2010**	SeqNo: **1908635**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	3.031	0.25						2.978	1.75	20	

Sample ID: **110816-064A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **3/30/2010**	RunNo: **119735**
Client ID: **B243-0**	Batch ID: **62999**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/1/2010**	SeqNo: **1908636**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	8.128	0.25	5.000	2.978	103	80	120				

Sample ID: **110816-064A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **3/30/2010**	RunNo: **119735**
Client ID: **B243-0**	Batch ID: **62999**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/1/2010**	SeqNo: **1908637**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	8.154	0.25	5.000	2.978	104	80	120	8.128	0.316	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Monday, March 29, 2010 9:12 AM
To: Diane Galvan
Subject: RE: Results/EDD - I-580 WB HOV LANE (110816)

Hi Diane: Please run the following samples for WET lead, standard TAT. Thanks.

B251-0, B262-0, B250-0, B249-0, B263-0, B242-0, B254-0, B244-1, B257-0, B244-0, B256-0, B243-0, B258-0, B256-1, B259-2

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

Geocon Consultants, Inc
6671 Brisa Street
Livermore, CA 94550
Tel (925) 371-5900
Cell (925) 768-9874

GEOTECHNICAL ENVIRONMENTAL MATERIALS

San Diego Murrieta Burbank Bakersfield Sacramento Livermore Carson City Las Vegas Portland

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May 04, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 110816

RE: I-580 WB HOV LANE, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on March 19, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

Advanced Technology Laboratories

Date: 5/4/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION
WET DI/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	110816
Project:	I-580 WB HOV LANE, E8474-06-01	**Date Received**	3/19/2010 9:10:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
110816-001A	B263-0	ND	mg/L	63739	0.25	1	3/17/2010	5/3/2010
110816-004A	B262-0	ND	mg/L	63739	0.25	1	3/17/2010	5/3/2010
110816-019A	B257-0	ND	mg/L	63739	0.25	1	3/17/2010	5/3/2010
110816-022A	B256-0	ND	mg/L	63739	0.25	1	3/17/2010	5/3/2010
110816-028A	B254-0	ND	mg/L	63739	0.25	1	3/17/2010	5/3/2010
110816-037A	B251-0	ND	mg/L	63739	0.25	1	3/17/2010	5/3/2010
110816-040A	B250-0	ND	mg/L	63739	0.25	1	3/17/2010	5/3/2010
110816-049A	B242-0	ND	mg/L	63739	0.25	1	3/17/2010	5/3/2010
110816-062A	B244-1	ND	mg/L	63739	0.25	1	3/17/2010	5/3/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 5/4/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (TCLP)
EPA 1311/ 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	110816
Project:	I-580 WB HOV LANE, E8474-06-01	**Date Received**	3/19/2010 9:10:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
110816-001A	B263-0	0.43	mg/L	63808	0.25	1	3/17/2010	5/3/2010
110816-004A	B262-0	0.77	mg/L	63808	0.25	1	3/17/2010	5/3/2010
110816-028A	B254-0	ND	mg/L	63808	0.25	1	3/17/2010	5/3/2010
110816-037A	B251-0	0.93	mg/L	63808	0.25	1	3/17/2010	5/3/2010
110816-040A	B250-0	0.37	mg/L	63808	0.25	1	3/17/2010	5/3/2010
110816-049A	B242-0	0.28	mg/L	63808	0.25	1	3/17/2010	5/3/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **MB-63739A**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **PBS**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928221**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63739**	SampType: **LCS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **LCSS**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928222**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.036	0.25	5.000	0	101	80	120				

Sample ID: **110888-001A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **ZZZZZZ**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928233**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **110888-001A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **ZZZZZZ**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928234**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.008	0.25	5.000	0	100	70	130				

Sample ID: **MB-63739B**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **PBS**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928235**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **111068-003A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **ZZZZZZ**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928246**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111068-003A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **ZZZZZZ**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928247**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.059	0.25	5.000	0	101	70	130				

Sample ID: **111068-003A-MSD**	SampType: **MSD**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **ZZZZZZ**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928248**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.988	0.25	5.000	0	99.8	70	130	5.059	1.40	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63808A**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **PBS**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927939**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63783A TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **PBS**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927940**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63808**	SampType: **LCS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **LCSS**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927941**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.961	0.25	1.000	0	96.1	80	120				

Sample ID: **110888-013A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **ZZZZZZ**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927952**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.963	0.25						0.9307	3.45	20	

Sample ID: **110888-013A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **ZZZZZZ**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927953**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	3.359	0.25	2.500	0.9307	97.1	70	130				

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 110816
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63808B**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **PBS**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927954**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63783B TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **PBS**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927955**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **111069-055A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **ZZZZZZ**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927966**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.334	0.25						0.3368	0.763	20	

Sample ID: **111069-055A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **ZZZZZZ**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927967**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.819	0.25	2.500	0.3368	99.3	70	130				

Sample ID: **111069-055A-MSD**	SampType: **MSD**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **ZZZZZZ**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927968**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.866	0.25	2.500	0.3368	101	70	130	2.819	1.66	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Tuesday, April 27, 2010 12:05 PM
To: Diane Galvan
Subject: I-580 WB HOV Lane project
Attachments: I-580 project-lead_TCLP_DI-WET.xls

HI Diane:
Please find the attached excel workbook with a list of TCLP and DI-WET lead analyses for samples for the referenced project. Please analyze under standard TAT. Thank you!

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

Geocon Consultants, Inc
6671 Brisa Street
Livermore, CA 94550
Tel (925) 371-5900
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GEOTECHNICAL ENVIRONMENTAL MATERIALS

San Diego Murrieta Burbank Bakersfield Sacramento Livermore Carson City Las Vegas Portland

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WorkOrder	ClientSampID	R_Rslt	DI-WET	TCLP
111138	B271-2	24	X	X
111138	B120-0	13	X	X
111138	B270-0	12	X	X
111137	B61-2	6.0	X	X
111137	B70-0	5.5	X	X
111137	B76-0	5.4	X	
111069	B225-1	25	X	X
111069	B204-0	16	X	X
111069	B210-0	14	X	X
111069	B219-0	13	X	X
111069	B207-2	8.9	X	X
111069	B191-1	8.6	X	X
111069	B209-0	7.3	X	X
111069	B224-0	6.8	X	
111069	B206-0	5.6	X	X
111069	B207-1	5.2	X	X
111069	B200-0	5.0	X	
111068	B211-0	13	X	X
111068	B184-0	12	X	X
111068	B207-0	12	X	
111068	B217-0	10	X	
111068	B193-0	8.5	X	X
111068	B208-0	7.5	X	
111068	B202-0	6.4	X	
110888	B229-0	57	X	X
110888	B237-0	37	X	X
110888	B240-0	20	X	X
110888	B228-0	16	X	X
110888	B236-0	14	X	X
110888	B241-0	13	X	X
110888	B234-0	13	X	X
110888	B227-0	9.8	X	
110888	B235-0	8.5	X	X
110888	B238-0	5.4	X	X
110816	B251-0	41.0	X	X
110816	B262-0	33.0	X	X
110816	B250-0	21.0	X	X
110816	B263-0	20.0	X	X
110816	B257-0	7.9	X	
110816	B242-0	7.5	X	X
110816	B244-1	6.0	X	
110816	B256-0	5.9	X	
110816	B254-0	5.1	X	X

March 31, 2010

Chris Merritt\Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 371-5900
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 110888

RE: I580 HOV LANES, E8474-06-01

Attention: Chris Merritt\Lauren Vigliotti

Enclosed are the results for sample(s) received on March 24, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I580 HOV LANES, E8474-06-01
Lab Order: 110888

CASE NARRATIVE

Sample Receiving / General Comments

Sample B226-2 was listed on the Chain of Custody (COC) but was not received by the laboratory. The client was notified on 3/24/10.

Analytical Comments for Method 6010

RPD for Duplicate (DUP) is outside criteria for samples 110888-026ADUP and 110888-046ADUP; however, the Laboratory Control Sample (LCS) validated the analytical batch.

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 3/31/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	110888
Project:	I580 HOV LANES, E8474-06-01	**Date Received**	3/24/2010 10:07:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
110888-002A	B241-1	34	mg/Kg	62890	5.0	1	3/23/2010	3/26/2010
110888-003A	B241-2	6.5	mg/Kg	62890	5.0	1	3/23/2010	3/26/2010
110888-005A	B240-1	8.3	mg/Kg	62890	5.0	1	3/23/2010	3/26/2010
110888-006A	B240-2	7.4	mg/Kg	62890	5.0	1	3/23/2010	3/26/2010
110888-007A	B239-0	72	mg/Kg	62890	5.0	1	3/23/2010	3/26/2010
110888-008A	B239-1	27	mg/Kg	62890	5.0	1	3/23/2010	3/26/2010
110888-009A	B239-2	11	mg/Kg	62890	5.0	1	3/23/2010	3/26/2010
110888-011A	B238-1	46	mg/Kg	62890	5.0	1	3/23/2010	3/26/2010
110888-012A	B238-2	6.6	mg/Kg	62890	5.0	1	3/23/2010	3/26/2010
110888-014A	B237-1	14	mg/Kg	62890	5.0	1	3/23/2010	3/26/2010
110888-015A	B237-2	9.3	mg/Kg	62890	5.0	1	3/23/2010	3/26/2010
110888-016A	B236-0	180	mg/Kg	62890	5.0	1	3/23/2010	3/26/2010
110888-017A	B236-1	5.6	mg/Kg	62890	5.0	1	3/23/2010	3/26/2010
110888-018A	B236-2	5.6	mg/Kg	62890	5.0	1	3/23/2010	3/26/2010
110888-020A	B235-1	5.6	mg/Kg	62890	5.0	1	3/23/2010	3/26/2010
110888-021A	B235-2	ND	mg/Kg	62890	5.0	1	3/23/2010	3/26/2010
110888-022A	B234-0	180	mg/Kg	62890	5.0	1	3/23/2010	3/26/2010
110888-023A	B234-1	41	mg/Kg	62890	5.0	1	3/23/2010	3/26/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 3/31/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	110888
Project:	I580 HOV LANES, E8474-06-01	**Date Received**	3/24/2010 10:07:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
110888-024A	B234-2	5.3	mg/Kg	62890	5.0	1	3/23/2010	3/26/2010
110888-026A	B233-1	7.7	mg/Kg	62890	5.0	1	3/23/2010	3/26/2010
110888-027A	B233-2	10	mg/Kg	62891	5.0	1	3/23/2010	3/26/2010
110888-029A	B232-1	13	mg/Kg	62891	5.0	1	3/23/2010	3/26/2010
110888-030A	B232-2	18	mg/Kg	62891	5.0	1	3/23/2010	3/26/2010
110888-031A	B231-0	32	mg/Kg	62891	5.0	1	3/23/2010	3/26/2010
110888-032A	B231-1	19	mg/Kg	62891	5.0	1	3/23/2010	3/26/2010
110888-033A	B231-2	42	mg/Kg	62891	5.0	1	3/23/2010	3/26/2010
110888-034A	B230-0	35	mg/Kg	62891	5.0	1	3/23/2010	3/26/2010
110888-035A	B230-1	7.1	mg/Kg	62891	5.0	1	3/23/2010	3/26/2010
110888-036A	B230-2	6.9	mg/Kg	62891	5.0	1	3/23/2010	3/26/2010
110888-038A	B229-1	10	mg/Kg	62891	5.0	1	3/23/2010	3/26/2010
110888-039A	B229-2	5.0	mg/Kg	62891	5.0	1	3/23/2010	3/26/2010
110888-040A	B228-0	290	mg/Kg	62891	5.0	1	3/23/2010	3/26/2010
110888-041A	B228-1	19	mg/Kg	62891	5.0	1	3/23/2010	3/26/2010
110888-042A	B228-2	5.7	mg/Kg	62891	5.0	1	3/23/2010	3/26/2010
110888-044A	B227-1	18	mg/Kg	62891	5.0	1	3/23/2010	3/26/2010
110888-045A	B227-2	7.8	mg/Kg	62891	5.0	1	3/23/2010	3/26/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 3/31/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	110888
Project:	I580 HOV LANES, E8474-06-01	**Date Received**	3/24/2010 10:07:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
110888-047A	B226-1	27	mg/Kg	62891	5.0	1	3/23/2010	3/26/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 3/31/2010

ANALYTICAL RESULTS

pH
EPA 9045C

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	110888
Project:	I580 HOV LANES, E8474-06-01	**Date Received**	3/24/2010 10:07:00 AM
Project No:		**Matrix:**	Soil
Analyte:	pH	**Analyst:**	CBB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
110888-002A	B241-1	8.3	pH Units	R119527	0.10	1	3/23/2010	3/26/2010
110888-012A	B238-2	7.5	pH Units	R119527	0.10	1	3/23/2010	3/26/2010
110888-021A	B235-2	6.8	pH Units	R119527	0.10	1	3/23/2010	3/26/2010
110888-030A	B232-2	8.1	pH Units	R119527	0.10	1	3/23/2010	3/26/2010
110888-038A	B229-1	7.0	pH Units	R119527	0.10	1	3/23/2010	3/26/2010
110888-047A	B226-1	7.9	pH Units	R119527	0.10	1	3/23/2010	3/26/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B241-0
Lab Order:	110888	**Collection Date:**	3/23/2010
Project:	I580 HOV LANES, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110888-001A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100329K	QC Batch: 62950			PrepDate:	3/29/2010	Analyst: **SMH**
Antimony	ND	2.0		mg/Kg	1	3/29/2010 10:02 PM
Arsenic	ND	1.0		mg/Kg	1	3/29/2010 10:02 PM
Barium	170	1.0		mg/Kg	1	3/29/2010 10:02 PM
Beryllium	ND	1.0		mg/Kg	1	3/29/2010 10:02 PM
Cadmium	ND	1.0		mg/Kg	1	3/29/2010 10:02 PM
Chromium	33	1.0		mg/Kg	1	3/29/2010 10:02 PM
Cobalt	7.2	1.0		mg/Kg	1	3/29/2010 10:02 PM
Copper	51	2.0		mg/Kg	1	3/29/2010 10:02 PM
Lead	220	1.0		mg/Kg	1	3/29/2010 10:02 PM
Molybdenum	4.2	1.0		mg/Kg	1	3/29/2010 10:02 PM
Nickel	35	1.0		mg/Kg	1	3/29/2010 10:02 PM
Selenium	ND	1.0		mg/Kg	1	3/29/2010 10:02 PM
Silver	ND	1.0		mg/Kg	1	3/29/2010 10:02 PM
Thallium	ND	1.0		mg/Kg	1	3/29/2010 10:02 PM
Vanadium	29	1.0		mg/Kg	1	3/29/2010 10:02 PM
Zinc	190	1.0		mg/Kg	1	3/29/2010 10:02 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA5_100329B	QC Batch: 62953			PrepDate:	3/29/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/29/2010 03:17 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B240-0
Lab Order:	110888	**Collection Date:**	3/23/2010
Project:	I580 HOV LANES, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110888-004A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100329K	QC Batch: 62950			PrepDate:	3/29/2010	Analyst: **SMH**
Antimony	ND	2.0		mg/Kg	1	3/29/2010 10:07 PM
Arsenic	9.1	1.0		mg/Kg	1	3/29/2010 10:07 PM
Barium	160	1.0		mg/Kg	1	3/29/2010 10:07 PM
Beryllium	ND	1.0		mg/Kg	1	3/29/2010 10:07 PM
Cadmium	1.2	1.0		mg/Kg	1	3/29/2010 10:07 PM
Chromium	35	1.0		mg/Kg	1	3/29/2010 10:07 PM
Cobalt	8.9	1.0		mg/Kg	1	3/29/2010 10:07 PM
Copper	50	2.0		mg/Kg	1	3/29/2010 10:07 PM
Lead	360	1.0		mg/Kg	1	3/29/2010 10:07 PM
Molybdenum	1.8	1.0		mg/Kg	1	3/29/2010 10:07 PM
Nickel	36	1.0		mg/Kg	1	3/29/2010 10:07 PM
Selenium	ND	1.0		mg/Kg	1	3/29/2010 10:07 PM
Silver	ND	1.0		mg/Kg	1	3/29/2010 10:07 PM
Thallium	ND	1.0		mg/Kg	1	3/29/2010 10:07 PM
Vanadium	43	1.0		mg/Kg	1	3/29/2010 10:07 PM
Zinc	240	1.0		mg/Kg	1	3/29/2010 10:07 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA5_100329B	QC Batch: 62953			PrepDate:	3/29/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/29/2010 03:19 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B238-0
Lab Order:	110888	**Collection Date:**	3/23/2010
Project:	I580 HOV LANES, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110888-010A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100329K	QC Batch: 62950			PrepDate:	3/29/2010	Analyst: **SMH**
Antimony	ND	2.0		mg/Kg	1	3/29/2010 10:12 PM
Arsenic	ND	1.0		mg/Kg	1	3/29/2010 10:12 PM
Barium	240	1.0		mg/Kg	1	3/29/2010 10:12 PM
Beryllium	ND	1.0		mg/Kg	1	3/29/2010 10:12 PM
Cadmium	1.2	1.0		mg/Kg	1	3/29/2010 10:12 PM
Chromium	34	1.0		mg/Kg	1	3/29/2010 10:12 PM
Cobalt	8.4	1.0		mg/Kg	1	3/29/2010 10:12 PM
Copper	64	2.0		mg/Kg	1	3/29/2010 10:12 PM
Lead	120	1.0		mg/Kg	1	3/29/2010 10:12 PM
Molybdenum	2.4	1.0		mg/Kg	1	3/29/2010 10:12 PM
Nickel	32	1.0		mg/Kg	1	3/29/2010 10:12 PM
Selenium	ND	1.0		mg/Kg	1	3/29/2010 10:12 PM
Silver	ND	1.0		mg/Kg	1	3/29/2010 10:12 PM
Thallium	ND	1.0		mg/Kg	1	3/29/2010 10:12 PM
Vanadium	39	1.0		mg/Kg	1	3/29/2010 10:12 PM
Zinc	390	1.0		mg/Kg	1	3/29/2010 10:12 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA5_100329B	QC Batch: 62953			PrepDate:	3/29/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/29/2010 03:21 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B237-0
Lab Order:	110888	**Collection Date:**	3/23/2010
Project:	I580 HOV LANES, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110888-013A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100329K	QC Batch: 62950			PrepDate:	3/29/2010	Analyst: **SMH**
Antimony	4.3	2.0		mg/Kg	1	3/29/2010 10:16 PM
Arsenic	4.2	1.0		mg/Kg	1	3/29/2010 10:16 PM
Barium	180	1.0		mg/Kg	1	3/29/2010 10:16 PM
Beryllium	ND	1.0		mg/Kg	1	3/29/2010 10:16 PM
Cadmium	1.2	1.0		mg/Kg	1	3/29/2010 10:16 PM
Chromium	40	1.0		mg/Kg	1	3/29/2010 10:16 PM
Cobalt	8.9	1.0		mg/Kg	1	3/29/2010 10:16 PM
Copper	46	2.0		mg/Kg	1	3/29/2010 10:16 PM
Lead	530	1.0		mg/Kg	1	3/29/2010 10:16 PM
Molybdenum	1.7	1.0		mg/Kg	1	3/29/2010 10:16 PM
Nickel	63	1.0		mg/Kg	1	3/29/2010 10:16 PM
Selenium	ND	1.0		mg/Kg	1	3/29/2010 10:16 PM
Silver	ND	1.0		mg/Kg	1	3/29/2010 10:16 PM
Thallium	ND	1.0		mg/Kg	1	3/29/2010 10:16 PM
Vanadium	28	1.0		mg/Kg	1	3/29/2010 10:16 PM
Zinc	270	1.0		mg/Kg	1	3/29/2010 10:16 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA5_100329B	QC Batch: 62953			PrepDate:	3/29/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/29/2010 03:27 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B235-0
Lab Order:	110888	**Collection Date:**	3/23/2010
Project:	I580 HOV LANES, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110888-019A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100329K	QC Batch: 62950			PrepDate:	3/29/2010	Analyst: **SMH**
Antimony	ND	2.0		mg/Kg	1	3/29/2010 10:21 PM
Arsenic	ND	1.0		mg/Kg	1	3/29/2010 10:21 PM
Barium	130	1.0		mg/Kg	1	3/29/2010 10:21 PM
Beryllium	ND	1.0		mg/Kg	1	3/29/2010 10:21 PM
Cadmium	ND	1.0		mg/Kg	1	3/29/2010 10:21 PM
Chromium	32	1.0		mg/Kg	1	3/29/2010 10:21 PM
Cobalt	7.4	1.0		mg/Kg	1	3/29/2010 10:21 PM
Copper	32	2.0		mg/Kg	1	3/29/2010 10:21 PM
Lead	120	1.0		mg/Kg	1	3/29/2010 10:21 PM
Molybdenum	2.0	1.0		mg/Kg	1	3/29/2010 10:21 PM
Nickel	37	1.0		mg/Kg	1	3/29/2010 10:21 PM
Selenium	ND	1.0		mg/Kg	1	3/29/2010 10:21 PM
Silver	ND	1.0		mg/Kg	1	3/29/2010 10:21 PM
Thallium	ND	1.0		mg/Kg	1	3/29/2010 10:21 PM
Vanadium	25	1.0		mg/Kg	1	3/29/2010 10:21 PM
Zinc	160	1.0		mg/Kg	1	3/29/2010 10:21 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA5_100329B	QC Batch: 62953			PrepDate:	3/29/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/29/2010 03:29 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B233-0
Lab Order:	110888	**Collection Date:**	3/23/2010
Project:	I580 HOV LANES, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110888-025A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100329K	QC Batch: 62950			PrepDate:	3/29/2010	Analyst: **SMH**
Antimony	ND	2.0		mg/Kg	1	3/29/2010 10:26 PM
Arsenic	1.8	1.0		mg/Kg	1	3/29/2010 10:26 PM
Barium	140	1.0		mg/Kg	1	3/29/2010 10:26 PM
Beryllium	ND	1.0		mg/Kg	1	3/29/2010 10:26 PM
Cadmium	ND	1.0		mg/Kg	1	3/29/2010 10:26 PM
Chromium	29	1.0		mg/Kg	1	3/29/2010 10:26 PM
Cobalt	9.6	1.0		mg/Kg	1	3/29/2010 10:26 PM
Copper	17	2.0		mg/Kg	1	3/29/2010 10:26 PM
Lead	35	1.0		mg/Kg	1	3/29/2010 10:26 PM
Molybdenum	ND	1.0		mg/Kg	1	3/29/2010 10:26 PM
Nickel	36	1.0		mg/Kg	1	3/29/2010 10:26 PM
Selenium	ND	1.0		mg/Kg	1	3/29/2010 10:26 PM
Silver	ND	1.0		mg/Kg	1	3/29/2010 10:26 PM
Thallium	ND	1.0		mg/Kg	1	3/29/2010 10:26 PM
Vanadium	33	1.0		mg/Kg	1	3/29/2010 10:26 PM
Zinc	53	1.0		mg/Kg	1	3/29/2010 10:26 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA5_100329B	QC Batch: 62953			PrepDate:	3/29/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/29/2010 03:31 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B232-0
Lab Order:	110888	**Collection Date:**	3/23/2010
Project:	I580 HOV LANES, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110888-028A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100329K	QC Batch: 62950			PrepDate:	3/29/2010	Analyst: **SMH**
Antimony	ND	2.0		mg/Kg	1	3/29/2010 10:31 PM
Arsenic	ND	1.0		mg/Kg	1	3/29/2010 10:31 PM
Barium	150	1.0		mg/Kg	1	3/29/2010 10:31 PM
Beryllium	ND	1.0		mg/Kg	1	3/29/2010 10:31 PM
Cadmium	ND	1.0		mg/Kg	1	3/29/2010 10:31 PM
Chromium	28	1.0		mg/Kg	1	3/29/2010 10:31 PM
Cobalt	8.7	1.0		mg/Kg	1	3/29/2010 10:31 PM
Copper	25	2.0		mg/Kg	1	3/29/2010 10:31 PM
Lead	28	1.0		mg/Kg	1	3/29/2010 10:31 PM
Molybdenum	2.4	1.0		mg/Kg	1	3/29/2010 10:31 PM
Nickel	43	1.0		mg/Kg	1	3/29/2010 10:31 PM
Selenium	ND	1.0		mg/Kg	1	3/29/2010 10:31 PM
Silver	ND	1.0		mg/Kg	1	3/29/2010 10:31 PM
Thallium	ND	1.0		mg/Kg	1	3/29/2010 10:31 PM
Vanadium	29	1.0		mg/Kg	1	3/29/2010 10:31 PM
Zinc	120	1.0		mg/Kg	1	3/29/2010 10:31 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA5_100329B	QC Batch: 62953			PrepDate:	3/29/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/29/2010 03:33 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B229-0
Lab Order:	110888	**Collection Date:**	3/23/2010
Project:	I580 HOV LANES, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110888-037A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100329K	QC Batch: 62950			PrepDate:	3/29/2010	Analyst: **SMH**
Antimony	ND	2.0		mg/Kg	1	3/29/2010 10:35 PM
Arsenic	1.1	1.0		mg/Kg	1	3/29/2010 10:35 PM
Barium	140	1.0		mg/Kg	1	3/29/2010 10:35 PM
Beryllium	ND	1.0		mg/Kg	1	3/29/2010 10:35 PM
Cadmium	ND	1.0		mg/Kg	1	3/29/2010 10:35 PM
Chromium	27	1.0		mg/Kg	1	3/29/2010 10:35 PM
Cobalt	7.7	1.0		mg/Kg	1	3/29/2010 10:35 PM
Copper	25	2.0		mg/Kg	1	3/29/2010 10:35 PM
Lead	530	1.0		mg/Kg	1	3/29/2010 10:35 PM
Molybdenum	8.8	1.0		mg/Kg	1	3/29/2010 10:35 PM
Nickel	29	1.0		mg/Kg	1	3/29/2010 10:35 PM
Selenium	ND	1.0		mg/Kg	1	3/29/2010 10:35 PM
Silver	ND	1.0		mg/Kg	1	3/29/2010 10:35 PM
Thallium	ND	1.0		mg/Kg	1	3/29/2010 10:35 PM
Vanadium	27	1.0		mg/Kg	1	3/29/2010 10:35 PM
Zinc	160	1.0		mg/Kg	1	3/29/2010 10:35 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA5_100329B	QC Batch: 62953			PrepDate:	3/29/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/29/2010 03:35 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B227-0
Lab Order:	110888	**Collection Date:**	3/23/2010
Project:	I580 HOV LANES, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110888-043A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100329K	QC Batch: 62950			PrepDate:	3/29/2010	Analyst: **SMH**
Antimony	ND	2.0		mg/Kg	1	3/29/2010 10:40 PM
Arsenic	1.6	1.0		mg/Kg	1	3/29/2010 10:40 PM
Barium	150	1.0		mg/Kg	1	3/29/2010 10:40 PM
Beryllium	ND	1.0		mg/Kg	1	3/29/2010 10:40 PM
Cadmium	ND	1.0		mg/Kg	1	3/29/2010 10:40 PM
Chromium	35	1.0		mg/Kg	1	3/29/2010 10:40 PM
Cobalt	7.6	1.0		mg/Kg	1	3/29/2010 10:40 PM
Copper	51	2.0		mg/Kg	1	3/29/2010 10:40 PM
Lead	50	1.0		mg/Kg	1	3/29/2010 10:40 PM
Molybdenum	2.6	1.0		mg/Kg	1	3/29/2010 10:40 PM
Nickel	37	1.0		mg/Kg	1	3/29/2010 10:40 PM
Selenium	ND	1.0		mg/Kg	1	3/29/2010 10:40 PM
Silver	ND	1.0		mg/Kg	1	3/29/2010 10:40 PM
Thallium	ND	1.0		mg/Kg	1	3/29/2010 10:40 PM
Vanadium	32	1.0		mg/Kg	1	3/29/2010 10:40 PM
Zinc	160	1.0		mg/Kg	1	3/29/2010 10:40 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA5_100329B	QC Batch: 62953			PrepDate:	3/29/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/29/2010 03:38 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B226-0
Lab Order:	110888	**Collection Date:**	3/23/2010
Project:	I580 HOV LANES, E8474-06-01	**Matrix:**	SOIL
Lab ID:	110888-046A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100329K	QC Batch: 62950			PrepDate:	3/29/2010	Analyst: **SMH**
Antimony	ND	2.0		mg/Kg	1	3/29/2010 10:45 PM
Arsenic	ND	1.0		mg/Kg	1	3/29/2010 10:45 PM
Barium	160	1.0		mg/Kg	1	3/29/2010 10:45 PM
Beryllium	ND	1.0		mg/Kg	1	3/29/2010 10:45 PM
Cadmium	ND	1.0		mg/Kg	1	3/29/2010 10:45 PM
Chromium	35	1.0		mg/Kg	1	3/29/2010 10:45 PM
Cobalt	8.2	1.0		mg/Kg	1	3/29/2010 10:45 PM
Copper	47	2.0		mg/Kg	1	3/29/2010 10:45 PM
Lead	46	1.0		mg/Kg	1	3/29/2010 10:45 PM
Molybdenum	2.6	1.0		mg/Kg	1	3/29/2010 10:45 PM
Nickel	39	1.0		mg/Kg	1	3/29/2010 10:45 PM
Selenium	ND	1.0		mg/Kg	1	3/29/2010 10:45 PM
Silver	ND	1.0		mg/Kg	1	3/29/2010 10:45 PM
Thallium	ND	1.0		mg/Kg	1	3/29/2010 10:45 PM
Vanadium	30	1.0		mg/Kg	1	3/29/2010 10:45 PM
Zinc	210	1.0		mg/Kg	1	3/29/2010 10:45 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA5_100329B	QC Batch: 62953			PrepDate:	3/29/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	3/29/2010 03:13 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 110888
Project: I580 HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-62950** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/29/2010** RunNo: **119618**
Client ID: **PBS** Batch ID: **62950** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/29/2010** SeqNo: **1906758**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	ND	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	0.622	1.0									

Sample ID: **LCS-62950** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/29/2010** RunNo: **119618**
Client ID: **LCSS** Batch ID: **62950** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/29/2010** SeqNo: **1906759**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	47.815	2.0	50.00	0	95.6	80	120				
Arsenic	46.101	1.0	50.00	0	92.2	80	120				
Barium	51.569	1.0	50.00	0	103	80	120				
Beryllium	49.739	1.0	50.00	0	99.5	80	120				
Cadmium	48.516	1.0	50.00	0	97.0	80	120				
Chromium	50.271	1.0	50.00	0	101	80	120				
Cobalt	50.782	1.0	50.00	0	102	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110888
Project: I580 HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-62950** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/29/2010** RunNo: **119618**
Client ID: **LCSS** Batch ID: **62950** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/29/2010** SeqNo: **1906759**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	50.896	2.0	50.00	0	102	80	120				
Lead	50.057	1.0	50.00	0	100	80	120				
Molybdenum	50.246	1.0	50.00	0	100	80	120				
Nickel	49.055	1.0	50.00	0	98.1	80	120				
Selenium	45.068	1.0	50.00	0	90.1	80	120				
Silver	44.086	1.0	50.00	0	88.2	80	120				
Thallium	48.644	1.0	50.00	0	97.3	80	120				
Vanadium	50.790	1.0	50.00	0	102	80	120				
Zinc	47.203	1.0	50.00	0.6219	93.2	80	120				

Sample ID: **110888-046A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/29/2010** RunNo: **119618**
Client ID: **B226-0** Batch ID: **62950** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/30/2010** SeqNo: **1906770**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	1.412	2.0						1.176	0	20	
Arsenic	ND	1.0						0	0	20	
Barium	148.660	1.0						156.6	5.22	20	
Beryllium	ND	1.0						0	0	20	
Cadmium	0.742	1.0						0.7591	0	20	
Chromium	36.642	1.0						35.47	3.25	20	
Cobalt	8.089	1.0						8.213	1.52	20	
Copper	56.019	2.0						47.15	17.2	20	
Lead	59.179	1.0						46.21	24.6	20	R
Molybdenum	3.487	1.0						2.603	29.0	20	R
Nickel	39.977	1.0						39.05	2.34	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	30.142	1.0						29.73	1.38	20	
Zinc	233.348	1.0						210.6	10.2	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110888
Project: I580 HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **110888-046A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/29/2010** RunNo: **119618**
Client ID: **B226-0** Batch ID: **62950** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/30/2010** SeqNo: **1906771**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	100.525	2.0	125.0	1.176	79.5	32	105				
Arsenic	101.565	1.0	125.0	0	81.3	49	106				
Barium	241.478	1.0	125.0	156.6	67.9	31	133				
Beryllium	102.065	1.0	125.0	0	81.7	56	106				
Cadmium	98.219	1.0	125.0	0.7591	78.0	51	103				
Chromium	136.449	1.0	125.0	35.47	80.8	45	114				
Cobalt	107.027	1.0	125.0	8.213	79.1	52	106				
Copper	174.558	2.0	125.0	47.15	102	54	125				
Lead	141.641	1.0	125.0	46.21	76.3	34	126				
Molybdenum	107.471	1.0	125.0	2.603	83.9	54	106				
Nickel	137.333	1.0	125.0	39.05	78.6	45	111				
Selenium	100.707	1.0	125.0	0	80.6	47	104				
Silver	107.269	1.0	125.0	0	85.8	56	112				
Thallium	97.420	1.0	125.0	0	77.9	46	101				
Vanadium	131.663	1.0	125.0	29.73	81.5	54	114				
Zinc	288.794	1.0	125.0	210.6	62.5	28	125				

Sample ID: **110888-046A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/29/2010** RunNo: **119618**
Client ID: **B226-0** Batch ID: **62950** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/30/2010** SeqNo: **1906772**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	102.516	2.0	125.0	1.176	81.1	32	105	100.5	1.96	20	
Arsenic	102.514	1.0	125.0	0	82.0	49	106	101.6	0.930	20	
Barium	259.075	1.0	125.0	156.6	82.0	31	133	241.5	7.03	20	
Beryllium	104.947	1.0	125.0	0	84.0	56	106	102.1	2.78	20	
Cadmium	101.464	1.0	125.0	0.7591	80.6	51	103	98.22	3.25	20	
Chromium	140.958	1.0	125.0	35.47	84.4	45	114	136.4	3.25	20	
Cobalt	110.758	1.0	125.0	8.213	82.0	52	106	107.0	3.43	20	
Copper	178.477	2.0	125.0	47.15	105	54	125	174.6	2.22	20	
Lead	144.115	1.0	125.0	46.21	78.3	34	126	141.6	1.73	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110888
Project: I580 HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **110888-046A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **3/29/2010** RunNo: **119618**
Client ID: **B226-0** Batch ID: **62950** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **3/30/2010** SeqNo: **1906772**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	109.284	1.0	125.0	2.603	85.3	54	106	107.5	1.67	20	
Nickel	134.975	1.0	125.0	39.05	76.7	45	111	137.3	1.73	20	
Selenium	102.405	1.0	125.0	0	81.9	47	104	100.7	1.67	20	
Silver	110.383	1.0	125.0	0	88.3	56	112	107.3	2.86	20	
Thallium	101.077	1.0	125.0	0	80.9	46	101	97.42	3.68	20	
Vanadium	137.368	1.0	125.0	29.73	86.1	54	114	131.7	4.24	20	
Zinc	305.670	1.0	125.0	210.6	76.0	28	125	288.8	5.68	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110888
Project: I580 HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-62890A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/25/2010**	RunNo: **119531**
Client ID: **PBS**	Batch ID: **62890**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/26/2010**	SeqNo: **1904751**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-62890**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/25/2010**	RunNo: **119531**
Client ID: **LCSS**	Batch ID: **62890**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/26/2010**	SeqNo: **1904752**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	270.136	5.0	250.0	0	108	80	120				

Sample ID: **110888-014A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/25/2010**	RunNo: **119531**
Client ID: **B237-1**	Batch ID: **62890**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/26/2010**	SeqNo: **1904763**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	16.395	5.0						14.22	14.2	20	

Sample ID: **110888-014A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/25/2010**	RunNo: **119531**
Client ID: **B237-1**	Batch ID: **62890**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/26/2010**	SeqNo: **1904764**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	223.686	5.0	250.0	14.22	83.8	34	126				

Sample ID: **MB-62890B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/25/2010**	RunNo: **119531**
Client ID: **PBS**	Batch ID: **62890**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/26/2010**	SeqNo: **1904765**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110888
Project: I580 HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **110888-026A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/25/2010**	RunNo: **119531**
Client ID: **B233-1**	Batch ID: **62890**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/26/2010**	SeqNo: **1904776**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	10.245	5.0						7.700	28.4	20	R

Sample ID: **110888-026A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/25/2010**	RunNo: **119531**
Client ID: **B233-1**	Batch ID: **62890**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/26/2010**	SeqNo: **1904777**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	217.543	5.0	250.0	7.700	83.9	34	126				

Sample ID: **110888-026A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/25/2010**	RunNo: **119531**
Client ID: **B233-1**	Batch ID: **62890**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/26/2010**	SeqNo: **1904778**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	217.453	5.0	250.0	7.700	83.9	34	126	217.5	0.0413	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110888
Project: I580 HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-62891A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/25/2010**	RunNo: **119535**
Client ID: **PBS**	Batch ID: **62891**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/26/2010**	SeqNo: **1904800**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.134	5.0									

Sample ID: **LCS-62891**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/25/2010**	RunNo: **119535**
Client ID: **LCSS**	Batch ID: **62891**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/26/2010**	SeqNo: **1904801**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	268.095	5.0	250.0	0.1336	107	80	120				

Sample ID: **110888-038A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/25/2010**	RunNo: **119535**
Client ID: **B229-1**	Batch ID: **62891**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/26/2010**	SeqNo: **1904812**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	9.605	5.0						10.43	8.21	20	

Sample ID: **110888-038A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/25/2010**	RunNo: **119535**
Client ID: **B229-1**	Batch ID: **62891**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/26/2010**	SeqNo: **1904813**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	218.818	5.0	250.0	10.43	83.4	34	126				

Sample ID: **MB-62891B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/25/2010**	RunNo: **119535**
Client ID: **PBS**	Batch ID: **62891**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/26/2010**	SeqNo: **1904814**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110888
Project: I580 HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **110888-047A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/25/2010**	RunNo: **119535**
Client ID: **B226-1**	Batch ID: **62891**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/26/2010**	SeqNo: **1904822**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	32.423	5.0						27.46	16.6	20	

Sample ID: **110888-047A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/25/2010**	RunNo: **119535**
Client ID: **B226-1**	Batch ID: **62891**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/26/2010**	SeqNo: **1904823**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	213.042	5.0	250.0	27.46	74.2	34	126				

Sample ID: **110888-047A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **3/25/2010**	RunNo: **119535**
Client ID: **B226-1**	Batch ID: **62891**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **3/26/2010**	SeqNo: **1904824**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	235.861	5.0	250.0	27.46	83.4	34	126	213.0	10.2	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110888
Project: I580 HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-62953**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **3/29/2010**	RunNo: **119592**
Client ID: **PBS**	Batch ID: **62953**	TestNo: **EPA 7471A**		Analysis Date: **3/29/2010**	SeqNo: **1906017**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-62953**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **3/29/2010**	RunNo: **119592**
Client ID: **LCSS**	Batch ID: **62953**	TestNo: **EPA 7471A**		Analysis Date: **3/29/2010**	SeqNo: **1906018**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.850	0.10	0.8300	0	102	80	120				

Sample ID: **110888-046A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **3/29/2010**	RunNo: **119592**
Client ID: **B226-0**	Batch ID: **62953**	TestNo: **EPA 7471A**		Analysis Date: **3/29/2010**	SeqNo: **1906019**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.920	0.10	0.8300	0.07642	102	70	130				

Sample ID: **110888-046A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **3/29/2010**	RunNo: **119592**
Client ID: **B226-0**	Batch ID: **62953**	TestNo: **EPA 7471A**		Analysis Date: **3/29/2010**	SeqNo: **1906020**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.908	0.10	0.8300	0.07642	100	70	130	0.9205	1.41	20	

Sample ID: **110888-046A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **3/29/2010**	RunNo: **119592**
Client ID: **B226-0**	Batch ID: **62953**	TestNo: **EPA 7471A**		Analysis Date: **3/29/2010**	SeqNo: **1906022**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.077	0.10						0.07642	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110888
Project: I580 HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 9045_S

Sample ID: **110888-047ADUP** SampType: **DUP** TestCode: **9045_S** Units: **pH Units** Prep Date: RunNo: **119527**
Client ID: **B226-1** Batch ID: **R119527** TestNo: **EPA 9045C** Analysis Date: **3/26/2010** SeqNo: **1904657**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.910	0.10						7.910	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CHAIN OF CUSTODY RECORD

Pg 1 of

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#:

Logged By: _____ Date: 3/24/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: GSO

Sample Condition Upon Receipt: 8.8
1. CHILLED Y☑ N☐ 4. SEALED Y☐ N☑
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☑ N☐
3. CONTAINER INTACT Y☑ N☐ 6. PRESERVED Y☐ N☑

Client: GEOCON CONSULTANTS, INC.	Address: 6671 Brisa Street		TEL: (925) 371-5900
Attn: C. MERRITT, L. VIGLIOTTI	City: Livermore	State: CA Zip Code: 94550	FAX: (925) 371-5915

Project Name: I580 HOV LANES Project #: E8474-06-01 Sampler: (Printed Name) CM/MR (Signature) C. MERRITT

Relinquished by: (Signature and Printed Name) CHRIS MERRITT Date: 3-23-10 Time: 1830 Received by: (Signature and Printed Name) Date: 3/24/10 Time: 10:07

Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
CM — Print Name
3-23-09 — Date
CM — Signature

Send Report To:
Attn:
Co: SAME AS ABOVE
Address
City State Zip

Bill To:
Attn:
Co: SAME AS ABOVE
Address
City State Zip

Special Instructions/Comments:
IF CAM17 SPECIFIED, IT IS ONLY FOR THE -0 (GLASS JAR) SAMPLE
ALL OTHERS TOTAL LEAD
WHERE pH SELECTED, CHOOSE 1 OF THE 3 SAMPLES AT RANDOM.

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX

PRESERVATION

Q A / Q C
RTNE ☐
CT ☑
SWRCB ☐
Logcode
OTHER

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal) Pb	8015B (GRO) / BTEX	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000) pH ISEP-4645	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	110888 - 1/3	B241-0,1,2	3-23-10	Veterans on Site				X				X	X	X				E	3	J/B	C	
	-4/6	B240-							X			X										
	-7/9	B239-																				
	-10/12	B238-										X	X									
	-13/15	B237-										X										
	-16/18	B236-																				
	-19/21	B235-										X	X									
	-22/24	B234-																				
	-25/27	B233-										X										
	-28/30	B232-										X	X									

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____

Logged By: f Date: 3/24/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: _____

Sample Condition Upon Receipt
1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON CONSULTANTS, INC.
Attn: C. MERRITT, L. VIGLIOTTI
Address: 6671 Brisa Street
City Livermore State CA Zip Code 94550
TEL: (925) 371-5900
FAX: (925) 371-5915

Project Name: I 580 HOV LANES Project #: E8474-06-01 Sampler: (Printed Name) CM/MR (Signature) C. MERRITT

Relinquished by: (Signature and Printed Name) CHRIS MERRITT Date: 3-23-10 Time: 1830 Received by: (Signature and Printed Name) MARK CHAPPELL Date: 3/24/10 Time: 10:37

Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
CM — Print Name
3-23-10 — Date
CM — Signature

Send Report To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State _____ Zip _____

Bill To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:
→ IF CAM 17 SPECIFIED - SEE PAGE 1
→ PH - SEE PAGE 1

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides) | 8082 (PCB) | 8260B (Volatiles) | 8270C (BNA) | 6010B (Total Metal) Pb | 8015B (GRO) / BTEX | 8015B (DRO) | 8021 (BTEX) | TITLE 22 / CAM 17 (6010 / 7000) | pH EPA 9045

SPECIFY APPROPRIATE MATRIX: SOIL | WATER | GROUND WATER | WASTEWATER

Container(s): TAT | # | Type

PRESERVATION

Q A / Q C: RTNE ☐ CT ☒ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	8270C (BNA)	6010B (Total Metal)	8015B (DRO)	TITLE 22 / CAM 17	pH	SOIL	TAT	#	Type	PRESERVATION	REMARKS
	110888-31/33	B231-0,1,2	3-23-10	1430	X					X	E	3	J/B	C	
	-34/36	B230-			X										
	-37/39	B229-			X		X	X							
	-40/42	B228-			X										
	-43/45	B227-			X		X								
	-46/48	B226-			X		X	X							

- TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr | B= Emergency Next workday | C= Critical 2 Workdays | D= Urgent 3 Workdays | E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

April 21, 2010

Chris Merritt\Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 371-5900
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 110888

RE: I580 HOV LANES, E8474-06-01

Attention: Chris Merritt\Lauren Vigliotti

Enclosed are the results for sample(s) received on March 24, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I580 HOV LANES, E8474-06-01
Lab Order: 110888

CASE NARRATIVE

Analytical Comments for Method 7420

Dilution was necessary for samples 110888-001A, 110888-004A, 110888-013A, 110888-016A, 110888-022A, 110888-037A, 110888-040A and 110888-043A, due to sample matrix.

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 4/21/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (STLC)
WET/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	110888
Project:	I580 HOV LANES, E8474-06-01	**Date Received**	3/24/2010 10:07:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
110888-001A	B241-0	13	mg/L	63447	0.50	2	3/23/2010	4/20/2010
110888-004A	B240-0	20	mg/L	63447	2.5	10	3/23/2010	4/20/2010
110888-007A	B239-0	2.4	mg/L	63447	0.25	1	3/23/2010	4/20/2010
110888-010A	B238-0	5.4	mg/L	63447	0.25	1	3/23/2010	4/20/2010
110888-013A	B237-0	37	mg/L	63447	2.5	10	3/23/2010	4/20/2010
110888-016A	B236-0	14	mg/L	63447	0.50	2	3/23/2010	4/20/2010
110888-019A	B235-0	8.5	mg/L	63447	0.25	1	3/23/2010	4/20/2010
110888-022A	B234-0	13	mg/L	63447	0.50	2	3/23/2010	4/20/2010
110888-037A	B229-0	57	mg/L	63447	2.5	10	3/23/2010	4/20/2010
110888-040A	B228-0	16	mg/L	63447	0.50	2	3/23/2010	4/20/2010
110888-043A	B227-0	9.8	mg/L	63447	0.50	2	3/23/2010	4/20/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 110888
Project: I580 HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-63447A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120366**
Client ID: **PBS**	Batch ID: **63447**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919843**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63447**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120366**
Client ID: **LCSS**	Batch ID: **63447**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919844**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.847	0.25	5.000	0	96.9	80	120				

Sample ID: **110888-040A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120366**
Client ID: **B228-0**	Batch ID: **63447**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919855**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	16.440	0.50						16.49	0.298	20	

Sample ID: **110888-040A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120366**
Client ID: **B228-0**	Batch ID: **63447**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919856**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	21.975	1.0	5.000	16.49	110	80	120				

Sample ID: **MB-63447B**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120366**
Client ID: **PBS**	Batch ID: **63447**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919857**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110888
Project: I580 HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **111068-021A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120366**
Client ID: **ZZZZZZ**	Batch ID: **63447**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919868**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.643	0.25						2.662	0.689	20	

Sample ID: **111068-021A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120366**
Client ID: **ZZZZZZ**	Batch ID: **63447**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919869**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	7.337	0.25	5.000	2.662	93.5	80	120				

Sample ID: **111068-021A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120366**
Client ID: **ZZZZZZ**	Batch ID: **63447**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919870**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	7.289	0.25	5.000	2.662	92.5	80	120	7.337	0.654	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Wednesday, April 14, 2010 11:22 AM
To: Diane Galvan
Subject: WOs110816, -888, 111068,-069

Hi Diane:
Please run the following samples for WET lead, standard TAT. Thanks!

WO	ID
110816	B259-2
110816	B256-1
110816	B258-0
110816	B243-0
110816	B256-0
110816	B244-0
110816	B257-0
110816	B244-1
110816	B254-0
110816	B242-0
110816	B263-0
110816	B249-0
110816	B250-0
110816	B262-0
110816	B251-0
110888	B227-0
110888	B239-0

WO	ID
110888	B238-0
110888	B235-0
110888	B236-0
110888	B234-0
110888	B241-0
110888	B228-0
110888	B240-0
110888	B237-0
110888	B229-0
111068	B223-0
111068	B202-0
111068	B190-0
111068	B217-0
111068	B218-0
111068	B208-0
111068	B207-0
111068	B184-0
111068	B193-0

WO	ID
111068	B211-0
111069	B191-0
111069	B189-1
111069	B200-0
111069	B224-0
111069	B195-0
111069	B203-2
111069	B206-0
111069	B204-1

111069 B207-1
111069 B207-2
111069 B209-0
111069 B219-0
111069 B191-1
111069 B210-0
111069 B192-0
111069 B204-0
111069 B225-1

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

Geocon Consultants, Inc
6671 Brisa Street
Livermore, CA 94550
Tel (925) 371-5900
Cell (925) 768-9874

GEOCON

GEOTECHNICAL ENVIRONMENTAL MATERIALS

San Diego Murrieta Burbank Bakersfield Sacramento Livermore Carson City Las Vegas Portland

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May 04, 2010

Chris Merritt\Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 371-5900
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 110888

RE: I580 HOV LANES, E8474-06-01

Attention: Chris Merritt\Lauren Vigliotti

Enclosed are the results for sample(s) received on March 24, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

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Advanced Technology Laboratories

Date: 5/4/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION
WET DI/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	110888
Project:	I580 HOV LANES, E8474-06-01	**Date Received**	3/24/2010 10:07:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
110888-001A	B241-0	ND	mg/L	63739	0.25	1	3/23/2010	5/3/2010
110888-004A	B240-0	ND	mg/L	63739	0.25	1	3/23/2010	5/3/2010
110888-010A	B238-0	ND	mg/L	63739	0.25	1	3/23/2010	5/3/2010
110888-013A	B237-0	ND	mg/L	63739	0.25	1	3/23/2010	5/3/2010
110888-016A	B236-0	ND	mg/L	63739	0.25	1	3/23/2010	5/3/2010
110888-019A	B235-0	ND	mg/L	63739	0.25	1	3/23/2010	5/3/2010
110888-022A	B234-0	ND	mg/L	63739	0.25	1	3/23/2010	5/3/2010
110888-037A	B229-0	ND	mg/L	63739	0.25	1	3/23/2010	5/3/2010
110888-040A	B228-0	ND	mg/L	63739	0.25	1	3/23/2010	5/3/2010
110888-043A	B227-0	ND	mg/L	63739	0.25	1	3/23/2010	5/3/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 5/4/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (TCLP)
EPA 1311/ 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	110888
Project:	I580 HOV LANES, E8474-06-01	**Date Received**	3/24/2010 10:07:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
110888-001A	B241-0	ND	mg/L	63808	0.25	1	3/23/2010	5/3/2010
110888-004A	B240-0	0.41	mg/L	63808	0.25	1	3/23/2010	5/3/2010
110888-010A	B238-0	ND	mg/L	63808	0.25	1	3/23/2010	5/3/2010
110888-013A	B237-0	0.93	mg/L	63808	0.25	1	3/23/2010	5/3/2010
110888-016A	B236-0	0.41	mg/L	63808	0.25	1	3/23/2010	5/3/2010
110888-019A	B235-0	0.32	mg/L	63808	0.25	1	3/23/2010	5/3/2010
110888-022A	B234-0	ND	mg/L	63808	0.25	1	3/23/2010	5/3/2010
110888-037A	B229-0	0.74	mg/L	63808	0.25	1	3/23/2010	5/3/2010
110888-040A	B228-0	0.33	mg/L	63808	0.25	1	3/23/2010	5/3/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 110888
Project: I580 HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **MB-63739A**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **PBS**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928221**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63739**	SampType: **LCS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **LCSS**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928222**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.036	0.25	5.000	0	101	80	120				

Sample ID: **110888-001A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **B241-0**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928233**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **110888-001A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **B241-0**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928234**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.008	0.25	5.000	0	100	70	130				

Sample ID: **MB-63739B**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **PBS**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928235**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110888
Project: I580 HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **111068-003A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **ZZZZZZ**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928246**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111068-003A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **ZZZZZZ**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928247**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.059	0.25	5.000	0	101	70	130				

Sample ID: **111068-003A-MSD**	SampType: **MSD**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **ZZZZZZ**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928248**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.988	0.25	5.000	0	99.8	70	130	5.059	1.40	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110888
Project: I580 HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63808A**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **PBS**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927939**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63783A TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **PBS**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927940**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63808**	SampType: **LCS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **LCSS**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927941**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.961	0.25	1.000	0	96.1	80	120				

Sample ID: **110888-013A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **B237-0**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927952**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.963	0.25						0.9307	3.45	20	

Sample ID: **110888-013A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **B237-0**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927953**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	3.359	0.25	2.500	0.9307	97.1	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 110888
Project: I580 HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63808B**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **PBS**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927954**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63783B TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **PBS**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927955**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **111069-055A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **ZZZZZZ**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927966**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.334	0.25						0.3368	0.763	20	

Sample ID: **111069-055A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **ZZZZZZ**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927967**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.819	0.25	2.500	0.3368	99.3	70	130				

Sample ID: **111069-055A-MSD**	SampType: **MSD**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **ZZZZZZ**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927968**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.866	0.25	2.500	0.3368	101	70	130	2.819	1.66	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Tuesday, April 27, 2010 12:05 PM
To: Diane Galvan
Subject: I-580 WB HOV Lane project
Attachments: I-580 project-lead_TCLP_DI-WET.xls

HI Diane:
Please find the attached excel workbook with a list of TCLP and DI-WET lead analyses for samples for the referenced project. Please analyze under standard TAT. Thank you!

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

Geocon Consultants, Inc
6671 Brisa Street
Livermore, CA 94550
Tel (925) 371-5900
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GEOCON

GEOTECHNICAL ENVIRONMENTAL MATERIALS

San Diego Murrieta Burbank Bakersfield Sacramento Livermore Carson City Las Vegas Portland

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WorkOrder	ClientSampID	R_Rslt	DI-WET	TCLP
111138	B271-2	24	X	X
111138	B120-0	13	X	X
111138	B270-0	12	X	X
111137	B61-2	6.0	X	X
111137	B70-0	5.5	X	X
111137	B76-0	5.4	X	
111069	B225-1	25	X	X
111069	B204-0	16	X	X
111069	B210-0	14	X	X
111069	B219-0	13	X	X
111069	B207-2	8.9	X	X
111069	B191-1	8.6	X	X
111069	B209-0	7.3	X	X
111069	B224-0	6.8	X	
111069	B206-0	5.6	X	X
111069	B207-1	5.2	X	X
111069	B200-0	5.0	X	
111068	B211-0	13	X	X
111068	B184-0	12	X	X
111068	B207-0	12	X	
111068	B217-0	10	X	
111068	B193-0	8.5	X	X
111068	B208-0	7.5	X	
111068	B202-0	6.4	X	
110888	B229-0	57	X	X
110888	B237-0	37	X	X
110888	B240-0	20	X	X
110888	B228-0	16	X	X
110888	B236-0	14	X	X
110888	B241-0	13	X	X
110888	B234-0	13	X	X
110888	B227-0	9.8	X	
110888	B235-0	8.5	X	X
110888	B238-0	5.4	X	X
110816	B251-0	41.0	X	X
110816	B262-0	33.0	X	X
110816	B250-0	21.0	X	X
110816	B263-0	20.0	X	X
110816	B257-0	7.9	X	
110816	B242-0	7.5	X	X
110816	B244-1	6.0	X	
110816	B256-0	5.9	X	
110816	B254-0	5.1	X	X

April 12, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111068

RE: 580 WB HOV, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 03, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: 580 WB HOV, E8474-06-01
Lab Order: 111068

CASE NARRATIVE

Analytical Comments for Method 6010

Matrix Spike (MS) and /or Matrix Spike Duplicate (MSD) are/is outside recovery criteria for samples 111068-020AMS and 111068-020AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

RPD for Duplicate (DUP) and/or Matrix Spike (MS)/Matrix Spike Duplicate (MSD) is outside criteria for samples 111068-020ADUP and 111068-020AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B181-0
Lab Order:	111068	**Collection Date:**	4/2/2010 2:00:00 PM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-001A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407D	QC Batch: 63173			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 04:33 PM
Arsenic	1.4	1.0		mg/Kg	1	4/7/2010 04:33 PM
Barium	150	1.0		mg/Kg	1	4/7/2010 04:33 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 04:33 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 04:33 PM
Chromium	43	1.0		mg/Kg	1	4/7/2010 04:33 PM
Cobalt	11	1.0		mg/Kg	1	4/7/2010 04:33 PM
Copper	43	2.0		mg/Kg	1	4/7/2010 04:33 PM
Lead	27	1.0		mg/Kg	1	4/7/2010 04:33 PM
Molybdenum	7.7	1.0		mg/Kg	1	4/7/2010 04:33 PM
Nickel	60	1.0		mg/Kg	1	4/7/2010 04:33 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 04:33 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 04:33 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 04:33 PM
Vanadium	21	1.0		mg/Kg	1	4/7/2010 04:33 PM
Zinc	220	1.0		mg/Kg	1	4/7/2010 04:33 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407A	QC Batch: 63162			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/7/2010 09:44 AM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc. **Client Sample ID:** B182-0
Lab Order: 111068 **Collection Date:** 4/2/2010 2:05:00 PM
Project: 580 WB HOV, E8474-06-01 **Matrix:** SOIL
Lab ID: 111068-002A

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407D	QC Batch: 63173			PrepDate: 4/7/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 04:38 PM
Arsenic	4.9	1.0		mg/Kg	1	4/7/2010 04:38 PM
Barium	140	1.0		mg/Kg	1	4/7/2010 04:38 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 04:38 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 04:38 PM
Chromium	23	1.0		mg/Kg	1	4/7/2010 04:38 PM
Cobalt	9.1	1.0		mg/Kg	1	4/7/2010 04:38 PM
Copper	21	2.0		mg/Kg	1	4/7/2010 04:38 PM
Lead	14	1.0		mg/Kg	1	4/7/2010 04:38 PM
Molybdenum	ND	1.0		mg/Kg	1	4/7/2010 04:38 PM
Nickel	27	1.0		mg/Kg	1	4/7/2010 04:38 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 04:38 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 04:38 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 04:38 PM
Vanadium	35	1.0		mg/Kg	1	4/7/2010 04:38 PM
Zinc	87	1.0		mg/Kg	1	4/7/2010 04:38 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407A	QC Batch: 63162			PrepDate: 4/6/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/7/2010 09:46 AM
PH						
				EPA 9045C		
RunID: WETCHEM_100408B	QC Batch: R119967			PrepDate:		Analyst: **CBB**
pH	8.0	0.10		pH Units	1	4/8/2010

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B184-0
Lab Order:	111068	**Collection Date:**	4/2/2010 1:40:00 PM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-003A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407D	QC Batch: 63173			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 04:43 PM
Arsenic	2.9	1.0		mg/Kg	1	4/7/2010 04:43 PM
Barium	160	1.0		mg/Kg	1	4/7/2010 04:43 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 04:43 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 04:43 PM
Chromium	25	1.0		mg/Kg	1	4/7/2010 04:43 PM
Cobalt	7.7	1.0		mg/Kg	1	4/7/2010 04:43 PM
Copper	210	2.0		mg/Kg	1	4/7/2010 04:43 PM
Lead	150	1.0		mg/Kg	1	4/7/2010 04:43 PM
Molybdenum	1.0	1.0		mg/Kg	1	4/7/2010 04:43 PM
Nickel	34	1.0		mg/Kg	1	4/7/2010 04:43 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 04:43 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 04:43 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 04:43 PM
Vanadium	28	1.0		mg/Kg	1	4/7/2010 04:43 PM
Zinc	150	1.0		mg/Kg	1	4/7/2010 04:43 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407A	QC Batch: 63162			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/7/2010 09:48 AM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B187-0
Lab Order:	111068	**Collection Date:**	4/2/2010 12:47:00 PM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-004A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407D	QC Batch: 63173			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 04:47 PM
Arsenic	2.2	1.0		mg/Kg	1	4/7/2010 04:47 PM
Barium	190	1.0		mg/Kg	1	4/7/2010 04:47 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 04:47 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 04:47 PM
Chromium	26	1.0		mg/Kg	1	4/7/2010 04:47 PM
Cobalt	6.3	1.0		mg/Kg	1	4/7/2010 04:47 PM
Copper	43	2.0		mg/Kg	1	4/7/2010 04:47 PM
Lead	35	1.0		mg/Kg	1	4/7/2010 04:47 PM
Molybdenum	1.9	1.0		mg/Kg	1	4/7/2010 04:47 PM
Nickel	31	1.0		mg/Kg	1	4/7/2010 04:47 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 04:47 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 04:47 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 04:47 PM
Vanadium	24	1.0		mg/Kg	1	4/7/2010 04:47 PM
Zinc	190	1.0		mg/Kg	1	4/7/2010 04:47 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407A	QC Batch: 63162			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/7/2010 09:54 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111068
Project: 580 WB HOV, E8474-06-01
Lab ID: 111068-005A

Client Sample ID: B188-0
Collection Date: 4/2/2010 12:45:00 PM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407D	QC Batch: 63173			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 04:52 PM
Arsenic	1.7	1.0		mg/Kg	1	4/7/2010 04:52 PM
Barium	160	1.0		mg/Kg	1	4/7/2010 04:52 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 04:52 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 04:52 PM
Chromium	25	1.0		mg/Kg	1	4/7/2010 04:52 PM
Cobalt	5.8	1.0		mg/Kg	1	4/7/2010 04:52 PM
Copper	41	2.0		mg/Kg	1	4/7/2010 04:52 PM
Lead	42	1.0		mg/Kg	1	4/7/2010 04:52 PM
Molybdenum	2.9	1.0		mg/Kg	1	4/7/2010 04:52 PM
Nickel	29	1.0		mg/Kg	1	4/7/2010 04:52 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 04:52 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 04:52 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 04:52 PM
Vanadium	23	1.0		mg/Kg	1	4/7/2010 04:52 PM
Zinc	200	1.0		mg/Kg	1	4/7/2010 04:52 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407A	QC Batch: 63162			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/7/2010 09:57 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B190-0
Lab Order:	111068	**Collection Date:**	4/2/2010 12:30:00 PM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-006A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407D	QC Batch: 63173			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 06:47 PM
Arsenic	2.0	1.0		mg/Kg	1	4/7/2010 06:47 PM
Barium	170	1.0		mg/Kg	1	4/7/2010 06:47 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 06:47 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 06:47 PM
Chromium	24	1.0		mg/Kg	1	4/7/2010 06:47 PM
Cobalt	6.2	1.0		mg/Kg	1	4/7/2010 06:47 PM
Copper	48	2.0		mg/Kg	1	4/7/2010 06:47 PM
Lead	54	1.0		mg/Kg	1	4/7/2010 06:47 PM
Molybdenum	3.6	1.0		mg/Kg	1	4/7/2010 06:47 PM
Nickel	27	1.0		mg/Kg	1	4/7/2010 06:47 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 06:47 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 06:47 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 06:47 PM
Vanadium	24	1.0		mg/Kg	1	4/7/2010 06:47 PM
Zinc	230	1.0		mg/Kg	1	4/7/2010 06:47 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407A	QC Batch: 63162			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	0.35	0.10		mg/Kg	1	4/7/2010 09:59 AM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B193-0
Lab Order:	111068	**Collection Date:**	4/2/2010 11:41:00 AM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-007A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407D	QC Batch: 63173			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 06:51 PM
Arsenic	2.5	1.0		mg/Kg	1	4/7/2010 06:51 PM
Barium	160	1.0		mg/Kg	1	4/7/2010 06:51 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 06:51 PM
Cadmium	1.4	1.0		mg/Kg	1	4/7/2010 06:51 PM
Chromium	39	1.0		mg/Kg	1	4/7/2010 06:51 PM
Cobalt	6.6	1.0		mg/Kg	1	4/7/2010 06:51 PM
Copper	64	2.0		mg/Kg	1	4/7/2010 06:51 PM
Lead	150	1.0		mg/Kg	1	4/7/2010 06:51 PM
Molybdenum	3.4	1.0		mg/Kg	1	4/7/2010 06:51 PM
Nickel	37	1.0		mg/Kg	1	4/7/2010 06:51 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 06:51 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 06:51 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 06:51 PM
Vanadium	24	1.0		mg/Kg	1	4/7/2010 06:51 PM
Zinc	240	1.0		mg/Kg	1	4/7/2010 06:51 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407A	QC Batch: 63162			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	0.10	0.10		mg/Kg	1	4/7/2010 10:01 AM

Qualifiers:		
B	Analyte detected in the associated Method Blank	
H	Holding times for preparation or analysis exceeded	
S	Spike/Surrogate outside of limits due to matrix interference	
DO	Surrogate Diluted Out	
E	Value above quantitation range	
ND	Not Detected at the Reporting Limit	
	Results are wet unless otherwise specified	

CLIENT: Geocon Consultants, Inc. **Client Sample ID:** B194-0
Lab Order: 111068 **Collection Date:** 4/2/2010 11:50:00 AM
Project: 580 WB HOV, E8474-06-01 **Matrix:** SOIL
Lab ID: 111068-008A

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407D	QC Batch: 63173			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 06:56 PM
Arsenic	1.0	1.0		mg/Kg	1	4/7/2010 06:56 PM
Barium	120	1.0		mg/Kg	1	4/7/2010 06:56 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 06:56 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 06:56 PM
Chromium	18	1.0		mg/Kg	1	4/7/2010 06:56 PM
Cobalt	4.3	1.0		mg/Kg	1	4/7/2010 06:56 PM
Copper	29	2.0		mg/Kg	1	4/7/2010 06:56 PM
Lead	37	1.0		mg/Kg	1	4/7/2010 06:56 PM
Molybdenum	1.3	1.0		mg/Kg	1	4/7/2010 06:56 PM
Nickel	25	1.0		mg/Kg	1	4/7/2010 06:56 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 06:56 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 06:56 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 06:56 PM
Vanadium	15	1.0		mg/Kg	1	4/7/2010 06:56 PM
Zinc	150	1.0		mg/Kg	1	4/7/2010 06:56 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407A	QC Batch: 63162			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/7/2010 10:03 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B196-0
Lab Order:	111068	**Collection Date:**	4/2/2010 9:50:00 AM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-009A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407D	QC Batch: 63173			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 07:01 PM
Arsenic	1.1	1.0		mg/Kg	1	4/7/2010 07:01 PM
Barium	140	1.0		mg/Kg	1	4/7/2010 07:01 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 07:01 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 07:01 PM
Chromium	31	1.0		mg/Kg	1	4/7/2010 07:01 PM
Cobalt	7.9	1.0		mg/Kg	1	4/7/2010 07:01 PM
Copper	44	2.0		mg/Kg	1	4/7/2010 07:01 PM
Lead	34	1.0		mg/Kg	1	4/7/2010 07:01 PM
Molybdenum	3.6	1.0		mg/Kg	1	4/7/2010 07:01 PM
Nickel	42	1.0		mg/Kg	1	4/7/2010 07:01 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 07:01 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 07:01 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 07:01 PM
Vanadium	23	1.0		mg/Kg	1	4/7/2010 07:01 PM
Zinc	210	1.0		mg/Kg	1	4/7/2010 07:01 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407A	QC Batch: 63162			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/7/2010 10:05 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B198-0
Lab Order:	111068	**Collection Date:**	4/2/2010 9:30:00 AM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-010A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407D	QC Batch: 63173			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 07:05 PM
Arsenic	5.4	1.0		mg/Kg	1	4/7/2010 07:05 PM
Barium	220	1.0		mg/Kg	1	4/7/2010 07:05 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 07:05 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 07:05 PM
Chromium	21	1.0		mg/Kg	1	4/7/2010 07:05 PM
Cobalt	8.8	1.0		mg/Kg	1	4/7/2010 07:05 PM
Copper	28	2.0		mg/Kg	1	4/7/2010 07:05 PM
Lead	37	1.0		mg/Kg	1	4/7/2010 07:05 PM
Molybdenum	ND	1.0		mg/Kg	1	4/7/2010 07:05 PM
Nickel	27	1.0		mg/Kg	1	4/7/2010 07:05 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 07:05 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 07:05 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 07:05 PM
Vanadium	34	1.0		mg/Kg	1	4/7/2010 07:05 PM
Zinc	88	1.0		mg/Kg	1	4/7/2010 07:05 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407A	QC Batch: 63162			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/7/2010 09:40 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B199-0
Lab Order:	111068	**Collection Date:**	4/2/2010 9:24:00 AM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-011A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407E	QC Batch: 63174			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 07:47 PM
Arsenic	ND	1.0		mg/Kg	1	4/7/2010 07:47 PM
Barium	120	1.0		mg/Kg	1	4/7/2010 07:47 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 07:47 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 07:47 PM
Chromium	26	1.0		mg/Kg	1	4/7/2010 07:47 PM
Cobalt	6.5	1.0		mg/Kg	1	4/7/2010 07:47 PM
Copper	69	2.0		mg/Kg	1	4/7/2010 07:47 PM
Lead	41	1.0		mg/Kg	1	4/7/2010 07:47 PM
Molybdenum	4.6	1.0		mg/Kg	1	4/7/2010 07:47 PM
Nickel	36	1.0		mg/Kg	1	4/7/2010 07:47 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 07:47 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 07:47 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 07:47 PM
Vanadium	21	1.0		mg/Kg	1	4/7/2010 07:47 PM
Zinc	250	1.0		mg/Kg	1	4/7/2010 07:47 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407B	QC Batch: 63163			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/7/2010 10:28 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B202-0
Lab Order:	111068	**Collection Date:**	4/2/2010 8:50:00 AM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-012A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407E	QC Batch: 63174			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 07:52 PM
Arsenic	2.3	1.0		mg/Kg	1	4/7/2010 07:52 PM
Barium	200	1.0		mg/Kg	1	4/7/2010 07:52 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 07:52 PM
Cadmium	1.1	1.0		mg/Kg	1	4/7/2010 07:52 PM
Chromium	32	1.0		mg/Kg	1	4/7/2010 07:52 PM
Cobalt	7.1	1.0		mg/Kg	1	4/7/2010 07:52 PM
Copper	60	2.0		mg/Kg	1	4/7/2010 07:52 PM
Lead	52	1.0		mg/Kg	1	4/7/2010 07:52 PM
Molybdenum	2.7	1.0		mg/Kg	1	4/7/2010 07:52 PM
Nickel	34	1.0		mg/Kg	1	4/7/2010 07:52 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 07:52 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 07:52 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 07:52 PM
Vanadium	26	1.0		mg/Kg	1	4/7/2010 07:52 PM
Zinc	220	1.0		mg/Kg	1	4/7/2010 07:52 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407B	QC Batch: 63163			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	0.12	0.10		mg/Kg	1	4/7/2010 10:30 AM

Qualifiers:		
B	Analyte detected in the associated Method Blank	
H	Holding times for preparation or analysis exceeded	
S	Spike/Surrogate outside of limits due to matrix interference	
DO	Surrogate Diluted Out	
E	Value above quantitation range	
ND	Not Detected at the Reporting Limit	
	Results are wet unless otherwise specified	

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B203-0
Lab Order:	111068	**Collection Date:**	4/2/2010 8:51:00 AM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-013A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407E	QC Batch: 63174			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 07:57 PM
Arsenic	1.3	1.0		mg/Kg	1	4/7/2010 07:57 PM
Barium	160	1.0		mg/Kg	1	4/7/2010 07:57 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 07:57 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 07:57 PM
Chromium	33	1.0		mg/Kg	1	4/7/2010 07:57 PM
Cobalt	11	1.0		mg/Kg	1	4/7/2010 07:57 PM
Copper	120	2.0		mg/Kg	1	4/7/2010 07:57 PM
Lead	47	1.0		mg/Kg	1	4/7/2010 07:57 PM
Molybdenum	3.7	1.0		mg/Kg	1	4/7/2010 07:57 PM
Nickel	36	1.0		mg/Kg	1	4/7/2010 07:57 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 07:57 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 07:57 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 07:57 PM
Vanadium	27	1.0		mg/Kg	1	4/7/2010 07:57 PM
Zinc	530	1.0		mg/Kg	1	4/7/2010 07:57 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407B	QC Batch: 63163			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	0.14	0.10		mg/Kg	1	4/7/2010 10:32 AM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B205-0
Lab Order:	111068	**Collection Date:**	4/2/2010 8:27:00 AM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-014A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407E	QC Batch: 63174			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 08:01 PM
Arsenic	2.1	1.0		mg/Kg	1	4/7/2010 08:01 PM
Barium	150	1.0		mg/Kg	1	4/7/2010 08:01 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 08:01 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 08:01 PM
Chromium	30	1.0		mg/Kg	1	4/7/2010 08:01 PM
Cobalt	6.8	1.0		mg/Kg	1	4/7/2010 08:01 PM
Copper	46	2.0		mg/Kg	1	4/7/2010 08:01 PM
Lead	49	1.0		mg/Kg	1	4/7/2010 08:01 PM
Molybdenum	2.2	1.0		mg/Kg	1	4/7/2010 08:01 PM
Nickel	31	1.0		mg/Kg	1	4/7/2010 08:01 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 08:01 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 08:01 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 08:01 PM
Vanadium	25	1.0		mg/Kg	1	4/7/2010 08:01 PM
Zinc	200	1.0		mg/Kg	1	4/7/2010 08:01 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407B	QC Batch: 63163			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/7/2010 10:34 AM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B207-0
Lab Order:	111068	**Collection Date:**	4/1/2010 5:11:00 PM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-015A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407E	QC Batch: 63174			PrepDate: 4/7/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 08:06 PM
Arsenic	1.8	1.0		mg/Kg	1	4/7/2010 08:06 PM
Barium	160	1.0		mg/Kg	1	4/7/2010 08:06 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 08:06 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 08:06 PM
Chromium	34	1.0		mg/Kg	1	4/7/2010 08:06 PM
Cobalt	8.5	1.0		mg/Kg	1	4/7/2010 08:06 PM
Copper	26	2.0		mg/Kg	1	4/7/2010 08:06 PM
Lead	99	1.0		mg/Kg	1	4/7/2010 08:06 PM
Molybdenum	1.2	1.0		mg/Kg	1	4/7/2010 08:06 PM
Nickel	51	1.0		mg/Kg	1	4/7/2010 08:06 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 08:06 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 08:06 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 08:06 PM
Vanadium	27	1.0		mg/Kg	1	4/7/2010 08:06 PM
Zinc	110	1.0		mg/Kg	1	4/7/2010 08:06 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407B	QC Batch: 63163			PrepDate: 4/6/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/7/2010 10:36 AM
PH						
				EPA 9045C		
RunID: WETCHEM_100408B	QC Batch: R119967			PrepDate:		Analyst: **CBB**
pH	7.8	0.10		pH Units	1	4/8/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B208-0
Lab Order:	111068	**Collection Date:**	4/1/2010 4:40:00 PM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-016A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407E	QC Batch: 63174			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 08:11 PM
Arsenic	1.5	1.0		mg/Kg	1	4/7/2010 08:11 PM
Barium	99	1.0		mg/Kg	1	4/7/2010 08:11 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 08:11 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 08:11 PM
Chromium	26	1.0		mg/Kg	1	4/7/2010 08:11 PM
Cobalt	5.5	1.0		mg/Kg	1	4/7/2010 08:11 PM
Copper	14	2.0		mg/Kg	1	4/7/2010 08:11 PM
Lead	85	1.0		mg/Kg	1	4/7/2010 08:11 PM
Molybdenum	ND	1.0		mg/Kg	1	4/7/2010 08:11 PM
Nickel	47	1.0		mg/Kg	1	4/7/2010 08:11 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 08:11 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 08:11 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 08:11 PM
Vanadium	14	1.0		mg/Kg	1	4/7/2010 08:11 PM
Zinc	67	1.0		mg/Kg	1	4/7/2010 08:11 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407B	QC Batch: 63163			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/7/2010 10:38 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B211-0
Lab Order:	111068	**Collection Date:**	4/1/2010 2:58:00 PM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-017A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407E	QC Batch: 63174			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 08:15 PM
Arsenic	4.8	1.0		mg/Kg	1	4/7/2010 08:15 PM
Barium	170	1.0		mg/Kg	1	4/7/2010 08:15 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 08:15 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 08:15 PM
Chromium	21	1.0		mg/Kg	1	4/7/2010 08:15 PM
Cobalt	7.1	1.0		mg/Kg	1	4/7/2010 08:15 PM
Copper	30	2.0		mg/Kg	1	4/7/2010 08:15 PM
Lead	210	1.0		mg/Kg	1	4/7/2010 08:15 PM
Molybdenum	1.3	1.0		mg/Kg	1	4/7/2010 08:15 PM
Nickel	28	1.0		mg/Kg	1	4/7/2010 08:15 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 08:15 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 08:15 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 08:15 PM
Vanadium	23	1.0		mg/Kg	1	4/7/2010 08:15 PM
Zinc	220	1.0		mg/Kg	1	4/7/2010 08:15 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407B	QC Batch: 63163			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/7/2010 10:44 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111068
Project: 580 WB HOV, E8474-06-01
Lab ID: 111068-018A

Client Sample ID: B212-0
Collection Date: 4/1/2010 3:12:00 PM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407E	QC Batch: 63174			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 08:20 PM
Arsenic	3.4	1.0		mg/Kg	1	4/7/2010 08:20 PM
Barium	230	1.0		mg/Kg	1	4/7/2010 08:20 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 08:20 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 08:20 PM
Chromium	21	1.0		mg/Kg	1	4/7/2010 08:20 PM
Cobalt	9.0	1.0		mg/Kg	1	4/7/2010 08:20 PM
Copper	15	2.0		mg/Kg	1	4/7/2010 08:20 PM
Lead	5.4	1.0		mg/Kg	1	4/7/2010 08:20 PM
Molybdenum	ND	1.0		mg/Kg	1	4/7/2010 08:20 PM
Nickel	26	1.0		mg/Kg	1	4/7/2010 08:20 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 08:20 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 08:20 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 08:20 PM
Vanadium	31	1.0		mg/Kg	1	4/7/2010 08:20 PM
Zinc	35	1.0		mg/Kg	1	4/7/2010 08:20 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407B	QC Batch: 63163			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	0.23	0.10		mg/Kg	1	4/7/2010 10:46 AM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B214-0
Lab Order:	111068	**Collection Date:**	4/1/2010 2:35:00 PM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-019A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407E	QC Batch: 63174			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 08:25 PM
Arsenic	7.4	1.0		mg/Kg	1	4/7/2010 08:25 PM
Barium	210	1.0		mg/Kg	1	4/7/2010 08:25 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 08:25 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 08:25 PM
Chromium	17	1.0		mg/Kg	1	4/7/2010 08:25 PM
Cobalt	8.2	1.0		mg/Kg	1	4/7/2010 08:25 PM
Copper	18	2.0		mg/Kg	1	4/7/2010 08:25 PM
Lead	20	1.0		mg/Kg	1	4/7/2010 08:25 PM
Molybdenum	ND	1.0		mg/Kg	1	4/7/2010 08:25 PM
Nickel	23	1.0		mg/Kg	1	4/7/2010 08:25 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 08:25 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 08:25 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 08:25 PM
Vanadium	29	1.0		mg/Kg	1	4/7/2010 08:25 PM
Zinc	62	1.0		mg/Kg	1	4/7/2010 08:25 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407B	QC Batch: 63163			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/7/2010 10:48 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B217-0
Lab Order:	111068	**Collection Date:**	4/1/2010 2:07:00 PM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-020A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407E	QC Batch: 63174			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 08:38 PM
Arsenic	1.9	1.0		mg/Kg	1	4/7/2010 08:38 PM
Barium	160	1.0		mg/Kg	1	4/7/2010 08:38 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 08:38 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 08:38 PM
Chromium	28	1.0		mg/Kg	1	4/7/2010 08:38 PM
Cobalt	6.1	1.0		mg/Kg	1	4/7/2010 08:38 PM
Copper	96	2.0		mg/Kg	1	4/7/2010 08:38 PM
Lead	70	1.0		mg/Kg	1	4/7/2010 08:38 PM
Molybdenum	5.1	1.0		mg/Kg	1	4/7/2010 08:38 PM
Nickel	31	1.0		mg/Kg	1	4/7/2010 08:38 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 08:38 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 08:38 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 08:38 PM
Vanadium	22	1.0		mg/Kg	1	4/7/2010 08:38 PM
Zinc	290	1.0		mg/Kg	1	4/7/2010 08:38 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407B	QC Batch: 63163			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	0.15	0.10		mg/Kg	1	4/7/2010 10:23 AM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B218-0
Lab Order:	111068	**Collection Date:**	4/1/2010 1:47:00 PM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-021A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407F	QC Batch: 63175			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 09:11 PM
Arsenic	7.2	1.0		mg/Kg	1	4/7/2010 09:11 PM
Barium	220	1.0		mg/Kg	1	4/7/2010 09:11 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 09:11 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 09:11 PM
Chromium	22	1.0		mg/Kg	1	4/7/2010 09:11 PM
Cobalt	8.6	1.0		mg/Kg	1	4/7/2010 09:11 PM
Copper	18	2.0		mg/Kg	1	4/7/2010 09:11 PM
Lead	74	1.0		mg/Kg	1	4/7/2010 09:11 PM
Molybdenum	ND	1.0		mg/Kg	1	4/7/2010 09:11 PM
Nickel	30	1.0		mg/Kg	1	4/7/2010 09:11 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 09:11 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 09:11 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 09:11 PM
Vanadium	29	1.0		mg/Kg	1	4/7/2010 09:11 PM
Zinc	68	1.0		mg/Kg	1	4/7/2010 09:11 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407C	QC Batch: 63164			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/7/2010 11:11 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B220-0
Lab Order:	111068	**Collection Date:**	4/1/2010 1:30:00 PM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-022A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407F	QC Batch: 63175			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 09:16 PM
Arsenic	3.5	1.0		mg/Kg	1	4/7/2010 09:16 PM
Barium	120	1.0		mg/Kg	1	4/7/2010 09:16 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 09:16 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 09:16 PM
Chromium	23	1.0		mg/Kg	1	4/7/2010 09:16 PM
Cobalt	7.8	1.0		mg/Kg	1	4/7/2010 09:16 PM
Copper	15	2.0		mg/Kg	1	4/7/2010 09:16 PM
Lead	11	1.0		mg/Kg	1	4/7/2010 09:16 PM
Molybdenum	ND	1.0		mg/Kg	1	4/7/2010 09:16 PM
Nickel	29	1.0		mg/Kg	1	4/7/2010 09:16 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 09:16 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 09:16 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 09:16 PM
Vanadium	24	1.0		mg/Kg	1	4/7/2010 09:16 PM
Zinc	31	1.0		mg/Kg	1	4/7/2010 09:16 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407C	QC Batch: 63164			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/7/2010 11:13 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B221-0
Lab Order:	111068	**Collection Date:**	4/1/2010 1:14:00 PM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-023A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407F	QC Batch: 63175			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 09:21 PM
Arsenic	3.0	1.0		mg/Kg	1	4/7/2010 09:21 PM
Barium	160	1.0		mg/Kg	1	4/7/2010 09:21 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 09:21 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 09:21 PM
Chromium	25	1.0		mg/Kg	1	4/7/2010 09:21 PM
Cobalt	7.8	1.0		mg/Kg	1	4/7/2010 09:21 PM
Copper	20	2.0		mg/Kg	1	4/7/2010 09:21 PM
Lead	17	1.0		mg/Kg	1	4/7/2010 09:21 PM
Molybdenum	ND	1.0		mg/Kg	1	4/7/2010 09:21 PM
Nickel	29	1.0		mg/Kg	1	4/7/2010 09:21 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 09:21 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 09:21 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 09:21 PM
Vanadium	26	1.0		mg/Kg	1	4/7/2010 09:21 PM
Zinc	58	1.0		mg/Kg	1	4/7/2010 09:21 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407C	QC Batch: 63164			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/7/2010 11:15 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B223-0
Lab Order:	111068	**Collection Date:**	4/1/2010 12:55:00 PM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-024A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407F	QC Batch: 63175			PrepDate: 4/7/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 09:35 PM
Arsenic	2.4	1.0		mg/Kg	1	4/7/2010 09:35 PM
Barium	140	1.0		mg/Kg	1	4/7/2010 09:35 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 09:35 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 09:35 PM
Chromium	25	1.0		mg/Kg	1	4/7/2010 09:35 PM
Cobalt	7.4	1.0		mg/Kg	1	4/7/2010 09:35 PM
Copper	45	2.0		mg/Kg	1	4/7/2010 09:35 PM
Lead	50	1.0		mg/Kg	1	4/7/2010 09:35 PM
Molybdenum	1.1	1.0		mg/Kg	1	4/7/2010 09:35 PM
Nickel	38	1.0		mg/Kg	1	4/7/2010 09:35 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 09:35 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 09:35 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 09:35 PM
Vanadium	23	1.0		mg/Kg	1	4/7/2010 09:35 PM
Zinc	93	1.0		mg/Kg	1	4/7/2010 09:35 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407C	QC Batch: 63164			PrepDate: 4/6/2010		Analyst: **IL**
Mercury	0.35	0.10		mg/Kg	1	4/7/2010 11:17 AM
PH						
				EPA 9045C		
RunID: WETCHEM_100408B	QC Batch: R119967			PrepDate:		Analyst: **CBB**
pH	8.0	0.10		pH Units	1	4/8/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B225-0
Lab Order:	111068	**Collection Date:**	4/1/2010 12:35:00 PM
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-025A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100407F	QC Batch: 63175			PrepDate:	4/7/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/7/2010 09:39 PM
Arsenic	1.3	1.0		mg/Kg	1	4/7/2010 09:39 PM
Barium	110	1.0		mg/Kg	1	4/7/2010 09:39 PM
Beryllium	ND	1.0		mg/Kg	1	4/7/2010 09:39 PM
Cadmium	ND	1.0		mg/Kg	1	4/7/2010 09:39 PM
Chromium	27	1.0		mg/Kg	1	4/7/2010 09:39 PM
Cobalt	6.0	1.0		mg/Kg	1	4/7/2010 09:39 PM
Copper	43	2.0		mg/Kg	1	4/7/2010 09:39 PM
Lead	48	1.0		mg/Kg	1	4/7/2010 09:39 PM
Molybdenum	2.0	1.0		mg/Kg	1	4/7/2010 09:39 PM
Nickel	30	1.0		mg/Kg	1	4/7/2010 09:39 PM
Selenium	ND	1.0		mg/Kg	1	4/7/2010 09:39 PM
Silver	ND	1.0		mg/Kg	1	4/7/2010 09:39 PM
Thallium	ND	1.0		mg/Kg	1	4/7/2010 09:39 PM
Vanadium	22	1.0		mg/Kg	1	4/7/2010 09:39 PM
Zinc	190	1.0		mg/Kg	1	4/7/2010 09:39 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100407C	QC Batch: 63164			PrepDate:	4/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/7/2010 11:03 AM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B180-0
Lab Order:	111068	**Collection Date:**	4/1/2010
Project:	580 WB HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111068-026A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP						
	EPA 3050M			**EPA 6010B**		
RunID: ICP6_100407G	QC Batch: 63137			PrepDate:	4/6/2010	Analyst: **SRB**
Lead	22	5.0		mg/Kg	1	4/7/2010 04:54 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63173** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/7/2010** RunNo: **119948**
Client ID: **PBS** Batch ID: **63173** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2010** SeqNo: **1912118**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	0.044	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	0.993	1.0									

Sample ID: **LCS-63173** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/7/2010** RunNo: **119948**
Client ID: **LCSS** Batch ID: **63173** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2010** SeqNo: **1912119**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	46.943	2.0	50.00	0	93.9	80	120				
Arsenic	45.411	1.0	50.00	0	90.8	80	120				
Barium	48.602	1.0	50.00	0	97.2	80	120				
Beryllium	47.838	1.0	50.00	0	95.7	80	120				
Cadmium	47.901	1.0	50.00	0	95.8	80	120				
Chromium	47.705	1.0	50.00	0	95.4	80	120				
Cobalt	48.470	1.0	50.00	0	96.9	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63173** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/7/2010** RunNo: **119948**
Client ID: **LCSS** Batch ID: **63173** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2010** SeqNo: **1912119**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	47.978	2.0	50.00	0	96.0	80	120				
Lead	49.052	1.0	50.00	0	98.1	80	120				
Molybdenum	50.541	1.0	50.00	0	101	80	120				
Nickel	47.270	1.0	50.00	0.04408	94.5	80	120				
Selenium	44.652	1.0	50.00	0	89.3	80	120				
Silver	45.897	1.0	50.00	0	91.8	80	120				
Thallium	48.911	1.0	50.00	0	97.8	80	120				
Vanadium	48.198	1.0	50.00	0	96.4	80	120				
Zinc	48.255	1.0	50.00	0.9926	94.5	80	120				

Sample ID: **111068-010A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/7/2010** RunNo: **119948**
Client ID: **B198-0** Batch ID: **63173** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2010** SeqNo: **1912130**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.304	2.0						0.2972	0	20	
Arsenic	5.670	1.0						5.407	4.76	20	
Barium	214.270	1.0						215.9	0.774	20	
Beryllium	0.244	1.0						0.2577	0	20	
Cadmium	0.744	1.0						0.4170	0	20	
Chromium	21.901	1.0						21.00	4.22	20	
Cobalt	8.679	1.0						8.763	0.958	20	
Copper	27.443	2.0						28.16	2.58	20	
Lead	43.322	1.0						37.17	15.3	20	
Molybdenum	0.731	1.0						0.6600	0	20	
Nickel	28.035	1.0						26.84	4.37	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	34.034	1.0						34.33	0.875	20	
Zinc	100.570	1.0						87.68	13.7	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111068-010A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/7/2010** RunNo: **119948**
Client ID: **B198-0** Batch ID: **63173** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2010** SeqNo: **1912131**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	76.071	2.0	125.0	0.2972	60.6	32	105				
Arsenic	101.900	1.0	125.0	5.407	77.2	49	106				
Barium	323.650	1.0	125.0	215.9	86.2	31	133				
Beryllium	100.954	1.0	125.0	0.2577	80.6	56	106				
Cadmium	94.856	1.0	125.0	0.4170	75.6	51	103				
Chromium	123.189	1.0	125.0	21.00	81.8	45	114				
Cobalt	105.169	1.0	125.0	8.763	77.1	52	106				
Copper	139.732	2.0	125.0	28.16	89.3	54	125				
Lead	134.384	1.0	125.0	37.17	77.8	34	126				
Molybdenum	99.695	1.0	125.0	0.6600	79.2	54	106				
Nickel	123.340	1.0	125.0	26.84	77.2	45	111				
Selenium	96.012	1.0	125.0	0	76.8	47	104				
Silver	106.135	1.0	125.0	0	84.9	56	112				
Thallium	97.141	1.0	125.0	0	77.7	46	101				
Vanadium	140.150	1.0	125.0	34.33	84.7	54	114				
Zinc	169.853	1.0	125.0	87.68	65.7	28	125				

Sample ID: **111068-010A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/7/2010** RunNo: **119948**
Client ID: **B198-0** Batch ID: **63173** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2010** SeqNo: **1912132**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	73.923	2.0	125.0	0.2972	58.9	32	105	76.07	2.86	20	
Arsenic	102.841	1.0	125.0	5.407	77.9	49	106	101.9	0.919	20	
Barium	329.476	1.0	125.0	215.9	90.8	31	133	323.7	1.78	20	
Beryllium	103.335	1.0	125.0	0.2577	82.5	56	106	101.0	2.33	20	
Cadmium	96.145	1.0	125.0	0.4170	76.6	51	103	94.86	1.35	20	
Chromium	124.472	1.0	125.0	21.00	82.8	45	114	123.2	1.04	20	
Cobalt	105.920	1.0	125.0	8.763	77.7	52	106	105.2	0.712	20	
Copper	143.598	2.0	125.0	28.16	92.4	54	125	139.7	2.73	20	
Lead	132.782	1.0	125.0	37.17	76.5	34	126	134.4	1.20	20	

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111068-010A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/7/2010** RunNo: **119948**
Client ID: **B198-0** Batch ID: **63173** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2010** SeqNo: **1912132**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	99.505	1.0	125.0	0.6600	79.1	54	106	99.69	0.190	20	
Nickel	124.568	1.0	125.0	26.84	78.2	45	111	123.3	0.991	20	
Selenium	95.741	1.0	125.0	0	76.6	47	104	96.01	0.282	20	
Silver	107.141	1.0	125.0	0	85.7	56	112	106.1	0.943	20	
Thallium	97.812	1.0	125.0	0	78.2	46	101	97.14	0.689	20	
Vanadium	140.817	1.0	125.0	34.33	85.2	54	114	140.1	0.475	20	
Zinc	174.522	1.0	125.0	87.68	69.5	28	125	169.9	2.71	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63174** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/7/2010** RunNo: **119949**
Client ID: **PBS** Batch ID: **63174** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2010** SeqNo: **1912133**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	ND	1.0									
Selenium	ND	1.0									
Silver	0.018	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	0.243	1.0									

Sample ID: **LCS-63174** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/7/2010** RunNo: **119949**
Client ID: **LCSS** Batch ID: **63174** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2010** SeqNo: **1912134**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	45.089	2.0	50.00	0	90.2	80	120				
Arsenic	43.540	1.0	50.00	0	87.1	80	120				
Barium	47.485	1.0	50.00	0	95.0	80	120				
Beryllium	46.488	1.0	50.00	0	93.0	80	120				
Cadmium	45.839	1.0	50.00	0	91.7	80	120				
Chromium	46.630	1.0	50.00	0	93.3	80	120				
Cobalt	47.182	1.0	50.00	0	94.4	80	120				
Copper	46.171	2.0	50.00	0	92.3	80	120				
Lead	46.868	1.0	50.00	0	93.7	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63174** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/7/2010** RunNo: **119949**
Client ID: **LCSS** Batch ID: **63174** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2010** SeqNo: **1912134**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	48.492	1.0	50.00	0	97.0	80	120				
Nickel	45.543	1.0	50.00	0	91.1	80	120				
Selenium	42.347	1.0	50.00	0	84.7	80	120				
Silver	45.196	1.0	50.00	0.01759	90.4	80	120				
Thallium	46.333	1.0	50.00	0	92.7	80	120				
Vanadium	46.892	1.0	50.00	0	93.8	80	120				
Zinc	46.222	1.0	50.00	0.2427	92.0	80	120				

Sample ID: **111068-020A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/7/2010** RunNo: **119949**
Client ID: **B217-0** Batch ID: **63174** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2010** SeqNo: **1912145**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.701	2.0						0.7130	0	20	
Arsenic	1.969	1.0						1.928	2.13	20	
Barium	166.705	1.0						163.3	2.04	20	
Beryllium	ND	1.0						0	0	20	
Cadmium	1.587	1.0						0.8790	57.4	20	R
Chromium	27.278	1.0						28.07	2.87	20	
Cobalt	6.082	1.0						6.081	0.0202	20	
Copper	55.684	2.0						96.25	53.4	20	R
Lead	91.585	1.0						70.12	26.6	20	R
Molybdenum	2.221	1.0						5.123	79.0	20	R
Nickel	30.848	1.0						31.41	1.79	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	22.883	1.0						21.94	4.19	20	
Zinc	288.598	1.0						290.3	0.587	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111068-020A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/7/2010** RunNo: **119949**
Client ID: **B217-0** Batch ID: **63174** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2010** SeqNo: **1912146**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	79.511	2.0	125.0	0.7130	63.0	32	105				
Arsenic	96.084	1.0	125.0	1.928	75.3	49	106				
Barium	253.518	1.0	125.0	163.3	72.1	31	133				
Beryllium	99.544	1.0	125.0	0	79.6	56	106				
Cadmium	94.756	1.0	125.0	0.8790	75.1	51	103				
Chromium	133.250	1.0	125.0	28.07	84.1	45	114				
Cobalt	102.775	1.0	125.0	6.081	77.4	52	106				
Copper	151.899	2.0	125.0	96.25	44.5	54	125				S
Lead	207.600	1.0	125.0	70.12	110	34	126				
Molybdenum	100.801	1.0	125.0	5.123	76.5	54	106				
Nickel	127.784	1.0	125.0	31.41	77.1	45	111				
Selenium	92.653	1.0	125.0	0	74.1	47	104				
Silver	102.069	1.0	125.0	0	81.7	56	112				
Thallium	93.934	1.0	125.0	0	75.1	46	101				
Vanadium	123.640	1.0	125.0	21.94	81.4	54	114				
Zinc	364.563	1.0	125.0	290.3	59.4	28	125				

Sample ID: **111068-020A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/7/2010** RunNo: **119949**
Client ID: **B217-0** Batch ID: **63174** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2010** SeqNo: **1912147**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	66.390	2.0	125.0	0.7130	52.5	32	105	79.51	18.0	20	
Arsenic	81.985	1.0	125.0	1.928	64.0	49	106	96.08	15.8	20	
Barium	210.910	1.0	125.0	163.3	38.1	31	133	253.5	18.3	20	
Beryllium	84.726	1.0	125.0	0	67.8	56	106	99.54	16.1	20	
Cadmium	79.337	1.0	125.0	0.8790	62.8	51	103	94.76	17.7	20	
Chromium	108.956	1.0	125.0	28.07	64.7	45	114	133.2	20.1	20	R
Cobalt	86.088	1.0	125.0	6.081	64.0	52	106	102.8	17.7	20	
Copper	127.828	2.0	125.0	96.25	25.3	54	125	151.9	17.2	20	S
Lead	160.858	1.0	125.0	70.12	72.6	34	126	207.6	25.4	20	R

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111068-020A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/7/2010** RunNo: **119949**
Client ID: **B217-0** Batch ID: **63174** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2010** SeqNo: **1912147**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	85.134	1.0	125.0	5.123	64.0	54	106	100.8	16.9	20	
Nickel	108.912	1.0	125.0	31.41	62.0	45	111	127.8	15.9	20	
Selenium	78.109	1.0	125.0	0	62.5	47	104	92.65	17.0	20	
Silver	85.007	1.0	125.0	0	68.0	56	112	102.1	18.2	20	
Thallium	80.161	1.0	125.0	0	64.1	46	101	93.93	15.8	20	
Vanadium	104.164	1.0	125.0	21.94	65.8	54	114	123.6	17.1	20	
Zinc	304.462	1.0	125.0	290.3	11.3	28	125	364.6	18.0	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63175**	SampType: **MBLK**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/7/2010**	RunNo: **119950**
Client ID: **PBS**	Batch ID: **63175**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/7/2010**	SeqNo: **1912148**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	ND	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63175**	SampType: **LCS**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/7/2010**	RunNo: **119950**
Client ID: **LCSS**	Batch ID: **63175**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/7/2010**	SeqNo: **1912149**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	43.197	2.0	50.00	0	86.4	80	120				
Arsenic	41.619	1.0	50.00	0	83.2	80	120				
Barium	45.483	1.0	50.00	0	91.0	80	120				
Beryllium	44.094	1.0	50.00	0	88.2	80	120				
Cadmium	43.466	1.0	50.00	0	86.9	80	120				
Chromium	44.642	1.0	50.00	0	89.3	80	120				
Cobalt	44.943	1.0	50.00	0	89.9	80	120				
Copper	44.393	2.0	50.00	0	88.8	80	120				
Lead	44.994	1.0	50.00	0	90.0	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63175** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/7/2010** RunNo: **119950**
Client ID: **LCSS** Batch ID: **63175** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2010** SeqNo: **1912149**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	46.064	1.0	50.00	0	92.1	80	120				
Nickel	43.671	1.0	50.00	0	87.3	80	120				
Selenium	40.047	1.0	50.00	0	80.1	80	120				
Silver	43.337	1.0	50.00	0	86.7	80	120				
Thallium	44.303	1.0	50.00	0	88.6	80	120				
Vanadium	45.134	1.0	50.00	0	90.3	80	120				
Zinc	44.247	1.0	50.00	0	88.5	80	120				

Sample ID: **111082-001A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/7/2010** RunNo: **119950**
Client ID: **ZZZZZZ** Batch ID: **63175** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2010** SeqNo: **1912156**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0						0	0	20	
Arsenic	ND	1.0						0	0	20	
Barium	89.363	1.0						91.60	2.47	20	
Beryllium	ND	1.0						0	0	20	
Cadmium	0.129	1.0						0.1318	0	20	
Chromium	9.506	1.0						9.426	0.848	20	
Cobalt	9.323	1.0						9.535	2.26	20	
Copper	13.124	2.0						14.62	10.8	20	
Lead	3.855	1.0						4.057	5.11	20	
Molybdenum	0.294	1.0						0.1814	0	20	
Nickel	6.005	1.0						6.173	2.76	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	0.670	1.0						0.4493	0	20	
Vanadium	35.912	1.0						35.77	0.411	20	
Zinc	39.871	1.0						41.59	4.21	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111082-001A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/7/2010** RunNo: **119950**
Client ID: **ZZZZZZ** Batch ID: **63175** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2010** SeqNo: **1912157**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	77.050	2.0	125.0	0	61.6	32	105				
Arsenic	77.502	1.0	125.0	0	62.0	49	106				
Barium	187.143	1.0	125.0	91.60	76.4	31	133				
Beryllium	95.972	1.0	125.0	0	76.8	56	106				
Cadmium	89.289	1.0	125.0	0.1318	71.3	51	103				
Chromium	103.768	1.0	125.0	9.426	75.5	45	114				
Cobalt	100.250	1.0	125.0	9.535	72.6	52	106				
Copper	118.557	2.0	125.0	14.62	83.1	54	125				
Lead	95.863	1.0	125.0	4.057	73.4	34	126				
Molybdenum	93.708	1.0	125.0	0.1814	74.8	54	106				
Nickel	96.428	1.0	125.0	6.173	72.2	45	111				
Selenium	89.588	1.0	125.0	0	71.7	47	104				
Silver	99.494	1.0	125.0	0	79.6	56	112				
Thallium	91.538	1.0	125.0	0.4493	72.9	46	101				
Vanadium	133.605	1.0	125.0	35.77	78.3	54	114				
Zinc	129.546	1.0	125.0	41.59	70.4	28	125				

Sample ID: **111082-001A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/7/2010** RunNo: **119950**
Client ID: **ZZZZZZ** Batch ID: **63175** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2010** SeqNo: **1912158**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	68.522	2.0	125.0	0	54.8	32	105	77.05	11.7	20	
Arsenic	70.039	1.0	125.0	0	56.0	49	106	77.50	10.1	20	
Barium	179.715	1.0	125.0	91.60	70.5	31	133	187.1	4.05	20	
Beryllium	87.818	1.0	125.0	0	70.3	56	106	95.97	8.87	20	
Cadmium	83.853	1.0	125.0	0.1318	67.0	51	103	89.29	6.28	20	
Chromium	98.532	1.0	125.0	9.426	71.3	45	114	103.8	5.18	20	
Cobalt	94.420	1.0	125.0	9.535	67.9	52	106	100.3	5.99	20	
Copper	116.264	2.0	125.0	14.62	81.3	54	125	118.6	1.95	20	
Lead	88.656	1.0	125.0	4.057	67.7	34	126	95.86	7.81	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111082-001A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/7/2010** RunNo: **119950**
Client ID: **ZZZZZZ** Batch ID: **63175** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/7/2010** SeqNo: **1912158**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	86.022	1.0	125.0	0.1814	68.7	54	106	93.71	8.55	20	
Nickel	90.994	1.0	125.0	6.173	67.9	45	111	96.43	5.80	20	
Selenium	83.386	1.0	125.0	0	66.7	47	104	89.59	7.17	20	
Silver	93.194	1.0	125.0	0	74.6	56	112	99.49	6.54	20	
Thallium	82.882	1.0	125.0	0.4493	65.9	46	101	91.54	9.93	20	
Vanadium	127.512	1.0	125.0	35.77	73.4	54	114	133.6	4.67	20	
Zinc	123.360	1.0	125.0	41.59	65.4	28	125	129.5	4.89	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63137A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119944**
Client ID: **PBS**	Batch ID: **63137**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912048**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.205	5.0									

Sample ID: **LCS-63137**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119944**
Client ID: **LCSS**	Batch ID: **63137**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912049**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	289.424	5.0	250.0	0.2053	116	80	120				

Sample ID: **111069-107A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119944**
Client ID: **ZZZZZZ**	Batch ID: **63137**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912061**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	11.187	5.0						10.56	5.78	20	

Sample ID: **111069-107A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119944**
Client ID: **ZZZZZZ**	Batch ID: **63137**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912062**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	232.410	5.0	250.0	10.56	88.7	34	126				

Sample ID: **MB-63137B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119944**
Client ID: **PBS**	Batch ID: **63137**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912063**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111069-112A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119944**
Client ID: **ZZZZZZ**	Batch ID: **63137**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912069**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	73.592	5.0						85.27	14.7	20	

Sample ID: **111069-112A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119944**
Client ID: **ZZZZZZ**	Batch ID: **63137**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912070**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	328.422	5.0	250.0	85.27	97.3	34	126				

Sample ID: **111069-112A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119944**
Client ID: **ZZZZZZ**	Batch ID: **63137**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912071**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	335.712	5.0	250.0	85.27	100	34	126	328.4	2.20	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63162**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119907**
Client ID: **PBS**	Batch ID: **63162**	TestNo: **EPA 7471A**		Analysis Date: **4/7/2010**	SeqNo: **1911277**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63162**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119907**
Client ID: **LCSS**	Batch ID: **63162**	TestNo: **EPA 7471A**		Analysis Date: **4/7/2010**	SeqNo: **1911278**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.732	0.10	0.8300	0	88.2	80	120				

Sample ID: **111068-010A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119907**
Client ID: **B198-0**	Batch ID: **63162**	TestNo: **EPA 7471A**		Analysis Date: **4/7/2010**	SeqNo: **1911279**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.795	0.10	0.8300	0.03736	91.2	70	130				

Sample ID: **111068-010A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119907**
Client ID: **B198-0**	Batch ID: **63162**	TestNo: **EPA 7471A**		Analysis Date: **4/7/2010**	SeqNo: **1911280**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.786	0.10	0.8300	0.03736	90.2	70	130	0.7947	1.05	20	

Sample ID: **111068-010A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119907**
Client ID: **B198-0**	Batch ID: **63162**	TestNo: **EPA 7471A**		Analysis Date: **4/7/2010**	SeqNo: **1911282**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.036	0.10						0.03736	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63163**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119909**
Client ID: **PBS**	Batch ID: **63163**	TestNo: **EPA 7471A**		Analysis Date: **4/7/2010**	SeqNo: **1911292**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63163**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119909**
Client ID: **LCSS**	Batch ID: **63163**	TestNo: **EPA 7471A**		Analysis Date: **4/7/2010**	SeqNo: **1911293**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.728	0.10	0.8300	0	87.8	80	120				

Sample ID: **111068-020A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119909**
Client ID: **B217-0**	Batch ID: **63163**	TestNo: **EPA 7471A**		Analysis Date: **4/7/2010**	SeqNo: **1911294**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.823	0.10	0.8300	0.1526	80.7	70	130				

Sample ID: **111068-020A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119909**
Client ID: **B217-0**	Batch ID: **63163**	TestNo: **EPA 7471A**		Analysis Date: **4/7/2010**	SeqNo: **1911295**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.817	0.10	0.8300	0.1526	80.0	70	130	0.8228	0.764	20	

Sample ID: **111068-020A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119909**
Client ID: **B217-0**	Batch ID: **63163**	TestNo: **EPA 7471A**		Analysis Date: **4/7/2010**	SeqNo: **1911297**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.169	0.10						0.1526	10.0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63164**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119910**
Client ID: **PBS**	Batch ID: **63164**	TestNo: **EPA 7471A**		Analysis Date: **4/7/2010**	SeqNo: **1911307**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63164**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119910**
Client ID: **LCSS**	Batch ID: **63164**	TestNo: **EPA 7471A**		Analysis Date: **4/7/2010**	SeqNo: **1911308**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.765	0.10	0.8300	0	92.2	80	120				

Sample ID: **111068-025A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119910**
Client ID: **B225-0**	Batch ID: **63164**	TestNo: **EPA 7471A**		Analysis Date: **4/7/2010**	SeqNo: **1911309**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.839	0.10	0.8300	0.05781	94.1	70	130				

Sample ID: **111068-025A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119910**
Client ID: **B225-0**	Batch ID: **63164**	TestNo: **EPA 7471A**		Analysis Date: **4/7/2010**	SeqNo: **1911310**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.838	0.10	0.8300	0.05781	93.9	70	130	0.8389	0.162	20	

Sample ID: **111068-025A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119910**
Client ID: **B225-0**	Batch ID: **63164**	TestNo: **EPA 7471A**		Analysis Date: **4/7/2010**	SeqNo: **1911312**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.057	0.10						0.05781	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 9045_S

Sample ID: **111069-045ADUP** SampType: **DUP** TestCode: **9045_S** Units: **pH Units** Prep Date: RunNo: **119967**
Client ID: **ZZZZZZ** Batch ID: **R119967** TestNo: **EPA 9045C** Analysis Date: **4/8/2010** SeqNo: **1912408**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.860	0.10						7.890	0.381	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____
Logged By: _____ Date: 4/3/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: GSO

Sample Condition Upon Receipt
1. CHILLED 6.6 Y☑ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) N/A Y☐ N☐ 5. # OF SPLS MATCH COC Y☑ N☐
3. CONTAINER INTACT Y☑ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON
Attn: L. VIGLIOTTI
Address: 6671 BRISA ST
City LIVERMORE State CA Zip Code 94550
TEL: (925) 371-5900
FAX: (") " 5915

Project Name: 580 WB HOV Project #: E8474-06-01
Sampler: (Printed Name) C. MERRITT (Signature) C. MERRITT

Relinquished by: (Signature and Printed Name) CHRIS MERRITT	Date: 4-2-10	Time: 1700	Received by: (Signature and Printed Name) FEDEX		Date: 4/3/10	Time: 1040
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)		Date:	Time:
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)		Date:	Time:

I hereby authorize ATL to perform the work indicated below.
Project Mgr./Submitter:
D. WATTS 4/2/2010
Print Name Date
Signature

Send Report To:
Attn: _____
Co: SEE "CLIENT"
Address _____
City _____ State _____ Zip _____

Bill To:
Attn: _____
Co: _____
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:
*LAB to SELECT 10% AT RANDOM FOR pH ANALYSES
PLEASE RETURN ALL GEOCON COOLERS

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / 8020 (BTEX)	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	pH *	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	11068-01	B181-D	4/2/10	1400									X		X				E	1	J G	C	
	-2	B182-		1405																			
	-3	B184-		1340																			
	-4	B187-		1247																			
	-5	B188-		1245																			
	-6	B190-		1230																			
	-7	B193-		1141																			
	-8	B194-		1150																			
	-9	B196-		0950																			
	-10	B198-		0930																			

QA/QC: RTNE ☐ CT ☑
SWRCB ☐ Logcode ____
OTHER ____

- TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=Zn(AC)$_2$ O=NaOH T=$Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____

Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: _____

Sample Condition Upon Receipt
1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON
Attn: L. VIGLIOTTI
Address: 6671 BRISA ST
City LIVERMORE State CA Zip Code 94550
TEL: (925) 371-5900
FAX: (") " 5915

Project Name: 580 WB HOV
Project #: E8474-06-01
Sampler: (Printed Name) C. MERRITT (Signature) C. MERRITT

Relinquished by: (Signature and Printed Name) CHRIS MERRITT Date: 4-2-10 Time: 1700
Received by: (Signature and Printed Name) FEDEX Date: 4/3/10 Time: 1040
Relinquished by: (Signature and Printed Name) Date: Time:
Received by: (Signature and Printed Name) Date: Time:
Relinquished by: (Signature and Printed Name) Date: Time:
Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr./Submitter:
D. WATTS 4/2/2010
Print Name Date
Signature

Send Report To:
Attn: _____
Co: SEE "CLIENT"
Address _____
City _____ State _____ Zip _____

Bill To:
Attn: _____
Co: _____
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:
SEE Pg 1
PLEASE RETURN ALL GEOCON COOLERS

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / 8020 (BTEX)	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	111068 - 11	B199 - D	4/2/10	0924									X	X				E	1	J G	C	
	- 12	B202 -		0850																		
	- 13	B203 -		0851																		
	- 14	B205 -		0827																		
	- 15	B207 -	4/1/10	1711																		
	- 16	B208 -		1640																		
	- 17	B211 -		1458																		
	- 18	B212 -		1512																		
	- 19	B214 -		1435																		
	- 20	B217 -		1407																		

QA/QC: RTNE ☐ CT ☒ SWRCB ☐ Logcode ____ OTHER ____

- TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____

Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: _____

Sample Condition Upon Receipt
1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON
Address: 6671 BRISA ST
City LIVERMORE State CA Zip Code 94550
TEL: (925) 371-5900
FAX: (") " 5915
Attn: L. VIGLIOTTI
Project Name: 580 WB HOV Project #: E8474-06-01
Sampler: (Printed Name) C. MERRITT (Signature) C. MERRETT

Relinquished by: (Signature and Printed Name) CHRIS MERRITT	Date: 4-2-10	Time: 1700	Received by: (Signature and Printed Name) FEDEX	Date: 4/3/10	Time: 1040
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below.
Project Mgr./Submitter:
D. WATTS 4/2/2010
Print Name Date
Signature

Send Report To:
Attn: _____
Co: SEE "CLIENT"
Address _____
City _____ State _____ Zip _____

Bill To:
Attn: _____
Co: _____
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:
SEE Pg 1
PLEASE RETURN ALL GEOCON COOLERS

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metals)	8015B (GRO) / 8020 (BTEX)	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	TOTAL Pb	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	111069-21	B218-0	4/1/10	1347									X		X				E	1	J;G	C	
	-22	B220-		1330																			
	-23	B221-		1314																			
	-24	B223-		1255																			
	-25	B225-		1235																			
	-26	B180-0	4-1-10											X						P	B		

QA/QC: RTNE ☐ CT ☐
SWRCB ☐ Logcode ____
OTHER ____

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=Zn(AC)$_2$ O=NaOH T=$Na_2S_2O_3$

April 21, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111068

RE: 580 WB HOV, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 03, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: 580 WB HOV, E8474-06-01
Lab Order: 111068

CASE NARRATIVE

Analytical Comments for Method 7420

Dilution was necessary for samples 111068-003A, 111068-015A, 111068-017A and 111068-020A, due to sample matrix.

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 4/21/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (STLC)
WET/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111068
Project:	580 WB HOV, E8474-06-01	**Date Received**	4/3/2010 10:40:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111068-003A	B184-0	12	mg/L	63447	0.50	2	4/2/2010	4/20/2010
111068-006A	B190-0	2.8	mg/L	63447	0.25	1	4/2/2010	4/20/2010
111068-007A	B193-0	8.5	mg/L	63447	0.25	1	4/2/2010	4/20/2010
111068-012A	B202-0	6.4	mg/L	63447	0.25	1	4/2/2010	4/20/2010
111068-015A	B207-0	12	mg/L	63447	0.50	2	4/1/2010	4/20/2010
111068-016A	B208-0	7.5	mg/L	63447	0.25	1	4/1/2010	4/20/2010
111068-017A	B211-0	13	mg/L	63447	0.50	2	4/1/2010	4/20/2010
111068-020A	B217-0	10	mg/L	63447	0.50	2	4/1/2010	4/20/2010
111068-021A	B218-0	2.7	mg/L	63447	0.25	1	4/1/2010	4/20/2010
111068-024A	B223-0	3.1	mg/L	63448	0.25	1	4/1/2010	4/20/2010

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-63447A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120366**
Client ID: **PBS**	Batch ID: **63447**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919843**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63447**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120366**
Client ID: **LCSS**	Batch ID: **63447**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919844**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.847	0.25	5.000	0	96.9	80	120				

Sample ID: **110888-040A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120366**
Client ID: **ZZZZZZ**	Batch ID: **63447**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919855**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	16.440	0.50						16.49	0.298	20	

Sample ID: **110888-040A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120366**
Client ID: **ZZZZZZ**	Batch ID: **63447**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919856**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	21.975	1.0	5.000	16.49	110	80	120				

Sample ID: **MB-63447B**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120366**
Client ID: **PBS**	Batch ID: **63447**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919857**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **111068-021A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120366**
Client ID: **B218-0**	Batch ID: **63447**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919868**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.643	0.25						2.662	0.689	20	

Sample ID: **111068-021A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120366**
Client ID: **B218-0**	Batch ID: **63447**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919869**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	7.337	0.25	5.000	2.662	93.5	80	120				

Sample ID: **111068-021A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120366**
Client ID: **B218-0**	Batch ID: **63447**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919870**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	7.289	0.25	5.000	2.662	92.5	80	120	7.337	0.654	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-63448A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **PBS**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919880**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63448**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **LCSS**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919881**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.047	0.25	5.000	0	101	80	120				

Sample ID: **111069-098A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **ZZZZZZ**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919892**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.423	0.25						2.423	0.00966	20	

Sample ID: **111069-098A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **ZZZZZZ**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919893**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	6.826	0.25	5.000	2.423	88.1	80	120				

Sample ID: **MB-63448B**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **PBS**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919894**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **111137-012A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **ZZZZZZ**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919905**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	3.150	0.25						3.186	1.12	20	

Sample ID: **111137-012A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **ZZZZZZ**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919906**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	7.605	0.25	5.000	3.186	88.4	80	120				

Sample ID: **111137-012A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **ZZZZZZ**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919907**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	7.611	0.25	5.000	3.186	88.5	80	120	7.605	0.0805	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Wednesday, April 14, 2010 11:22 AM
To: Diane Galvan
Subject: WOs110816, -888, 111068,-069

Hi Diane:
Please run the following samples for WET lead, standard TAT. Thanks!

WO	ID
110816	B259-2
110816	B256-1
110816	B258-0
110816	B243-0
110816	B256-0
110816	B244-0
110816	B257-0
110816	B244-1
110816	B254-0
110816	B242-0
110816	B263-0
110816	B249-0
110816	B250-0
110816	B262-0
110816	B251-0
110888	B227-0
110888	B239-0

WO	ID
110888	B238-0
110888	B235-0
110888	B236-0
110888	B234-0
110888	B241-0
110888	B228-0
110888	B240-0
110888	B237-0
110888	B229-0
111068	B223-0
111068	B202-0
111068	B190-0
111068	B217-0
111068	B218-0
111068	B208-0
111068	B207-0
111068	B184-0
111068	B193-0

WO	ID
111068	B211-0
111069	B191-0
111069	B189-1
111069	B200-0
111069	B224-0
111069	B195-0
111069	B203-2
111069	B206-0
111069	B204-1

111069 B207-1
111069 B207-2
111069 B209-0
111069 B219-0
111069 B191-1
111069 B210-0
111069 B192-0
111069 B204-0
111069 B225-1

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

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GEOCON

GEOTECHNICAL ENVIRONMENTAL MATERIALS

San Diego Murrieta Burbank Bakersfield Sacramento Livermore Carson City Las Vegas Portland

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May 04, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111068

RE: 580 WB HOV, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 03, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

Advanced Technology Laboratories

Date: 5/4/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION
WET DI/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111068
Project:	580 WB HOV, E8474-06-01	**Date Received**	4/3/2010 10:40:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111068-003A	B184-0	ND	mg/L	63739	0.25	1	4/2/2010	5/3/2010
111068-007A	B193-0	ND	mg/L	63740	0.25	1	4/2/2010	5/3/2010
111068-012A	B202-0	ND	mg/L	63740	0.25	1	4/2/2010	5/3/2010
111068-015A	B207-0	ND	mg/L	63740	0.25	1	4/1/2010	5/3/2010
111068-016A	B208-0	ND	mg/L	63740	0.25	1	4/1/2010	5/3/2010
111068-017A	B211-0	ND	mg/L	63740	0.25	1	4/1/2010	5/3/2010
111068-020A	B217-0	ND	mg/L	63740	0.25	1	4/1/2010	5/3/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 5/4/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (TCLP)
EPA 1311/ 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111068
Project:	580 WB HOV, E8474-06-01	**Date Received**	4/3/2010 10:40:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111068-003A	B184-0	0.29	mg/L	63808	0.25	1	4/2/2010	5/3/2010
111068-007A	B193-0	0.29	mg/L	63808	0.25	1	4/2/2010	5/3/2010
111068-017A	B211-0	0.32	mg/L	63808	0.25	1	4/1/2010	5/3/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **MB-63739A**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **PBS**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928221**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63739**	SampType: **LCS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **LCSS**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928222**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.036	0.25	5.000	0	101	80	120				

Sample ID: **110888-001A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **ZZZZZZ**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928233**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **110888-001A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **ZZZZZZ**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928234**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.008	0.25	5.000	0	100	70	130				

Sample ID: **MB-63739B**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **PBS**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928235**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **111068-003A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **B184-0**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928246**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111068-003A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **B184-0**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928247**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.059	0.25	5.000	0	101	70	130				

Sample ID: **111068-003A-MSD**	SampType: **MSD**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120799**
Client ID: **B184-0**	Batch ID: **63739**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928248**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.988	0.25	5.000	0	99.8	70	130	5.059	1.40	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **MB-63740A**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **PBS**	Batch ID: **63740**	TestNo: **WET DI/ EPA**	**WET**	Analysis Date: **5/3/2010**	SeqNo: **1928249**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63740**	SampType: **LCS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **LCSS**	Batch ID: **63740**	TestNo: **WET DI/ EPA**	**WET**	Analysis Date: **5/3/2010**	SeqNo: **1928250**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.085	0.25	5.000	0	102	80	120				

Sample ID: **111069-091A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **ZZZZZZ**	Batch ID: **63740**	TestNo: **WET DI/ EPA**	**WET**	Analysis Date: **5/3/2010**	SeqNo: **1928261**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111069-091A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **ZZZZZZ**	Batch ID: **63740**	TestNo: **WET DI/ EPA**	**WET**	Analysis Date: **5/3/2010**	SeqNo: **1928262**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.969	0.25	5.000	0	99.4	70	130				

Sample ID: **MB-63740B**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **PBS**	Batch ID: **63740**	TestNo: **WET DI/ EPA**	**WET**	Analysis Date: **5/3/2010**	SeqNo: **1928263**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **111137-108A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **ZZZZZZ**	Batch ID: **63740**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928274**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111137-108A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **ZZZZZZ**	Batch ID: **63740**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928275**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.957	0.25	5.000	0	99.1	70	130				

Sample ID: **111137-108A-MSD**	SampType: **MSD**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **ZZZZZZ**	Batch ID: **63740**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928276**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.006	0.25	5.000	0	100	70	130	4.957	0.984	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63808A**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **PBS**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927939**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63783A TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **PBS**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927940**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63808**	SampType: **LCS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **LCSS**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927941**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.961	0.25	1.000	0	96.1	80	120				

Sample ID: **110888-013A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **ZZZZZZ**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927952**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.963	0.25						0.9307	3.45	20	

Sample ID: **110888-013A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **ZZZZZZ**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927953**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	3.359	0.25	2.500	0.9307	97.1	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111068
Project: 580 WB HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63808B**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **PBS**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927954**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63783B TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **PBS**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927955**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **111069-055A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **ZZZZZZ**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927966**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.334	0.25						0.3368	0.763	20	

Sample ID: **111069-055A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **ZZZZZZ**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927967**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.819	0.25	2.500	0.3368	99.3	70	130				

Sample ID: **111069-055A-MSD**	SampType: **MSD**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **ZZZZZZ**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927968**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.866	0.25	2.500	0.3368	101	70	130	2.819	1.66	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Tuesday, April 27, 2010 12:05 PM
To: Diane Galvan
Subject: I-580 WB HOV Lane project
Attachments: I-580 project-lead_TCLP_DI-WET.xls

HI Diane:
Please find the attached excel workbook with a list of TCLP and DI-WET lead analyses for samples for the referenced project. Please analyze under standard TAT. Thank you!

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

Geocon Consultants, Inc
6671 Brisa Street
Livermore, CA 94550
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GEOTECHNICAL ENVIRONMENTAL MATERIALS

San Diego Murrieta Burbank Bakersfield Sacramento Livermore Carson City Las Vegas Portland

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WorkOrder	ClientSampID	R_Rslt	DI-WET	TCLP
111138	B271-2	24	X	X
111138	B120-0	13	X	X
111138	B270-0	12	X	X
111137	B61-2	6.0	X	X
111137	B70-0	5.5	X	X
111137	B76-0	5.4	X	
111069	B225-1	25	X	X
111069	B204-0	16	X	X
111069	B210-0	14	X	X
111069	B219-0	13	X	X
111069	B207-2	8.9	X	X
111069	B191-1	8.6	X	X
111069	B209-0	7.3	X	X
111069	B224-0	6.8	X	
111069	B206-0	5.6	X	X
111069	B207-1	5.2	X	X
111069	B200-0	5.0	X	
111068	B211-0	13	X	X
111068	B184-0	12	X	X
111068	B207-0	12	X	
111068	B217-0	10	X	
111068	B193-0	8.5	X	X
111068	B208-0	7.5	X	
111068	B202-0	6.4	X	
110888	B229-0	57	X	X
110888	B237-0	37	X	X
110888	B240-0	20	X	X
110888	B228-0	16	X	X
110888	B236-0	14	X	X
110888	B241-0	13	X	X
110888	B234-0	13	X	X
110888	B227-0	9.8	X	
110888	B235-0	8.5	X	X
110888	B238-0	5.4	X	X
110816	B251-0	41.0	X	X
110816	B262-0	33.0	X	X
110816	B250-0	21.0	X	X
110816	B263-0	20.0	X	X
110816	B257-0	7.9	X	
110816	B242-0	7.5	X	X
110816	B244-1	6.0	X	
110816	B256-0	5.9	X	
110816	B254-0	5.1	X	X

April 12, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111069

RE: I 580 WB HOV LANES, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 03, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I 580 WB HOV LANES, E8474-06-01
Lab Order: 111069

CASE NARRATIVE

Analytical Comments for Method 6010

RPD for Duplicate (DUP) is outside criteria for samples 111069-037ADUP, 111069-057ADUP, 111069-077ADUP and 111069-097ADUP; however, the Laboratory Control Sample (LCS) validated the analytical batch.

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 4/12/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111069
Project:	I 580 WB HOV LANES, E8474-06-01	**Date Received**	4/3/2010 10:40:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111069-001A	B180-1	7.4	mg/Kg	63132	5.0	1	4/2/2010	4/8/2010
111069-002A	B180-2	6.6	mg/Kg	63132	5.0	1	4/2/2010	4/8/2010
111069-003A	B181-1	5.2	mg/Kg	63132	5.0	1	4/2/2010	4/8/2010
111069-004A	B181-2	ND	mg/Kg	63132	5.0	1	4/2/2010	4/8/2010
111069-005A	B182-1	9.6	mg/Kg	63132	5.0	1	4/2/2010	4/8/2010
111069-006A	B182-2	6.4	mg/Kg	63132	5.0	1	4/2/2010	4/8/2010
111069-007A	B183-1	8.7	mg/Kg	63132	5.0	1	4/2/2010	4/8/2010
111069-008A	B183-2	5.2	mg/Kg	63132	5.0	1	4/2/2010	4/8/2010
111069-009A	B184-1	6.4	mg/Kg	63132	5.0	1	4/2/2010	4/8/2010
111069-010A	B184-2	5.3	mg/Kg	63132	5.0	1	4/2/2010	4/8/2010
111069-011A	B185-1	6.7	mg/Kg	63132	5.0	1	4/2/2010	4/8/2010
111069-012A	B185-2	5.5	mg/Kg	63132	5.0	1	4/2/2010	4/8/2010
111069-013A	B186-1	ND	mg/Kg	63132	5.0	1	4/2/2010	4/8/2010
111069-014A	B186-2	ND	mg/Kg	63132	5.0	1	4/2/2010	4/8/2010
111069-015A	B187-1	14	mg/Kg	63132	5.0	1	4/2/2010	4/8/2010
111069-016A	B187-2	ND	mg/Kg	63132	5.0	1	4/2/2010	4/8/2010
111069-017A	B188-1	8.3	mg/Kg	63132	5.0	1	4/2/2010	4/8/2010
111069-018A	B188-2	5.0	mg/Kg	63133	5.0	1	4/2/2010	4/7/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/12/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111069
Project:	I 580 WB HOV LANES, E8474-06-01	**Date Received**	4/3/2010 10:40:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111069-019A	B189-1	72	mg/Kg	63133	5.0	1	4/2/2010	4/7/2010
111069-020A	B189-2	16	mg/Kg	63133	5.0	1	4/2/2010	4/7/2010
111069-021A	B190-1	17	mg/Kg	63133	5.0	1	4/2/2010	4/7/2010
111069-022A	B190-2	28	mg/Kg	63133	5.0	1	4/2/2010	4/7/2010
111069-023A	B191-1	170	mg/Kg	63133	5.0	1	4/2/2010	4/7/2010
111069-024A	B191-2	ND	mg/Kg	63133	5.0	1	4/2/2010	4/7/2010
111069-025A	B192-1	7.2	mg/Kg	63133	5.0	1	4/2/2010	4/7/2010
111069-026A	B192-2	ND	mg/Kg	63133	5.0	1	4/2/2010	4/7/2010
111069-027A	B193-1	25	mg/Kg	63133	5.0	1	4/2/2010	4/7/2010
111069-028A	B193-2	8.0	mg/Kg	63133	5.0	1	4/2/2010	4/7/2010
111069-029A	B194-1	8.7	mg/Kg	63133	5.0	1	4/2/2010	4/7/2010
111069-030A	B194-2	9.0	mg/Kg	63133	5.0	1	4/2/2010	4/7/2010
111069-031A	B195-1	27	mg/Kg	63133	5.0	1	4/2/2010	4/7/2010
111069-032A	B195-2	12	mg/Kg	63133	5.0	1	4/2/2010	4/7/2010
111069-033A	B196-1	5.4	mg/Kg	63133	5.0	1	4/2/2010	4/7/2010
111069-034A	B196-2	10	mg/Kg	63133	5.0	1	4/2/2010	4/7/2010
111069-035A	B197-1	7.1	mg/Kg	63133	5.0	1	4/2/2010	4/7/2010
111069-036A	B197-2	7.9	mg/Kg	63133	5.0	1	4/2/2010	4/7/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/12/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111069
Project:	I 580 WB HOV LANES, E8474-06-01	**Date Received**	4/3/2010 10:40:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111069-037A	B198-1	37	mg/Kg	63133	5.0	1	4/2/2010	4/7/2010
111069-038A	B198-2	6.0	mg/Kg	63134	5.0	1	4/2/2010	4/7/2010
111069-039A	B199-1	22	mg/Kg	63134	5.0	1	4/2/2010	4/7/2010
111069-040A	B199-2	15	mg/Kg	63134	5.0	1	4/2/2010	4/7/2010
111069-041A	B200-1	6.5	mg/Kg	63134	5.0	1	4/2/2010	4/7/2010
111069-042A	B200-2	ND	mg/Kg	63134	5.0	1	4/2/2010	4/7/2010
111069-043A	B201-1	7.5	mg/Kg	63134	5.0	1	4/2/2010	4/7/2010
111069-044A	B201-2	ND	mg/Kg	63134	5.0	1	4/2/2010	4/7/2010
111069-045A	B202-1	18	mg/Kg	63134	5.0	1	4/2/2010	4/7/2010
111069-046A	B202-2	6.6	mg/Kg	63134	5.0	1	4/2/2010	4/7/2010
111069-047A	B203-1	39	mg/Kg	63134	5.0	1	4/2/2010	4/7/2010
111069-048A	B203-2	99	mg/Kg	63134	5.0	1	4/2/2010	4/7/2010
111069-049A	B204-1	120	mg/Kg	63134	5.0	1	4/2/2010	4/7/2010
111069-050A	B204-2	6.2	mg/Kg	63134	5.0	1	4/2/2010	4/7/2010
111069-051A	B205-1	15	mg/Kg	63134	5.0	1	4/2/2010	4/7/2010
111069-052A	B205-2	9.6	mg/Kg	63134	5.0	1	4/2/2010	4/7/2010
111069-053A	B206-1	8.5	mg/Kg	63134	5.0	1	4/1/2010	4/7/2010
111069-054A	B206-2	5.9	mg/Kg	63134	5.0	1	4/1/2010	4/7/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/12/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111069
Project:	I 580 WB HOV LANES, E8474-06-01	**Date Received**	4/3/2010 10:40:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111069-055A	B207-1	120	mg/Kg	63134	5.0	1	4/1/2010	4/7/2010
111069-056A	B207-2	150	mg/Kg	63134	5.0	1	4/1/2010	4/7/2010
111069-057A	B208-1	8.1	mg/Kg	63134	5.0	1	4/1/2010	4/7/2010
111069-058A	B208-2	9.2	mg/Kg	63135	5.0	1	4/1/2010	4/7/2010
111069-059A	B209-1	ND	mg/Kg	63135	5.0	1	4/1/2010	4/7/2010
111069-060A	B209-2	5.0	mg/Kg	63135	5.0	1	4/1/2010	4/7/2010
111069-061A	B210-1	29	mg/Kg	63135	5.0	1	4/1/2010	4/7/2010
111069-062A	B210-2	8.4	mg/Kg	63135	5.0	1	4/1/2010	4/7/2010
111069-063A	B211-1	5.5	mg/Kg	63135	5.0	1	4/1/2010	4/7/2010
111069-064A	B211-2	13	mg/Kg	63135	5.0	1	4/1/2010	4/7/2010
111069-065A	B212-1	5.4	mg/Kg	63135	5.0	1	4/1/2010	4/7/2010
111069-066A	B212-2	5.1	mg/Kg	63135	5.0	1	4/1/2010	4/7/2010
111069-067A	B213-1	8.8	mg/Kg	63135	5.0	1	4/1/2010	4/7/2010
111069-068A	B213-2	7.9	mg/Kg	63135	5.0	1	4/1/2010	4/7/2010
111069-069A	B214-1	15	mg/Kg	63135	5.0	1	4/1/2010	4/7/2010
111069-070A	B214-2	28	mg/Kg	63135	5.0	1	4/1/2010	4/7/2010
111069-071A	B215-1	8.9	mg/Kg	63135	5.0	1	4/1/2010	4/7/2010
111069-072A	B215-2	6.2	mg/Kg	63135	5.0	1	4/1/2010	4/7/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/12/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111069
Project:	I 580 WB HOV LANES, E8474-06-01	**Date Received**	4/3/2010 10:40:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111069-073A	B216-1	44	mg/Kg	63135	5.0	1	4/1/2010	4/7/2010
111069-074A	B216-2	5.3	mg/Kg	63135	5.0	1	4/1/2010	4/7/2010
111069-075A	B217-1	47	mg/Kg	63135	5.0	1	4/1/2010	4/7/2010
111069-076A	B217-1.5	46	mg/Kg	63135	5.0	1	4/1/2010	4/7/2010
111069-077A	B218-1	13	mg/Kg	63135	5.0	1	4/1/2010	4/7/2010
111069-078A	B218-2	7.3	mg/Kg	63136	5.0	1	4/1/2010	4/7/2010
111069-079A	B219-1	15	mg/Kg	63136	5.0	1	4/1/2010	4/7/2010
111069-080A	B219-2	9.1	mg/Kg	63136	5.0	1	4/1/2010	4/7/2010
111069-081A	B220-1	18	mg/Kg	63136	5.0	1	4/1/2010	4/7/2010
111069-082A	B220-2	7.7	mg/Kg	63136	5.0	1	4/1/2010	4/7/2010
111069-083A	B221-1	6.9	mg/Kg	63136	5.0	1	4/1/2010	4/7/2010
111069-084A	B221-2	47	mg/Kg	63136	5.0	1	4/1/2010	4/7/2010
111069-085A	B222-1	43	mg/Kg	63136	5.0	1	4/1/2010	4/7/2010
111069-086A	B222-2	8.9	mg/Kg	63136	5.0	1	4/1/2010	4/7/2010
111069-087A	B223-1	25	mg/Kg	63136	5.0	1	4/1/2010	4/7/2010
111069-088A	B223-2	29	mg/Kg	63136	5.0	1	4/1/2010	4/7/2010
111069-089A	B224-1	48	mg/Kg	63136	5.0	1	4/1/2010	4/7/2010
111069-090A	B224-2	9.5	mg/Kg	63136	5.0	1	4/1/2010	4/7/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/12/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111069
Project:	I 580 WB HOV LANES, E8474-06-01	**Date Received**	4/3/2010 10:40:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111069-091A	B225-1	480	mg/Kg	63136	5.0	1	4/1/2010	4/7/2010
111069-092A	B225-2	14	mg/Kg	63136	5.0	1	4/1/2010	4/7/2010
111069-093A	B183-0	23	mg/Kg	63136	5.0	1	4/2/2010	4/7/2010
111069-094A	B185-0	18	mg/Kg	63136	5.0	1	4/2/2010	4/7/2010
111069-095A	B186-0	6.8	mg/Kg	63136	5.0	1	4/2/2010	4/7/2010
111069-096A	B189-0	49	mg/Kg	63136	5.0	1	4/2/2010	4/7/2010
111069-097A	B191-0	50	mg/Kg	63136	5.0	1	4/2/2010	4/7/2010
111069-098A	B192-0	230	mg/Kg	63137	5.0	1	4/2/2010	4/7/2010
111069-099A	B195-0	87	mg/Kg	63137	5.0	1	4/2/2010	4/7/2010
111069-100A	B197-0	18	mg/Kg	63137	5.0	1	4/2/2010	4/7/2010
111069-101A	B200-0	77	mg/Kg	63137	5.0	1	4/2/2010	4/7/2010
111069-102A	B201-0	47	mg/Kg	63137	5.0	1	4/2/2010	4/7/2010
111069-103A	B204-0	250	mg/Kg	63137	5.0	1	4/2/2010	4/7/2010
111069-104A	B206-0	110	mg/Kg	63137	5.0	1	4/2/2010	4/7/2010
111069-105A	B209-0	150	mg/Kg	63137	5.0	1	4/2/2010	4/7/2010
111069-106A	B210-0	190	mg/Kg	63137	5.0	1	4/2/2010	4/7/2010
111069-107A	B213-0	11	mg/Kg	63137	5.0	1	4/2/2010	4/7/2010
111069-108A	B215-0	41	mg/Kg	63137	5.0	1	4/2/2010	4/7/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/12/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111069
Project:	I 580 WB HOV LANES, E8474-06-01	**Date Received**	4/3/2010 10:40:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111069-109A	B216-0	17	mg/Kg	63137	5.0	1	4/2/2010	4/7/2010
111069-110A	B219-0	150	mg/Kg	63137	5.0	1	4/2/2010	4/7/2010
111069-111A	B222-0	30	mg/Kg	63137	5.0	1	4/2/2010	4/7/2010
111069-112A	B224-0	85	mg/Kg	63137	5.0	1	4/2/2010	4/7/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/12/2010

ANALYTICAL RESULTS

pH
EPA 9045C

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111069
Project:	I 580 WB HOV LANES, E8474-06-01	**Date Received**	4/3/2010 10:40:00 AM
Project No:		**Matrix:**	Soil
Analyte:	pH	**Analyst:**	CBB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111069-001A	B180-1	8.0	pH Units	R119967	0.10	1	4/2/2010	4/8/2010
111069-012A	B185-2	8.1	pH Units	R119967	0.10	1	4/2/2010	4/8/2010
111069-023A	B191-1	8.1	pH Units	R119967	0.10	1	4/2/2010	4/8/2010
111069-034A	B196-2	7.9	pH Units	R119967	0.10	1	4/2/2010	4/8/2010
111069-045A	B202-1	7.9	pH Units	R119967	0.10	1	4/2/2010	4/8/2010
111069-056A	B207-2	7.9	pH Units	R119967	0.10	1	4/1/2010	4/8/2010
111069-067A	B213-1	8.0	pH Units	R119967	0.10	1	4/1/2010	4/8/2010
111069-078A	B218-2	7.7	pH Units	R119991	0.10	1	4/1/2010	4/9/2010
111069-089A	B224-1	8.0	pH Units	R119991	0.10	1	4/1/2010	4/9/2010
111069-091A	B225-1	8.0	pH Units	R119991	0.10	1	4/1/2010	4/9/2010
111069-102A	B201-0	7.5	pH Units	R119991	0.10	1	4/2/2010	4/9/2010
111069-112A	B224-0	7.9	pH Units	R119991	0.10	1	4/2/2010	4/9/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63132A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119955**
Client ID: **PBS**	Batch ID: **63132**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/8/2010**	SeqNo: **1912205**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.263	5.0									

Sample ID: **LCS-63132**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119955**
Client ID: **LCSS**	Batch ID: **63132**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/8/2010**	SeqNo: **1912206**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	280.262	5.0	250.0	0.2631	112	80	120				

Sample ID: **111069-007A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119955**
Client ID: **B183-1**	Batch ID: **63132**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/8/2010**	SeqNo: **1912216**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	8.293	5.0						8.708	4.89	20	

Sample ID: **111069-007A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119955**
Client ID: **B183-1**	Batch ID: **63132**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/8/2010**	SeqNo: **1912217**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	230.298	5.0	250.0	8.708	88.6	34	126				

Sample ID: **MB-63132B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119955**
Client ID: **PBS**	Batch ID: **63132**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/8/2010**	SeqNo: **1912218**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.172	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111069-017A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119955**
Client ID: **B188-1**	Batch ID: **63132**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/8/2010**	SeqNo: **1912229**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	9.388	5.0						8.291	12.4	20	

Sample ID: **111069-017A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119955**
Client ID: **B188-1**	Batch ID: **63132**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/8/2010**	SeqNo: **1912230**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	236.638	5.0	250.0	8.291	91.3	34	126				

Sample ID: **111069-017A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119955**
Client ID: **B188-1**	Batch ID: **63132**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/8/2010**	SeqNo: **1912231**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	206.006	5.0	250.0	8.291	79.1	34	126	236.6	13.8	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63133A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119939**
Client ID: **PBS**	Batch ID: **63133**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1911902**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.123	5.0									

Sample ID: **LCS-63133**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119939**
Client ID: **LCSS**	Batch ID: **63133**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1911903**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	278.095	5.0	250.0	0.1233	111	80	120				

Sample ID: **111069-027A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119939**
Client ID: **B193-1**	Batch ID: **63133**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1911914**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	27.875	5.0						24.95	11.1	20	

Sample ID: **111069-027A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119939**
Client ID: **B193-1**	Batch ID: **63133**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1911915**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	256.015	5.0	250.0	24.95	92.4	34	126				

Sample ID: **MB-63133B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119939**
Client ID: **PBS**	Batch ID: **63133**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1911916**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111069-037A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119939**
Client ID: **B198-1**	Batch ID: **63133**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1911928**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	46.732	5.0						37.15	22.8	20	R

Sample ID: **111069-037A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119939**
Client ID: **B198-1**	Batch ID: **63133**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1911929**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	268.154	5.0	250.0	37.15	92.4	34	126				

Sample ID: **111069-037A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119939**
Client ID: **B198-1**	Batch ID: **63133**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1911930**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	244.963	5.0	250.0	37.15	83.1	34	126	268.2	9.04	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63134A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119941**
Client ID: **PBS**	Batch ID: **63134**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1911931**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.132	5.0									

Sample ID: **LCS-63134**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119941**
Client ID: **LCSS**	Batch ID: **63134**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1911932**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	282.593	5.0	250.0	0.1316	113	80	120				

Sample ID: **111069-047A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119941**
Client ID: **B203-1**	Batch ID: **63134**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1911943**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	38.963	5.0						39.49	1.33	20	

Sample ID: **111069-047A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119941**
Client ID: **B203-1**	Batch ID: **63134**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1911944**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	253.510	5.0	250.0	39.49	85.6	34	126				

Sample ID: **MB-63134B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119941**
Client ID: **PBS**	Batch ID: **63134**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1911945**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111069-057A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119941**
Client ID: **B208-1**	Batch ID: **63134**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1911956**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.563	5.0						8.148	37.7	20	R

Sample ID: **111069-057A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119941**
Client ID: **B208-1**	Batch ID: **63134**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1911957**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	242.771	5.0	250.0	8.148	93.8	34	126				

Sample ID: **111069-057A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119941**
Client ID: **B208-1**	Batch ID: **63134**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1911958**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	232.971	5.0	250.0	8.148	89.9	34	126	242.8	4.12	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63135A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119942**
Client ID: **PBS**	Batch ID: **63135**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1911992**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.204	5.0									

Sample ID: **LCS-63135**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119942**
Client ID: **LCSS**	Batch ID: **63135**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1911993**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	284.911	5.0	250.0	0.2038	114	80	120				

Sample ID: **111069-067A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119942**
Client ID: **B213-1**	Batch ID: **63135**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912004**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	9.150	5.0						8.803	3.87	20	

Sample ID: **111069-067A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119942**
Client ID: **B213-1**	Batch ID: **63135**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912005**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	234.135	5.0	250.0	8.803	90.1	34	126				

Sample ID: **MB-63135B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119942**
Client ID: **PBS**	Batch ID: **63135**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912006**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.291	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111069-077A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119942**
Client ID: **B218-1**	Batch ID: **63135**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912017**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	26.282	5.0						13.28	65.8	20	R

Sample ID: **111069-077A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119942**
Client ID: **B218-1**	Batch ID: **63135**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912018**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	226.651	5.0	250.0	13.28	85.4	34	126				

Sample ID: **111069-077A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119942**
Client ID: **B218-1**	Batch ID: **63135**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912019**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	232.562	5.0	250.0	13.28	87.7	34	126	226.7	2.57	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63136A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119943**
Client ID: **PBS**	Batch ID: **63136**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912020**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.252	5.0									

Sample ID: **LCS-63136**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119943**
Client ID: **LCSS**	Batch ID: **63136**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912021**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	266.038	5.0	250.0	0.2517	106	80	120				

Sample ID: **111069-087A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119943**
Client ID: **B223-1**	Batch ID: **63136**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912032**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	26.064	5.0						25.02	4.10	20	

Sample ID: **111069-087A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119943**
Client ID: **B223-1**	Batch ID: **63136**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912033**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	228.743	5.0	250.0	25.02	81.5	34	126				

Sample ID: **MB-63136B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119943**
Client ID: **PBS**	Batch ID: **63136**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912034**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.206	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111069-097A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119943**
Client ID: **B191-0**	Batch ID: **63136**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912045**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	39.282	5.0						49.66	23.3	20	R

Sample ID: **111069-097A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119943**
Client ID: **B191-0**	Batch ID: **63136**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912046**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	319.078	5.0	250.0	49.66	108	34	126				

Sample ID: **111069-097A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119943**
Client ID: **B191-0**	Batch ID: **63136**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912047**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	276.532	5.0	250.0	49.66	90.7	34	126	319.1	14.3	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63137A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119944**
Client ID: **PBS**	Batch ID: **63137**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912048**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.205	5.0									

Sample ID: **LCS-63137**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119944**
Client ID: **LCSS**	Batch ID: **63137**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912049**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	289.424	5.0	250.0	0.2053	116	80	120				

Sample ID: **111069-107A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119944**
Client ID: **B213-0**	Batch ID: **63137**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912061**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	11.187	5.0						10.56	5.78	20	

Sample ID: **111069-107A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119944**
Client ID: **B213-0**	Batch ID: **63137**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912062**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	232.410	5.0	250.0	10.56	88.7	34	126				

Sample ID: **MB-63137B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119944**
Client ID: **PBS**	Batch ID: **63137**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912063**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111069-112A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119944**
Client ID: **B224-0**	Batch ID: **63137**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912069**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	73.592	5.0						85.27	14.7	20	

Sample ID: **111069-112A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119944**
Client ID: **B224-0**	Batch ID: **63137**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912070**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	328.422	5.0	250.0	85.27	97.3	34	126				

Sample ID: **111069-112A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/6/2010**	RunNo: **119944**
Client ID: **B224-0**	Batch ID: **63137**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/7/2010**	SeqNo: **1912071**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	335.712	5.0	250.0	85.27	100	34	126	328.4	2.20	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 9045_S

Sample ID: **111069-045ADUP** SampType: **DUP** TestCode: **9045_S** Units: **pH Units** Prep Date: RunNo: **119967**
Client ID: **B202-1** Batch ID: **R119967** TestNo: **EPA 9045C** Analysis Date: **4/8/2010** SeqNo: **1912408**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.860	0.10						7.890	0.381	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 9045_S

Sample ID: **111069-091ADUP** SampType: **DUP** TestCode: **9045_S** Units: **pH Units** Prep Date: RunNo: **119991**
Client ID: **B225-1** Batch ID: **R119991** TestNo: **EPA 9045C** Analysis Date: **4/9/2010** SeqNo: **1912713**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	8.030	0.10						8.000	0.374	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____
Logged By: _____ Date: 4/3/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: GSO

Sample Condition Upon Receipt
1. CHILLED 18-C Y☑ N☐ 4. SEALED Y☐ N☑
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☑ N☐
3. CONTAINER INTACT Y☑ N☐ 6. PRESERVED Y☐ N☑

Client: GEOCON CONSULTANTS, INC.
Attn: L. VIGLIOTTI,
Address: 6671 Brisa Street
City Livermore State CA Zip Code 94550
TEL: (925) 371-5900
FAX: (925) 371-5915

Project Name: I 580 WB HOV LANES Project #: E8474-06-01 Sampler: (Printed Name) CM/DW (Signature)

Relinquished by: (Signature and Printed Name) CHRIS MERRITT Date: 4-2-10 Time: Received by: (Signature and Printed Name) FPOIWA Date: 4/3/10 Time: 1040
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
CM — Print Name
4-2-10 — Date
CM — Signature

Send Report To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State ____ Zip ____

Bill To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State ____ Zip ____

Special Instructions/Comments:
10% FOR PH
INDIVIDUAL SAMPLES

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX

Q A / Q C: RTNE ☐ CT ☑ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / BTEX	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000) TOTAL Pb	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	111069 - 1,2	B180 - 1, 2	4-2-10										X	X				E	2	P, G	C	
	- 3,4	B181 -																				
	- 5, 6	B182 -																				
	- 7, 8	B183 -																				
	- 9, 10	B184 -																				
	- 11, 12	B185 -																				
	- 13, 14	B186 -																				
	- 15, 16	B187 -																				
	- 17, 18	B188 -																				
	- 19, 20	B189 -																				

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____

Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: _____

Sample Condition Upon Receipt:
1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON CONSULTANTS, INC.	Address: 6671 Brisa Street	TEL: (925) 371-5900
Attn: L. VIGLIOTTI	City Livermore State CA Zip Code 94550	FAX: (925) 371-5915

Project Name: I 580 WB HOV LANES Project #: E8474-06-01 Sampler: (Printed Name) CM/DW (Signature) C. MERRITT

Relinquished by: (Signature and Printed Name) CHRIS MERRITT Date: 4-2-10 Time: 1700 Received by: (Signature and Printed Name) FPDHA Date: 4/3/10 Time: 1040

Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
CM (Print Name) 4-2-10 (Date)
CM (Signature)

Send Report To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State____ Zip____

Bill To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State____ Zip____

Special Instructions/Comments:
10% FOR pH.
INDIVIDUAL SAMPLES

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX

Q A / Q C: RTNE ☐ CT ☑ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / BTEX	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	TOTAL Pb	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	111069 - 21, 22	B190 - 1, 2	4-2-10	VAR									X		X				E	2	P B	C	
	- 23, 24	B191 -																					
	- 25, 26	B192 -																					
	- 27, 28	B193 -																					
	- 29, 30	B194 -																					
	- 31, 32	B195 -																					
	- 33, 34	B196 -																					
	- 35, 36	B197 -																					
	- 37, 38	B198 -																					
	- 39, 40	B199 -																					

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____
Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: _____

Sample Condition Upon Receipt:
1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON CONSULTANTS, INC.
Attn: L. VIGLIOTTI
Address: 6671 Brisa Street
City: Livermore State: CA Zip Code: 94550
TEL: (925) 371-5900
FAX: (925) 371-5915

Project Name: I 580 WB HOV LANES Project #: E8474-06-01 Sampler: (Printed Name) CM/OW (Signature) C. MERRITT

Relinquished by: (Signature and Printed Name) CHRIS MERRITT Date: 4-2-10 Time: 1700 Received by: (Signature and Printed Name) FEDEX Date: 4/3/10 Time: 1040
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
CM 4-2-10
Print Name Date
CM
Signature

Send Report To:
Attn: _____
Co: SAME AS ABOVE
Address: _____
City _____ State _____ Zip _____

Bill To:
Attn: _____
Co: SAME AS ABOVE
Address: _____
City _____ State _____ Zip _____

Special Instructions/Comments:
10% FOR pH
SAMPLES ARE INDIVIDUAL

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

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Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX

PRESERVATION

Q A / Q C
RTNE ☐
CT ☐
SWRCB ☐
Logcode _____
OTHER _____

ITEM	LAB USE ONLY: Batch # / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / BTEX	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	TOTAL Pb	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	11069-41,42	B200-1,2	4-2-10	VAR									X		X				E	2	P/B	C	
	-43,44	B201-																					
	-45,46	B202-																					
	-47,48	B203-																					
	-49,50	B204-																					
	-51,52	B205-																					
	-53,54	B206-	4-1-10																				
	-55,56	B207-																					
	-57,58	B208-																					
	-59,60	B209-																					

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____
Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: _____

Sample Condition Upon Receipt
1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON CONSULTANTS, INC.
Attn: L. VIGLIOTTI
Address: 6671 Brisa Street
City Livermore State CA Zip Code 94550
TEL: (925) 371-5900
FAX: (925) 371-5915

Project Name: I 580 WB HOV LANES Project #: E8474-06-01 Sampler: (Printed Name) CM/DW (Signature) C. MERRITT

Relinquished by: (Signature and Printed Name) CHRIS MERRITT Date: 4-2-10 Time: 1700 Received by: (Signature and Printed Name) FPDHL Date: 4/3/10 Time: 1040
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
CM (Print Name) 4-2-10 (Date)
CM (Signature)

Send Report To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State _____ Zip _____

Bill To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:
10% FOR pH
INDIVIDUAL SAMPLES.

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / BTEX	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000) TOTAL Pb	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	111069 - 61, 62	B210 - 1, 2	4-1-10	VAR									X	X				E	2	P B	C	
	-63, 64	B211 - 1, 2																				
	-65, 66	B212 - 1, 2																				
	-67, 68	B213 -																				
	-69, 70	B214 -																				
	-71, 72	B215 -																				
	-73, 74	B216 -																				
	-75, 76	B217 - 1, 1.5																				
	-77, 78	B218 - 1, 2																				
	-79, 80	B219 -																				

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode ____ OTHER ____

- TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

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DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
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Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____

Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: _____

Sample Condition Upon Receipt:
1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON CONSULTANTS, INC.
Address: 6671 Brisa Street
TEL: (925) 371-5900
Attn: L. VIGLIOTTI
City Livermore State CA Zip Code 94550
FAX: (925) 371-5915

Project Name: I 580 WB HOV LANES Project #: E8474-06-01 Sampler: (Printed Name) CM/DW (Signature) C. MERRITT

Relinquished by: (Signature and Printed Name) CHRIS MERRITT Date: 4-2-10 Time: 1700 Received by: (Signature and Printed Name) FPDHL Date: 4/3/10 Time: 1040

Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
CM — Print Name
4-2-10 — Date
CM — Signature

Send Report To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State _____ Zip _____

Bill To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:
10% FOR pH
SAMPLES ARE INDIVIDUAL

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

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- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX

PRESERVATION

Q A / Q C
RTNE ☐
CT ☒
SWRCB ☐
Logcode ____
OTHER ____

ITEM	LAB USE ONLY: Batch # / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / BTEX	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	TOTAL Pb	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	11065-81, 82	B220-1, 2	4-1-10	VAR										X					E	2	P B	C	
	-83, 84	B221 -																					
	-85, 86	B222 -																					
	-87, 88	B223 -																					
	-89, 90	B224 -																					
	-91, 92	B225 -																					

- TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____

Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: _____

Sample Condition Upon Receipt:
1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON CONSULTANTS, INC.
Attn: L. VIGLIOTTI
Address: 6671 Brisa Street
City Livermore State CA Zip Code 94550
TEL: (925) 371-5900
FAX: (925) 371-5915

Project Name: I 580 WB HOV LANES Project #: E8474-06-01 Sampler: (Printed Name) C. MERRITT (Signature) SAME

Relinquished by: (Signature and Printed Name) CHRIS MERRITT Date: 4-2-10 Time: 1700 Received by: (Signature and Printed Name) FEDEX Date: 4/3/10 Time: 1040
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
CM 4-2-10
Print Name Date
CM
Signature

Send Report To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State_____ Zip_____

Bill To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State_____ Zip_____

Special Instructions/Comments:
10% FOR pH

Sample/Records - Archival & Disposal
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Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides); 8082 (PCB); 8260B (Volatiles); 8270C (BNA); 6010B (Total Metal); 8015B (GRO) / BTEX; 8015B (DRO); 8021 (BTEX); TITLE 22 / CAM 17 (6010 / 7000); TOTAL Pb

SPECIFY APPROPRIATE MATRIX: SOIL; WATER; GROUND WATER; WASTEWATER

Container(s): TAT; # ; Type

PRESERVATION

Q A / Q C: RTNE ☐ CT ☑ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	TAT	#	Type	PRESERVATION	REMARKS
	111069 - 93	B183-0	4-2-10	VAR	E	1	P B	C	
	- 94	B185-							
	- 95	B186-							
	- 96	B189-							
	- 97	B191-							
	- 98	B192-							
	- 99	B195-							
	- 100	B197-							
	- 101	B200-							
	- 102	B201-							

X (8081A); X (SOIL)

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

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DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

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FOR LABORATORY USE ONLY:

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Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: _____

Sample Condition Upon Receipt:
1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON CONSULTANTS, INC.
Address: 6671 Brisa Street
TEL: (925) 371-5900
Attn: L. VIGLIOTTI
City Livermore State CA Zip Code 94550
FAX: (925) 371-5915

Project Name: I580 WB HOV LANES Project #: E8474-06-01 Sampler: (Printed Name) CM/DW (Signature) C. MERRITT

Relinquished by: (Signature and Printed Name) CHRIS MERRITT Date: 4-2-10 Time: 1700 Received by: (Signature and Printed Name) FEDEX Date: 4/3/10 Time: 1040

Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
CM (Print Name) 4-2-10 (Date)
CM (Signature)

Send Report To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State _____ Zip _____

Bill To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:
10% FOR pH

Sample/Records - Archival & Disposal
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Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX

Q A / Q C: RTNE ☐ CT ☒ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / BTEX	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	TOTAL Pb	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	A10C9-103	B204-0	4-2-10	VAR										X	X				E	1	P B	C	
	-104	B206-																					
	-105	B209-																					
	-106	B210-																					
	-107	B213-																					
	-108	B215-																					
	-109	B216-																					
	-110	B219-																					
	-111	B222-																					
	-112	B224-																					

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TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

April 21, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111069

RE: I 580 WB HOV LANES, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 03, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I 580 WB HOV LANES, E8474-06-01
Lab Order: 111069

CASE NARRATIVE

Analytical Comments for Method 7420

Dilution was necessary for samples 111069-091A, 111069-103A, 111069-106A and 111069-110A, due to sample matrix.

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 4/21/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (STLC)
WET/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111069
Project:	I 580 WB HOV LANES, E8474-06-01	**Date Received**	4/3/2010 10:40:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111069-019A	B189-1	3.1	mg/L	63448	0.25	1	4/2/2010	4/20/2010
111069-023A	B191-1	8.6	mg/L	63448	0.25	1	4/2/2010	4/20/2010
111069-048A	B203-2	3.3	mg/L	63448	0.25	1	4/2/2010	4/20/2010
111069-049A	B204-1	0.75	mg/L	63448	0.25	1	4/2/2010	4/20/2010
111069-055A	B207-1	5.2	mg/L	63448	0.25	1	4/1/2010	4/20/2010
111069-056A	B207-2	8.9	mg/L	63448	0.25	1	4/1/2010	4/20/2010
111069-091A	B225-1	25	mg/L	63448	2.5	10	4/1/2010	4/20/2010
111069-097A	B191-0	3.0	mg/L	63448	0.25	1	4/2/2010	4/20/2010
111069-098A	B192-0	2.4	mg/L	63448	0.25	1	4/2/2010	4/20/2010
111069-099A	B195-0	2.9	mg/L	63448	0.25	1	4/2/2010	4/20/2010
111069-101A	B200-0	5.0	mg/L	63448	0.25	1	4/2/2010	4/20/2010
111069-103A	B204-0	16	mg/L	63448	0.50	2	4/2/2010	4/20/2010
111069-104A	B206-0	5.6	mg/L	63448	0.25	1	4/2/2010	4/20/2010
111069-105A	B209-0	7.3	mg/L	63448	0.25	1	4/2/2010	4/20/2010
111069-106A	B210-0	14	mg/L	63448	0.50	2	4/2/2010	4/20/2010
111069-110A	B219-0	13	mg/L	63448	0.50	2	4/2/2010	4/20/2010
111069-112A	B224-0	6.8	mg/L	63448	0.25	1	4/2/2010	4/20/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-63448A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **PBS**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919880**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63448**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **LCSS**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919881**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.047	0.25	5.000	0	101	80	120				

Sample ID: **111069-098A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **B192-0**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919892**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.423	0.25						2.423	0.00966	20	

Sample ID: **111069-098A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **B192-0**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919893**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	6.826	0.25	5.000	2.423	88.1	80	120				

Sample ID: **MB-63448B**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **PBS**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919894**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **111137-012A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **ZZZZZZ**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919905**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	3.150	0.25						3.186	1.12	20	

Sample ID: **111137-012A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **ZZZZZZ**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919906**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	7.605	0.25	5.000	3.186	88.4	80	120				

Sample ID: **111137-012A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **ZZZZZZ**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919907**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	7.611	0.25	5.000	3.186	88.5	80	120	7.605	0.0805	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Wednesday, April 14, 2010 11:22 AM
To: Diane Galvan
Subject: WOs110816, -888, 111068,-069

Hi Diane:
Please run the following samples for WET lead, standard TAT. Thanks!

WO	ID
110816	B259-2
110816	B256-1
110816	B258-0
110816	B243-0
110816	B256-0
110816	B244-0
110816	B257-0
110816	B244-1
110816	B254-0
110816	B242-0
110816	B263-0
110816	B249-0
110816	B250-0
110816	B262-0
110816	B251-0
110888	B227-0
110888	B239-0

WO	ID
110888	B238-0
110888	B235-0
110888	B236-0
110888	B234-0
110888	B241-0
110888	B228-0
110888	B240-0
110888	B237-0
110888	B229-0
111068	B223-0
111068	B202-0
111068	B190-0
111068	B217-0
111068	B218-0
111068	B208-0
111068	B207-0
111068	B184-0
111068	B193-0

WO	ID
111068	B211-0
111069	B191-0
111069	B189-1
111069	B200-0
111069	B224-0
111069	B195-0
111069	B203-2
111069	B206-0
111069	B204-1

111069 B207-1
111069 B207-2
111069 B209-0
111069 B219-0
111069 B191-1
111069 B210-0
111069 B192-0
111069 B204-0
111069 B225-1

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

Geocon Consultants, Inc
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GEOCON

GEOTECHNICAL ENVIRONMENTAL MATERIALS

San Diego Murrieta Burbank Bakersfield Sacramento Livermore Carson City Las Vegas Portland

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May 04, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111069

RE: I 580 WB HOV LANES, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 03, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

Advanced Technology Laboratories

Date: 5/4/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION
WET DI/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111069
Project:	I 580 WB HOV LANES, E8474-06-01	**Date Received**	4/3/2010 10:40:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111069-023A	B191-1	ND	mg/L	63740	0.25	1	4/2/2010	5/3/2010
111069-055A	B207-1	ND	mg/L	63740	0.25	1	4/1/2010	5/3/2010
111069-056A	B207-2	ND	mg/L	63740	0.25	1	4/1/2010	5/3/2010
111069-091A	B225-1	ND	mg/L	63740	0.25	1	4/1/2010	5/3/2010
111069-101A	B200-0	ND	mg/L	63740	0.25	1	4/2/2010	5/3/2010
111069-103A	B204-0	ND	mg/L	63740	0.25	1	4/2/2010	5/3/2010
111069-104A	B206-0	ND	mg/L	63740	0.25	1	4/2/2010	5/3/2010
111069-105A	B209-0	ND	mg/L	63740	0.25	1	4/2/2010	5/3/2010
111069-106A	B210-0	ND	mg/L	63740	0.25	1	4/2/2010	5/3/2010
111069-110A	B219-0	ND	mg/L	63740	0.25	1	4/2/2010	5/3/2010
111069-112A	B224-0	ND	mg/L	63740	0.25	1	4/2/2010	5/3/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 5/4/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (TCLP)
EPA 1311/ 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111069
Project:	I 580 WB HOV LANES, E8474-06-01	**Date Received**	4/3/2010 10:40:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111069-023A	B191-1	0.42	mg/L	63808	0.25	1	4/2/2010	5/3/2010
111069-055A	B207-1	0.34	mg/L	63808	0.25	1	4/1/2010	5/3/2010
111069-056A	B207-2	0.37	mg/L	63809	0.25	1	4/1/2010	5/3/2010
111069-091A	B225-1	0.77	mg/L	63809	0.25	1	4/1/2010	5/3/2010
111069-103A	B204-0	1.4	mg/L	63809	0.25	1	4/2/2010	5/3/2010
111069-104A	B206-0	0.44	mg/L	63809	0.25	1	4/2/2010	5/3/2010
111069-105A	B209-0	0.36	mg/L	63809	0.25	1	4/2/2010	5/3/2010
111069-106A	B210-0	ND	mg/L	63809	0.25	1	4/2/2010	5/3/2010
111069-110A	B219-0	0.36	mg/L	63809	0.25	1	4/2/2010	5/3/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **MB-63740A**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **PBS**	Batch ID: **63740**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928249**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63740**	SampType: **LCS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **LCSS**	Batch ID: **63740**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928250**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.085	0.25	5.000	0	102	80	120				

Sample ID: **111069-091A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **B225-1**	Batch ID: **63740**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928261**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111069-091A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **B225-1**	Batch ID: **63740**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928262**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.969	0.25	5.000	0	99.4	70	130				

Sample ID: **MB-63740B**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **PBS**	Batch ID: **63740**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928263**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **111137-108A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **ZZZZZZ**	Batch ID: **63740**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928274**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111137-108A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **ZZZZZZ**	Batch ID: **63740**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928275**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.957	0.25	5.000	0	99.1	70	130				

Sample ID: **111137-108A-MSD**	SampType: **MSD**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **ZZZZZZ**	Batch ID: **63740**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928276**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.006	0.25	5.000	0	100	70	130	4.957	0.984	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63808A**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **PBS**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927939**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63783A TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **PBS**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927940**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63808**	SampType: **LCS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **LCSS**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927941**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.961	0.25	1.000	0	96.1	80	120				

Sample ID: **110888-013A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **ZZZZZZ**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927952**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.963	0.25						0.9307	3.45	20	

Sample ID: **110888-013A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **ZZZZZZ**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927953**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	3.359	0.25	2.500	0.9307	97.1	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63808B**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **PBS**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927954**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63783B TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **PBS**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927955**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **111069-055A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **B207-1**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927966**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.334	0.25						0.3368	0.763	20	

Sample ID: **111069-055A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **B207-1**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927967**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.819	0.25	2.500	0.3368	99.3	70	130				

Sample ID: **111069-055A-MSD**	SampType: **MSD**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120785**
Client ID: **B207-1**	Batch ID: **63808**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927968**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.866	0.25	2.500	0.3368	101	70	130	2.819	1.66	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63809A**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **PBS**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927969**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63784A TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **PBS**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927970**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63809**	SampType: **LCS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **LCSS**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927971**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	1.029	0.25	1.000	0	103	80	120				

Sample ID: **111138-055A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **ZZZZZZ**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927982**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.223	0.25						0.2423	0	20	

Sample ID: **111138-055A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **ZZZZZZ**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927983**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.552	0.25	2.500	0.2423	92.4	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111069
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63809B**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **PBS**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927984**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63784B TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **PBS**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927985**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **111139-073A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **ZZZZZZ**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927992**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111139-073A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **ZZZZZZ**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927993**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.678	0.25	2.500	0	107	70	130				

Sample ID: **111139-073A-MSD**	SampType: **MSD**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **ZZZZZZ**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927994**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.675	0.25	2.500	0	107	70	130	2.678	0.119	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Tuesday, April 27, 2010 12:05 PM
To: Diane Galvan
Subject: I-580 WB HOV Lane project
Attachments: I-580 project-lead_TCLP_DI-WET.xls

HI Diane:
Please find the attached excel workbook with a list of TCLP and DI-WET lead analyses for samples for the referenced project. Please analyze under standard TAT. Thank you!

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

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6671 Brisa Street
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GEOCON

GEOTECHNICAL ENVIRONMENTAL MATERIALS

San Diego Murrieta Burbank Bakersfield Sacramento Livermore Carson City Las Vegas Portland

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WorkOrder	ClientSampID	R_Rslt	DI-WET	TCLP
111138	B271-2	24	X	X
111138	B120-0	13	X	X
111138	B270-0	12	X	X
111137	B61-2	6.0	X	X
111137	B70-0	5.5	X	X
111137	B76-0	5.4	X	
111069	B225-1	25	X	X
111069	B204-0	16	X	X
111069	B210-0	14	X	X
111069	B219-0	13	X	X
111069	B207-2	8.9	X	X
111069	B191-1	8.6	X	X
111069	B209-0	7.3	X	X
111069	B224-0	6.8	X	
111069	B206-0	5.6	X	X
111069	B207-1	5.2	X	X
111069	B200-0	5.0	X	
111068	B211-0	13	X	X
111068	B184-0	12	X	X
111068	B207-0	12	X	
111068	B217-0	10	X	
111068	B193-0	8.5	X	X
111068	B208-0	7.5	X	
111068	B202-0	6.4	X	
110888	B229-0	57	X	X
110888	B237-0	37	X	X
110888	B240-0	20	X	X
110888	B228-0	16	X	X
110888	B236-0	14	X	X
110888	B241-0	13	X	X
110888	B234-0	13	X	X
110888	B227-0	9.8	X	
110888	B235-0	8.5	X	X
110888	B238-0	5.4	X	X
110816	B251-0	41.0	X	X
110816	B262-0	33.0	X	X
110816	B250-0	21.0	X	X
110816	B263-0	20.0	X	X
110816	B257-0	7.9	X	
110816	B242-0	7.5	X	X
110816	B244-1	6.0	X	
110816	B256-0	5.9	X	
110816	B254-0	5.1	X	X

April 15, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111137

RE: I-580 WB, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 08, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I-580 WB, E8474-06-01
Lab Order: 111137

CASE NARRATIVE

Analytical Comments for Method 6010

Dilution was necessary for samples 111137-115A, 111137-125A, 111137-130A and 111137-142A, due to sample matrix.

RPD for Duplicate (DUP) and/or Matrix Spike (MS)/Matrix Spike Duplicate (MSD) is outside criteria for samples 111137-012ADUP, 111137-024ADUP, 111137-037ADUP, 111137-049ADUP, 111137-050ADUP, 111137-074ADUP, 111137-087ADUP, 111137-100ADUP, 111137-100AMSD, 111137-112ADUP, 111137-124ADUP, 111137-137ADUP, 111137-139ADUP and 111137-143ADUP; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Analytical Comments for Method 8015 (DRO/ORO)

Dilution was necessary for sample 111137-142A, due to sample matrix.

Surrogate recovery was diluted out for sample 111137-142A.

Analytical Comments for Method 8021

Matrix Spike (MS) and /or Matrix Spike Duplicate (MSD) are/is outside recovery criteria for samples 111137-143AMS and 111137-143AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 4/15/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111137
Project:	I-580 WB, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111137-001A	B106-0	36	mg/Kg	63234	5.0	1	4/6/2010	4/12/2010
111137-002A	B106-1	5.5	mg/Kg	63234	5.0	1	4/6/2010	4/12/2010
111137-003A	B106-2	5.4	mg/Kg	63234	5.0	1	4/6/2010	4/12/2010
111137-004A	B104-0	27	mg/Kg	63234	5.0	1	4/6/2010	4/12/2010
111137-006A	B104-2	6.2	mg/Kg	63234	5.0	1	4/6/2010	4/12/2010
111137-007A	B102-0	64	mg/Kg	63234	5.0	1	4/6/2010	4/12/2010
111137-008A	B102-1	15	mg/Kg	63234	5.0	1	4/6/2010	4/12/2010
111137-009A	B102-2	6.4	mg/Kg	63234	5.0	1	4/6/2010	4/12/2010
111137-011A	B100-1	41	mg/Kg	63234	5.0	1	4/6/2010	4/12/2010
111137-012A	B100-2	56	mg/Kg	63234	5.0	1	4/6/2010	4/12/2010
111137-013A	B99-0	84	mg/Kg	63234	5.0	1	4/6/2010	4/12/2010
111137-014A	B99-1	9.0	mg/Kg	63234	5.0	1	4/6/2010	4/12/2010
111137-016A	B97-0	21	mg/Kg	63234	5.0	1	4/6/2010	4/12/2010
111137-017A	B97-1	10	mg/Kg	63234	5.0	1	4/6/2010	4/12/2010
111137-018A	B97-2	19	mg/Kg	63234	5.0	1	4/6/2010	4/12/2010
111137-019A	B96-0	28	mg/Kg	63234	5.0	1	4/6/2010	4/12/2010
111137-021A	B96-2	14	mg/Kg	63234	5.0	1	4/6/2010	4/12/2010
111137-022A	B95-0	15	mg/Kg	63234	5.0	1	4/6/2010	4/12/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/15/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111137
Project:	I-580 WB, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111137-023A	B95-1	8.4	mg/Kg	63234	5.0	1	4/6/2010	4/12/2010
111137-024A	B95-2	11	mg/Kg	63234	5.0	1	4/6/2010	4/12/2010
111137-026A	B93-1	8.6	mg/Kg	63235	5.0	1	4/6/2010	4/12/2010
111137-027A	B93-2	45	mg/Kg	63235	5.0	1	4/6/2010	4/12/2010
111137-028A	B92-0	7.9	mg/Kg	63235	5.0	1	4/6/2010	4/12/2010
111137-029A	B92-1	8.1	mg/Kg	63235	5.0	1	4/6/2010	4/12/2010
111137-031A	B91-0	26	mg/Kg	63235	5.0	1	4/6/2010	4/12/2010
111137-032A	B91-1	ND	mg/Kg	63235	5.0	1	4/6/2010	4/12/2010
111137-033A	B91-2	6.4	mg/Kg	63235	5.0	1	4/6/2010	4/12/2010
111137-034A	B90-0	8.4	mg/Kg	63235	5.0	1	4/6/2010	4/12/2010
111137-036A	B90-2	94	mg/Kg	63235	5.0	1	4/6/2010	4/12/2010
111137-037A	B89-0	33	mg/Kg	63235	5.0	1	4/6/2010	4/12/2010
111137-038A	B89-1	49	mg/Kg	63235	5.0	1	4/6/2010	4/12/2010
111137-039A	B89-2	22	mg/Kg	63235	5.0	1	4/6/2010	4/12/2010
111137-041A	B88-1	17	mg/Kg	63235	5.0	1	4/6/2010	4/12/2010
111137-042A	B88-2	26	mg/Kg	63235	5.0	1	4/6/2010	4/12/2010
111137-043A	B87-0	16	mg/Kg	63235	5.0	1	4/6/2010	4/12/2010
111137-044A	B87-1	9.5	mg/Kg	63235	5.0	1	4/6/2010	4/12/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/15/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111137
Project:	I-580 WB, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111137-046A	B86-0	35	mg/Kg	63235	5.0	1	4/6/2010	4/12/2010
111137-047A	B86-1	ND	mg/Kg	63235	5.0	1	4/6/2010	4/12/2010
111137-048A	B86-2	75	mg/Kg	63235	5.0	1	4/6/2010	4/12/2010
111137-049A	B85-0	18	mg/Kg	63235	5.0	1	4/6/2010	4/12/2010
111137-051A	B85-2	56	mg/Kg	63236	5.0	1	4/6/2010	4/12/2010
111137-052A	B84-0	30	mg/Kg	63236	5.0	1	4/6/2010	4/12/2010
111137-053A	B84-1	23	mg/Kg	63236	5.0	1	4/6/2010	4/12/2010
111137-054A	B84-2	76	mg/Kg	63236	5.0	1	4/6/2010	4/12/2010
111137-056A	B83-1	43	mg/Kg	63236	5.0	1	4/6/2010	4/12/2010
111137-057A	B83-2	42	mg/Kg	63236	5.0	1	4/6/2010	4/12/2010
111137-058A	B82-0	13	mg/Kg	63236	5.0	1	4/6/2010	4/12/2010
111137-059A	B82-1	6.7	mg/Kg	63236	5.0	1	4/6/2010	4/12/2010
111137-061A	B81-0	15	mg/Kg	63236	5.0	1	4/6/2010	4/12/2010
111137-062A	B81-1	7.9	mg/Kg	63236	5.0	1	4/6/2010	4/12/2010
111137-063A	B81-2	65	mg/Kg	63236	5.0	1	4/6/2010	4/12/2010
111137-064A	B80-0	18	mg/Kg	63236	5.0	1	4/6/2010	4/12/2010
111137-066A	B80-2	6.6	mg/Kg	63236	5.0	1	4/6/2010	4/12/2010
111137-067A	B78-0	97	mg/Kg	63236	5.0	1	4/6/2010	4/12/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/15/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111137
Project:	I-580 WB, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111137-068A	B78-1	10	mg/Kg	63236	5.0	1	4/6/2010	4/12/2010
111137-069A	B78-2	9.2	mg/Kg	63236	5.0	1	4/6/2010	4/12/2010
111137-071A	B77-1	53	mg/Kg	63236	5.0	1	4/6/2010	4/12/2010
111137-072A	B77-2	8.6	mg/Kg	63236	5.0	1	4/6/2010	4/12/2010
111137-073A	B76-0	60	mg/Kg	63236	5.0	1	4/6/2010	4/12/2010
111137-074A	B76-1	17	mg/Kg	63236	5.0	1	4/6/2010	4/12/2010
111137-076A	B75-0	12	mg/Kg	63237	5.0	1	4/6/2010	4/12/2010
111137-077A	B75-1	15	mg/Kg	63237	5.0	1	4/6/2010	4/12/2010
111137-078A	B75-2	37	mg/Kg	63237	5.0	1	4/6/2010	4/12/2010
111137-079A	B74-0	18	mg/Kg	63237	5.0	1	4/6/2010	4/12/2010
111137-081A	B74-2	6.9	mg/Kg	63237	5.0	1	4/6/2010	4/12/2010
111137-082A	B73-0	62	mg/Kg	63237	5.0	1	4/6/2010	4/12/2010
111137-083A	B73-1	33	mg/Kg	63237	5.0	1	4/6/2010	4/12/2010
111137-084A	B73-2	8.2	mg/Kg	63237	5.0	1	4/6/2010	4/12/2010
111137-086A	B70-1	5.7	mg/Kg	63237	5.0	1	4/6/2010	4/12/2010
111137-087A	B70-2	5.5	mg/Kg	63237	5.0	1	4/6/2010	4/12/2010
111137-088A	B67-0	33	mg/Kg	63237	5.0	1	4/6/2010	4/12/2010
111137-089A	B67-1	24	mg/Kg	63237	5.0	1	4/6/2010	4/12/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/15/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111137
Project:	I-580 WB, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111137-091A	B66-0	19	mg/Kg	63237	5.0	1	4/6/2010	4/12/2010
111137-092A	B66-1	6.3	mg/Kg	63237	5.0	1	4/6/2010	4/12/2010
111137-093A	B66-2	5.8	mg/Kg	63237	5.0	1	4/6/2010	4/12/2010
111137-094A	B65-0	100	mg/Kg	63237	5.0	1	4/6/2010	4/12/2010
111137-096A	B65-2	ND	mg/Kg	63237	5.0	1	4/6/2010	4/12/2010
111137-097A	B64-0	58	mg/Kg	63237	5.0	1	4/6/2010	4/12/2010
111137-098A	B64-1	ND	mg/Kg	63237	5.0	1	4/6/2010	4/12/2010
111137-099A	B64-2	5.4	mg/Kg	63237	5.0	1	4/6/2010	4/12/2010
111137-101A	B63-1	7.1	mg/Kg	63238	5.0	1	4/6/2010	4/12/2010
111137-102A	B63-2	ND	mg/Kg	63238	5.0	1	4/6/2010	4/12/2010
111137-103A	B62-0	25	mg/Kg	63238	5.0	1	4/6/2010	4/12/2010
111137-104A	B62-1	38	mg/Kg	63238	5.0	1	4/6/2010	4/12/2010
111137-106A	B61-0	14	mg/Kg	63238	5.0	1	4/6/2010	4/12/2010
111137-107A	B61-1	8.1	mg/Kg	63238	5.0	1	4/6/2010	4/12/2010
111137-108A	B61-2	110	mg/Kg	63238	5.0	1	4/6/2010	4/12/2010
111137-109A	B60-0	17	mg/Kg	63238	5.0	1	4/6/2010	4/12/2010
111137-111A	B60-2	15	mg/Kg	63238	5.0	1	4/6/2010	4/12/2010
111137-112A	B59-0	12	mg/Kg	63238	5.0	1	4/6/2010	4/12/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/15/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111137
Project:	I-580 WB, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111137-113A	B59-1	ND	mg/Kg	63238	5.0	1	4/6/2010	4/12/2010
111137-114A	B59-2	7.7	mg/Kg	63238	5.0	1	4/6/2010	4/12/2010
111137-116A	B58-1	16	mg/Kg	63238	5.0	1	4/6/2010	4/12/2010
111137-117A	B58-2	5.8	mg/Kg	63238	5.0	1	4/6/2010	4/12/2010
111137-118A	B57-0	47	mg/Kg	63238	5.0	1	4/6/2010	4/12/2010
111137-119A	B57-1	8.9	mg/Kg	63238	5.0	1	4/6/2010	4/12/2010
111137-121A	B56-0	21	mg/Kg	63238	5.0	1	4/6/2010	4/12/2010
111137-122A	B56-1	26	mg/Kg	63238	5.0	1	4/6/2010	4/12/2010
111137-123A	B56-2	15	mg/Kg	63238	5.0	1	4/6/2010	4/12/2010
111137-124A	B55-0	78	mg/Kg	63238	5.0	1	4/6/2010	4/12/2010
111137-126A	B55-2	6.6	mg/Kg	63239	5.0	1	4/6/2010	4/12/2010
111137-127A	B54-0	17	mg/Kg	63239	5.0	1	4/6/2010	4/12/2010
111137-128A	B54-1	ND	mg/Kg	63239	5.0	1	4/6/2010	4/12/2010
111137-129A	B54-2	11	mg/Kg	63239	5.0	1	4/6/2010	4/12/2010
111137-131A	B53-1	9.6	mg/Kg	63239	5.0	1	4/6/2010	4/12/2010
111137-132A	B53-2	6.0	mg/Kg	63239	5.0	1	4/6/2010	4/12/2010
111137-133A	B52-0	21	mg/Kg	63239	5.0	1	4/6/2010	4/12/2010
111137-134A	B52-1	5.3	mg/Kg	63239	5.0	1	4/6/2010	4/12/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/15/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111137
Project:	I-580 WB, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111137-136A	B51-0	51	mg/Kg	63239	5.0	1	4/6/2010	4/12/2010
111137-137A	B51-1	5.2	mg/Kg	63239	5.0	1	4/6/2010	4/12/2010
111137-138A	B51-2	8.3	mg/Kg	63239	5.0	1	4/6/2010	4/12/2010
111137-139A	B50-0	37	mg/Kg	63239	5.0	1	4/6/2010	4/12/2010
111137-141A	B50-2	11	mg/Kg	63267	5.0	1	4/6/2010	4/12/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/15/2010

ANALYTICAL RESULTS

pH
EPA 9045C

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111137
Project:	I-580 WB, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	pH	**Analyst:**	CBB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111137-001A	B106-0	8.1	pH Units	R120100	0.10	1	4/6/2010	4/12/2010
111137-012A	B100-2	8.0	pH Units	R120100	0.10	1	4/6/2010	4/12/2010
111137-023A	B95-1	8.6	pH Units	R120100	0.10	1	4/6/2010	4/12/2010
111137-034A	B90-0	8.8	pH Units	R120100	0.10	1	4/6/2010	4/12/2010
111137-045A	B87-2	8.2	pH Units	R120100	0.10	1	4/6/2010	4/12/2010
111137-056A	B83-1	7.8	pH Units	R120100	0.10	1	4/6/2010	4/12/2010
111137-067A	B78-0	7.8	pH Units	R120100	0.10	1	4/6/2010	4/12/2010
111137-078A	B75-2	7.7	pH Units	R120100	0.10	1	4/6/2010	4/12/2010
111137-089A	B67-1	7.9	pH Units	R120100	0.10	1	4/6/2010	4/12/2010
111137-091A	B66-0	7.6	pH Units	R120100	0.10	1	4/6/2010	4/12/2010
111137-102A	B63-2	7.9	pH Units	R120103	0.10	1	4/6/2010	4/13/2010
111137-113A	B59-1	7.2	pH Units	R120103	0.10	1	4/6/2010	4/13/2010
111137-124A	B55-0	7.6	pH Units	R120103	0.10	1	4/6/2010	4/13/2010
111137-135A	B52-2	7.4	pH Units	R120103	0.10	1	4/6/2010	4/13/2010
111137-141A	B50-2	8.0	pH Units	R120103	0.10	1	4/6/2010	4/13/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B104-1
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-005A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412C	QC Batch: 63261			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 06:57 PM
Arsenic	1.9	1.0		mg/Kg	1	4/12/2010 06:57 PM
Barium	110	1.0		mg/Kg	1	4/12/2010 06:57 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 06:57 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 06:57 PM
Chromium	35	1.0		mg/Kg	1	4/12/2010 06:57 PM
Cobalt	9.9	1.0		mg/Kg	1	4/12/2010 06:57 PM
Copper	17	2.0		mg/Kg	1	4/12/2010 06:57 PM
Lead	5.5	1.0		mg/Kg	1	4/12/2010 06:57 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 06:57 PM
Nickel	66	1.0		mg/Kg	1	4/12/2010 06:57 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 06:57 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 06:57 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 06:57 PM
Vanadium	24	1.0		mg/Kg	1	4/12/2010 06:57 PM
Zinc	35	1.0		mg/Kg	1	4/12/2010 06:57 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412E	QC Batch: 63264			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 04:38 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B100-0
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-010A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412C	QC Batch: 63261			PrepDate: 4/12/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 07:02 PM
Arsenic	2.4	1.0		mg/Kg	1	4/12/2010 07:02 PM
Barium	160	1.0		mg/Kg	1	4/12/2010 07:02 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 07:02 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 07:02 PM
Chromium	23	1.0		mg/Kg	1	4/12/2010 07:02 PM
Cobalt	7.7	1.0		mg/Kg	1	4/12/2010 07:02 PM
Copper	15	2.0		mg/Kg	1	4/12/2010 07:02 PM
Lead	16	1.0		mg/Kg	1	4/12/2010 07:02 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 07:02 PM
Nickel	33	1.0		mg/Kg	1	4/12/2010 07:02 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 07:02 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 07:02 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 07:02 PM
Vanadium	28	1.0		mg/Kg	1	4/12/2010 07:02 PM
Zinc	38	1.0		mg/Kg	1	4/12/2010 07:02 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412E	QC Batch: 63264			PrepDate: 4/12/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 04:40 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B99-2
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-015A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412C	QC Batch: 63261			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 07:06 PM
Arsenic	1.9	1.0		mg/Kg	1	4/12/2010 07:06 PM
Barium	110	1.0		mg/Kg	1	4/12/2010 07:06 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 07:06 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 07:06 PM
Chromium	23	1.0		mg/Kg	1	4/12/2010 07:06 PM
Cobalt	8.3	1.0		mg/Kg	1	4/12/2010 07:06 PM
Copper	12	2.0		mg/Kg	1	4/12/2010 07:06 PM
Lead	7.9	1.0		mg/Kg	1	4/12/2010 07:06 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 07:06 PM
Nickel	36	1.0		mg/Kg	1	4/12/2010 07:06 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 07:06 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 07:06 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 07:06 PM
Vanadium	23	1.0		mg/Kg	1	4/12/2010 07:06 PM
Zinc	31	1.0		mg/Kg	1	4/12/2010 07:06 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412E	QC Batch: 63264			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 04:46 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B96-1
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-020A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412C	QC Batch: 63261			PrepDate: 4/12/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 07:11 PM
Arsenic	1.6	1.0		mg/Kg	1	4/12/2010 07:11 PM
Barium	150	1.0		mg/Kg	1	4/12/2010 07:11 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 07:11 PM
Cadmium	1.0	1.0		mg/Kg	1	4/12/2010 07:11 PM
Chromium	30	1.0		mg/Kg	1	4/12/2010 07:11 PM
Cobalt	7.9	1.0		mg/Kg	1	4/12/2010 07:11 PM
Copper	27	2.0		mg/Kg	1	4/12/2010 07:11 PM
Lead	320	1.0		mg/Kg	1	4/12/2010 07:11 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 07:11 PM
Nickel	41	1.0		mg/Kg	1	4/12/2010 07:11 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 07:11 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 07:11 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 07:11 PM
Vanadium	26	1.0		mg/Kg	1	4/12/2010 07:11 PM
Zinc	150	1.0		mg/Kg	1	4/12/2010 07:11 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412E	QC Batch: 63264			PrepDate: 4/12/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 04:48 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B93-0
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-025A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412C	QC Batch: 63261			PrepDate: 4/12/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 07:16 PM
Arsenic	ND	1.0		mg/Kg	1	4/12/2010 07:16 PM
Barium	150	1.0		mg/Kg	1	4/12/2010 07:16 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 07:16 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 07:16 PM
Chromium	29	1.0		mg/Kg	1	4/12/2010 07:16 PM
Cobalt	7.1	1.0		mg/Kg	1	4/12/2010 07:16 PM
Copper	33	2.0		mg/Kg	1	4/12/2010 07:16 PM
Lead	67	1.0		mg/Kg	1	4/12/2010 07:16 PM
Molybdenum	1.7	1.0		mg/Kg	1	4/12/2010 07:16 PM
Nickel	43	1.0		mg/Kg	1	4/12/2010 07:16 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 07:16 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 07:16 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 07:16 PM
Vanadium	23	1.0		mg/Kg	1	4/12/2010 07:16 PM
Zinc	110	1.0		mg/Kg	1	4/12/2010 07:16 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412E	QC Batch: 63264			PrepDate: 4/12/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 04:50 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B92-2
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-030A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412C	QC Batch: 63261			PrepDate: 4/12/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 07:20 PM
Arsenic	2.2	1.0		mg/Kg	1	4/12/2010 07:20 PM
Barium	140	1.0		mg/Kg	1	4/12/2010 07:20 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 07:20 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 07:20 PM
Chromium	21	1.0		mg/Kg	1	4/12/2010 07:20 PM
Cobalt	7.5	1.0		mg/Kg	1	4/12/2010 07:20 PM
Copper	14	2.0		mg/Kg	1	4/12/2010 07:20 PM
Lead	36	1.0		mg/Kg	1	4/12/2010 07:20 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 07:20 PM
Nickel	31	1.0		mg/Kg	1	4/12/2010 07:20 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 07:20 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 07:20 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 07:20 PM
Vanadium	17	1.0		mg/Kg	1	4/12/2010 07:20 PM
Zinc	54	1.0		mg/Kg	1	4/12/2010 07:20 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412E	QC Batch: 63264			PrepDate: 4/12/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 04:52 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B90-1
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-035A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412C	QC Batch: 63261			PrepDate: 4/12/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 07:25 PM
Arsenic	4.0	1.0		mg/Kg	1	4/12/2010 07:25 PM
Barium	210	1.0		mg/Kg	1	4/12/2010 07:25 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 07:25 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 07:25 PM
Chromium	26	1.0		mg/Kg	1	4/12/2010 07:25 PM
Cobalt	10	1.0		mg/Kg	1	4/12/2010 07:25 PM
Copper	16	2.0		mg/Kg	1	4/12/2010 07:25 PM
Lead	8.1	1.0		mg/Kg	1	4/12/2010 07:25 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 07:25 PM
Nickel	35	1.0		mg/Kg	1	4/12/2010 07:25 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 07:25 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 07:25 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 07:25 PM
Vanadium	37	1.0		mg/Kg	1	4/12/2010 07:25 PM
Zinc	37	1.0		mg/Kg	1	4/12/2010 07:25 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412E	QC Batch: 63264			PrepDate: 4/12/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 04:54 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B88-0
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-040A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412C	QC Batch: 63261			PrepDate: 4/12/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 07:30 PM
Arsenic	1.8	1.0		mg/Kg	1	4/12/2010 07:30 PM
Barium	150	1.0		mg/Kg	1	4/12/2010 07:30 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 07:30 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 07:30 PM
Chromium	29	1.0		mg/Kg	1	4/12/2010 07:30 PM
Cobalt	8.5	1.0		mg/Kg	1	4/12/2010 07:30 PM
Copper	16	2.0		mg/Kg	1	4/12/2010 07:30 PM
Lead	27	1.0		mg/Kg	1	4/12/2010 07:30 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 07:30 PM
Nickel	44	1.0		mg/Kg	1	4/12/2010 07:30 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 07:30 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 07:30 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 07:30 PM
Vanadium	26	1.0		mg/Kg	1	4/12/2010 07:30 PM
Zinc	49	1.0		mg/Kg	1	4/12/2010 07:30 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412E	QC Batch: 63264			PrepDate: 4/12/2010		Analyst: **IL**
Mercury	0.54	0.10		mg/Kg	1	4/12/2010 04:56 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B87-2
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-045A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412C	QC Batch: 63261			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 07:43 PM
Arsenic	1.5	1.0		mg/Kg	1	4/12/2010 07:43 PM
Barium	130	1.0		mg/Kg	1	4/12/2010 07:43 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 07:43 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 07:43 PM
Chromium	25	1.0		mg/Kg	1	4/12/2010 07:43 PM
Cobalt	8.9	1.0		mg/Kg	1	4/12/2010 07:43 PM
Copper	15	2.0		mg/Kg	1	4/12/2010 07:43 PM
Lead	20	1.0		mg/Kg	1	4/12/2010 07:43 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 07:43 PM
Nickel	74	1.0		mg/Kg	1	4/12/2010 07:43 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 07:43 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 07:43 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 07:43 PM
Vanadium	23	1.0		mg/Kg	1	4/12/2010 07:43 PM
Zinc	45	1.0		mg/Kg	1	4/12/2010 07:43 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412E	QC Batch: 63264			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 04:58 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B85-1
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-050A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412C	QC Batch: 63261			PrepDate: 4/12/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 07:48 PM
Arsenic	ND	1.0		mg/Kg	1	4/12/2010 07:48 PM
Barium	98	1.0		mg/Kg	1	4/12/2010 07:48 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 07:48 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 07:48 PM
Chromium	26	1.0		mg/Kg	1	4/12/2010 07:48 PM
Cobalt	6.2	1.0		mg/Kg	1	4/12/2010 07:48 PM
Copper	24	2.0		mg/Kg	1	4/12/2010 07:48 PM
Lead	40	1.0		mg/Kg	1	4/12/2010 07:48 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 07:48 PM
Nickel	45	1.0		mg/Kg	1	4/12/2010 07:48 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 07:48 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 07:48 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 07:48 PM
Vanadium	19	1.0		mg/Kg	1	4/12/2010 07:48 PM
Zinc	84	1.0		mg/Kg	1	4/12/2010 07:48 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412E	QC Batch: 63264			PrepDate: 4/12/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 04:33 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B83-0
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-055A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412D	QC Batch: 63262			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 08:18 PM
Arsenic	ND	1.0		mg/Kg	1	4/12/2010 08:18 PM
Barium	100	1.0		mg/Kg	1	4/12/2010 08:18 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 08:18 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 08:18 PM
Chromium	25	1.0		mg/Kg	1	4/12/2010 08:18 PM
Cobalt	6.9	1.0		mg/Kg	1	4/12/2010 08:18 PM
Copper	19	2.0		mg/Kg	1	4/12/2010 08:18 PM
Lead	15	1.0		mg/Kg	1	4/12/2010 08:18 PM
Molybdenum	1.2	1.0		mg/Kg	1	4/12/2010 08:18 PM
Nickel	38	1.0		mg/Kg	1	4/12/2010 08:18 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 08:18 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 08:18 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 08:18 PM
Vanadium	22	1.0		mg/Kg	1	4/12/2010 08:18 PM
Zinc	81	1.0		mg/Kg	1	4/12/2010 08:18 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412F	QC Batch: 63265			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	0.12	0.10		mg/Kg	1	4/12/2010 05:21 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B82-2
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-060A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412D	QC Batch: 63262			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 08:23 PM
Arsenic	2.2	1.0		mg/Kg	1	4/12/2010 08:23 PM
Barium	160	1.0		mg/Kg	1	4/12/2010 08:23 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 08:23 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 08:23 PM
Chromium	25	1.0		mg/Kg	1	4/12/2010 08:23 PM
Cobalt	8.4	1.0		mg/Kg	1	4/12/2010 08:23 PM
Copper	20	2.0		mg/Kg	1	4/12/2010 08:23 PM
Lead	50	1.0		mg/Kg	1	4/12/2010 08:23 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 08:23 PM
Nickel	36	1.0		mg/Kg	1	4/12/2010 08:23 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 08:23 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 08:23 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 08:23 PM
Vanadium	25	1.0		mg/Kg	1	4/12/2010 08:23 PM
Zinc	88	1.0		mg/Kg	1	4/12/2010 08:23 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412F	QC Batch: 63265			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 05:23 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B80-1
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-065A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412D	QC Batch: 63262			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 08:36 PM
Arsenic	1.1	1.0		mg/Kg	1	4/12/2010 08:36 PM
Barium	170	1.0		mg/Kg	1	4/12/2010 08:36 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 08:36 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 08:36 PM
Chromium	26	1.0		mg/Kg	1	4/12/2010 08:36 PM
Cobalt	6.0	1.0		mg/Kg	1	4/12/2010 08:36 PM
Copper	11	2.0		mg/Kg	1	4/12/2010 08:36 PM
Lead	5.6	1.0		mg/Kg	1	4/12/2010 08:36 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 08:36 PM
Nickel	23	1.0		mg/Kg	1	4/12/2010 08:36 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 08:36 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 08:36 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 08:36 PM
Vanadium	26	1.0		mg/Kg	1	4/12/2010 08:36 PM
Zinc	33	1.0		mg/Kg	1	4/12/2010 08:36 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412F	QC Batch: 63265			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 05:25 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B77-0
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-070A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412D	QC Batch: 63262			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 08:42 PM
Arsenic	ND	1.0		mg/Kg	1	4/12/2010 08:42 PM
Barium	85	1.0		mg/Kg	1	4/12/2010 08:42 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 08:42 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 08:42 PM
Chromium	26	1.0		mg/Kg	1	4/12/2010 08:42 PM
Cobalt	6.0	1.0		mg/Kg	1	4/12/2010 08:42 PM
Copper	29	2.0		mg/Kg	1	4/12/2010 08:42 PM
Lead	110	1.0		mg/Kg	1	4/12/2010 08:42 PM
Molybdenum	1.1	1.0		mg/Kg	1	4/12/2010 08:42 PM
Nickel	39	1.0		mg/Kg	1	4/12/2010 08:42 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 08:42 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 08:42 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 08:42 PM
Vanadium	18	1.0		mg/Kg	1	4/12/2010 08:42 PM
Zinc	97	1.0		mg/Kg	1	4/12/2010 08:42 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412F	QC Batch: 63265			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 05:27 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B76-2
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-075A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412D	QC Batch: 63262			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 08:47 PM
Arsenic	3.5	1.0		mg/Kg	1	4/12/2010 08:47 PM
Barium	130	1.0		mg/Kg	1	4/12/2010 08:47 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 08:47 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 08:47 PM
Chromium	22	1.0		mg/Kg	1	4/12/2010 08:47 PM
Cobalt	9.5	1.0		mg/Kg	1	4/12/2010 08:47 PM
Copper	15	2.0		mg/Kg	1	4/12/2010 08:47 PM
Lead	6.4	1.0		mg/Kg	1	4/12/2010 08:47 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 08:47 PM
Nickel	28	1.0		mg/Kg	1	4/12/2010 08:47 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 08:47 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 08:47 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 08:47 PM
Vanadium	33	1.0		mg/Kg	1	4/12/2010 08:47 PM
Zinc	38	1.0		mg/Kg	1	4/12/2010 08:47 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412F	QC Batch: 63265			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 05:29 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B74-1
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-080A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412D	QC Batch: 63262			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 08:52 PM
Arsenic	ND	1.0		mg/Kg	1	4/12/2010 08:52 PM
Barium	76	1.0		mg/Kg	1	4/12/2010 08:52 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 08:52 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 08:52 PM
Chromium	26	1.0		mg/Kg	1	4/12/2010 08:52 PM
Cobalt	6.2	1.0		mg/Kg	1	4/12/2010 08:52 PM
Copper	15	2.0		mg/Kg	1	4/12/2010 08:52 PM
Lead	28	1.0		mg/Kg	1	4/12/2010 08:52 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 08:52 PM
Nickel	43	1.0		mg/Kg	1	4/12/2010 08:52 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 08:52 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 08:52 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 08:52 PM
Vanadium	20	1.0		mg/Kg	1	4/12/2010 08:52 PM
Zinc	43	1.0		mg/Kg	1	4/12/2010 08:52 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412F	QC Batch: 63265			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 05:35 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B70-0
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-085A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412D	QC Batch: 63262			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 08:56 PM
Arsenic	ND	1.0		mg/Kg	1	4/12/2010 08:56 PM
Barium	120	1.0		mg/Kg	1	4/12/2010 08:56 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 08:56 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 08:56 PM
Chromium	25	1.0		mg/Kg	1	4/12/2010 08:56 PM
Cobalt	5.9	1.0		mg/Kg	1	4/12/2010 08:56 PM
Copper	34	2.0		mg/Kg	1	4/12/2010 08:56 PM
Lead	120	1.0		mg/Kg	1	4/12/2010 08:56 PM
Molybdenum	1.6	1.0		mg/Kg	1	4/12/2010 08:56 PM
Nickel	33	1.0		mg/Kg	1	4/12/2010 08:56 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 08:56 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 08:56 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 08:56 PM
Vanadium	21	1.0		mg/Kg	1	4/12/2010 08:56 PM
Zinc	210	1.0		mg/Kg	1	4/12/2010 08:56 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412F	QC Batch: 63265			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 05:37 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B67-2
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-090A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412D	QC Batch: 63262			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 09:01 PM
Arsenic	1.3	1.0		mg/Kg	1	4/12/2010 09:01 PM
Barium	87	1.0		mg/Kg	1	4/12/2010 09:01 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 09:01 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 09:01 PM
Chromium	23	1.0		mg/Kg	1	4/12/2010 09:01 PM
Cobalt	7.1	1.0		mg/Kg	1	4/12/2010 09:01 PM
Copper	13	2.0		mg/Kg	1	4/12/2010 09:01 PM
Lead	13	1.0		mg/Kg	1	4/12/2010 09:01 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 09:01 PM
Nickel	36	1.0		mg/Kg	1	4/12/2010 09:01 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 09:01 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 09:01 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 09:01 PM
Vanadium	20	1.0		mg/Kg	1	4/12/2010 09:01 PM
Zinc	33	1.0		mg/Kg	1	4/12/2010 09:01 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412F	QC Batch: 63265			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 05:39 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B65-1
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-095A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412D	QC Batch: 63262			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 09:06 PM
Arsenic	2.2	1.0		mg/Kg	1	4/12/2010 09:06 PM
Barium	120	1.0		mg/Kg	1	4/12/2010 09:06 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 09:06 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 09:06 PM
Chromium	20	1.0		mg/Kg	1	4/12/2010 09:06 PM
Cobalt	7.2	1.0		mg/Kg	1	4/12/2010 09:06 PM
Copper	12	2.0		mg/Kg	1	4/12/2010 09:06 PM
Lead	6.5	1.0		mg/Kg	1	4/12/2010 09:06 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 09:06 PM
Nickel	24	1.0		mg/Kg	1	4/12/2010 09:06 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 09:06 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 09:06 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 09:06 PM
Vanadium	27	1.0		mg/Kg	1	4/12/2010 09:06 PM
Zinc	31	1.0		mg/Kg	1	4/12/2010 09:06 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412F	QC Batch: 63265			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 05:41 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B63-0
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-100A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412D	QC Batch: 63262			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 09:10 PM
Arsenic	1.2	1.0		mg/Kg	1	4/12/2010 09:10 PM
Barium	130	1.0		mg/Kg	1	4/12/2010 09:10 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 09:10 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 09:10 PM
Chromium	26	1.0		mg/Kg	1	4/12/2010 09:10 PM
Cobalt	7.9	1.0		mg/Kg	1	4/12/2010 09:10 PM
Copper	19	2.0		mg/Kg	1	4/12/2010 09:10 PM
Lead	52	1.0		mg/Kg	1	4/12/2010 09:10 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 09:10 PM
Nickel	39	1.0		mg/Kg	1	4/12/2010 09:10 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 09:10 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 09:10 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 09:10 PM
Vanadium	25	1.0		mg/Kg	1	4/12/2010 09:10 PM
Zinc	67	1.0		mg/Kg	1	4/12/2010 09:10 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412F	QC Batch: 63265			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 05:17 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B62-2
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-105A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412E	QC Batch: 63263			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 09:49 PM
Arsenic	1.7	1.0		mg/Kg	1	4/12/2010 09:49 PM
Barium	120	1.0		mg/Kg	1	4/12/2010 09:49 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 09:49 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 09:49 PM
Chromium	21	1.0		mg/Kg	1	4/12/2010 09:49 PM
Cobalt	7.4	1.0		mg/Kg	1	4/12/2010 09:49 PM
Copper	15	2.0		mg/Kg	1	4/12/2010 09:49 PM
Lead	92	1.0		mg/Kg	1	4/12/2010 09:49 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 09:49 PM
Nickel	30	1.0		mg/Kg	1	4/12/2010 09:49 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 09:49 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 09:49 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 09:49 PM
Vanadium	29	1.0		mg/Kg	1	4/12/2010 09:49 PM
Zinc	45	1.0		mg/Kg	1	4/12/2010 09:49 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412G	QC Batch: 63266			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 06:04 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B60-1
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-110A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412E	QC Batch: 63263			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 09:54 PM
Arsenic	ND	1.0		mg/Kg	1	4/12/2010 09:54 PM
Barium	58	1.0		mg/Kg	1	4/12/2010 09:54 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 09:54 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 09:54 PM
Chromium	26	1.0		mg/Kg	1	4/12/2010 09:54 PM
Cobalt	6.3	1.0		mg/Kg	1	4/12/2010 09:54 PM
Copper	13	2.0		mg/Kg	1	4/12/2010 09:54 PM
Lead	3.6	1.0		mg/Kg	1	4/12/2010 09:54 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 09:54 PM
Nickel	65	1.0		mg/Kg	1	4/12/2010 09:54 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 09:54 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 09:54 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 09:54 PM
Vanadium	16	1.0		mg/Kg	1	4/12/2010 09:54 PM
Zinc	27	1.0		mg/Kg	1	4/12/2010 09:54 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412G	QC Batch: 63266			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 06:06 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B58-0
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-115A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412E	QC Batch: 63263			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 09:59 PM
Arsenic	1.5	1.0		mg/Kg	1	4/12/2010 09:59 PM
Barium	110	1.0		mg/Kg	1	4/12/2010 09:59 PM
Beryllium	ND	2.0		mg/Kg	2	4/13/2010 10:54 AM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 09:59 PM
Chromium	25	1.0		mg/Kg	1	4/12/2010 09:59 PM
Cobalt	7.2	1.0		mg/Kg	1	4/12/2010 09:59 PM
Copper	14	2.0		mg/Kg	1	4/12/2010 09:59 PM
Lead	20	1.0		mg/Kg	1	4/12/2010 09:59 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 09:59 PM
Nickel	53	1.0		mg/Kg	1	4/12/2010 09:59 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 09:59 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 09:59 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 09:59 PM
Vanadium	22	1.0		mg/Kg	1	4/12/2010 09:59 PM
Zinc	41	1.0		mg/Kg	1	4/12/2010 09:59 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412G	QC Batch: 63266			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 06:08 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B57-2
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-120A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412E	QC Batch: 63263			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 10:03 PM
Arsenic	3.7	1.0		mg/Kg	1	4/12/2010 10:03 PM
Barium	140	1.0		mg/Kg	1	4/12/2010 10:03 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 10:03 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 10:03 PM
Chromium	34	1.0		mg/Kg	1	4/12/2010 10:03 PM
Cobalt	11	1.0		mg/Kg	1	4/12/2010 10:03 PM
Copper	22	2.0		mg/Kg	1	4/12/2010 10:03 PM
Lead	9.3	1.0		mg/Kg	1	4/12/2010 10:03 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 10:03 PM
Nickel	62	1.0		mg/Kg	1	4/12/2010 10:03 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 10:03 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 10:03 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 10:03 PM
Vanadium	28	1.0		mg/Kg	1	4/12/2010 10:03 PM
Zinc	47	1.0		mg/Kg	1	4/12/2010 10:03 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412G	QC Batch: 63266			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 06:10 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B55-1
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-125A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412E	QC Batch: 63263			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 10:08 PM
Arsenic	4.4	1.0		mg/Kg	1	4/12/2010 10:08 PM
Barium	150	1.0		mg/Kg	1	4/12/2010 10:08 PM
Beryllium	ND	2.0		mg/Kg	2	4/13/2010 10:59 AM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 10:08 PM
Chromium	23	1.0		mg/Kg	1	4/12/2010 10:08 PM
Cobalt	9.9	1.0		mg/Kg	1	4/12/2010 10:08 PM
Copper	19	2.0		mg/Kg	1	4/12/2010 10:08 PM
Lead	6.8	1.0		mg/Kg	1	4/12/2010 10:08 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 10:08 PM
Nickel	29	1.0		mg/Kg	1	4/12/2010 10:08 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 10:08 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 10:08 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 10:08 PM
Vanadium	31	1.0		mg/Kg	1	4/12/2010 10:08 PM
Zinc	43	1.0		mg/Kg	1	4/12/2010 10:08 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412G	QC Batch: 63266			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 06:12 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B53-0
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-130A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412E	QC Batch: 63263			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	4.0		mg/Kg	2	4/13/2010 11:03 AM
Arsenic	2.7	2.0		mg/Kg	2	4/13/2010 11:03 AM
Barium	79	2.0		mg/Kg	2	4/13/2010 11:03 AM
Beryllium	ND	2.0		mg/Kg	2	4/13/2010 11:03 AM
Cadmium	ND	2.0		mg/Kg	2	4/13/2010 11:03 AM
Chromium	24	2.0		mg/Kg	2	4/13/2010 11:03 AM
Cobalt	9.2	2.0		mg/Kg	2	4/13/2010 11:03 AM
Copper	14	4.0		mg/Kg	2	4/13/2010 11:03 AM
Lead	8.9	2.0		mg/Kg	2	4/13/2010 11:03 AM
Molybdenum	ND	2.0		mg/Kg	2	4/13/2010 11:03 AM
Nickel	27	2.0		mg/Kg	2	4/13/2010 11:03 AM
Selenium	ND	2.0		mg/Kg	2	4/13/2010 11:03 AM
Silver	ND	2.0		mg/Kg	2	4/13/2010 11:03 AM
Thallium	ND	2.0		mg/Kg	2	4/13/2010 11:03 AM
Vanadium	31	2.0		mg/Kg	2	4/13/2010 11:03 AM
Zinc	46	2.0		mg/Kg	2	4/13/2010 11:03 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412G	QC Batch: 63266			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 06:14 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B52-2
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-135A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412E	QC Batch: 63263			PrepDate: 4/12/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 10:26 PM
Arsenic	3.4	1.0		mg/Kg	1	4/12/2010 10:26 PM
Barium	160	1.0		mg/Kg	1	4/12/2010 10:26 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 10:26 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 10:26 PM
Chromium	19	1.0		mg/Kg	1	4/12/2010 10:26 PM
Cobalt	7.8	1.0		mg/Kg	1	4/12/2010 10:26 PM
Copper	12	2.0		mg/Kg	1	4/12/2010 10:26 PM
Lead	5.5	1.0		mg/Kg	1	4/12/2010 10:26 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 10:26 PM
Nickel	20	1.0		mg/Kg	1	4/12/2010 10:26 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 10:26 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 10:26 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 10:26 PM
Vanadium	33	1.0		mg/Kg	1	4/12/2010 10:26 PM
Zinc	31	1.0		mg/Kg	1	4/12/2010 10:26 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412G	QC Batch: 63266			PrepDate: 4/12/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 06:16 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B50-1
Lab Order:	111137	**Collection Date:**	4/6/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-140A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412E	QC Batch: 63263			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 10:31 PM
Arsenic	2.6	1.0		mg/Kg	1	4/12/2010 10:31 PM
Barium	110	1.0		mg/Kg	1	4/12/2010 10:31 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 10:31 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 10:31 PM
Chromium	25	1.0		mg/Kg	1	4/12/2010 10:31 PM
Cobalt	8.1	1.0		mg/Kg	1	4/12/2010 10:31 PM
Copper	17	2.0		mg/Kg	1	4/12/2010 10:31 PM
Lead	11	1.0		mg/Kg	1	4/12/2010 10:31 PM
Molybdenum	1.6	1.0		mg/Kg	1	4/12/2010 10:31 PM
Nickel	33	1.0		mg/Kg	1	4/12/2010 10:31 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 10:31 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 10:31 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 10:31 PM
Vanadium	29	1.0		mg/Kg	1	4/12/2010 10:31 PM
Zinc	51	1.0		mg/Kg	1	4/12/2010 10:31 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412G	QC Batch: 63266			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 06:18 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW4-0
Lab Order:	111137	**Collection Date:**	4/6/2010 3:30:00 PM
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-142A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412E	QC Batch: 63263			PrepDate: 4/12/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 10:35 PM
Arsenic	2.4	1.0		mg/Kg	1	4/12/2010 10:35 PM
Barium	110	1.0		mg/Kg	1	4/12/2010 10:35 PM
Beryllium	ND	2.0		mg/Kg	2	4/13/2010 11:08 AM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 10:35 PM
Chromium	24	1.0		mg/Kg	1	4/12/2010 10:35 PM
Cobalt	7.5	1.0		mg/Kg	1	4/12/2010 10:35 PM
Copper	17	2.0		mg/Kg	1	4/12/2010 10:35 PM
Lead	7.9	1.0		mg/Kg	1	4/12/2010 10:35 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 10:35 PM
Nickel	39	1.0		mg/Kg	1	4/12/2010 10:35 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 10:35 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 10:35 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 10:35 PM
Vanadium	26	1.0		mg/Kg	1	4/12/2010 10:35 PM
Zinc	62	1.0		mg/Kg	1	4/12/2010 10:35 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC8_100412B	QC Batch: 63246			PrepDate: 4/9/2010		Analyst: **CBR**
DRO	90	20		mg/Kg	10	4/13/2010 03:23 AM
ORO	550	20		mg/Kg	10	4/13/2010 03:23 AM
Surr: p-Terphenyl	0	30-128	SDO	%REC	10	4/13/2010 03:23 AM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100409A	QC Batch: E10VS096			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/9/2010 11:58 AM
Surr: Bromofluorobenzene (FID)	106	56-137		%REC	1	4/9/2010 11:58 AM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100409A	QC Batch: E10VS096			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/9/2010 11:58 AM
Ethylbenzene	ND	5.0		µg/Kg	1	4/9/2010 11:58 AM
m,p-Xylene	ND	10		µg/Kg	1	4/9/2010 11:58 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW4-0
Lab Order:	111137	**Collection Date:**	4/6/2010 3:30:00 PM
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-142A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
			EPA 8021B			
RunID: GC2_100409A	QC Batch: E10VS096			PrepDate:		Analyst: **DDL**
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/9/2010 11:58 AM
o-Xylene	ND	5.0		µg/Kg	1	4/9/2010 11:58 AM
Toluene	ND	5.0		µg/Kg	1	4/9/2010 11:58 AM
Surr: Bromofluorobenzene (PID)	104	64-116		%REC	1	4/9/2010 11:58 AM
MERCURY BY COLD VAPOR TECHNIQUE						
			EPA 7471A			
RunID: AA1_100412G	QC Batch: 63266			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 06:24 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW4-4
Lab Order:	111137	**Collection Date:**	4/6/2010 3:30:00 PM
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-143A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100412E	QC Batch: 63263			PrepDate: 4/12/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/12/2010 10:40 PM
Arsenic	2.7	1.0		mg/Kg	1	4/12/2010 10:40 PM
Barium	120	1.0		mg/Kg	1	4/12/2010 10:40 PM
Beryllium	ND	1.0		mg/Kg	1	4/12/2010 10:40 PM
Cadmium	ND	1.0		mg/Kg	1	4/12/2010 10:40 PM
Chromium	19	1.0		mg/Kg	1	4/12/2010 10:40 PM
Cobalt	8.3	1.0		mg/Kg	1	4/12/2010 10:40 PM
Copper	12	2.0		mg/Kg	1	4/12/2010 10:40 PM
Lead	5.1	1.0		mg/Kg	1	4/12/2010 10:40 PM
Molybdenum	ND	1.0		mg/Kg	1	4/12/2010 10:40 PM
Nickel	21	1.0		mg/Kg	1	4/12/2010 10:40 PM
Selenium	ND	1.0		mg/Kg	1	4/12/2010 10:40 PM
Silver	ND	1.0		mg/Kg	1	4/12/2010 10:40 PM
Thallium	ND	1.0		mg/Kg	1	4/12/2010 10:40 PM
Vanadium	32	1.0		mg/Kg	1	4/12/2010 10:40 PM
Zinc	31	1.0		mg/Kg	1	4/12/2010 10:40 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC8_100412B	QC Batch: 63246			PrepDate: 4/9/2010		Analyst: **CBR**
DRO	ND	1.0		mg/Kg	1	4/13/2010 01:07 AM
ORO	ND	1.0		mg/Kg	1	4/13/2010 01:07 AM
Surr: p-Terphenyl	83.2	30-128		%REC	1	4/13/2010 01:07 AM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100409A	QC Batch: E10VS096			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/9/2010 12:12 PM
Surr: Bromofluorobenzene (FID)	107	56-137		%REC	1	4/9/2010 12:12 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100409A	QC Batch: E10VS096			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/9/2010 12:12 PM
Ethylbenzene	ND	5.0		µg/Kg	1	4/9/2010 12:12 PM
m,p-Xylene	ND	10		µg/Kg	1	4/9/2010 12:12 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW4-4
Lab Order:	111137	**Collection Date:**	4/6/2010 3:30:00 PM
Project:	I-580 WB, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111137-143A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/PID				**EPA 8021B**		
RunID: GC2_100409A	QC Batch: E10VS096			PrepDate:		Analyst: **DDL**
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/9/2010 12:12 PM
o-Xylene	ND	5.0		µg/Kg	1	4/9/2010 12:12 PM
Toluene	ND	5.0		µg/Kg	1	4/9/2010 12:12 PM
Surr: Bromofluorobenzene (PID)	105	64-116		%REC	1	4/9/2010 12:12 PM
MERCURY BY COLD VAPOR TECHNIQUE				**EPA 7471A**		
RunID: AA1_100412G	QC Batch: 63266			PrepDate: 4/12/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 06:00 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63261** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120073**
Client ID: **PBS** Batch ID: **63261** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/12/2010** SeqNo: **1914124**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	0.277	1.0									
Beryllium	0.061	1.0									
Cadmium	0.048	1.0									
Chromium	0.133	1.0									
Cobalt	0.051	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	0.079	1.0									
Nickel	0.086	1.0									
Selenium	ND	1.0									
Silver	0.066	1.0									
Thallium	ND	1.0									
Vanadium	0.082	1.0									
Zinc	0.452	1.0									

Sample ID: **LCS-63261** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120073**
Client ID: **LCSS** Batch ID: **63261** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/12/2010** SeqNo: **1914125**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	46.662	2.0	50.00	0	93.3	80	120				
Arsenic	44.940	1.0	50.00	0	89.9	80	120				
Barium	47.626	1.0	50.00	0.2773	94.7	80	120				
Beryllium	46.086	1.0	50.00	0.06073	92.1	80	120				
Cadmium	45.693	1.0	50.00	0.04752	91.3	80	120				
Chromium	46.339	1.0	50.00	0.1331	92.4	80	120				
Cobalt	47.480	1.0	50.00	0.05099	94.9	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63261** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120073**
Client ID: **LCSS** Batch ID: **63261** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/12/2010** SeqNo: **1914125**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	47.293	2.0	50.00	0	94.6	80	120				
Lead	46.313	1.0	50.00	0	92.6	80	120				
Molybdenum	48.594	1.0	50.00	0.07921	97.0	80	120				
Nickel	45.624	1.0	50.00	0.08580	91.1	80	120				
Selenium	43.048	1.0	50.00	0	86.1	80	120				
Silver	46.394	1.0	50.00	0.06593	92.7	80	120				
Thallium	46.650	1.0	50.00	0	93.3	80	120				
Vanadium	47.340	1.0	50.00	0.08210	94.5	80	120				
Zinc	45.612	1.0	50.00	0.4515	90.3	80	120				

Sample ID: **111137-050A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120073**
Client ID: **B85-1** Batch ID: **63261** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/12/2010** SeqNo: **1914136**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.335	2.0						0.4206	0	20	
Arsenic	1.012	1.0						0.8724	14.8	20	
Barium	100.487	1.0						97.74	2.77	20	
Beryllium	ND	1.0						0	0	20	
Cadmium	0.322	1.0						0.3952	0	20	
Chromium	22.868	1.0						25.53	11.0	20	
Cobalt	6.930	1.0						6.226	10.7	20	
Copper	17.901	2.0						24.06	29.3	20	R
Lead	25.117	1.0						39.76	45.1	20	R
Molybdenum	1.427	1.0						0.8874	46.6	20	R
Nickel	55.621	1.0						45.33	20.4	20	R
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	0.245	1.0						0.2316	0	20	
Vanadium	17.845	1.0						18.75	4.96	20	
Zinc	62.280	1.0						83.92	29.6	20	R

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111137-050A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120073**
Client ID: **B85-1** Batch ID: **63261** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/12/2010** SeqNo: **1914137**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	99.143	2.0	125.0	0.4206	79.0	32	105				
Arsenic	105.396	1.0	125.0	0.8724	83.6	49	106				
Barium	226.242	1.0	125.0	97.74	103	31	133				
Beryllium	100.110	1.0	125.0	0	80.1	56	106				
Cadmium	100.477	1.0	125.0	0.3952	80.1	51	103				
Chromium	137.788	1.0	125.0	25.53	89.8	45	114				
Cobalt	109.436	1.0	125.0	6.226	82.6	52	106				
Copper	130.994	2.0	125.0	24.06	85.5	54	125				
Lead	129.836	1.0	125.0	39.76	72.1	34	126				
Molybdenum	109.330	1.0	125.0	0.8874	86.8	54	106				
Nickel	160.316	1.0	125.0	45.33	92.0	45	111				
Selenium	100.942	1.0	125.0	0	80.8	47	104				
Silver	106.235	1.0	125.0	0	85.0	56	112				
Thallium	101.115	1.0	125.0	0.2316	80.7	46	101				
Vanadium	127.110	1.0	125.0	18.75	86.7	54	114				
Zinc	168.470	1.0	125.0	83.92	67.6	28	125				

Sample ID: **111137-050A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120073**
Client ID: **B85-1** Batch ID: **63261** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914484**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	93.948	2.0	125.0	0.4206	74.8	32	105	99.14	5.38	20	
Arsenic	100.396	1.0	125.0	0.8724	79.6	49	106	105.4	4.86	20	
Barium	216.911	1.0	125.0	97.74	95.3	31	133	226.2	4.21	20	
Beryllium	98.309	1.0	125.0	0	78.6	56	106	100.1	1.82	20	
Cadmium	96.327	1.0	125.0	0.3952	76.7	51	103	100.5	4.22	20	
Chromium	127.420	1.0	125.0	25.53	81.5	45	114	137.8	7.82	20	
Cobalt	107.436	1.0	125.0	6.226	81.0	52	106	109.4	1.84	20	
Copper	126.930	2.0	125.0	24.06	82.3	54	125	131.0	3.15	20	
Lead	138.421	1.0	125.0	39.76	78.9	34	126	129.8	6.40	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111137-050A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120073**
Client ID: **B85-1** Batch ID: **63261** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914484**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	102.766	1.0	125.0	0.8874	81.5	54	106	109.3	6.19	20	
Nickel	145.338	1.0	125.0	45.33	80.0	45	111	160.3	9.80	20	
Selenium	95.121	1.0	125.0	0	76.1	47	104	100.9	5.94	20	
Silver	105.039	1.0	125.0	0	84.0	56	112	106.2	1.13	20	
Thallium	96.143	1.0	125.0	0.2316	76.7	46	101	101.1	5.04	20	
Vanadium	123.280	1.0	125.0	18.75	83.6	54	114	127.1	3.06	20	
Zinc	177.671	1.0	125.0	83.92	75.0	28	125	168.5	5.32	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63262** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120074**
Client ID: **PBS** Batch ID: **63262** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/12/2010** SeqNo: **1914138**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	0.007	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	ND	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63262** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120074**
Client ID: **LCSS** Batch ID: **63262** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/12/2010** SeqNo: **1914139**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	47.169	2.0	50.00	0	94.3	80	120				
Arsenic	45.647	1.0	50.00	0	91.3	80	120				
Barium	47.085	1.0	50.00	0	94.2	80	120				
Beryllium	45.211	1.0	50.00	0	90.4	80	120				
Cadmium	45.793	1.0	50.00	0.006937	91.6	80	120				
Chromium	45.673	1.0	50.00	0	91.3	80	120				
Cobalt	46.991	1.0	50.00	0	94.0	80	120				
Copper	46.410	2.0	50.00	0	92.8	80	120				
Lead	46.214	1.0	50.00	0	92.4	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63262** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120074**
Client ID: **LCSS** Batch ID: **63262** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/12/2010** SeqNo: **1914139**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	49.271	1.0	50.00	0	98.5	80	120				
Nickel	44.945	1.0	50.00	0	89.9	80	120				
Selenium	43.829	1.0	50.00	0	87.7	80	120				
Silver	46.207	1.0	50.00	0	92.4	80	120				
Thallium	47.483	1.0	50.00	0	95.0	80	120				
Vanadium	46.479	1.0	50.00	0	93.0	80	120				
Zinc	46.665	1.0	50.00	0	93.3	80	120				

Sample ID: **111137-100A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120074**
Client ID: **B63-0** Batch ID: **63262** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/12/2010** SeqNo: **1914150**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.309	2.0						0.3195	0	20	
Arsenic	0.938	1.0						1.169	0	20	
Barium	101.679	1.0						126.1	21.4	20	R
Beryllium	ND	1.0						0	0	20	
Cadmium	0.385	1.0						0.3768	0	20	
Chromium	23.467	1.0						25.71	9.13	20	
Cobalt	6.891	1.0						7.946	14.2	20	
Copper	18.620	2.0						18.98	1.93	20	
Lead	50.527	1.0						51.94	2.76	20	
Molybdenum	0.693	1.0						0.5968	0	20	
Nickel	33.135	1.0						38.58	15.2	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	0.306	1.0						0.3348	0	20	
Vanadium	25.889	1.0						24.99	3.55	20	
Zinc	58.866	1.0						67.33	13.4	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111137-100A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120074**
Client ID: **B63-0** Batch ID: **63262** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/12/2010** SeqNo: **1914151**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	87.540	2.0	125.0	0.3195	69.8	32	105	99.02	12.3	20	
Arsenic	89.657	1.0	125.0	1.169	70.8	49	106	102.4	13.3	20	
Barium	179.702	1.0	125.0	126.1	42.9	31	133	217.8	19.2	20	
Beryllium	86.126	1.0	125.0	0	68.9	56	106	98.54	13.4	20	
Cadmium	85.107	1.0	125.0	0.3768	67.8	51	103	97.19	13.3	20	
Chromium	102.597	1.0	125.0	25.71	61.5	45	114	123.6	18.6	20	
Cobalt	92.453	1.0	125.0	7.946	67.6	52	106	109.1	16.5	20	
Copper	107.975	2.0	125.0	18.98	71.2	54	125	128.1	17.1	20	
Lead	116.517	1.0	125.0	51.94	51.7	34	126	165.3	34.6	20	R
Molybdenum	91.484	1.0	125.0	0.5968	72.7	54	106	106.0	14.7	20	
Nickel	107.560	1.0	125.0	38.58	55.2	45	111	131.8	20.3	20	R
Selenium	85.671	1.0	125.0	0	68.5	47	104	98.03	13.5	20	
Silver	91.510	1.0	125.0	0	73.2	56	112	104.7	13.5	20	
Thallium	84.789	1.0	125.0	0.3348	67.6	46	101	99.02	15.5	20	
Vanadium	109.003	1.0	125.0	24.99	67.2	54	114	128.2	16.2	20	
Zinc	118.386	1.0	125.0	67.33	40.8	28	125	153.1	25.6	20	R

Sample ID: **111137-100A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120074**
Client ID: **B63-0** Batch ID: **63262** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914487**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	99.019	2.0	125.0	0.3195	79.0	32	105				
Arsenic	102.449	1.0	125.0	1.169	81.0	49	106				
Barium	217.801	1.0	125.0	126.1	73.4	31	133				
Beryllium	98.536	1.0	125.0	0	78.8	56	106				
Cadmium	97.193	1.0	125.0	0.3768	77.5	51	103				
Chromium	123.580	1.0	125.0	25.71	78.3	45	114				
Cobalt	109.102	1.0	125.0	7.946	80.9	52	106				
Copper	128.109	2.0	125.0	18.98	87.3	54	125				
Lead	165.343	1.0	125.0	51.94	90.7	34	126				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111137-100A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120074**
Client ID: **B63-0** Batch ID: **63262** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914487**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	105.980	1.0	125.0	0.5968	84.3	54	106				
Nickel	131.808	1.0	125.0	38.58	74.6	45	111				
Selenium	98.029	1.0	125.0	0	78.4	47	104				
Silver	104.729	1.0	125.0	0	83.8	56	112				
Thallium	99.023	1.0	125.0	0.3348	79.0	46	101				
Vanadium	128.247	1.0	125.0	24.99	82.6	54	114				
Zinc	153.075	1.0	125.0	67.33	68.6	28	125				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63263** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120075**
Client ID: **PBS** Batch ID: **63263** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/12/2010** SeqNo: **1914182**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	ND	1.0									
Selenium	ND	1.0									
Silver	0.022	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	0.382	1.0									

Sample ID: **LCS-63263** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120075**
Client ID: **LCSS** Batch ID: **63263** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/12/2010** SeqNo: **1914183**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	46.906	2.0	50.00	0	93.8	80	120				
Arsenic	45.528	1.0	50.00	0	91.1	80	120				
Barium	47.442	1.0	50.00	0	94.9	80	120				
Beryllium	44.703	1.0	50.00	0	89.4	80	120				
Cadmium	46.373	1.0	50.00	0	92.7	80	120				
Chromium	46.122	1.0	50.00	0	92.2	80	120				
Cobalt	47.778	1.0	50.00	0	95.6	80	120				
Copper	46.763	2.0	50.00	0	93.5	80	120				
Lead	46.567	1.0	50.00	0	93.1	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63263** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120075**
Client ID: **LCSS** Batch ID: **63263** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/12/2010** SeqNo: **1914183**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	48.423	1.0	50.00	0	96.8	80	120				
Nickel	45.551	1.0	50.00	0	91.1	80	120				
Selenium	44.284	1.0	50.00	0	88.6	80	120				
Silver	46.229	1.0	50.00	0.02202	92.4	80	120				
Thallium	46.799	1.0	50.00	0	93.6	80	120				
Vanadium	46.514	1.0	50.00	0	93.0	80	120				
Zinc	47.142	1.0	50.00	0.3818	93.5	80	120				

Sample ID: **111137-143A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120075**
Client ID: **RW4-4** Batch ID: **63263** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/12/2010** SeqNo: **1914193**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.406	2.0						0	0	20	
Arsenic	3.759	1.0						2.741	31.3	20	R
Barium	136.046	1.0						122.1	10.8	20	
Beryllium	0.146	1.0						0	0	20	
Cadmium	0.382	1.0						0.2602	0	20	
Chromium	21.277	1.0						18.68	13.0	20	
Cobalt	10.021	1.0						8.305	18.7	20	
Copper	12.915	2.0						11.64	10.4	20	
Lead	6.182	1.0						5.112	19.0	20	
Molybdenum	0.372	1.0						0.2559	0	20	
Nickel	25.296	1.0						21.41	16.7	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	36.860	1.0						31.94	14.3	20	
Zinc	36.423	1.0						30.52	17.6	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111137-143A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120075**
Client ID: **RW4-4** Batch ID: **63263** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/12/2010** SeqNo: **1914194**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	95.997	2.0	125.0	0	76.8	32	105				
Arsenic	100.645	1.0	125.0	2.741	78.3	49	106				
Barium	228.120	1.0	125.0	122.1	84.8	31	133				
Beryllium	95.170	1.0	125.0	0	76.1	56	106				
Cadmium	95.546	1.0	125.0	0.2602	76.2	51	103				
Chromium	115.790	1.0	125.0	18.68	77.7	45	114				
Cobalt	107.022	1.0	125.0	8.305	79.0	52	106				
Copper	118.142	2.0	125.0	11.64	85.2	54	125				
Lead	100.118	1.0	125.0	5.112	76.0	34	126				
Molybdenum	102.094	1.0	125.0	0.2559	81.5	54	106				
Nickel	115.472	1.0	125.0	21.41	75.3	45	111				
Selenium	95.255	1.0	125.0	0	76.2	47	104				
Silver	101.370	1.0	125.0	0	81.1	56	112				
Thallium	95.681	1.0	125.0	0	76.5	46	101				
Vanadium	133.216	1.0	125.0	31.94	81.0	54	114				
Zinc	124.035	1.0	125.0	30.52	74.8	28	125				

Sample ID: **111137-143A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120075**
Client ID: **RW4-4** Batch ID: **63263** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/12/2010** SeqNo: **1914195**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	97.505	2.0	125.0	0	78.0	32	105	96.00	1.56	20	
Arsenic	102.898	1.0	125.0	2.741	80.1	49	106	100.6	2.21	20	
Barium	242.103	1.0	125.0	122.1	96.0	31	133	228.1	5.95	20	
Beryllium	95.618	1.0	125.0	0	76.5	56	106	95.17	0.470	20	
Cadmium	97.246	1.0	125.0	0.2602	77.6	51	103	95.55	1.76	20	
Chromium	117.878	1.0	125.0	18.68	79.4	45	114	115.8	1.79	20	
Cobalt	108.334	1.0	125.0	8.305	80.0	52	106	107.0	1.22	20	
Copper	118.306	2.0	125.0	11.64	85.3	54	125	118.1	0.139	20	
Lead	102.612	1.0	125.0	5.112	78.0	34	126	100.1	2.46	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111137-143A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120075**
Client ID: **RW4-4** Batch ID: **63263** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/12/2010** SeqNo: **1914195**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	104.561	1.0	125.0	0.2559	83.4	54	106	102.1	2.39	20	
Nickel	116.438	1.0	125.0	21.41	76.0	45	111	115.5	0.833	20	
Selenium	97.313	1.0	125.0	0	77.9	47	104	95.26	2.14	20	
Silver	102.561	1.0	125.0	0	82.0	56	112	101.4	1.17	20	
Thallium	97.591	1.0	125.0	0	78.1	46	101	95.68	1.98	20	
Vanadium	133.565	1.0	125.0	31.94	81.3	54	114	133.2	0.262	20	
Zinc	125.973	1.0	125.0	30.52	76.4	28	125	124.0	1.55	20	

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63234A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120043**
Client ID: **PBS**	Batch ID: **63234**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913505**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-63234**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120043**
Client ID: **LCSS**	Batch ID: **63234**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913506**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	263.902	5.0	250.0	0	106	80	120				

Sample ID: **111137-012A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120043**
Client ID: **B100-2**	Batch ID: **63234**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913517**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	38.368	5.0						55.96	37.3	20	R

Sample ID: **111137-012A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120043**
Client ID: **B100-2**	Batch ID: **63234**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913518**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	262.683	5.0	250.0	55.96	82.7	34	126				

Sample ID: **MB-63234B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120043**
Client ID: **PBS**	Batch ID: **63234**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913519**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111137-024A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120043**
Client ID: **B95-2**	Batch ID: **63234**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913530**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	11.925	5.0						10.69	10.9	20	

Sample ID: **111137-024A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120043**
Client ID: **B95-2**	Batch ID: **63234**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913531**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	230.508	5.0	250.0	10.69	87.9	34	126				

Sample ID: **111137-024A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120043**
Client ID: **B95-2**	Batch ID: **63234**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913532**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	232.247	5.0	250.0	10.69	88.6	34	126	230.5	0.752	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63235A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120047**
Client ID: **PBS**	Batch ID: **63235**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913577**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-63235**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120047**
Client ID: **LCSS**	Batch ID: **63235**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913578**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	268.812	5.0	250.0	0	108	80	120				

Sample ID: **111137-037A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120047**
Client ID: **B89-0**	Batch ID: **63235**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913589**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	13.926	5.0						32.90	81.0	20	R

Sample ID: **111137-037A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120047**
Client ID: **B89-0**	Batch ID: **63235**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913590**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	235.943	5.0	250.0	32.90	81.2	34	126				

Sample ID: **MB-63235B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120047**
Client ID: **PBS**	Batch ID: **63235**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913591**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.251	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111137-049A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120047**
Client ID: **B85-0**	Batch ID: **63235**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913602**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	25.063	5.0						17.52	35.4	20	R

Sample ID: **111137-049A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120047**
Client ID: **B85-0**	Batch ID: **63235**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913603**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	215.068	5.0	250.0	17.52	79.0	34	126				

Sample ID: **111137-049A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120047**
Client ID: **B85-0**	Batch ID: **63235**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913604**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	241.115	5.0	250.0	17.52	89.4	34	126	215.1	11.4	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63236A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120053**
Client ID: **PBS**	Batch ID: **63236**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913753**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-63236**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120053**
Client ID: **LCSS**	Batch ID: **63236**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913754**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	263.821	5.0	250.0	0	106	80	120				

Sample ID: **111137-062A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120053**
Client ID: **B81-1**	Batch ID: **63236**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913765**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	9.424	5.0						7.884	17.8	20	

Sample ID: **111137-062A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120053**
Client ID: **B81-1**	Batch ID: **63236**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913766**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	210.244	5.0	250.0	7.884	80.9	34	126				

Sample ID: **MB-63236B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120053**
Client ID: **PBS**	Batch ID: **63236**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913767**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111137-074A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120053**
Client ID: **B76-1**	Batch ID: **63236**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913778**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	9.142	5.0						17.43	62.4	20	R

Sample ID: **111137-074A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120053**
Client ID: **B76-1**	Batch ID: **63236**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913779**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	210.411	5.0	250.0	17.43	77.2	34	126				

Sample ID: **111137-074A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120053**
Client ID: **B76-1**	Batch ID: **63236**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913780**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	231.322	5.0	250.0	17.43	85.6	34	126	210.4	9.47	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63237A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120054**
Client ID: **PBS**	Batch ID: **63237**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913781**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.140	5.0									

Sample ID: **LCS-63237**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120054**
Client ID: **LCSS**	Batch ID: **63237**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913782**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	261.503	5.0	250.0	0.1396	105	80	120				

Sample ID: **111137-087A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120054**
Client ID: **B70-2**	Batch ID: **63237**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913793**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	8.962	5.0						5.483	48.2	20	R

Sample ID: **111137-087A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120054**
Client ID: **B70-2**	Batch ID: **63237**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913794**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	216.173	5.0	250.0	5.483	84.3	34	126				

Sample ID: **MB-63237B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120054**
Client ID: **PBS**	Batch ID: **63237**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913795**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111137-099A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120054**
Client ID: **B64-2**	Batch ID: **63237**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913806**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	3.724	5.0						5.360	0	20	

Sample ID: **111137-099A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120054**
Client ID: **B64-2**	Batch ID: **63237**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913807**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	221.840	5.0	250.0	5.360	86.6	34	126				

Sample ID: **111137-099A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120054**
Client ID: **B64-2**	Batch ID: **63237**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913808**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	218.522	5.0	250.0	5.360	85.3	34	126	221.8	1.51	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63238A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120055**
Client ID: **PBS**	Batch ID: **63238**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913810**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-63238**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120055**
Client ID: **LCSS**	Batch ID: **63238**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913811**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	248.044	5.0	250.0	0	99.2	80	120				

Sample ID: **111137-112A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120055**
Client ID: **B59-0**	Batch ID: **63238**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913822**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	9.535	5.0						12.16	24.2	20	R

Sample ID: **111137-112A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120055**
Client ID: **B59-0**	Batch ID: **63238**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913823**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	224.319	5.0	250.0	12.16	84.9	34	126				

Sample ID: **MB-63238B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120055**
Client ID: **PBS**	Batch ID: **63238**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913824**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111137-124A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120055**
Client ID: **B55-0**	Batch ID: **63238**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913835**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	57.837	5.0						77.66	29.3	20	R

Sample ID: **111137-124A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120055**
Client ID: **B55-0**	Batch ID: **63238**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913836**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	279.589	5.0	250.0	77.66	80.8	34	126				

Sample ID: **111137-124A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120055**
Client ID: **B55-0**	Batch ID: **63238**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913837**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	329.466	5.0	250.0	77.66	101	34	126	279.6	16.4	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63239A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120056**
Client ID: **PBS**	Batch ID: **63239**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913839**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.195	5.0									

Sample ID: **LCS-63239**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120056**
Client ID: **LCSS**	Batch ID: **63239**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913840**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	247.726	5.0	250.0	0.1946	99.0	80	120				

Sample ID: **111137-137A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120056**
Client ID: **B51-1**	Batch ID: **63239**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913851**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	8.472	5.0						5.191	48.0	20	R

Sample ID: **111137-137A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120056**
Client ID: **B51-1**	Batch ID: **63239**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913852**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	212.620	5.0	250.0	5.191	83.0	34	126				

Sample ID: **MB-63239B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120056**
Client ID: **PBS**	Batch ID: **63239**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1913853**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111137-139A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120078**
Client ID: **B50-0**	Batch ID: **63239**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914269**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	15.710	5.0						37.25	81.4	20	R

Sample ID: **111137-139A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120078**
Client ID: **B50-0**	Batch ID: **63239**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914270**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	269.611	5.0	250.0	37.25	92.9	34	126				

Sample ID: **111137-139A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120078**
Client ID: **B50-0**	Batch ID: **63239**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914271**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	253.670	5.0	250.0	37.25	86.6	34	126	269.6	6.09	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63267A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120077**
Client ID: **PBS**	Batch ID: **63267**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914237**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.420	5.0									

Sample ID: **LCS-63267**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120077**
Client ID: **LCSS**	Batch ID: **63267**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914238**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	280.807	5.0	250.0	0.4200	112	80	120				

Sample ID: **111138-012A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120077**
Client ID: **ZZZZZZ**	Batch ID: **63267**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914249**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	6.270	5.0						5.837	7.15	20	

Sample ID: **111138-012A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120077**
Client ID: **ZZZZZZ**	Batch ID: **63267**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914250**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	224.291	5.0	250.0	5.837	87.4	34	126				

Sample ID: **MB-63267B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120077**
Client ID: **PBS**	Batch ID: **63267**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914252**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111138-024A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120077**
Client ID: **ZZZZZZ**	Batch ID: **63267**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914262**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	31.186	5.0						23.98	26.1	20	R

Sample ID: **111138-024A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120077**
Client ID: **ZZZZZZ**	Batch ID: **63267**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914263**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	224.317	5.0	250.0	23.98	80.1	34	126				

Sample ID: **111138-024A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120077**
Client ID: **ZZZZZZ**	Batch ID: **63267**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914264**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	241.427	5.0	250.0	23.98	87.0	34	126	224.3	7.35	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63264**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120061**
Client ID: **PBS**	Batch ID: **63264**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913925**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63264**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120061**
Client ID: **LCSS**	Batch ID: **63264**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913926**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.846	0.10	0.8300	0	102	80	120				

Sample ID: **111137-050A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120061**
Client ID: **B85-1**	Batch ID: **63264**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913927**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.905	0.10	0.8300	0.03768	104	70	130				

Sample ID: **111137-050A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120061**
Client ID: **B85-1**	Batch ID: **63264**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913928**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.905	0.10	0.8300	0.03768	104	70	130	0.9045	0.0255	20	

Sample ID: **111137-050A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120061**
Client ID: **B85-1**	Batch ID: **63264**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913930**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.039	0.10						0.03768	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63265**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120065**
Client ID: **PBS**	Batch ID: **63265**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913969**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63265**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120065**
Client ID: **LCSS**	Batch ID: **63265**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913970**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.917	0.10	0.8300	0	110	80	120				

Sample ID: **111137-100A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120065**
Client ID: **B63-0**	Batch ID: **63265**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913971**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.978	0.10	0.8300	0.09694	106	70	130				

Sample ID: **111137-100A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120065**
Client ID: **B63-0**	Batch ID: **63265**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913972**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.972	0.10	0.8300	0.09694	105	70	130	0.9779	0.581	20	

Sample ID: **111137-100A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120065**
Client ID: **B63-0**	Batch ID: **63265**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913974**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.100	0.10						0.09694	3.19	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63266**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120066**
Client ID: **PBS**	Batch ID: **63266**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913999**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63266**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120066**
Client ID: **LCSS**	Batch ID: **63266**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1914000**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.888	0.10	0.8300	0	107	80	120				

Sample ID: **111137-143A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120066**
Client ID: **RW4-4**	Batch ID: **63266**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1914001**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.973	0.10	0.8300	0	117	70	130				

Sample ID: **111137-143A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120066**
Client ID: **RW4-4**	Batch ID: **63266**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1914002**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.967	0.10	0.8300	0	116	70	130	0.9728	0.643	20	

Sample ID: **111137-143A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120066**
Client ID: **RW4-4**	Batch ID: **63266**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1914004**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_DM LL

Sample ID: **MB-63246**	SampType: **MBLK**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120086**
Client ID: **PBS**	Batch ID: **63246**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **4/12/2010**	SeqNo: **1914434**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	ND	1.0									
ORO	ND	1.0									
Surr: p-Terphenyl	1.955		2.670		73.2	30	128				

Sample ID: **LCS-63246**	SampType: **LCS**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120086**
Client ID: **LCSS**	Batch ID: **63246**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **4/12/2010**	SeqNo: **1914435**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	27.904	1.0	33.00	0	84.6	35	118				
Surr: p-Terphenyl	2.371		2.670		88.8	30	128				

Sample ID: **111115-013AMS**	SampType: **MS**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120086**
Client ID: **ZZZZZZ**	Batch ID: **63246**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **4/12/2010**	SeqNo: **1914436**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	23.147	1.0	33.00	0	70.1	25	129				
Surr: p-Terphenyl	2.544		2.670		95.3	30	128				

Sample ID: **111115-013AMSD**	SampType: **MSD**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120086**
Client ID: **ZZZZZZ**	Batch ID: **63246**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **4/12/2010**	SeqNo: **1914437**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	20.791	1.0	33.00	0	63.0	25	129	23.15	10.7	20	
Surr: p-Terphenyl	2.331		2.670		87.3	30	128		0	0	

Sample ID: **111115-012ADUP**	SampType: **DUP**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **4/9/2010**	RunNo: **120086**
Client ID: **ZZZZZZ**	Batch ID: **63246**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **4/13/2010**	SeqNo: **1914440**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_DM LL

Sample ID: **111115-012ADUP** SampType: **DUP** TestCode: **8015_S_DM L** Units: **mg/Kg** Prep Date: **4/9/2010** RunNo: **120086**
Client ID: **ZZZZZZ** Batch ID: **63246** TestNo: **EPA 8015B(M EPA 3550B** Analysis Date: **4/13/2010** SeqNo: **1914440**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	ND	1.0						0	0	20	
ORO	ND	1.0						0	0	20	
Surr: p-Terphenyl	2.321		2.670		86.9	30	128		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_GAS

Sample ID: **E100498LCS2** SampType: **LCS** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120136**
Client ID: **LCSS** Batch ID: **E10VS096** TestNo: **EPA 8015B(M** Analysis Date: **4/9/2010** SeqNo: **1915272**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	5.196	1.0	5.000	0	104	70	130				
Surr: Bromofluorobenzene (FID)	105.860		100.0		106	56	137				

Sample ID: **E100408MB1** SampType: **MBLK** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120136**
Client ID: **PBS** Batch ID: **E10VS096** TestNo: **EPA 8015B(M** Analysis Date: **4/9/2010** SeqNo: **1915273**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	1.0									
Surr: Bromofluorobenzene (FID)	103.356		100.0		103	56	137				

Sample ID: **111137-143ADUP** SampType: **DUP** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120136**
Client ID: **RW4-4** Batch ID: **E10VS096** TestNo: **EPA 8015B(M** Analysis Date: **4/9/2010** SeqNo: **1915276**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	1.0						0	0	20	
Surr: Bromofluorobenzene (FID)	99.387		100.0		99.4	56	137		0	0	

Sample ID: **111137-143AMS** SampType: **MS** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120136**
Client ID: **RW4-4** Batch ID: **E10VS096** TestNo: **EPA 8015B(M** Analysis Date: **4/9/2010** SeqNo: **1915277**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.854	1.0	5.000	0	97.1	40	121				
Surr: Bromofluorobenzene (FID)	111.362		100.0		111	56	137				

Sample ID: **111137-143AMSD** SampType: **MSD** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120136**
Client ID: **RW4-4** Batch ID: **E10VS096** TestNo: **EPA 8015B(M** Analysis Date: **4/9/2010** SeqNo: **1915278**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.869	1.0	5.000	0	97.4	40	121	4.854	0.309	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits

Calculations are based on raw values

- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_GAS

Sample ID: **111137-143AMSD** SampType: **MSD** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120136**
Client ID: **RW4-4** Batch ID: **E10VS096** TestNo: **EPA 8015B(M** Analysis Date: **4/9/2010** SeqNo: **1915278**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (FID)	113.373		100.0		113	56	137		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_S_BTEX

Sample ID: **E100498LCS1** SampType: **LCS** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120136**
Client ID: **LCSS** Batch ID: **E10VS096** TestNo: **EPA 8021B** Analysis Date: **4/9/2010** SeqNo: **1915279**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	102.073	5.0	100.0	0	102	70	130				
Ethylbenzene	102.710	5.0	100.0	0	103	70	130				
m,p-Xylene	208.874	10	200.0	0	104	70	130				
Methyl tert-butyl ether	95.496	5.0	100.0	0	95.5	70	130				
o-Xylene	104.321	5.0	100.0	0	104	70	130				
Toluene	104.081	5.0	100.0	0	104	70	130				
Surr: Bromofluorobenzene (PID)	105.013		100.0		105	64	116				

Sample ID: **E100408MB1** SampType: **MBLK** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120136**
Client ID: **PBS** Batch ID: **E10VS096** TestNo: **EPA 8021B** Analysis Date: **4/9/2010** SeqNo: **1915280**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	5.0									
Ethylbenzene	ND	5.0									
m,p-Xylene	ND	10									
Methyl tert-butyl ether	ND	5.0									
o-Xylene	ND	5.0									
Toluene	ND	5.0									
Surr: Bromofluorobenzene (PID)	101.799		100.0		102	64	116				

Sample ID: **111137-143ADUP** SampType: **DUP** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120136**
Client ID: **RW4-4** Batch ID: **E10VS096** TestNo: **EPA 8021B** Analysis Date: **4/9/2010** SeqNo: **1915283**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	5.0						0	0	20	
Ethylbenzene	ND	5.0						0	0	20	
m,p-Xylene	ND	10						0	0	20	
Methyl tert-butyl ether	ND	5.0						0	0	20	
o-Xylene	ND	5.0						0	0	20	
Toluene	ND	5.0						0	0	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits

Calculations are based on raw values

- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_S_BTEX

Sample ID: **111137-143ADUP** SampType: **DUP** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120136**
Client ID: **RW4-4** Batch ID: **E10VS096** TestNo: **EPA 8021B** Analysis Date: **4/9/2010** SeqNo: **1915283**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (PID)	97.221		100.0		97.2	64	116		0	0	

Sample ID: **111137-143AMS** SampType: **MS** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120136**
Client ID: **RW4-4** Batch ID: **E10VS096** TestNo: **EPA 8021B** Analysis Date: **4/9/2010** SeqNo: **1915284**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	44.159	5.0	22.15	0	199	41	112				S
Ethylbenzene	48.176	5.0	42.30	0	114	26	100				S
m,p-Xylene	180.245	10	180.2	0	100	32	106				
Methyl tert-butyl ether	457.485	5.0	578.9	0	79.0	44	124				
o-Xylene	66.855	5.0	64.80	0	103	30	100				S
Toluene	174.630	5.0	172.6	0	101	38	112				
Surr: Bromofluorobenzene (PID)	109.117		100.0		109	64	116				

Sample ID: **111137-143AMSD** SampType: **MSD** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120136**
Client ID: **RW4-4** Batch ID: **E10VS096** TestNo: **EPA 8021B** Analysis Date: **4/9/2010** SeqNo: **1915285**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	45.084	5.0	22.15	0	204	41	112	44.16	2.07	20	S
Ethylbenzene	48.748	5.0	42.30	0	115	26	100	48.18	1.18	20	S
m,p-Xylene	182.245	10	180.2	0	101	32	106	180.2	1.10	20	
Methyl tert-butyl ether	474.095	5.0	578.9	0	81.9	44	124	457.5	3.57	20	
o-Xylene	67.840	5.0	64.80	0	105	30	100	66.86	1.46	20	S
Toluene	178.315	5.0	172.6	0	103	38	112	174.6	2.09	20	
Surr: Bromofluorobenzene (PID)	111.771		100.0		112	64	116		0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 9045_S

Sample ID: **111137-091ADUP** SampType: **DUP** TestCode: **9045_S** Units: **pH Units** Prep Date: RunNo: **120100**
Client ID: **B66-0** Batch ID: **R120100** TestNo: **EPA 9045C** Analysis Date: **4/12/2010** SeqNo: **1914677**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.380	0.10						7.550	2.28	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 9045_S

Sample ID: **111138-046ADUP** SampType: **DUP** TestCode: **9045_S** Units: **pH Units** Prep Date: RunNo: **120103**
Client ID: **ZZZZZZ** Batch ID: **R120103** TestNo: **EPA 9045C** Analysis Date: **4/13/2010** SeqNo: **1914708**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.280	0.10						7.320	0.548	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____
Logged By: _____ Date: 4/8/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☒ FEDEX ☐ Other: GSO

Sample Condition Upon Receipt: 5.0
1. CHILLED Y☑ N☐ 4. SEALED Y☐ N☑
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☑ N☐
3. CONTAINER INTACT Y☑ N☐ 6. PRESERVED Y☐ N☑

Client: GEOCON CONSULTANTS, INC.	Address: 6671 Brisa Street		TEL: (925) 371-5900
Attn: Lauren Vigliotti	City Livermore	State CA Zip Code 94550	FAX: (925) 371-5915

Project Name: I-580 WB Project #: E8474-06-01 Sampler: (Printed Name) Lauren Vigliotti (Signature) Lauren Vigliotti

Relinquished by: (Signature and Printed Name) Lauren Vigliotti	Date: 4/7/10	Time: 1630	Received by: (Signature and Printed Name)	Date: 4/8/10	Time: 935
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter: Lauren Vigliotti 4/6/10 (Print Name / Date)
Lauren Vigliotti (Signature)

Send Report To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State _____ Zip _____

Bill To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:
- Select 20% at random for CAM 17 metals analysis (NO TOTAL LEAD) ONLY.
- Select 10% at random for pH analysis.

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides) | 8082 (PCB) | 8260B (Volatiles) | 8270C (BNA) | 6010B (Total Metal) LEAD | 8015B (GRO) / BTEX | 8015B (DRO) | 8021 (BTEX) | TITLE 22 / CAM 17 (6010 / 7000) pH

SPECIFY APPROPRIATE MATRIX: SOIL | WATER | GROUND WATER | WASTEWATER

PRESERVATION

Q A / Q C: RTNE ☐ CT ☒ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	111137-1,2,3	B106-0,1,2	4/6/10	0930	E	1	B P	C	
	-4,5,6	B104-0,1,2		0940					
	-7,8,9	B102-0,1,2		0950					
	-10,11,12	B100-0,1,2		1000					
	-13,14,15	B99-0,1,2		1010					
	-16,17,18	B97-0,1,2		1025					
	-19,20,21	B96-0,1,2		1020					
	-22,23,24	B95-0,1,2		1030					
	-25,26,27	B93-0,1,2		1035					
	-28,29,30	B92-0,1,2		1045					

20% RANDOM (ONLY)
10% RANDOM

- TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr | B= Emergency Next workday | C= Critical 2 Workdays | D= Urgent 3 Workdays | E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____

Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☒ FEDEX ☐ Other: _____

Sample Condition Upon Receipt: 1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐ 2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐ 3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON CONSULTANTS, INC. Address: 6671 Brisa Street TEL: (925) 371-5900
Attn: Lauren Viglietti City Livermore State CA Zip Code 94550 FAX: (925) 371-5915
Project Name: I-580 WB Project #: E8474-06-01 Sampler: (Printed Name) (Signature)

Relinquished by: (Signature and Printed Name) Lauren Viglietti Date: 4/7/10 Time: 1630 Received by: (Signature and Printed Name) Mary Date: 4/8/10 Time: 935
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Print Name Date
Signature

Send Report To:
Attn: _____
Co: SAME AS ABOVE / Pg 1
Address _____
City _____ State_____ Zip_____

Bill To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State_____ Zip_____

Special Instructions/Comments:
See page 1. for Project information & analysis instructions

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides), 8082 (PCB), 8260B (Volatiles), 8270C (BNA), 6010B (Total Metals) LEAD, 8015B (GRO) / BTEX, 8015B (DRO), 8021 (BTEX), TITLE 22 / CAM 17 (6010 / 7000), pH

SPECIFY APPROPRIATE MATRIX: SOIL, WATER, GROUND WATER, WASTEWATER

PRESERVATION

Q A / Q C: RTNE ☐ CT ☒ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	111137 -31, 32, 33	B91 -0, 1, 2	4/6/10	1050	E	1	B P	C	
	-34, 35, 36	B90 -0, 1, 2		1055					
	-37, 38, 39	B89 -0, 1, 2		1100					
	-40, 41, 42	B88 -0, 1, 2		1105					
	-43, 44, 45	B87 -0, 1, 2		1115					
	-46, 47, 48	B86 -0, 1, 2		1125					
	-49, 50, 51	B85 -0, 1, 2		1135					
	-52, 53, 54	B84 -0, 1, 2		1140					
	-55, 56, 57	B83 -0, 1, 2		1145					
	-58, 59, 60	B82 -0, 1, 2		1155					

2010 RANDOM - ONLY 10% RANDOM

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____

Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: _____

Sample Condition Upon Receipt: 1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐ 2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐ 3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: Geocon, Consultants
Attn:
Address:
City State Zip Code
TEL: ( )
FAX: ( )

Project Name: I-580 WB Project #: 8474-06-01 Sampler: (Printed Name) (Signature)

Relinquished by: (Signature and Printed Name) Date 4/7/10 Time: 1630 Received by: (Signature and Printed Name) Date: 4/8/10 Time: 935
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Print Name Date
Signature

Send Report To: Attn: see page 1
Co:
Address
City State Zip

Bill To: Attn:
Co:
Address
City State Zip

Special Instructions/Comments: see page 1 for details & analysis instructions

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides), 8082 (PCB), 8260B (Volatiles), 8270C (BNA), 6010B (Total Metal) LEAD, 8015B (GRO) / 8020 (BTEX), 8015B (DRO), 8021 (BTEX), TITLE 22 / CAM 17 (6010 / 7000) pH

SPECIFY APPROPRIATE MATRIX: SOIL, WATER, GROUND WATER, WASTEWATER

PRESERVATION

Q A / Q C: RTNE ☐ CT ☒ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	TAT	Container(s): #	Type	REMARKS
	111137 - 61,62,63	B81-0,-1,-2	4/6/10	1200	E	1	B P	C
	-64,65,66	B80-0,-1,-2		1205				
	-67,68,69	B78-0,-1,-2		1215				
	-70,71,72	B77-0,-1,-2		1220				
	-73,74,75	B76-0,-1,-2		1225				
	-76,77,78	B75-0,-1,-2		1235				
	-79,80,81	B74-0,-1,-2		1240				
	-82,83,84	B73-0,-1,-2		1250				
	-85,86,87	B70-0,-1,-2		1255				
	-88,89,90	B67-0,-1,-2		1300				

20% RANDOM-ONLY
10% RANDOM

- TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

CHAIN OF CUSTODY RECORD

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FOR LABORATORY USE ONLY:

P.O.#: _____

Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: _____

Sample Condition Upon Receipt
1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: Geocon
Attn:
Address:
City State Zip Code
TEL: ( )
FAX: ( )

Project Name: I-580 WB Project #: E8474-06-01 Sampler: (Printed Name) (Signature)

Relinquished by: (Signature and Printed Name) Lauren Neglund	Date: 4/7/10	Time: 630	Received by: (Signature and Printed Name)	Date: 4/8/10	Time: 935
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Print Name Date
Signature

Send Report To:
Attn: See page 1
Co:
Address
City State Zip

Bill To:
Attn:
Co:
Address
City State Zip

Special Instructions/Comments:
See page 1 for details & analysis instructions.

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides), 8082 (PCB), 8260B (Volatiles), 8270C (BNA), 6010B (Total Metals) LEAD, 8015B (GRO) / 8020 (BTEX), 8015B (DRO), 8021 (BTEX), TITLE 22 / CAM 17 (6010 / 7000) pH

SPECIFY APPROPRIATE MATRIX: SOIL, WATER, GROUND WATER, WASTEWATER

PRESERVATION

Q A / Q C: RTNE ☐ CT ☒ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	TAT	Container(s): #	Container(s): Type	REMARKS
	111137-91, 92, 93	B66-0, -1, -2	4/6/10	1310	E	1	B P	
	-94, 95, 96	B65-0, -1, -2		1315				
	-97, 98, 99	B64-0, -1, -2		1330				
	-100, 101, 102	B63-0, -1, -2		1340				
	-103, 104, 105	B62-0, -1, -2		1350				
	-106, 107, 108	B61-0, -1, -2		1405				
	-109, 110, 111	B60-0, -1, -2		1410				
	-112, 113, 114	B59-0, -1, -2		1415				
	-115, 116, 117	B58-0, -1, -2		1425				
	-118, 119, 120	B57-0, -1, -2		1430				

X: 8270C (BNA), SOIL
X: 6010B (Total Metals) LEAD, pH
20% RANDOM-ONLY
10% RANDOM

- TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____

Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: _____

Sample Condition Upon Receipt: 1. CHILLED Y☐ N☐ 4. SEALED Y☐ N☐ 2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐ 3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GeoCon
Attn:
Address:
City State Zip Code
TEL: ( )
FAX: ( )

Project Name: I-580 WB Project #: E8474-06.01 Sampler: (Printed Name) (Signature)

Relinquished by: (Signature and Printed Name) Lauren Rigby Date: 4/7/10 Time: 1630 Received by: (Signature and Printed Name) Date: 4/8/10 Time: 935

Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter: ← _____ Print Name _____ Date _____ Signature

Send Report To: Attn: See page 1 Co: _____ Address _____ City _____ State _____ Zip _____

Bill To: Attn: → Co: _____ Address _____ City _____ State _____ Zip _____

Special Instructions/Comments: See page 1 for details & analysis instructions.

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides), 8082 (PCB), 8260B (Volatiles), 8270C (BNA), 6010B (Total Metal) LEAD, 8015B (GRO) / 8020 (BTEX) / MTBE, 8015B (DRO) / ORO, 8021 (BTEX), TITLE 22 / CAM 17 (6010 / 7000) pH

SPECIFY APPROPRIATE MATRIX: SOIL, WATER, GROUND WATER, WASTEWATER

PRESERVATION

Q A / Q C: RTNE ☐ CT ☒ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	TAT	Container(s): #	Type	PRESERVATION	REMARKS
	111137 -121, 122, 123	B56-0, -1, -2	4/6/10	1435	E	1	B P	C	
	-124, 125, 126	B55-0, -1, -2		1500					
	-127, 128, 129	B54-0, -1, -2		1445					
	-130, 131, 132	B53-0, -1, -2		1450					
	-133, 134, 135	B52-0, -1, -2		1510					
	-136, 137, 138	B51-0, -1, -2		1540					
	-139, 140, 141	B50-0, -1, -2		1545					
	-142, 143, ~~144~~	RW4-0, -4		1530					

20% RANDOM-ONLY
10% RANDOM

- TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

April 23, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111137

RE: I-580 WB, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 08, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

Advanced Technology Laboratories

Date: 4/23/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (STLC)
WET/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111137
Project:	I-580 WB, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111137-007A	B102-0	0.50	mg/L	63448	0.25	1	4/6/2010	4/20/2010
111137-012A	B100-2	3.2	mg/L	63448	0.25	1	4/6/2010	4/20/2010
111137-013A	B99-0	3.8	mg/L	63449	0.25	1	4/6/2010	4/20/2010
111137-020A	B96-1	0.33	mg/L	63449	0.25	1	4/6/2010	4/20/2010
111137-025A	B93-0	3.2	mg/L	63449	0.25	1	4/6/2010	4/20/2010
111137-036A	B90-2	2.1	mg/L	63449	0.25	1	4/6/2010	4/20/2010
111137-048A	B86-2	3.0	mg/L	63449	0.25	1	4/6/2010	4/20/2010
111137-051A	B85-2	2.8	mg/L	63449	0.25	1	4/6/2010	4/20/2010
111137-054A	B84-2	2.9	mg/L	63449	0.25	1	4/6/2010	4/20/2010
111137-060A	B82-2	1.5	mg/L	63449	0.25	1	4/6/2010	4/20/2010
111137-063A	B81-2	2.3	mg/L	63449	0.25	1	4/6/2010	4/20/2010
111137-067A	B78-0	4.9	mg/L	63449	0.25	1	4/6/2010	4/20/2010
111137-070A	B77-0	3.8	mg/L	63449	0.25	1	4/6/2010	4/20/2010
111137-071A	B77-1	2.3	mg/L	63449	0.25	1	4/6/2010	4/20/2010
111137-073A	B76-0	5.4	mg/L	63449	0.25	1	4/6/2010	4/20/2010
111137-082A	B73-0	1.3	mg/L	63449	0.25	1	4/6/2010	4/20/2010
111137-085A	B70-0	5.5	mg/L	63449	0.25	1	4/6/2010	4/20/2010
111137-094A	B65-0	2.9	mg/L	63449	0.25	1	4/6/2010	4/20/2010

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

Advanced Technology Laboratories

Date: 4/23/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (STLC)
WET/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111137
Project:	I-580 WB, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111137-097A	B64-0	2.6	mg/L	63449	0.25	1	4/6/2010	4/20/2010
111137-100A	B63-0	2.8	mg/L	63449	0.25	1	4/6/2010	4/20/2010
111137-105A	B62-2	0.47	mg/L	63449	0.25	1	4/6/2010	4/20/2010
111137-108A	B61-2	6.0	mg/L	63449	0.25	1	4/6/2010	4/20/2010
111137-124A	B55-0	2.9	mg/L	63450	0.25	1	4/6/2010	4/20/2010
111137-136A	B51-0	1.6	mg/L	63450	0.25	1	4/6/2010	4/20/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-63448A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **PBS**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919880**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63448**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **LCSS**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919881**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.047	0.25	5.000	0	101	80	120				

Sample ID: **111069-098A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **ZZZZZZ**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919892**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.423	0.25						2.423	0.00966	20	

Sample ID: **111069-098A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **ZZZZZZ**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919893**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	6.826	0.25	5.000	2.423	88.1	80	120				

Sample ID: **MB-63448B**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **PBS**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919894**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **111137-012A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **B100-2**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919905**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	3.150	0.25						3.186	1.12	20	

Sample ID: **111137-012A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **B100-2**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919906**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	7.605	0.25	5.000	3.186	88.4	80	120				

Sample ID: **111137-012A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120368**
Client ID: **B100-2**	Batch ID: **63448**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919907**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	7.611	0.25	5.000	3.186	88.5	80	120	7.605	0.0805	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-63449A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120369**
Client ID: **PBS**	Batch ID: **63449**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919908**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63449**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120369**
Client ID: **LCSS**	Batch ID: **63449**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919909**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.799	0.25	5.000	0	96.0	80	120				

Sample ID: **111137-067A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120369**
Client ID: **B78-0**	Batch ID: **63449**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919920**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.816	0.25						4.872	1.14	20	

Sample ID: **111137-067A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120369**
Client ID: **B78-0**	Batch ID: **63449**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919921**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	9.864	0.50	5.000	4.872	99.8	80	120				

Sample ID: **MB-63449B**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120369**
Client ID: **PBS**	Batch ID: **63449**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919922**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **111137-108A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120369**
Client ID: **B61-2**	Batch ID: **63449**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919933**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	6.100	0.25						5.971	2.15	20	

Sample ID: **111137-108A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120369**
Client ID: **B61-2**	Batch ID: **63449**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919934**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	11.085	0.50	5.000	5.971	102	80	120				

Sample ID: **111137-108A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120369**
Client ID: **B61-2**	Batch ID: **63449**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919935**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	10.888	0.50	5.000	5.971	98.4	80	120	11.08	1.79	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-63450A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **PBS**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919936**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63450**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **LCSS**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919937**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.873	0.25	5.000	0	97.5	80	120				

Sample ID: **111138-111A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **ZZZZZZ**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919948**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	24.451	2.5						24.48	0.114	20	

Sample ID: **111138-111A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **ZZZZZZ**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919949**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	28.538	2.5	5.000	24.48	81.2	80	120				

Sample ID: **MB-63450B**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **PBS**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919950**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **111138-112A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **ZZZZZZ**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919953**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.037	0.25						3.950	2.18	20	

Sample ID: **111138-112A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **ZZZZZZ**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919954**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	8.437	0.25	5.000	3.950	89.7	80	120				

Sample ID: **111138-112A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **ZZZZZZ**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919955**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	8.421	0.25	5.000	3.950	89.4	80	120	8.437	0.186	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Friday, April 16, 2010 10:07 AM
To: Diane Galvan
Subject: I-580 project

Hi Diane. Please run the following samples for WET lead, standard TAT. Thank you and have a great weekend.

WO	ID
111138	B271-2
111138	B270-0
111138	B120-0
111138	B272-0
111138	B267-0
111138	B114-1
111138	B124-2
111138	B114-0
111138	B129-1
111137	B96-1
111137	B70-0
111137	B77-0
111137	B61-2
111137	B65-0
111137	B78-0
111137	B90-2
111137	B62-2
111137	B99-0
111137	B55-0
111137	B84-2
111137	B86-2
111137	B93-0
111137	B81-2
111137	B102-0
111137	B73-0
111137	B76-0
111137	B64-0
111137	B100-2
111137	B85-2
111137	B77-1
111137	B63-0
111137	B51-0
111137	B82-2

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

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GEOCON

GEOTECHNICAL ENVIRONMENTAL MATERIALS

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May 04, 2010

Lauren Vigliotti
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6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111137

RE: I-580 WB, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 08, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

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Advanced Technology Laboratories

Date: 5/4/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION
WET DI/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111137
Project:	I-580 WB, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111137-073A	B76-0	ND	mg/L	63740	0.25	1	4/6/2010	5/3/2010
111137-085A	B70-0	ND	mg/L	63740	0.25	1	4/6/2010	5/3/2010
111137-108A	B61-2	ND	mg/L	63740	0.25	1	4/6/2010	5/3/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 5/4/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (TCLP)
EPA 1311/ 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111137
Project:	I-580 WB, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111137-085A	B70-0	0.28	mg/L	63809	0.25	1	4/6/2010	5/3/2010
111137-108A	B61-2	0.32	mg/L	63809	0.25	1	4/6/2010	5/3/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **MB-63740A**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **PBS**	Batch ID: **63740**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928249**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63740**	SampType: **LCS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **LCSS**	Batch ID: **63740**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928250**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.085	0.25	5.000	0	102	80	120				

Sample ID: **111069-091A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **ZZZZZZ**	Batch ID: **63740**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928261**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111069-091A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **ZZZZZZ**	Batch ID: **63740**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928262**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.969	0.25	5.000	0	99.4	70	130				

Sample ID: **MB-63740B**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **PBS**	Batch ID: **63740**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928263**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **111137-108A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **B61-2**	Batch ID: **63740**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928274**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111137-108A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **B61-2**	Batch ID: **63740**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928275**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.957	0.25	5.000	0	99.1	70	130				

Sample ID: **111137-108A-MSD**	SampType: **MSD**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120800**
Client ID: **B61-2**	Batch ID: **63740**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928276**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.006	0.25	5.000	0	100	70	130	4.957	0.984	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63809A**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **PBS**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927969**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63784A TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **PBS**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927970**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63809**	SampType: **LCS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **LCSS**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927971**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	1.029	0.25	1.000	0	103	80	120				

Sample ID: **111138-055A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **ZZZZZZ**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927982**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.223	0.25						0.2423	0	20	

Sample ID: **111138-055A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **ZZZZZZ**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927983**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.552	0.25	2.500	0.2423	92.4	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111137
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63809B**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **PBS**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927984**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63784B TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **PBS**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927985**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **111139-073A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **ZZZZZZ**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927992**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111139-073A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **ZZZZZZ**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927993**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.678	0.25	2.500	0	107	70	130				

Sample ID: **111139-073A-MSD**	SampType: **MSD**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **ZZZZZZ**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927994**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.675	0.25	2.500	0	107	70	130	2.678	0.119	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Tuesday, April 27, 2010 12:05 PM
To: Diane Galvan
Subject: I-580 WB HOV Lane project
Attachments: I-580 project-lead_TCLP_DI-WET.xls

HI Diane:
Please find the attached excel workbook with a list of TCLP and DI-WET lead analyses for samples for the referenced project. Please analyze under standard TAT. Thank you!

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

Geocon Consultants, Inc
6671 Brisa Street
Livermore, CA 94550
Tel (925) 371-5900
Cell (925) 768-9874

GEOCON

GEOTECHNICAL ENVIRONMENTAL MATERIALS

San Diego Murrieta Burbank Bakersfield Sacramento Livermore Carson City Las Vegas Portland

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WorkOrder	ClientSampID	R_Rslt	DI-WET	TCLP
111138	B271-2	24	X	X
111138	B120-0	13	X	X
111138	B270-0	12	X	X
111137	B61-2	6.0	X	X
111137	B70-0	5.5	X	X
111137	B76-0	5.4	X	
111069	B225-1	25	X	X
111069	B204-0	16	X	X
111069	B210-0	14	X	X
111069	B219-0	13	X	X
111069	B207-2	8.9	X	X
111069	B191-1	8.6	X	X
111069	B209-0	7.3	X	X
111069	B224-0	6.8	X	
111069	B206-0	5.6	X	X
111069	B207-1	5.2	X	X
111069	B200-0	5.0	X	
111068	B211-0	13	X	X
111068	B184-0	12	X	X
111068	B207-0	12	X	
111068	B217-0	10	X	
111068	B193-0	8.5	X	X
111068	B208-0	7.5	X	
111068	B202-0	6.4	X	
110888	B229-0	57	X	X
110888	B237-0	37	X	X
110888	B240-0	20	X	X
110888	B228-0	16	X	X
110888	B236-0	14	X	X
110888	B241-0	13	X	X
110888	B234-0	13	X	X
110888	B227-0	9.8	X	
110888	B235-0	8.5	X	X
110888	B238-0	5.4	X	X
110816	B251-0	41.0	X	X
110816	B262-0	33.0	X	X
110816	B250-0	21.0	X	X
110816	B263-0	20.0	X	X
110816	B257-0	7.9	X	
110816	B242-0	7.5	X	X
110816	B244-1	6.0	X	
110816	B256-0	5.9	X	
110816	B254-0	5.1	X	X

April 15, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111138

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 08, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I-580 WB HOV Lanes, E8474-06-01
Lab Order: 111138

CASE NARRATIVE

Analytical Comments for Method 6010

Matrix Spike (MS) and /or Matrix Spike Duplicate (MSD) are/is outside recovery criteria for samples 111138-081AMS, 111138-116AMS and 111138-116AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

RPD for Duplicate (DUP) and/or Matrix Spike (MS)/Matrix Spike Duplicate (MSD) is outside criteria for samples 111138-024ADUP, 111138-031ADUP, 111138-031AMSD, 111138-037ADUP, 111138-062ADUP, 111138-074AMSD, 111138-081ADUP, 111138-081AMSD, 111138-099ADUP, 111138-112ADUP and 111138-116ADUP; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 4/15/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111138
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111138-002A	B94-1	11	mg/Kg	63267	5.0	1	4/6/2010	4/12/2010
111138-003A	B94-2	7.5	mg/Kg	63267	5.0	1	4/6/2010	4/12/2010
111138-004A	B98-0	6.7	mg/Kg	63267	5.0	1	4/6/2010	4/12/2010
111138-005A	B98-1	12	mg/Kg	63267	5.0	1	4/6/2010	4/12/2010
111138-007A	B101-0	ND	mg/Kg	63267	5.0	1	4/6/2010	4/12/2010
111138-008A	B101-1	ND	mg/Kg	63267	5.0	1	4/6/2010	4/12/2010
111138-009A	B101-2	5.6	mg/Kg	63267	5.0	1	4/6/2010	4/12/2010
111138-010A	B103-0	20	mg/Kg	63267	5.0	1	4/6/2010	4/12/2010
111138-012A	B103-2	5.8	mg/Kg	63267	5.0	1	4/6/2010	4/12/2010
111138-013A	B105-0	16	mg/Kg	63267	5.0	1	4/6/2010	4/12/2010
111138-014A	B105-1	5.9	mg/Kg	63267	5.0	1	4/6/2010	4/12/2010
111138-015A	B105-2	ND	mg/Kg	63267	5.0	1	4/6/2010	4/12/2010
111138-017A	B107-1	9.1	mg/Kg	63267	5.0	1	4/6/2010	4/12/2010
111138-018A	B107-2	6.5	mg/Kg	63267	5.0	1	4/6/2010	4/12/2010
111138-019A	B108-0	14	mg/Kg	63267	5.0	1	4/6/2010	4/12/2010
111138-020A	B108-1	9.4	mg/Kg	63267	5.0	1	4/6/2010	4/12/2010
111138-022A	B109-0	9.6	mg/Kg	63267	5.0	1	4/6/2010	4/12/2010
111138-023A	B109-1	34	mg/Kg	63267	5.0	1	4/6/2010	4/12/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/15/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111138
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111138-024A	B109-2	24	mg/Kg	63267	5.0	1	4/6/2010	4/12/2010
111138-025A	B110-0	13	mg/Kg	63268	5.0	1	4/6/2010	4/12/2010
111138-027A	B110-2	17	mg/Kg	63268	5.0	1	4/6/2010	4/12/2010
111138-028A	B111-0	10	mg/Kg	63268	5.0	1	4/6/2010	4/12/2010
111138-029A	B111-1	15	mg/Kg	63268	5.0	1	4/6/2010	4/12/2010
111138-030A	B111-2	46	mg/Kg	63268	5.0	1	4/6/2010	4/12/2010
111138-032A	B112-1	5.1	mg/Kg	63268	5.0	1	4/6/2010	4/12/2010
111138-033A	B112-2	8.9	mg/Kg	63268	5.0	1	4/6/2010	4/12/2010
111138-034A	B113-0	6.9	mg/Kg	63268	5.0	1	4/6/2010	4/12/2010
111138-035A	B113-1	8.3	mg/Kg	63268	5.0	1	4/6/2010	4/12/2010
111138-037A	B114-0	55	mg/Kg	63268	5.0	1	4/6/2010	4/12/2010
111138-038A	B114-1	59	mg/Kg	63268	5.0	1	4/6/2010	4/12/2010
111138-039A	B114-2	8.4	mg/Kg	63268	5.0	1	4/6/2010	4/12/2010
111138-040A	B115-0	23	mg/Kg	63268	5.0	1	4/6/2010	4/12/2010
111138-042A	B115-2	8.0	mg/Kg	63268	5.0	1	4/6/2010	4/12/2010
111138-043A	B116-0	48	mg/Kg	63268	5.0	1	4/6/2010	4/12/2010
111138-044A	B116-1	18	mg/Kg	63268	5.0	1	4/6/2010	4/12/2010
111138-045A	B116-2	5.4	mg/Kg	63268	5.0	1	4/6/2010	4/12/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/15/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111138
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111138-047A	B117-1	47	mg/Kg	63268	5.0	1	4/6/2010	4/12/2010
111138-048A	B117-2	6.3	mg/Kg	63268	5.0	1	4/6/2010	4/12/2010
111138-049A	B118-0	18	mg/Kg	63268	5.0	1	4/6/2010	4/12/2010
111138-050A	B118-1	18	mg/Kg	63269	5.0	1	4/6/2010	4/12/2010
111138-052A	B119-0	24	mg/Kg	63269	5.0	1	4/6/2010	4/12/2010
111138-053A	B119-1	6.9	mg/Kg	63269	5.0	1	4/6/2010	4/12/2010
111138-054A	B119-2	37	mg/Kg	63269	5.0	1	4/6/2010	4/12/2010
111138-055A	B120-0	120	mg/Kg	63269	5.0	1	4/6/2010	4/12/2010
111138-057A	B120-2	5.5	mg/Kg	63269	5.0	1	4/6/2010	4/12/2010
111138-058A	B121-0	21	mg/Kg	63269	5.0	1	4/6/2010	4/12/2010
111138-059A	B121-1	9.4	mg/Kg	63269	5.0	1	4/6/2010	4/12/2010
111138-060A	B121-2	9.5	mg/Kg	63269	5.0	1	4/6/2010	4/12/2010
111138-062A	B122-1	6.7	mg/Kg	63269	5.0	1	4/6/2010	4/12/2010
111138-063A	B122-2	6.5	mg/Kg	63269	5.0	1	4/6/2010	4/12/2010
111138-064A	B123-0	22	mg/Kg	63269	5.0	1	4/6/2010	4/12/2010
111138-065A	B123-1	33	mg/Kg	63269	5.0	1	4/6/2010	4/12/2010
111138-067A	B124-0	22	mg/Kg	63269	5.0	1	4/6/2010	4/12/2010
111138-068A	B124-1	10	mg/Kg	63269	5.0	1	4/6/2010	4/12/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/15/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111138
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111138-069A	B124-2	56	mg/Kg	63269	5.0	1	4/6/2010	4/12/2010
111138-070A	B125-0	28	mg/Kg	63269	5.0	1	4/6/2010	4/12/2010
111138-072A	B125-2	23	mg/Kg	63269	5.0	1	4/6/2010	4/12/2010
111138-073A	B126-0	27	mg/Kg	63269	5.0	1	4/6/2010	4/12/2010
111138-074A	B126-1	22	mg/Kg	63269	5.0	1	4/6/2010	4/12/2010
111138-075A	B126-2	6.0	mg/Kg	63270	5.0	1	4/6/2010	4/12/2010
111138-077A	B127-1	21	mg/Kg	63270	5.0	1	4/6/2010	4/12/2010
111138-078A	B127-2	9.7	mg/Kg	63270	5.0	1	4/6/2010	4/12/2010
111138-079A	B128-0	32	mg/Kg	63270	5.0	1	4/6/2010	4/12/2010
111138-080A	B128-1	25	mg/Kg	63270	5.0	1	4/6/2010	4/12/2010
111138-082A	B129-0	31	mg/Kg	63270	5.0	1	4/6/2010	4/12/2010
111138-083A	B129-1	51	mg/Kg	63270	5.0	1	4/6/2010	4/12/2010
111138-084A	B129-2	5.3	mg/Kg	63270	5.0	1	4/6/2010	4/12/2010
111138-085A	B130-0	46	mg/Kg	63270	5.0	1	4/6/2010	4/12/2010
111138-087A	B130-2	5.3	mg/Kg	63270	5.0	1	4/6/2010	4/12/2010
111138-088A	B264-0	23	mg/Kg	63270	5.0	1	4/6/2010	4/12/2010
111138-089A	B264-1	14	mg/Kg	63270	5.0	1	4/6/2010	4/12/2010
111138-090A	B264-2	19	mg/Kg	63270	5.0	1	4/6/2010	4/12/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/15/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111138
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111138-092A	B265-1	15	mg/Kg	63270	5.0	1	4/6/2010	4/12/2010
111138-093A	B265-2	27	mg/Kg	63270	5.0	1	4/6/2010	4/12/2010
111138-094A	B266-0	18	mg/Kg	63270	5.0	1	4/6/2010	4/12/2010
111138-095A	B266-1	10	mg/Kg	63270	5.0	1	4/6/2010	4/12/2010
111138-097A	B267-0	76	mg/Kg	63270	5.0	1	4/6/2010	4/12/2010
111138-098A	B267-1	12	mg/Kg	63270	5.0	1	4/6/2010	4/12/2010
111138-099A	B267-2	11	mg/Kg	63270	5.0	1	4/6/2010	4/12/2010
111138-100A	B268-0	38	mg/Kg	63271	5.0	1	4/6/2010	4/12/2010
111138-102A	B268-2	7.9	mg/Kg	63271	5.0	1	4/6/2010	4/12/2010
111138-103A	B269-0	30	mg/Kg	63271	5.0	1	4/6/2010	4/12/2010
111138-104A	B269-1	24	mg/Kg	63271	5.0	1	4/6/2010	4/12/2010
111138-105A	B269-2	11	mg/Kg	63271	5.0	1	4/6/2010	4/12/2010
111138-107A	B270-1	5.4	mg/Kg	63271	5.0	1	4/6/2010	4/12/2010
111138-108A	B270-2	15	mg/Kg	63271	5.0	1	4/6/2010	4/12/2010
111138-109A	B271-0	17	mg/Kg	63271	5.0	1	4/6/2010	4/12/2010
111138-110A	B271-1	13	mg/Kg	63271	5.0	1	4/6/2010	4/12/2010
111138-112A	B272-0	84	mg/Kg	63271	5.0	1	4/6/2010	4/12/2010
111138-113A	B272-1	8.3	mg/Kg	63271	5.0	1	4/6/2010	4/13/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/15/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111138
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111138-114A	B272-2	11	mg/Kg	63271	5.0	1	4/6/2010	4/13/2010
111138-115A	B273-0	7.3	mg/Kg	63271	5.0	1	4/6/2010	4/13/2010
111138-117A	B273-2	5.4	mg/Kg	63271	5.0	1	4/6/2010	4/13/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/15/2010

ANALYTICAL RESULTS

pH
EPA 9045C

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111138
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	pH	**Analyst:**	CBB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111138-002A	B94-1	8.7	pH Units	R120103	0.10	1	4/6/2010	4/13/2010
111138-013A	B105-0	8.4	pH Units	R120103	0.10	1	4/6/2010	4/13/2010
111138-024A	B109-2	8.5	pH Units	R120103	0.10	1	4/6/2010	4/13/2010
111138-035A	B113-1	8.9	pH Units	R120103	0.10	1	4/6/2010	4/13/2010
111138-046A	B117-0	7.3	pH Units	R120103	0.10	1	4/6/2010	4/13/2010
111138-057A	B120-2	7.6	pH Units	R120108	0.10	1	4/6/2010	4/13/2010
111138-068A	B124-1	8.0	pH Units	R120108	0.10	1	4/6/2010	4/13/2010
111138-079A	B128-0	7.1	pH Units	R120108	0.10	1	4/6/2010	4/13/2010
111138-081A	B128-2	7.2	pH Units	R120108	0.10	1	4/6/2010	4/13/2010
111138-092A	B265-1	7.8	pH Units	R120108	0.10	1	4/6/2010	4/13/2010
111138-103A	B269-0	7.9	pH Units	R120108	0.10	1	4/6/2010	4/13/2010
111138-114A	B272-2	7.9	pH Units	R120108	0.10	1	4/6/2010	4/13/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B94-0
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-001A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413A	QC Batch: 63272			PrepDate: 4/12/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 11:52 AM
Arsenic	1.9	1.0		mg/Kg	1	4/13/2010 11:52 AM
Barium	130	1.0		mg/Kg	1	4/13/2010 11:52 AM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 11:52 AM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 11:52 AM
Chromium	32	1.0		mg/Kg	1	4/13/2010 11:52 AM
Cobalt	8.4	1.0		mg/Kg	1	4/13/2010 11:52 AM
Copper	16	2.0		mg/Kg	1	4/13/2010 11:52 AM
Lead	14	1.0		mg/Kg	1	4/13/2010 11:52 AM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 11:52 AM
Nickel	55	1.0		mg/Kg	1	4/13/2010 11:52 AM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 11:52 AM
Silver	ND	1.0		mg/Kg	1	4/13/2010 11:52 AM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 11:52 AM
Vanadium	24	1.0		mg/Kg	1	4/13/2010 11:52 AM
Zinc	37	1.0		mg/Kg	1	4/13/2010 11:52 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412B	QC Batch: 63276			PrepDate: 4/12/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 02:25 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B98-1.5
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-006A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413A	QC Batch: 63272			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 11:56 AM
Arsenic	ND	1.0		mg/Kg	1	4/13/2010 11:56 AM
Barium	81	1.0		mg/Kg	1	4/13/2010 11:56 AM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 11:56 AM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 11:56 AM
Chromium	24	1.0		mg/Kg	1	4/13/2010 11:56 AM
Cobalt	6.2	1.0		mg/Kg	1	4/13/2010 11:56 AM
Copper	20	2.0		mg/Kg	1	4/13/2010 11:56 AM
Lead	7.2	1.0		mg/Kg	1	4/13/2010 11:56 AM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 11:56 AM
Nickel	38	1.0		mg/Kg	1	4/13/2010 11:56 AM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 11:56 AM
Silver	ND	1.0		mg/Kg	1	4/13/2010 11:56 AM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 11:56 AM
Vanadium	18	1.0		mg/Kg	1	4/13/2010 11:56 AM
Zinc	49	1.0		mg/Kg	1	4/13/2010 11:56 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412B	QC Batch: 63276			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 02:27 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B103-1
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-011A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413A	QC Batch: 63272			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 12:01 PM
Arsenic	2.3	1.0		mg/Kg	1	4/13/2010 12:01 PM
Barium	150	1.0		mg/Kg	1	4/13/2010 12:01 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 12:01 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 12:01 PM
Chromium	35	1.0		mg/Kg	1	4/13/2010 12:01 PM
Cobalt	9.5	1.0		mg/Kg	1	4/13/2010 12:01 PM
Copper	17	2.0		mg/Kg	1	4/13/2010 12:01 PM
Lead	7.6	1.0		mg/Kg	1	4/13/2010 12:01 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 12:01 PM
Nickel	47	1.0		mg/Kg	1	4/13/2010 12:01 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 12:01 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 12:01 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 12:01 PM
Vanadium	31	1.0		mg/Kg	1	4/13/2010 12:01 PM
Zinc	43	1.0		mg/Kg	1	4/13/2010 12:01 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412B	QC Batch: 63276			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 02:29 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B107-0
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-016A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413A	QC Batch: 63272			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 12:06 PM
Arsenic	3.4	1.0		mg/Kg	1	4/13/2010 12:06 PM
Barium	170	1.0		mg/Kg	1	4/13/2010 12:06 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 12:06 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 12:06 PM
Chromium	33	1.0		mg/Kg	1	4/13/2010 12:06 PM
Cobalt	10	1.0		mg/Kg	1	4/13/2010 12:06 PM
Copper	17	2.0		mg/Kg	1	4/13/2010 12:06 PM
Lead	17	1.0		mg/Kg	1	4/13/2010 12:06 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 12:06 PM
Nickel	42	1.0		mg/Kg	1	4/13/2010 12:06 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 12:06 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 12:06 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 12:06 PM
Vanadium	36	1.0		mg/Kg	1	4/13/2010 12:06 PM
Zinc	42	1.0		mg/Kg	1	4/13/2010 12:06 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412B	QC Batch: 63276			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 02:31 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B108-2
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-021A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413A	QC Batch: 63272			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 12:11 PM
Arsenic	2.4	1.0		mg/Kg	1	4/13/2010 12:11 PM
Barium	160	1.0		mg/Kg	1	4/13/2010 12:11 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 12:11 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 12:11 PM
Chromium	25	1.0		mg/Kg	1	4/13/2010 12:11 PM
Cobalt	7.9	1.0		mg/Kg	1	4/13/2010 12:11 PM
Copper	14	2.0		mg/Kg	1	4/13/2010 12:11 PM
Lead	6.1	1.0		mg/Kg	1	4/13/2010 12:11 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 12:11 PM
Nickel	38	1.0		mg/Kg	1	4/13/2010 12:11 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 12:11 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 12:11 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 12:11 PM
Vanadium	18	1.0		mg/Kg	1	4/13/2010 12:11 PM
Zinc	32	1.0		mg/Kg	1	4/13/2010 12:11 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412B	QC Batch: 63276			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 02:33 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B110-1
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-026A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413A	QC Batch: 63272			PrepDate: 4/12/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 12:15 PM
Arsenic	2.5	1.0		mg/Kg	1	4/13/2010 12:15 PM
Barium	210	1.0		mg/Kg	1	4/13/2010 12:15 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 12:15 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 12:15 PM
Chromium	34	1.0		mg/Kg	1	4/13/2010 12:15 PM
Cobalt	9.1	1.0		mg/Kg	1	4/13/2010 12:15 PM
Copper	16	2.0		mg/Kg	1	4/13/2010 12:15 PM
Lead	12	1.0		mg/Kg	1	4/13/2010 12:15 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 12:15 PM
Nickel	52	1.0		mg/Kg	1	4/13/2010 12:15 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 12:15 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 12:15 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 12:15 PM
Vanadium	30	1.0		mg/Kg	1	4/13/2010 12:15 PM
Zinc	41	1.0		mg/Kg	1	4/13/2010 12:15 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412B	QC Batch: 63276			PrepDate: 4/12/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 02:35 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B112-0
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-031A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413A	QC Batch: 63272			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 12:20 PM
Arsenic	2.8	1.0		mg/Kg	1	4/13/2010 12:20 PM
Barium	150	1.0		mg/Kg	1	4/13/2010 12:20 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 12:20 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 12:20 PM
Chromium	29	1.0		mg/Kg	1	4/13/2010 12:20 PM
Cobalt	9.1	1.0		mg/Kg	1	4/13/2010 12:20 PM
Copper	15	2.0		mg/Kg	1	4/13/2010 12:20 PM
Lead	11	1.0		mg/Kg	1	4/13/2010 12:20 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 12:20 PM
Nickel	44	1.0		mg/Kg	1	4/13/2010 12:20 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 12:20 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 12:20 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 12:20 PM
Vanadium	31	1.0		mg/Kg	1	4/13/2010 12:20 PM
Zinc	39	1.0		mg/Kg	1	4/13/2010 12:20 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412B	QC Batch: 63276			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 02:10 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B113-2
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-036A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413C	QC Batch: 63273			PrepDate: 4/12/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 01:03 PM
Arsenic	1.1	1.0		mg/Kg	1	4/13/2010 01:03 PM
Barium	91	1.0		mg/Kg	1	4/13/2010 01:03 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 01:03 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 01:03 PM
Chromium	11	1.0		mg/Kg	1	4/13/2010 01:03 PM
Cobalt	6.8	1.0		mg/Kg	1	4/13/2010 01:03 PM
Copper	7.6	2.0		mg/Kg	1	4/13/2010 01:03 PM
Lead	15	1.0		mg/Kg	1	4/13/2010 01:03 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 01:03 PM
Nickel	20	1.0		mg/Kg	1	4/13/2010 01:03 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 01:03 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 01:03 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 01:03 PM
Vanadium	13	1.0		mg/Kg	1	4/13/2010 01:03 PM
Zinc	27	1.0		mg/Kg	1	4/13/2010 01:03 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412C	QC Batch: 63277			PrepDate: 4/12/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 03:03 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B115-1
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-041A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413C	QC Batch: 63273			PrepDate: 4/12/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/13/2010 01:08 PM
Arsenic	2.4	1.0		mg/Kg	1	4/13/2010 01:08 PM
Barium	140	1.0		mg/Kg	1	4/13/2010 01:08 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 01:08 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 01:08 PM
Chromium	28	1.0		mg/Kg	1	4/13/2010 01:08 PM
Cobalt	8.4	1.0		mg/Kg	1	4/13/2010 01:08 PM
Copper	18	2.0		mg/Kg	1	4/13/2010 01:08 PM
Lead	29	1.0		mg/Kg	1	4/13/2010 01:08 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 01:08 PM
Nickel	38	1.0		mg/Kg	1	4/13/2010 01:08 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 01:08 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 01:08 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 01:08 PM
Vanadium	25	1.0		mg/Kg	1	4/13/2010 01:08 PM
Zinc	46	1.0		mg/Kg	1	4/13/2010 01:08 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412C	QC Batch: 63277			PrepDate: 4/12/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/12/2010 03:06 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B117-0
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-046A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413C	QC Batch: 63273			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 01:13 PM
Arsenic	ND	1.0		mg/Kg	1	4/13/2010 01:13 PM
Barium	130	1.0		mg/Kg	1	4/13/2010 01:13 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 01:13 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 01:13 PM
Chromium	21	1.0		mg/Kg	1	4/13/2010 01:13 PM
Cobalt	5.3	1.0		mg/Kg	1	4/13/2010 01:13 PM
Copper	33	2.0		mg/Kg	1	4/13/2010 01:13 PM
Lead	18	1.0		mg/Kg	1	4/13/2010 01:13 PM
Molybdenum	1.6	1.0		mg/Kg	1	4/13/2010 01:13 PM
Nickel	26	1.0		mg/Kg	1	4/13/2010 01:13 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 01:13 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 01:13 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 01:13 PM
Vanadium	19	1.0		mg/Kg	1	4/13/2010 01:13 PM
Zinc	180	1.0		mg/Kg	1	4/13/2010 01:13 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412C	QC Batch: 63277			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 03:08 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B118-2
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-051A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413C	QC Batch: 63273			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 01:18 PM
Arsenic	1.7	1.0		mg/Kg	1	4/13/2010 01:18 PM
Barium	94	1.0		mg/Kg	1	4/13/2010 01:18 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 01:18 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 01:18 PM
Chromium	18	1.0		mg/Kg	1	4/13/2010 01:18 PM
Cobalt	8.6	1.0		mg/Kg	1	4/13/2010 01:18 PM
Copper	7.0	2.0		mg/Kg	1	4/13/2010 01:18 PM
Lead	4.8	1.0		mg/Kg	1	4/13/2010 01:18 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 01:18 PM
Nickel	28	1.0		mg/Kg	1	4/13/2010 01:18 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 01:18 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 01:18 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 01:18 PM
Vanadium	24	1.0		mg/Kg	1	4/13/2010 01:18 PM
Zinc	17	1.0		mg/Kg	1	4/13/2010 01:18 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412C	QC Batch: 63277			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 03:10 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B120-1
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-056A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413C	QC Batch: 63273			PrepDate: 4/12/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/13/2010 01:22 PM
Arsenic	2.8	1.0		mg/Kg	1	4/13/2010 01:22 PM
Barium	200	1.0		mg/Kg	1	4/13/2010 01:22 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 01:22 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 01:22 PM
Chromium	24	1.0		mg/Kg	1	4/13/2010 01:22 PM
Cobalt	9.6	1.0		mg/Kg	1	4/13/2010 01:22 PM
Copper	12	2.0		mg/Kg	1	4/13/2010 01:22 PM
Lead	8.6	1.0		mg/Kg	1	4/13/2010 01:22 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 01:22 PM
Nickel	34	1.0		mg/Kg	1	4/13/2010 01:22 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 01:22 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 01:22 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 01:22 PM
Vanadium	26	1.0		mg/Kg	1	4/13/2010 01:22 PM
Zinc	25	1.0		mg/Kg	1	4/13/2010 01:22 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412C	QC Batch: 63277			PrepDate: 4/12/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/12/2010 03:12 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B122-0
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-061A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413C	QC Batch: 63273			PrepDate: 4/12/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 02:39 PM
Arsenic	ND	1.0		mg/Kg	1	4/13/2010 02:39 PM
Barium	120	1.0		mg/Kg	1	4/13/2010 02:39 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 02:39 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 02:39 PM
Chromium	38	1.0		mg/Kg	1	4/13/2010 02:39 PM
Cobalt	6.6	1.0		mg/Kg	1	4/13/2010 02:39 PM
Copper	27	2.0		mg/Kg	1	4/13/2010 02:39 PM
Lead	21	1.0		mg/Kg	1	4/13/2010 02:39 PM
Molybdenum	1.0	1.0		mg/Kg	1	4/13/2010 02:39 PM
Nickel	34	1.0		mg/Kg	1	4/13/2010 02:39 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 02:39 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 02:39 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 02:39 PM
Vanadium	27	1.0		mg/Kg	1	4/13/2010 02:39 PM
Zinc	120	1.0		mg/Kg	1	4/13/2010 02:39 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412C	QC Batch: 63277			PrepDate: 4/12/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 03:14 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B123-2
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-066A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413C	QC Batch: 63273			PrepDate: 4/12/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/13/2010 02:43 PM
Arsenic	2.1	1.0		mg/Kg	1	4/13/2010 02:43 PM
Barium	130	1.0		mg/Kg	1	4/13/2010 02:43 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 02:43 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 02:43 PM
Chromium	22	1.0		mg/Kg	1	4/13/2010 02:43 PM
Cobalt	8.8	1.0		mg/Kg	1	4/13/2010 02:43 PM
Copper	15	2.0		mg/Kg	1	4/13/2010 02:43 PM
Lead	20	1.0		mg/Kg	1	4/13/2010 02:43 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 02:43 PM
Nickel	29	1.0		mg/Kg	1	4/13/2010 02:43 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 02:43 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 02:43 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 02:43 PM
Vanadium	23	1.0		mg/Kg	1	4/13/2010 02:43 PM
Zinc	70	1.0		mg/Kg	1	4/13/2010 02:43 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412C	QC Batch: 63277			PrepDate: 4/12/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/12/2010 03:20 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B125-1
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-071A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413C	QC Batch: 63273			PrepDate: 4/12/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 02:48 PM
Arsenic	1.7	1.0		mg/Kg	1	4/13/2010 02:48 PM
Barium	170	1.0		mg/Kg	1	4/13/2010 02:48 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 02:48 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 02:48 PM
Chromium	22	1.0		mg/Kg	1	4/13/2010 02:48 PM
Cobalt	6.3	1.0		mg/Kg	1	4/13/2010 02:48 PM
Copper	19	2.0		mg/Kg	1	4/13/2010 02:48 PM
Lead	37	1.0		mg/Kg	1	4/13/2010 02:48 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 02:48 PM
Nickel	25	1.0		mg/Kg	1	4/13/2010 02:48 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 02:48 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 02:48 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 02:48 PM
Vanadium	25	1.0		mg/Kg	1	4/13/2010 02:48 PM
Zinc	93	1.0		mg/Kg	1	4/13/2010 02:48 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412C	QC Batch: 63277			PrepDate: 4/12/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 03:22 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B127-0
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-076A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413C	QC Batch: 63273			PrepDate: 4/12/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/13/2010 02:53 PM
Arsenic	ND	1.0		mg/Kg	1	4/13/2010 02:53 PM
Barium	120	1.0		mg/Kg	1	4/13/2010 02:53 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 02:53 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 02:53 PM
Chromium	19	1.0		mg/Kg	1	4/13/2010 02:53 PM
Cobalt	6.2	1.0		mg/Kg	1	4/13/2010 02:53 PM
Copper	27	2.0		mg/Kg	1	4/13/2010 02:53 PM
Lead	23	1.0		mg/Kg	1	4/13/2010 02:53 PM
Molybdenum	1.6	1.0		mg/Kg	1	4/13/2010 02:53 PM
Nickel	29	1.0		mg/Kg	1	4/13/2010 02:53 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 02:53 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 02:53 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 02:53 PM
Vanadium	19	1.0		mg/Kg	1	4/13/2010 02:53 PM
Zinc	170	1.0		mg/Kg	1	4/13/2010 02:53 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412C	QC Batch: 63277			PrepDate: 4/12/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/12/2010 03:24 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B128-2
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-081A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413C	QC Batch: 63273			PrepDate: 4/12/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 02:57 PM
Arsenic	1.8	1.0		mg/Kg	1	4/13/2010 02:57 PM
Barium	110	1.0		mg/Kg	1	4/13/2010 02:57 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 02:57 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 02:57 PM
Chromium	18	1.0		mg/Kg	1	4/13/2010 02:57 PM
Cobalt	4.7	1.0		mg/Kg	1	4/13/2010 02:57 PM
Copper	10	2.0		mg/Kg	1	4/13/2010 02:57 PM
Lead	11	1.0		mg/Kg	1	4/13/2010 02:57 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 02:57 PM
Nickel	19	1.0		mg/Kg	1	4/13/2010 02:57 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 02:57 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 02:57 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 02:57 PM
Vanadium	17	1.0		mg/Kg	1	4/13/2010 02:57 PM
Zinc	20	1.0		mg/Kg	1	4/13/2010 02:57 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412C	QC Batch: 63277			PrepDate: 4/12/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 02:59 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B130-1
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-086A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413D	QC Batch: 63274			PrepDate: 4/12/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 03:57 PM
Arsenic	2.1	1.0		mg/Kg	1	4/13/2010 03:57 PM
Barium	130	1.0		mg/Kg	1	4/13/2010 03:57 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 03:57 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 03:57 PM
Chromium	16	1.0		mg/Kg	1	4/13/2010 03:57 PM
Cobalt	8.1	1.0		mg/Kg	1	4/13/2010 03:57 PM
Copper	8.7	2.0		mg/Kg	1	4/13/2010 03:57 PM
Lead	6.7	1.0		mg/Kg	1	4/13/2010 03:57 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 03:57 PM
Nickel	18	1.0		mg/Kg	1	4/13/2010 03:57 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 03:57 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 03:57 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 03:57 PM
Vanadium	22	1.0		mg/Kg	1	4/13/2010 03:57 PM
Zinc	16	1.0		mg/Kg	1	4/13/2010 03:57 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412D	QC Batch: 63278			PrepDate: 4/12/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 03:47 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B265-0
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-091A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413D	QC Batch: 63274			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 04:02 PM
Arsenic	1.4	1.0		mg/Kg	1	4/13/2010 04:02 PM
Barium	110	1.0		mg/Kg	1	4/13/2010 04:02 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 04:02 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 04:02 PM
Chromium	27	1.0		mg/Kg	1	4/13/2010 04:02 PM
Cobalt	7.0	1.0		mg/Kg	1	4/13/2010 04:02 PM
Copper	31	2.0		mg/Kg	1	4/13/2010 04:02 PM
Lead	18	1.0		mg/Kg	1	4/13/2010 04:02 PM
Molybdenum	1.3	1.0		mg/Kg	1	4/13/2010 04:02 PM
Nickel	35	1.0		mg/Kg	1	4/13/2010 04:02 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 04:02 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 04:02 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 04:02 PM
Vanadium	23	1.0		mg/Kg	1	4/13/2010 04:02 PM
Zinc	140	1.0		mg/Kg	1	4/13/2010 04:02 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412D	QC Batch: 63278			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 04:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B266-2
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-096A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413D	QC Batch: 63274			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 04:07 PM
Arsenic	2.1	1.0		mg/Kg	1	4/13/2010 04:07 PM
Barium	110	1.0		mg/Kg	1	4/13/2010 04:07 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 04:07 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 04:07 PM
Chromium	22	1.0		mg/Kg	1	4/13/2010 04:07 PM
Cobalt	8.1	1.0		mg/Kg	1	4/13/2010 04:07 PM
Copper	14	2.0		mg/Kg	1	4/13/2010 04:07 PM
Lead	16	1.0		mg/Kg	1	4/13/2010 04:07 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 04:07 PM
Nickel	34	1.0		mg/Kg	1	4/13/2010 04:07 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 04:07 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 04:07 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 04:07 PM
Vanadium	24	1.0		mg/Kg	1	4/13/2010 04:07 PM
Zinc	34	1.0		mg/Kg	1	4/13/2010 04:07 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412D	QC Batch: 63278			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 04:02 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B268-1
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-101A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413D	QC Batch: 63274			PrepDate: 4/12/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/13/2010 04:12 PM
Arsenic	3.1	1.0		mg/Kg	1	4/13/2010 04:12 PM
Barium	35	1.0		mg/Kg	1	4/13/2010 04:12 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 04:12 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 04:12 PM
Chromium	37	1.0		mg/Kg	1	4/13/2010 04:12 PM
Cobalt	11	1.0		mg/Kg	1	4/13/2010 04:12 PM
Copper	20	2.0		mg/Kg	1	4/13/2010 04:12 PM
Lead	8.8	1.0		mg/Kg	1	4/13/2010 04:12 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 04:12 PM
Nickel	37	1.0		mg/Kg	1	4/13/2010 04:12 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 04:12 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 04:12 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 04:12 PM
Vanadium	45	1.0		mg/Kg	1	4/13/2010 04:12 PM
Zinc	53	1.0		mg/Kg	1	4/13/2010 04:12 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412D	QC Batch: 63278			PrepDate: 4/12/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/12/2010 04:04 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B270-0
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-106A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413D	QC Batch: 63274			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 04:16 PM
Arsenic	2.1	1.0		mg/Kg	1	4/13/2010 04:16 PM
Barium	140	1.0		mg/Kg	1	4/13/2010 04:16 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 04:16 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 04:16 PM
Chromium	28	1.0		mg/Kg	1	4/13/2010 04:16 PM
Cobalt	8.1	1.0		mg/Kg	1	4/13/2010 04:16 PM
Copper	19	2.0		mg/Kg	1	4/13/2010 04:16 PM
Lead	210	1.0		mg/Kg	1	4/13/2010 04:16 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 04:16 PM
Nickel	57	1.0		mg/Kg	1	4/13/2010 04:16 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 04:16 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 04:16 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 04:16 PM
Vanadium	23	1.0		mg/Kg	1	4/13/2010 04:16 PM
Zinc	99	1.0		mg/Kg	1	4/13/2010 04:16 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412D	QC Batch: 63278			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 04:06 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B271-2
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-111A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413D	QC Batch: 63274			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 04:21 PM
Arsenic	5.1	1.0		mg/Kg	1	4/13/2010 04:21 PM
Barium	190	1.0		mg/Kg	1	4/13/2010 04:21 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 04:21 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 04:21 PM
Chromium	39	1.0		mg/Kg	1	4/13/2010 04:21 PM
Cobalt	9.0	1.0		mg/Kg	1	4/13/2010 04:21 PM
Copper	45	2.0		mg/Kg	1	4/13/2010 04:21 PM
Lead	370	1.0		mg/Kg	1	4/13/2010 04:21 PM
Molybdenum	2.1	1.0		mg/Kg	1	4/13/2010 04:21 PM
Nickel	58	1.0		mg/Kg	1	4/13/2010 04:21 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 04:21 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 04:21 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 04:21 PM
Vanadium	28	1.0		mg/Kg	1	4/13/2010 04:21 PM
Zinc	250	1.0		mg/Kg	1	4/13/2010 04:21 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412D	QC Batch: 63278			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 04:08 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B273-1
Lab Order:	111138	**Collection Date:**	4/6/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111138-116A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413D	QC Batch: 63274			PrepDate:	4/12/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 04:26 PM
Arsenic	3.0	1.0		mg/Kg	1	4/13/2010 04:26 PM
Barium	240	1.0		mg/Kg	1	4/13/2010 04:26 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 04:26 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 04:26 PM
Chromium	28	1.0		mg/Kg	1	4/13/2010 04:26 PM
Cobalt	7.6	1.0		mg/Kg	1	4/13/2010 04:26 PM
Copper	18	2.0		mg/Kg	1	4/13/2010 04:26 PM
Lead	4.8	1.0		mg/Kg	1	4/13/2010 04:26 PM
Molybdenum	2.6	1.0		mg/Kg	1	4/13/2010 04:26 PM
Nickel	26	1.0		mg/Kg	1	4/13/2010 04:26 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 04:26 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 04:26 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 04:26 PM
Vanadium	31	1.0		mg/Kg	1	4/13/2010 04:26 PM
Zinc	39	1.0		mg/Kg	1	4/13/2010 04:26 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100412D	QC Batch: 63278			PrepDate:	4/12/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/12/2010 03:38 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63272** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120091**
Client ID: **PBS** Batch ID: **63272** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914518**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	0.051	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	0.231	1.0									

Sample ID: **LCS-63272** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120091**
Client ID: **LCSS** Batch ID: **63272** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914519**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	48.346	2.0	50.00	0	96.7	80	120				
Arsenic	46.636	1.0	50.00	0	93.3	80	120				
Barium	48.952	1.0	50.00	0	97.9	80	120				
Beryllium	46.362	1.0	50.00	0	92.7	80	120				
Cadmium	47.220	1.0	50.00	0	94.4	80	120				
Chromium	47.856	1.0	50.00	0	95.7	80	120				
Cobalt	49.105	1.0	50.00	0	98.2	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63272** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120091**
Client ID: **LCSS** Batch ID: **63272** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914519**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	48.173	2.0	50.00	0	96.3	80	120				
Lead	48.080	1.0	50.00	0	96.2	80	120				
Molybdenum	50.445	1.0	50.00	0	101	80	120				
Nickel	47.116	1.0	50.00	0.05095	94.1	80	120				
Selenium	45.200	1.0	50.00	0	90.4	80	120				
Silver	47.919	1.0	50.00	0	95.8	80	120				
Thallium	48.416	1.0	50.00	0	96.8	80	120				
Vanadium	48.470	1.0	50.00	0	96.9	80	120				
Zinc	49.084	1.0	50.00	0.2308	97.7	80	120				

Sample ID: **111138-031A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120091**
Client ID: **B112-0** Batch ID: **63272** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914530**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.315	2.0						0.3310	0	20	
Arsenic	1.962	1.0						2.791	34.9	20	R
Barium	184.143	1.0						154.1	17.8	20	
Beryllium	ND	1.0						0.09248	0	20	
Cadmium	0.289	1.0						0.3062	0	20	
Chromium	25.719	1.0						28.51	10.3	20	
Cobalt	8.492	1.0						9.083	6.73	20	
Copper	12.530	2.0						14.60	15.2	20	
Lead	9.788	1.0						10.50	7.04	20	
Molybdenum	0.625	1.0						0.6730	0	20	
Nickel	42.156	1.0						44.08	4.46	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	29.128	1.0						30.65	5.11	20	
Zinc	37.371	1.0						38.54	3.07	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111138-031A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120091**
Client ID: **B112-0** Batch ID: **63272** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914531**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	101.719	2.0	125.0	0.3310	81.1	32	105				
Arsenic	105.560	1.0	125.0	2.791	82.2	49	106				
Barium	318.482	1.0	125.0	154.1	131	31	133				
Beryllium	105.198	1.0	125.0	0.09248	84.1	56	106				
Cadmium	100.671	1.0	125.0	0.3062	80.3	51	103				
Chromium	125.250	1.0	125.0	28.51	77.4	45	114				
Cobalt	107.293	1.0	125.0	9.083	78.6	52	106				
Copper	123.510	2.0	125.0	14.60	87.1	54	125				
Lead	107.553	1.0	125.0	10.50	77.6	34	126				
Molybdenum	106.718	1.0	125.0	0.6730	84.8	54	106				
Nickel	127.672	1.0	125.0	44.08	66.9	45	111				
Selenium	105.458	1.0	125.0	0	84.4	47	104				
Silver	109.896	1.0	125.0	0	87.9	56	112				
Thallium	101.748	1.0	125.0	0	81.4	46	101				
Vanadium	136.494	1.0	125.0	30.65	84.7	54	114				
Zinc	126.574	1.0	125.0	38.54	70.4	28	125				

Sample ID: **111138-031A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120091**
Client ID: **B112-0** Batch ID: **63272** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914532**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	98.985	2.0	125.0	0.3310	78.9	32	105	101.7	2.72	20	
Arsenic	102.018	1.0	125.0	2.791	79.4	49	106	105.6	3.41	20	
Barium	238.151	1.0	125.0	154.1	67.2	31	133	318.5	28.9	20	R
Beryllium	99.725	1.0	125.0	0.09248	79.7	56	106	105.2	5.34	20	
Cadmium	96.344	1.0	125.0	0.3062	76.8	51	103	100.7	4.39	20	
Chromium	126.792	1.0	125.0	28.51	78.6	45	114	125.3	1.22	20	
Cobalt	104.793	1.0	125.0	9.083	76.6	52	106	107.3	2.36	20	
Copper	120.356	2.0	125.0	14.60	84.6	54	125	123.5	2.59	20	
Lead	108.073	1.0	125.0	10.50	78.1	34	126	107.6	0.482	20	

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111138-031A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120091**
Client ID: **B112-0** Batch ID: **63272** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914532**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	104.286	1.0	125.0	0.6730	82.9	54	106	106.7	2.30	20	
Nickel	138.919	1.0	125.0	44.08	75.9	45	111	127.7	8.44	20	
Selenium	99.521	1.0	125.0	0	79.6	47	104	105.5	5.79	20	
Silver	102.858	1.0	125.0	0	82.3	56	112	109.9	6.62	20	
Thallium	98.601	1.0	125.0	0	78.9	46	101	101.7	3.14	20	
Vanadium	129.500	1.0	125.0	30.65	79.1	54	114	136.5	5.26	20	
Zinc	126.641	1.0	125.0	38.54	70.5	28	125	126.6	0.0526	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits

Calculations are based on raw values

- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63273** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120098**
Client ID: **PBS** Batch ID: **63273** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914646**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	0.049	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	0.847	1.0									

Sample ID: **LCS-63273** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120098**
Client ID: **LCSS** Batch ID: **63273** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914647**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	46.323	2.0	50.00	0	92.6	80	120				
Arsenic	44.800	1.0	50.00	0	89.6	80	120				
Barium	46.912	1.0	50.00	0	93.8	80	120				
Beryllium	45.656	1.0	50.00	0	91.3	80	120				
Cadmium	45.943	1.0	50.00	0	91.9	80	120				
Chromium	46.109	1.0	50.00	0	92.2	80	120				
Cobalt	47.179	1.0	50.00	0	94.4	80	120				
Copper	46.721	2.0	50.00	0	93.4	80	120				
Lead	46.578	1.0	50.00	0	93.2	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63273** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120098**
Client ID: **LCSS** Batch ID: **63273** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914647**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	48.549	1.0	50.00	0	97.1	80	120				
Nickel	45.979	1.0	50.00	0.04901	91.9	80	120				
Selenium	43.538	1.0	50.00	0	87.1	80	120				
Silver	46.075	1.0	50.00	0	92.1	80	120				
Thallium	46.861	1.0	50.00	0	93.7	80	120				
Vanadium	46.983	1.0	50.00	0	94.0	80	120				
Zinc	47.749	1.0	50.00	0.8473	93.8	80	120				

Sample ID: **111138-081A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120098**
Client ID: **B128-2** Batch ID: **63273** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914658**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0						0	0	20	
Arsenic	2.230	1.0						1.763	23.4	20	R
Barium	115.903	1.0						113.3	2.25	20	
Beryllium	0.322	1.0						0.2846	0	20	
Cadmium	0.172	1.0						0.1309	0	20	
Chromium	19.541	1.0						18.03	8.04	20	
Cobalt	11.738	1.0						4.727	85.2	20	R
Copper	10.530	2.0						10.08	4.39	20	
Lead	10.297	1.0						11.28	9.09	20	
Molybdenum	0.125	1.0						0.1148	0	20	
Nickel	32.051	1.0						19.41	49.1	20	R
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	21.147	1.0						17.08	21.3	20	R
Zinc	19.937	1.0						20.34	2.02	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111138-081A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120098**
Client ID: **B128-2** Batch ID: **63273** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914659**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	116.435	2.0	125.0	0	93.1	32	105				
Arsenic	117.790	1.0	125.0	1.763	92.8	49	106				
Barium	327.864	1.0	125.0	113.3	172	31	133				S
Beryllium	120.974	1.0	125.0	0.2846	96.6	56	106				
Cadmium	115.128	1.0	125.0	0.1309	92.0	51	103				
Chromium	146.101	1.0	125.0	18.03	102	45	114				
Cobalt	131.687	1.0	125.0	4.727	102	52	106				
Copper	141.809	2.0	125.0	10.08	105	54	125				
Lead	136.503	1.0	125.0	11.28	100	34	126				
Molybdenum	122.114	1.0	125.0	0.1148	97.6	54	106				
Nickel	156.063	1.0	125.0	19.41	109	45	111				
Selenium	114.445	1.0	125.0	0	91.6	47	104				
Silver	121.809	1.0	125.0	0	97.4	56	112				
Thallium	117.231	1.0	125.0	0	93.8	46	101				
Vanadium	150.482	1.0	125.0	17.08	107	54	114				
Zinc	142.466	1.0	125.0	20.34	97.7	28	125				

Sample ID: **111138-081A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120098**
Client ID: **B128-2** Batch ID: **63273** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914660**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	97.972	2.0	125.0	0	78.4	32	105	116.4	17.2	20	
Arsenic	98.621	1.0	125.0	1.763	77.5	49	106	117.8	17.7	20	
Barium	250.976	1.0	125.0	113.3	110	31	133	327.9	26.6	20	R
Beryllium	99.311	1.0	125.0	0.2846	79.2	56	106	121.0	19.7	20	
Cadmium	95.769	1.0	125.0	0.1309	76.5	51	103	115.1	18.4	20	
Chromium	120.052	1.0	125.0	18.03	81.6	45	114	146.1	19.6	20	
Cobalt	101.861	1.0	125.0	4.727	77.7	52	106	131.7	25.5	20	R
Copper	117.519	2.0	125.0	10.08	86.0	54	125	141.8	18.7	20	
Lead	110.109	1.0	125.0	11.28	79.1	34	126	136.5	21.4	20	R

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111138-081A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120098**
Client ID: **B128-2** Batch ID: **63273** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914660**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	102.180	1.0	125.0	0.1148	81.7	54	106	122.1	17.8	20	
Nickel	120.753	1.0	125.0	19.41	81.1	45	111	156.1	25.5	20	R
Selenium	96.175	1.0	125.0	0	76.9	47	104	114.4	17.3	20	
Silver	101.062	1.0	125.0	0	80.8	56	112	121.8	18.6	20	
Thallium	99.009	1.0	125.0	0	79.2	46	101	117.2	16.9	20	
Vanadium	120.400	1.0	125.0	17.08	82.7	54	114	150.5	22.2	20	R
Zinc	117.403	1.0	125.0	20.34	77.6	28	125	142.5	19.3	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63274** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120109**
Client ID: **PBS** Batch ID: **63274** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914760**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	0.225	1.0									
Beryllium	ND	1.0									
Cadmium	0.041	1.0									
Chromium	0.128	1.0									
Cobalt	0.041	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	0.076	1.0									
Nickel	0.101	1.0									
Selenium	ND	1.0									
Silver	0.043	1.0									
Thallium	ND	1.0									
Vanadium	0.069	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63274** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120109**
Client ID: **LCSS** Batch ID: **63274** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914761**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	45.059	2.0	50.00	0	90.1	80	120				
Arsenic	43.436	1.0	50.00	0	86.9	80	120				
Barium	45.313	1.0	50.00	0.2252	90.2	80	120				
Beryllium	44.102	1.0	50.00	0	88.2	80	120				
Cadmium	44.436	1.0	50.00	0.04065	88.8	80	120				
Chromium	44.332	1.0	50.00	0.1282	88.4	80	120				
Cobalt	45.393	1.0	50.00	0.04084	90.7	80	120				
Copper	44.549	2.0	50.00	0	89.1	80	120				
Lead	45.802	1.0	50.00	0	91.6	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63274** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120109**
Client ID: **LCSS** Batch ID: **63274** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914761**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	47.397	1.0	50.00	0.07590	94.6	80	120				
Nickel	44.826	1.0	50.00	0.1009	89.4	80	120				
Selenium	42.662	1.0	50.00	0	85.3	80	120				
Silver	44.601	1.0	50.00	0.04313	89.1	80	120				
Thallium	45.845	1.0	50.00	0	91.7	80	120				
Vanadium	45.240	1.0	50.00	0.06883	90.3	80	120				
Zinc	45.836	1.0	50.00	0	91.7	80	120				

Sample ID: **111138-116A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120109**
Client ID: **B273-1** Batch ID: **63274** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914769**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0						0	0	20	
Arsenic	9.156	1.0						2.959	102	20	R
Barium	930.474	1.0						239.0	118	20	R
Beryllium	0.239	1.0						0.1633	0	20	
Cadmium	0.368	1.0						0.2862	0	20	
Chromium	25.078	1.0						28.05	11.2	20	
Cobalt	10.539	1.0						7.594	32.5	20	R
Copper	19.449	2.0						17.91	8.22	20	
Lead	5.256	1.0						4.825	8.55	20	
Molybdenum	11.709	1.0						2.593	127	20	R
Nickel	28.017	1.0						25.84	8.09	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	1.279	1.0						0.3043	123	20	R
Vanadium	39.069	1.0						31.20	22.4	20	R
Zinc	35.555	1.0						39.09	9.46	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111138-116A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120109**
Client ID: **B273-1** Batch ID: **63274** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914770**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	89.386	2.0	125.0	0	71.5	32	105				
Arsenic	102.771	1.0	125.0	2.959	79.8	49	106				
Barium	437.438	1.0	125.0	239.0	159	31	133				S
Beryllium	96.634	1.0	125.0	0.1633	77.2	56	106				
Cadmium	92.797	1.0	125.0	0.2862	74.0	51	103				
Chromium	129.208	1.0	125.0	28.05	80.9	45	114				
Cobalt	100.950	1.0	125.0	7.594	74.7	52	106				
Copper	130.845	2.0	125.0	17.91	90.3	54	125				
Lead	100.634	1.0	125.0	4.825	76.6	34	126				
Molybdenum	105.436	1.0	125.0	2.593	82.3	54	106				
Nickel	123.386	1.0	125.0	25.84	78.0	45	111				
Selenium	98.572	1.0	125.0	0	78.9	47	104				
Silver	103.373	1.0	125.0	0	82.7	56	112				
Thallium	95.194	1.0	125.0	0.3043	75.9	46	101				
Vanadium	140.544	1.0	125.0	31.20	87.5	54	114				
Zinc	140.620	1.0	125.0	39.09	81.2	28	125				

Sample ID: **111138-116A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120109**
Client ID: **B273-1** Batch ID: **63274** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914771**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	90.744	2.0	125.0	0	72.6	32	105	89.39	1.51	20	
Arsenic	100.665	1.0	125.0	2.959	78.2	49	106	102.8	2.07	20	
Barium	457.325	1.0	125.0	239.0	175	31	133	437.4	4.45	20	S
Beryllium	98.105	1.0	125.0	0.1633	78.4	56	106	96.63	1.51	20	
Cadmium	93.640	1.0	125.0	0.2862	74.7	51	103	92.80	0.905	20	
Chromium	121.985	1.0	125.0	28.05	75.1	45	114	129.2	5.75	20	
Cobalt	100.751	1.0	125.0	7.594	74.5	52	106	101.0	0.198	20	
Copper	124.680	2.0	125.0	17.91	85.4	54	125	130.8	4.83	20	
Lead	99.624	1.0	125.0	4.825	75.8	34	126	100.6	1.01	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111138-116A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/12/2010** RunNo: **120109**
Client ID: **B273-1** Batch ID: **63274** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1914771**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	104.525	1.0	125.0	2.593	81.5	54	106	105.4	0.867	20	
Nickel	118.806	1.0	125.0	25.84	74.4	45	111	123.4	3.78	20	
Selenium	97.851	1.0	125.0	0	78.3	47	104	98.57	0.735	20	
Silver	103.229	1.0	125.0	0	82.6	56	112	103.4	0.139	20	
Thallium	94.523	1.0	125.0	0.3043	75.4	46	101	95.19	0.707	20	
Vanadium	133.701	1.0	125.0	31.20	82.0	54	114	140.5	4.99	20	
Zinc	129.948	1.0	125.0	39.09	72.7	28	125	140.6	7.89	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63267A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120077**
Client ID: **PBS**	Batch ID: **63267**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914237**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.420	5.0									

Sample ID: **LCS-63267**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120077**
Client ID: **LCSS**	Batch ID: **63267**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914238**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	280.807	5.0	250.0	0.4200	112	80	120				

Sample ID: **111138-012A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120077**
Client ID: **B103-2**	Batch ID: **63267**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914249**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	6.270	5.0						5.837	7.15	20	

Sample ID: **111138-012A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120077**
Client ID: **B103-2**	Batch ID: **63267**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914250**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	224.291	5.0	250.0	5.837	87.4	34	126				

Sample ID: **MB-63267B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120077**
Client ID: **PBS**	Batch ID: **63267**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914252**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111138-024A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120077**
Client ID: **B109-2**	Batch ID: **63267**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914262**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	31.186	5.0						23.98	26.1	20	R

Sample ID: **111138-024A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120077**
Client ID: **B109-2**	Batch ID: **63267**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914263**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	224.317	5.0	250.0	23.98	80.1	34	126				

Sample ID: **111138-024A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120077**
Client ID: **B109-2**	Batch ID: **63267**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914264**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	241.427	5.0	250.0	23.98	87.0	34	126	224.3	7.35	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63268A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120079**
Client ID: **PBS**	Batch ID: **63268**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914272**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.146	5.0									

Sample ID: **LCS-63268**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120079**
Client ID: **LCSS**	Batch ID: **63268**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914273**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	289.250	5.0	250.0	0.1461	116	80	120				

Sample ID: **111138-037A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120079**
Client ID: **B114-0**	Batch ID: **63268**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914284**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	35.384	5.0						54.85	43.1	20	R

Sample ID: **111138-037A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120079**
Client ID: **B114-0**	Batch ID: **63268**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914285**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	282.762	5.0	250.0	54.85	91.2	34	126				

Sample ID: **MB-63268B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120079**
Client ID: **PBS**	Batch ID: **63268**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914286**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111138-049A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120079**
Client ID: **B118-0**	Batch ID: **63268**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914297**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	14.653	5.0						17.54	17.9	20	

Sample ID: **111138-049A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120079**
Client ID: **B118-0**	Batch ID: **63268**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914298**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	254.954	5.0	250.0	17.54	95.0	34	126				

Sample ID: **111138-049A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120079**
Client ID: **B118-0**	Batch ID: **63268**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914299**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	269.886	5.0	250.0	17.54	101	34	126	255.0	5.69	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63269A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120080**
Client ID: **PBS**	Batch ID: **63269**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914300**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.498	5.0									

Sample ID: **LCS-63269**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120080**
Client ID: **LCSS**	Batch ID: **63269**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914301**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	285.333	5.0	250.0	0.4979	114	80	120				

Sample ID: **111138-062A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120080**
Client ID: **B122-1**	Batch ID: **63269**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914312**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	9.196	5.0						6.720	31.1	20	R

Sample ID: **111138-062A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120080**
Client ID: **B122-1**	Batch ID: **63269**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914313**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	234.846	5.0	250.0	6.720	91.3	34	126				

Sample ID: **MB-63269B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120080**
Client ID: **PBS**	Batch ID: **63269**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914315**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111138-074A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120080**
Client ID: **B126-1**	Batch ID: **63269**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914325**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	21.212	5.0						22.33	5.11	20	

Sample ID: **111138-074A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120080**
Client ID: **B126-1**	Batch ID: **63269**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914326**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	245.166	5.0	250.0	22.33	89.1	34	126				

Sample ID: **111138-074A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120080**
Client ID: **B126-1**	Batch ID: **63269**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914327**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	184.572	5.0	250.0	22.33	64.9	34	126	245.2	28.2	20	R

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63270A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120081**
Client ID: **PBS**	Batch ID: **63270**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914328**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-63270**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120081**
Client ID: **LCSS**	Batch ID: **63270**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914329**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	273.256	5.0	250.0	0	109	80	120				

Sample ID: **111138-087A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120081**
Client ID: **B130-2**	Batch ID: **63270**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914340**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.315	5.0						5.307	0	20	

Sample ID: **111138-087A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120081**
Client ID: **B130-2**	Batch ID: **63270**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914341**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	219.184	5.0	250.0	5.307	85.6	34	126				

Sample ID: **MB-63270B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120081**
Client ID: **PBS**	Batch ID: **63270**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914342**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.142	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111138-099A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120081**
Client ID: **B267-2**	Batch ID: **63270**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914353**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	6.283	5.0						11.31	57.1	20	R

Sample ID: **111138-099A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120081**
Client ID: **B267-2**	Batch ID: **63270**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914354**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	237.814	5.0	250.0	11.31	90.6	34	126				

Sample ID: **111138-099A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120081**
Client ID: **B267-2**	Batch ID: **63270**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914355**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	250.703	5.0	250.0	11.31	95.8	34	126	237.8	5.28	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63271A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120082**
Client ID: **PBS**	Batch ID: **63271**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914356**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.190	5.0									

Sample ID: **LCS-63271**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120082**
Client ID: **LCSS**	Batch ID: **63271**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914357**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	278.168	5.0	250.0	0.1905	111	80	120				

Sample ID: **111138-112A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120082**
Client ID: **B272-0**	Batch ID: **63271**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914368**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	68.442	5.0						84.13	20.6	20	R

Sample ID: **111138-112A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120082**
Client ID: **B272-0**	Batch ID: **63271**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/12/2010**	SeqNo: **1914369**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	309.540	5.0	250.0	84.13	90.2	34	126				

Sample ID: **MB-63271B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120082**
Client ID: **PBS**	Batch ID: **63271**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/13/2010**	SeqNo: **1914419**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.214	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111138-117A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120082**
Client ID: **B273-2**	Batch ID: **63271**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/13/2010**	SeqNo: **1914424**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.792	5.0						5.388	7.23	20	

Sample ID: **111138-117A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120082**
Client ID: **B273-2**	Batch ID: **63271**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/13/2010**	SeqNo: **1914425**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	213.028	5.0	250.0	5.388	83.1	34	126				

Sample ID: **111138-117A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120082**
Client ID: **B273-2**	Batch ID: **63271**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/13/2010**	SeqNo: **1914426**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	218.833	5.0	250.0	5.388	85.4	34	126	213.0	2.69	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63276**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120048**
Client ID: **PBS**	Batch ID: **63276**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913628**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63276**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120048**
Client ID: **LCSS**	Batch ID: **63276**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913629**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.848	0.10	0.8300	0	102	80	120				

Sample ID: **111138-031A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120048**
Client ID: **B112-0**	Batch ID: **63276**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913630**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.836	0.10	0.8300	0	101	70	130				

Sample ID: **111138-031A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120048**
Client ID: **B112-0**	Batch ID: **63276**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913631**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.836	0.10	0.8300	0	101	70	130	0.8357	0.0235	20	

Sample ID: **111138-031A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120048**
Client ID: **B112-0**	Batch ID: **63276**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913633**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63277**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120057**
Client ID: **PBS**	Batch ID: **63277**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913859**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63277**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120057**
Client ID: **LCSS**	Batch ID: **63277**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913860**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.818	0.10	0.8300	0	98.6	80	120				

Sample ID: **111138-081A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120057**
Client ID: **B128-2**	Batch ID: **63277**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913861**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.858	0.10	0.8300	0	103	70	130				

Sample ID: **111138-081A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120057**
Client ID: **B128-2**	Batch ID: **63277**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913862**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.865	0.10	0.8300	0	104	70	130	0.8577	0.797	20	

Sample ID: **111138-081A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120057**
Client ID: **B128-2**	Batch ID: **63277**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913864**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63278**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120059**
Client ID: **PBS**	Batch ID: **63278**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913898**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63278**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120059**
Client ID: **LCSS**	Batch ID: **63278**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913899**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.839	0.10	0.8300	0	101	80	120				

Sample ID: **111138-116A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120059**
Client ID: **B273-1**	Batch ID: **63278**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913901**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.069	0.10						0.06925	0	20	

Sample ID: **111138-116A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120059**
Client ID: **B273-1**	Batch ID: **63278**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913903**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.852	0.10	0.8300	0.06925	94.3	70	130				

Sample ID: **111138-116A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/12/2010**	RunNo: **120059**
Client ID: **B273-1**	Batch ID: **63278**	TestNo: **EPA 7471A**		Analysis Date: **4/12/2010**	SeqNo: **1913904**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.855	0.10	0.8300	0.06925	94.6	70	130	0.8517	0.347	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 9045_S

Sample ID: **111138-046ADUP** SampType: **DUP** TestCode: **9045_S** Units: **pH Units** Prep Date: RunNo: **120103**
Client ID: **B117-0** Batch ID: **R120103** TestNo: **EPA 9045C** Analysis Date: **4/13/2010** SeqNo: **1914708**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.280	0.10						7.320	0.548	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 9045_S

Sample ID: **111063-025ADUP** SampType: **DUP** TestCode: **9045_S** Units: **pH Units** Prep Date: RunNo: **120108**
Client ID: **ZZZZZZ** Batch ID: **R120108** TestNo: **EPA 9045C** Analysis Date: **4/13/2010** SeqNo: **1914752**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	6.720	0.10						6.570	2.26	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CHAIN OF CUSTODY RECORD

1 OF 4

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #:
Logged By: Date: 4/8/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FedEx ☐ Other: GSO

Sample Condition Upon Receipt: 5.6 4.4
1. CHILLED Y ☑ N ☐ 4. SEALED Y ☐ N ☑
2. HEADSPACE (VOA) Y ☐ N ☐ n/a 5. # OF SPLS MATCH COC Y ☑ N ☐
3. CONTAINER INTACT Y ☑ N ☐ 6. PRESERVED Y ☐ N ☑

Client: Geocon Consultants, Inc.
Attention: Lauren Vigliotti
Address: 6671 Brisa Street
City: Livermore State: CA Zip Code: 94550
Tel:
Fax:

Project Name: I-580 WB HOV Lanes
Project #: E8474-06-01
Sampler: (Printed Name) CM/DW (Signature) C. MERRITT

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
CHRIS MERRITT	4-7-10	1645		4/8/10	935

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Chris Merritt 4/7/2010
Print Name Date
CM
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:
20% Random select for CAM 17 metals ONLY, no total lead. 10% random select for pH

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample ID / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / 8020 (BTEX)	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	Total Lead (EPA 6010)	10% Random pH (EPA 9045)	CAM17 Metals 20% Random, no lead	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	111138 - 1, 2, 3	B94 - 0,1,2	4/6/2010	VAR									X	X	X		X					E	1	B P	C	
	- 4, 5, 6	B98 - 0,1,2	4/6/2010	VAR									X	X	X		X					E	1	B P	C	
	- 7, 8, 9	B101 - 0,1,2	4/6/2010	VAR									X	X	X		X					E	1	B P	C	
	- 10, 11, 12	B103 - 0,1,2	4/6/2010	VAR									X	X	X		X					E	1	B P	C	
	- 13, 14, 15	B105 - 0,1,2	4/6/2010	VAR									X	X	X		X					E	1	B P	C	
	- 16, 17, 18	B107 - 0,1,2	4/6/2010	VAR									X	X	X		X					E	1	B P	C	
	- 19, 20, 21	B108 - 0,1,2	4/6/2010	VAR									X	X	X		X					E	1	B P	C	
	- 22, 23, 24	B109 - 0,1,2	4/6/2010	VAR									X	X	X		X					E	1	B P	C	
	- 25, 26, 27	B110 - 0,1,2	4/6/2010	VAR									X	X	X		X					E	1	B P	C	
	- 28, 29, 30	B111 - 0,1,2	4/6/2010	VAR									X	X	X		X					E	1	B P	C	

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode _____ OTHER _____

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs; B = Emergency Next Workday; C = Critical 2 Workdays; D = Urgent 3 Workdays; E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

2 of 4

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FedEx ☐ Other: _____

Sample Condition Upon Receipt:
1. CHILLED Y ☐ N ☐ 4. SEALED Y ☐ N ☐
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☐ N ☐
3. CONTAINER INTACT Y ☐ N ☐ 6. PRESERVED Y ☐ N ☐

Client: Geocon Consultants, Inc. | Address: 6671 Brisa Street | Tel:
Attention: Lauren Vigliotti | City: Livermore | State: CA | Zip Code: 94550 | Fax:

Project Name: I-580 WB HOV Lanes | Project #: E8474-06-01 | Sampler: (Printed Name) CM/DW (Signature) C. MERRITT

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
CHRIS MERRITT	4-7-10	1645		4/8/10	935
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Chris Merritt 4/7/2010
Print Name Date
CM
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:
20% Random select for CAM 17 metals ONLY, no total lead. 10% random select for pH

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides); 8082 (PCB); 8260B (Volatiles); 8270C (BNA); 6010B (Total Metal); 8015B (GRO) / 8020 (BTEX); 8015B (DRO); 8021 (BTEX); TITLE 22 / CAM 17 (6010 / 7000); Total Lead (EPA 6010); 10% Random pH (EPA 9045); CAM17 Metals 20% Random, no lead

SPECIFY APPROPRIATE MATRIX: SOIL; WATER; GROUND WATER; WASTEWATER

PRESERVATION

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode_____ OTHER _____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample ID / Location	Date	Time	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	11113 [-31,32,33]	B112 - 0,1,2	4/6/2010	VAR	E	1	B P	C	
	-34,35,36	B113 - 0,1,2	4/6/2010	VAR	E	1	B P	C	
	-37,38,39	B114 - 0,1,2	4/6/2010	VAR	E	1	B P	C	
	-40,41,42	B115 - 0,1,2	4/6/2010	VAR	E	1	B P	C	
	-43,44,45	B116 - 0,1,2	4/6/2010	VAR	E	1	B P	C	
	-46,47,48	B117 - 0,1,2	4/6/2010	VAR	E	1	B P	C	
	-49,50,51	B118 - 0,1,2	4/6/2010	VAR	E	1	B P	C	
	-52,53,54	B119 - 0,1,2	4/6/2010	VAR	E	1	B P	C	
	-55,56,57	B120 - 0,1,2	4/6/2010	VAR	E	1	B P	C	
	-58,59,60	B121 - 0,1,2	4/6/2010	VAR	E	1	B P	C	

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs; B = Emergency Next Workday; C = Critical 2 Workdays; D = Urgent 3 Workdays; E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives:
H=HCl N=HNO_3 S=H_2SO_4 C=4°C
Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

3 of 4

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FedEx ☐ Other: _____

Sample Condition Upon Receipt
1. CHILLED Y ☐ N ☐ 4. SEALED Y ☐ N ☐
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☐ N ☐
3. CONTAINER INTACT Y ☐ N ☐ 6. PRESERVED Y ☐ N ☐

Client: Geocon Consultants, Inc. | Address: 6671 Brisa Street | Tel:
Attention: Lauren Vigliotti | City: Livermore | State: CA | Zip Code: 94550 | Fax:

Project Name: I-580 WB HOV Lanes | Project #: E8474-06-01 | Sampler: (Printed Name) CM/DW (Signature) C. MERRITT

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
CHRIS MERRITT	4-7-10	1645		4/8/10	935

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Chris Merritt 4/7/2010
Print Name Date
CM
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:
20% Random select for CAM 17 metals ONLY, no total lead. 10% random select for pH

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides), 8082 (PCB), 8260B (Volatiles), 8270C (BNA), 6010B (Total Metal), 8015B (GRO) / 8020 (BTEX), 8015B (DRO), 8021 (BTEX), TITLE 22 / CAM 17 (6010 / 7000), Total Lead (EPA 6010), 10% Random pH (EPA 9045), CAM17 Metals 20% Random, no lead

SPECIFY APPROPRIATE MATRIX: SOIL, WATER, GROUND WATER, WASTEWATER

PRESERVATION

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode_____ OTHER _____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample ID / Location	Date	Time	8081A	8082	8260B	8270C	6010B	8015B (GRO)	8015B (DRO)	8021	TITLE 22	Total Lead	10% Random pH	CAM17 Metals	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	10113 Y-C1, C4, C3	B122 - 0,1,2	4/6/2010	VAR									X	X	X		X				E	1	B P	C	
	- C4, C3, CC	B123 - 0,1,2	4/6/2010	VAR									X	X	X		X				E	1	B P	C	
	- C7, C9, C5	B124 - 0,1,2	4/6/2010	VAR									X	X	X		X				E	1	B P	C	
	- 74, 71, 7C	B125 - 0,1,2	4/6/2010	VAR									X	X	X		X				E	1	B P	C	
	- 73, 74, 75	B126 - 0,1,2	4/6/2010	VAR									X	X	X		X				E	1	B P	C	
	- 76, 77, 78	B127 - 0,1,2	4/6/2010	VAR									X	X	X		X				E	1	B P	C	
	- 75, 54, 81	B128 - 0,1,2	4/6/2010	VAR									X	X	X		X				E	1	B P	C	
	- 82, 83, 84	B129 - 0,1,2	4/6/2010	VAR									X	X	X		X				E	1	B P	C	
	- 85, 86, 87	B130 - 0,1,2	4/6/2010	VAR									X	X	X		X				E	1	B P	C	
	88, 89, 90	B264 - 0,1,2	4/6/2010	VAR									X	X	X		X				E	1	B P	C	

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs | B = Emergency Next Workday | C = Critical 2 Workdays | D = Urgent 3 Workdays | E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl $N=HNO_3$ $S=H_2SO_4$ C=4°C $Z=Zn(AC)_2$ O=NaOH $T=Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FedEx ☐ Other: _____

Sample Condition Upon Receipt:
1. CHILLED Y ☐ N ☐ 4. SEALED Y ☐ N ☐
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☐ N ☐
3. CONTAINER INTACT Y ☐ N ☐ 6. PRESERVED Y ☐ N ☐

Client: Geocon Consultants, Inc.
Attention: Lauren Vigliotti
Address: 6671 Brisa Street
City: Livermore State: CA Zip Code: 94550
Tel:
Fax:

Project Name: I-580 WB HOV Lanes
Project #: E8474-06-01
Sampler: (Printed Name) CM/PW (Signature) C. MERRITT

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
CHRIS MERRITT	4-7-10	1645		4/8/10	935

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Chris Merritt 4/7/2010
Print Name Date
CM
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:
20% Random select for CAM 17 metals ONLY, no total lead. 10% random select for pH

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides), 8082 (PCB), 8260B (Volatiles), 8270C (BNA), 6010B (Total Metal), 8015B (GRO) / 8020 (BTEX), 8015B (DRO), 8021 (BTEX), TITLE 22 / CAM 17 (6010 / 7000), Total Lead (EPA 6010), 10% Random pH (EPA 9045), CAM17 Metals 20% Random, no lead

SPECIFY APPROPRIATE MATRIX: SOIL, WATER, GROUND WATER, WASTEWATER

PRESERVATION

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode_____ OTHER _____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample ID / Location	Date	Time	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	111138 - 91, 92, 93	B265 - 0,1,2	4/6/2010	VAR	E	1	B P	C	
	- 94, 95, 96	B266 - 0,1,2	4/6/2010	VAR	E	1	B P	C	
	- 97, 98, 99	B267 - 0,1,2	4/6/2010	VAR	E	1	B P	C	
	- 100, 101, 102	B268 - 0,1,2	4/6/2010	VAR	E	1	B P	C	
	- 103, 104, 105	B269 - 0,1,2	4/6/2010	VAR	E	1	B P	C	
	- 106, 107, 108	B270 - 0,1,2	4/6/2010	VAR	E	1	B P	C	
	- 109, 110, 111	B271 - 0,1,2	4/6/2010	VAR	E	1	B P	C	
	- 112, 113, 114	B272 - 0,1,2	4/6/2010	VAR	E	1	B P	C	
	- 115, 116, 117	B273 - 0,1,2	4/6/2010	VAR	E	1	B P	C	

(For each sample row: X X X under TITLE 22 / CAM 17 (6010 / 7000), Total Lead (EPA 6010), 10% Random pH (EPA 9045); X under SOIL.)

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs; B = Emergency Next Workday; C = Critical 2 Workdays; D = Urgent 3 Workdays; E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives:
H=HCl N=HNO_3 S=H_2SO_4 C=4°C
Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

Diane Galvan

From: Carmen Aguila
Sent: Tuesday, April 13, 2010 10:47 AM
To: Diane Galvan
Cc: Eddie Rodriguez; Edgar Morrison
Subject: FW: I-580 WB HOV Lanes, E8474-06-01

From: Chris Merritt [mailto:merritt@geoconinc.com]
Sent: Monday, April 12, 2010 2:10 PM
To: Carmen Aguila
Subject: RE: I-580 WB HOV Lanes, E8474-06-01

Yes, that is correct Carmen.

-----Original Message-----
From: Carmen Aguila [mailto:Carmen@atlglobal.com]
Sent: Monday, April 12, 2010 10:21 AM
To: merritt@geoconinc.com
Cc: Diane Galvan
Subject: I-580 WB HOV Lanes, E8474-06-01

Hi Chris,

Per our conversation last Friday, there was no sample submitted for B98-2.0, this should be B98-1.5 as indicated on the sample container that was received.

Please reply to confirm.

Thank you,
Carmen Aguila
Sample Control Manager

Advanced Technology Laboratories
www.atlglobal.com
Tel: (562) 989-4045 ext. 245
Fax: (562) 989-4040

Advanced Technology Laboratories is a full-service environmental lab providing organic and inorganic analyses of soil, water, wastewater, storm water and hazardous waste samples. ATL is accredited by the State of California, NELAP and State of Nevada and holds various SBE, DBE and MBE certificates and a USDA soil permit. ATL takes pride in providing our customers with quick turnaround time, excellent customer service and defensible data while offering very competitive rates. *Advanced Technology Labs - Your Partner for Quality Environmental Testing*

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April 23, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111138

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 08, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I-580 WB HOV Lanes, E8474-06-01
Lab Order: 111138

CASE NARRATIVE

Analytical Comments for Method 7420

Dilution was necessary for samples 111138-055A, 111138-106A and 111138-111A, due to sample matrix.

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 4/23/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (STLC)
WET/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111138
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111138-037A	B114-0	2.1	mg/L	63450	0.25	1	4/6/2010	4/20/2010
111138-038A	B114-1	2.5	mg/L	63450	0.25	1	4/6/2010	4/20/2010
111138-055A	B120-0	13	mg/L	63450	0.50	2	4/6/2010	4/20/2010
111138-069A	B124-2	2.6	mg/L	63450	0.25	1	4/6/2010	4/20/2010
111138-083A	B129-1	2.6	mg/L	63450	0.25	1	4/6/2010	4/20/2010
111138-097A	B267-0	1.8	mg/L	63450	0.25	1	4/6/2010	4/20/2010
111138-106A	B270-0	12	mg/L	63450	0.50	2	4/6/2010	4/20/2010
111138-111A	B271-2	24	mg/L	63450	2.5	10	4/6/2010	4/20/2010
111138-112A	B272-0	4.0	mg/L	63450	0.25	1	4/6/2010	4/20/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-63450A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **PBS**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919936**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63450**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **LCSS**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919937**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.873	0.25	5.000	0	97.5	80	120				

Sample ID: **111138-111A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **B271-2**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919948**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	24.451	2.5						24.48	0.114	20	

Sample ID: **111138-111A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **B271-2**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919949**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	28.538	2.5	5.000	24.48	81.2	80	120				

Sample ID: **MB-63450B**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **PBS**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919950**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **111138-112A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **B272-0**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919953**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.037	0.25						3.950	2.18	20	

Sample ID: **111138-112A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **B272-0**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919954**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	8.437	0.25	5.000	3.950	89.7	80	120				

Sample ID: **111138-112A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **B272-0**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919955**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	8.421	0.25	5.000	3.950	89.4	80	120	8.437	0.186	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Friday, April 16, 2010 10:07 AM
To: Diane Galvan
Subject: I-580 project

Hi Diane. Please run the following samples for WET lead, standard TAT. Thank you and have a great weekend.

WO	ID
111138	B271-2
111138	B270-0
111138	B120-0
111138	B272-0
111138	B267-0
111138	B114-1
111138	B124-2
111138	B114-0
111138	B129-1
111137	B96-1
111137	B70-0
111137	B77-0
111137	B61-2
111137	B65-0
111137	B78-0
111137	B90-2
111137	B62-2
111137	B99-0
111137	B55-0
111137	B84-2
111137	B86-2
111137	B93-0
111137	B81-2
111137	B102-0
111137	B73-0
111137	B76-0
111137	B64-0
111137	B100-2
111137	B85-2
111137	B77-1
111137	B63-0
111137	B51-0
111137	B82-2

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

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GEOCON

GEOTECHNICAL ENVIRONMENTAL MATERIALS

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May 04, 2010

Lauren Vigliotti
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Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111138

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 08, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

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Advanced Technology Laboratories

Date: 5/4/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION
WET DI/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111138
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111138-055A	B120-0	ND	mg/L	63741	0.25	1	4/6/2010	5/3/2010
111138-106A	B270-0	ND	mg/L	63741	0.25	1	4/6/2010	5/3/2010
111138-111A	B271-2	ND	mg/L	63741	0.25	1	4/6/2010	5/3/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 5/4/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (TCLP)
EPA 1311/ 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111138
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111138-055A	B120-0	ND	mg/L	63809	0.25	1	4/6/2010	5/3/2010
111138-106A	B270-0	0.43	mg/L	63809	0.25	1	4/6/2010	5/3/2010
111138-111A	B271-2	0.50	mg/L	63809	0.25	1	4/6/2010	5/3/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **MB-63741A**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120801**
Client ID: **PBS**	Batch ID: **63741**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928277**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63741**	SampType: **LCS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120801**
Client ID: **LCSS**	Batch ID: **63741**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928278**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.047	0.25	5.000	0	101	80	120				

Sample ID: **111139-058A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120801**
Client ID: **ZZZZZZ**	Batch ID: **63741**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928289**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111139-058A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120801**
Client ID: **ZZZZZZ**	Batch ID: **63741**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928290**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.070	0.25	5.000	0	101	70	130				

Sample ID: **MB-63741B**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120801**
Client ID: **PBS**	Batch ID: **63741**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928291**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **111139-098A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120801**
Client ID: **ZZZZZZ**	Batch ID: **63741**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928299**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111139-098A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120801**
Client ID: **ZZZZZZ**	Batch ID: **63741**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928300**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.121	0.25	5.000	0	102	70	130				

Sample ID: **111139-098A-MSD**	SampType: **MSD**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120801**
Client ID: **ZZZZZZ**	Batch ID: **63741**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928301**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.073	0.25	5.000	0	101	70	130	5.121	0.951	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63809A**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **PBS**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927969**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63784A TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **PBS**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927970**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63809**	SampType: **LCS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **LCSS**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927971**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	1.029	0.25	1.000	0	103	80	120				

Sample ID: **111138-055A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **B120-0**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927982**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.223	0.25						0.2423	0	20	

Sample ID: **111138-055A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **B120-0**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927983**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.552	0.25	2.500	0.2423	92.4	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111138
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63809B**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **PBS**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927984**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63784B TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **PBS**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927985**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **111139-073A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **ZZZZZZ**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927992**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111139-073A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **ZZZZZZ**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927993**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.678	0.25	2.500	0	107	70	130				

Sample ID: **111139-073A-MSD**	SampType: **MSD**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **ZZZZZZ**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927994**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.675	0.25	2.500	0	107	70	130	2.678	0.119	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Tuesday, April 27, 2010 12:05 PM
To: Diane Galvan
Subject: I-580 WB HOV Lane project
Attachments: I-580 project-lead_TCLP_DI-WET.xls

HI Diane:
Please find the attached excel workbook with a list of TCLP and DI-WET lead analyses for samples for the referenced project. Please analyze under standard TAT. Thank you!

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

Geocon Consultants, Inc
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GEOCON

GEOTECHNICAL ENVIRONMENTAL MATERIALS

San Diego Murrieta Burbank Bakersfield Sacramento Livermore Carson City Las Vegas Portland

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WorkOrder	ClientSampID	R_Rslt	DI-WET	TCLP
111138	B271-2	24	X	X
111138	B120-0	13	X	X
111138	B270-0	12	X	X
111137	B61-2	6.0	X	X
111137	B70-0	5.5	X	X
111137	B76-0	5.4	X	
111069	B225-1	25	X	X
111069	B204-0	16	X	X
111069	B210-0	14	X	X
111069	B219-0	13	X	X
111069	B207-2	8.9	X	X
111069	B191-1	8.6	X	X
111069	B209-0	7.3	X	X
111069	B224-0	6.8	X	
111069	B206-0	5.6	X	X
111069	B207-1	5.2	X	X
111069	B200-0	5.0	X	
111068	B211-0	13	X	X
111068	B184-0	12	X	X
111068	B207-0	12	X	
111068	B217-0	10	X	
111068	B193-0	8.5	X	X
111068	B208-0	7.5	X	
111068	B202-0	6.4	X	
110888	B229-0	57	X	X
110888	B237-0	37	X	X
110888	B240-0	20	X	X
110888	B228-0	16	X	X
110888	B236-0	14	X	X
110888	B241-0	13	X	X
110888	B234-0	13	X	X
110888	B227-0	9.8	X	
110888	B235-0	8.5	X	X
110888	B238-0	5.4	X	X
110816	B251-0	41.0	X	X
110816	B262-0	33.0	X	X
110816	B250-0	21.0	X	X
110816	B263-0	20.0	X	X
110816	B257-0	7.9	X	
110816	B242-0	7.5	X	X
110816	B244-1	6.0	X	
110816	B256-0	5.9	X	
110816	B254-0	5.1	X	X

April 19, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111139

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 08, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I-580 WB HOV Lanes, E8474-06-01
Lab Order: 111139

CASE NARRATIVE

Analytical Comments for Method 6010

RPD for Duplicate (DUP) and/or Matrix Spike (MS)/Matrix Spike Duplicate (MSD) is outside criteria for samples 111139-026ADUP, 1111139=045ADUP, 111139-051ADUP, 111139-063ADUP, 111139-076ADUP, 111139-095ADUP, 111139-101ADUP, 111139-101AMSD, 111139-113ADUP, 111139-138ADUP, 111139-145ADUP and 111139-145AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 4/19/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111139
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111139-002A	B179-1	5.5	mg/Kg	63341	5.0	1	4/5/2010	4/16/2010
111139-003A	B179-2	5.4	mg/Kg	63341	5.0	1	4/5/2010	4/16/2010
111139-004A	B178-0	11	mg/Kg	63341	5.0	1	4/5/2010	4/16/2010
111139-006A	B178-2	6.2	mg/Kg	63341	5.0	1	4/5/2010	4/16/2010
111139-007A	B177-0	140	mg/Kg	63341	5.0	1	4/5/2010	4/16/2010
111139-008A	B177-1	57	mg/Kg	63341	5.0	1	4/5/2010	4/16/2010
111139-009A	B177-2	12	mg/Kg	63341	5.0	1	4/5/2010	4/16/2010
111139-011A	B176-1	ND	mg/Kg	63341	5.0	1	4/5/2010	4/16/2010
111139-012A	B176-2	ND	mg/Kg	63341	5.0	1	4/5/2010	4/16/2010
111139-013A	B175-0	37	mg/Kg	63341	5.0	1	4/5/2010	4/16/2010
111139-014A	B175-1	ND	mg/Kg	63341	5.0	1	4/5/2010	4/16/2010
111139-016A	B174-0	36	mg/Kg	63341	5.0	1	4/5/2010	4/16/2010
111139-017A	B174-1	5.8	mg/Kg	63341	5.0	1	4/5/2010	4/16/2010
111139-018A	B174-2	23	mg/Kg	63341	5.0	1	4/5/2010	4/16/2010
111139-019A	B173-0	130	mg/Kg	63341	5.0	1	4/5/2010	4/16/2010
111139-021A	B173-2	12	mg/Kg	63341	5.0	1	4/5/2010	4/16/2010
111139-022A	B172-0	93	mg/Kg	63341	5.0	1	4/5/2010	4/16/2010
111139-023A	B172-1	7.9	mg/Kg	63341	5.0	1	4/5/2010	4/16/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/19/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111139
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111139-024A	B172-2	11	mg/Kg	63341	5.0	1	4/5/2010	4/16/2010
111139-026A	B171-1	16	mg/Kg	63341	5.0	1	4/5/2010	4/16/2010
111139-027A	B171-2	10	mg/Kg	63342	5.0	1	4/5/2010	4/16/2010
111139-028A	B170-0	9.0	mg/Kg	63342	5.0	1	4/5/2010	4/16/2010
111139-029A	B170-1	ND	mg/Kg	63342	5.0	1	4/5/2010	4/16/2010
111139-031A	B169-0	ND	mg/Kg	63342	5.0	1	4/5/2010	4/16/2010
111139-032A	B169-1	ND	mg/Kg	63342	5.0	1	4/5/2010	4/16/2010
111139-033A	B169-2	16	mg/Kg	63342	5.0	1	4/5/2010	4/16/2010
111139-034A	B168-0	33	mg/Kg	63342	5.0	1	4/5/2010	4/16/2010
111139-036A	B168-2	ND	mg/Kg	63342	5.0	1	4/5/2010	4/16/2010
111139-037A	B167-0	30	mg/Kg	63342	5.0	1	4/5/2010	4/16/2010
111139-038A	B167-1	12	mg/Kg	63342	5.0	1	4/5/2010	4/16/2010
111139-039A	B167-2	7.4	mg/Kg	63342	5.0	1	4/5/2010	4/16/2010
111139-041A	B166-1	13	mg/Kg	63342	5.0	1	4/5/2010	4/16/2010
111139-042A	B166-2	ND	mg/Kg	63342	5.0	1	4/5/2010	4/16/2010
111139-043A	B165-0	230	mg/Kg	63342	5.0	1	4/5/2010	4/16/2010
111139-044A	B165-1	17	mg/Kg	63342	5.0	1	4/5/2010	4/16/2010
111139-046A	B164-0	310	mg/Kg	63342	5.0	1	4/5/2010	4/16/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/19/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111139
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111139-047A	B164-1	10	mg/Kg	63342	5.0	1	4/5/2010	4/16/2010
111139-048A	B164-2	11	mg/Kg	63342	5.0	1	4/5/2010	4/16/2010
111139-049A	B163-0	72	mg/Kg	63342	5.0	1	4/5/2010	4/16/2010
111139-051A	B163-2	ND	mg/Kg	63342	5.0	1	4/5/2010	4/16/2010
111139-052A	B162-0	520	mg/Kg	63343	5.0	1	4/5/2010	4/16/2010
111139-053A	B162-1	7.3	mg/Kg	63343	5.0	1	4/5/2010	4/16/2010
111139-054A	B162-1.5	ND	mg/Kg	63343	5.0	1	4/5/2010	4/16/2010
111139-056A	B161-1	9.5	mg/Kg	63343	5.0	1	4/5/2010	4/16/2010
111139-057A	B161-2	26	mg/Kg	63343	5.0	1	4/5/2010	4/16/2010
111139-058A	B160-0	110	mg/Kg	63343	5.0	1	4/5/2010	4/16/2010
111139-059A	B160-1	17	mg/Kg	63343	5.0	1	4/5/2010	4/16/2010
111139-061A	B159-0	270	mg/Kg	63343	5.0	1	4/5/2010	4/16/2010
111139-062A	B159-1	78	mg/Kg	63343	5.0	1	4/5/2010	4/16/2010
111139-063A	B159-2	14	mg/Kg	63343	5.0	1	4/5/2010	4/16/2010
111139-064A	B158-0	54	mg/Kg	63343	5.0	1	4/5/2010	4/16/2010
111139-066A	B158-2	16	mg/Kg	63343	5.0	1	4/5/2010	4/16/2010
111139-067A	B157-0	81	mg/Kg	63343	5.0	1	4/5/2010	4/16/2010
111139-068A	B157-1	57	mg/Kg	63343	5.0	1	4/5/2010	4/16/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

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Date: 4/19/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111139
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111139-069A	B157-2	ND	mg/Kg	63343	5.0	1	4/5/2010	4/16/2010
111139-071A	B156-1	7.4	mg/Kg	63343	5.0	1	4/5/2010	4/16/2010
111139-072A	B156-2	ND	mg/Kg	63343	5.0	1	4/5/2010	4/16/2010
111139-073A	B155-0	160	mg/Kg	63343	5.0	1	4/5/2010	4/16/2010
111139-074A	B155-1	120	mg/Kg	63343	5.0	1	4/5/2010	4/16/2010
111139-076A	B154-0	43	mg/Kg	63343	5.0	1	4/5/2010	4/16/2010
111139-077A	B154-1	ND	mg/Kg	63344	5.0	1	4/5/2010	4/16/2010
111139-078A	B154-2	ND	mg/Kg	63344	5.0	1	4/5/2010	4/16/2010
111139-079A	B153-0	17	mg/Kg	63344	5.0	1	4/5/2010	4/16/2010
111139-081A	B153-2	ND	mg/Kg	63344	5.0	1	4/5/2010	4/16/2010
111139-082A	B152-0	22	mg/Kg	63344	5.0	1	4/5/2010	4/16/2010
111139-083A	B152-1	16	mg/Kg	63344	5.0	1	4/5/2010	4/16/2010
111139-084A	B152-2	5.1	mg/Kg	63344	5.0	1	4/5/2010	4/16/2010
111139-086A	B151-1	81	mg/Kg	63344	5.0	1	4/5/2010	4/16/2010
111139-087A	B151-2	120	mg/Kg	63344	5.0	1	4/5/2010	4/16/2010
111139-088A	B150-0	29	mg/Kg	63344	5.0	1	4/5/2010	4/16/2010
111139-089A	B150-1	ND	mg/Kg	63344	5.0	1	4/5/2010	4/16/2010
111139-091A	B149-0	33	mg/Kg	63344	5.0	1	4/5/2010	4/16/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/19/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111139
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111139-092A	B149-1	19	mg/Kg	63344	5.0	1	4/5/2010	4/16/2010
111139-093A	B149-2	ND	mg/Kg	63344	5.0	1	4/5/2010	4/16/2010
111139-094A	B148-0	7.6	mg/Kg	63344	5.0	1	4/5/2010	4/16/2010
111139-096A	B148-2	19	mg/Kg	63344	5.0	1	4/5/2010	4/16/2010
111139-097A	B147-0	39	mg/Kg	63344	5.0	1	4/5/2010	4/16/2010
111139-098A	B147-1	130	mg/Kg	63344	5.0	1	4/5/2010	4/16/2010
111139-099A	B147-2	9.1	mg/Kg	63344	5.0	1	4/5/2010	4/16/2010
111139-101A	B146-1	37	mg/Kg	63344	5.0	1	4/5/2010	4/16/2010
111139-102A	B146-2	6.1	mg/Kg	63345	5.0	1	4/5/2010	4/16/2010
111139-103A	B145-0	29	mg/Kg	63345	5.0	1	4/5/2010	4/16/2010
111139-104A	B145-1	29	mg/Kg	63345	5.0	1	4/5/2010	4/16/2010
111139-106A	B144-0	14	mg/Kg	63345	5.0	1	4/5/2010	4/16/2010
111139-107A	B144-1	21	mg/Kg	63345	5.0	1	4/5/2010	4/16/2010
111139-108A	B144-2	5.7	mg/Kg	63345	5.0	1	4/5/2010	4/16/2010
111139-109A	B143-0	38	mg/Kg	63345	5.0	1	4/5/2010	4/16/2010
111139-111A	B143-2	5.7	mg/Kg	63345	5.0	1	4/5/2010	4/16/2010
111139-112A	B142-0	21	mg/Kg	63345	5.0	1	4/5/2010	4/16/2010
111139-113A	B142-1	43	mg/Kg	63345	5.0	1	4/5/2010	4/16/2010

Qualifiers:

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H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/19/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111139
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111139-114A	B142-2	8.4	mg/Kg	63345	5.0	1	4/5/2010	4/16/2010
111139-116A	B141-1	ND	mg/Kg	63345	5.0	1	4/5/2010	4/16/2010
111139-117A	B141-2	ND	mg/Kg	63345	5.0	1	4/5/2010	4/16/2010
111139-118A	B140-0	29	mg/Kg	63345	5.0	1	4/5/2010	4/16/2010
111139-119A	B140-1	5.2	mg/Kg	63345	5.0	1	4/5/2010	4/16/2010
111139-121A	B139-0	24	mg/Kg	63345	5.0	1	4/5/2010	4/16/2010
111139-122A	B139-1	18	mg/Kg	63345	5.0	1	4/5/2010	4/16/2010
111139-123A	B139-2	11	mg/Kg	63345	5.0	1	4/5/2010	4/16/2010
111139-124A	B138-0	ND	mg/Kg	63345	5.0	1	4/5/2010	4/16/2010
111139-126A	B138-2	ND	mg/Kg	63345	5.0	1	4/5/2010	4/16/2010
111139-127A	B137-0	51	mg/Kg	63346	5.0	1	4/5/2010	4/16/2010
111139-128A	B137-1	7.6	mg/Kg	63346	5.0	1	4/5/2010	4/16/2010
111139-129A	B137-2	ND	mg/Kg	63346	5.0	1	4/5/2010	4/16/2010
111139-131A	B136-1	5.0	mg/Kg	63346	5.0	1	4/5/2010	4/16/2010
111139-132A	B136-2	ND	mg/Kg	63346	5.0	1	4/5/2010	4/16/2010
111139-133A	B135-0	13	mg/Kg	63346	5.0	1	4/5/2010	4/16/2010
111139-134A	B135-1	ND	mg/Kg	63346	5.0	1	4/5/2010	4/16/2010
111139-136A	B134-0	8.9	mg/Kg	63346	5.0	1	4/5/2010	4/16/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/19/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111139
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111139-137A	B134-1	ND	mg/Kg	63346	5.0	1	4/5/2010	4/16/2010
111139-138A	B134-2	5.5	mg/Kg	63346	5.0	1	4/5/2010	4/16/2010
111139-139A	B133-0	29	mg/Kg	63346	5.0	1	4/5/2010	4/16/2010
111139-141A	B133-2	9.8	mg/Kg	63346	5.0	1	4/5/2010	4/16/2010
111139-142A	B132-0	6.9	mg/Kg	63346	5.0	1	4/5/2010	4/16/2010
111139-143A	B132-1	5.7	mg/Kg	63346	5.0	1	4/5/2010	4/16/2010
111139-144A	B132-2	ND	mg/Kg	63346	5.0	1	4/5/2010	4/16/2010
111139-146A	B131-1	12	mg/Kg	63346	5.0	1	4/5/2010	4/16/2010
111139-147A	B131-2	5.5	mg/Kg	63346	5.0	1	4/5/2010	4/16/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/19/2010

ANALYTICAL RESULTS

pH
EPA 9045C

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111139
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	pH	**Analyst:**	CBB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111139-010A	B176-0	7.6	pH Units	R120258	0.10	1	4/5/2010	4/16/2010
111139-020A	B173-1	8.1	pH Units	R120258	0.10	1	4/5/2010	4/16/2010
111139-030A	B170-1.5	8.3	pH Units	R120258	0.10	1	4/5/2010	4/16/2010
111139-040A	B166-0	8.2	pH Units	R120258	0.10	1	4/5/2010	4/16/2010
111139-050A	B163-1	7.3	pH Units	R120258	0.10	1	4/5/2010	4/16/2010
111139-060A	B160-2	8.0	pH Units	R120258	0.10	1	4/5/2010	4/16/2010
111139-070A	B156-0	8.2	pH Units	R120258	0.10	1	4/5/2010	4/16/2010
111139-080A	B153-1	7.4	pH Units	R120258	0.10	1	4/5/2010	4/16/2010
111139-090A	B150-2	8.2	pH Units	R120258	0.10	1	4/5/2010	4/16/2010
111139-100A	B146-0	7.8	pH Units	R120258	0.10	1	4/5/2010	4/16/2010
111139-110A	B143-1	6.4	pH Units	R120259	0.10	1	4/5/2010	4/16/2010
111139-120A	B140-2	7.5	pH Units	R120259	0.10	1	4/5/2010	4/16/2010
111139-130A	B136-0	8.0	pH Units	R120259	0.10	1	4/5/2010	4/16/2010
111139-140A	B133-1	7.9	pH Units	R120259	0.10	1	4/5/2010	4/16/2010
111139-147A	B131-2	8.3	pH Units	R120259	0.10	1	4/5/2010	4/16/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B179-0
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-001A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413E	QC Batch: 63320			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 05:47 PM
Arsenic	2.8	1.0		mg/Kg	1	4/13/2010 05:47 PM
Barium	240	1.0		mg/Kg	1	4/13/2010 05:47 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 05:47 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 05:47 PM
Chromium	21	1.0		mg/Kg	1	4/13/2010 05:47 PM
Cobalt	7.1	1.0		mg/Kg	1	4/13/2010 05:47 PM
Copper	9.7	2.0		mg/Kg	1	4/13/2010 05:47 PM
Lead	7.1	1.0		mg/Kg	1	4/13/2010 05:47 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 05:47 PM
Nickel	26	1.0		mg/Kg	1	4/13/2010 05:47 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 05:47 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 05:47 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 05:47 PM
Vanadium	28	1.0		mg/Kg	1	4/13/2010 05:47 PM
Zinc	29	1.0		mg/Kg	1	4/13/2010 05:47 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413A	QC Batch: 63309			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 01:48 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B178-1
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-005A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413E	QC Batch: 63320			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 05:52 PM
Arsenic	ND	1.0		mg/Kg	1	4/13/2010 05:52 PM
Barium	59	1.0		mg/Kg	1	4/13/2010 05:52 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 05:52 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 05:52 PM
Chromium	21	1.0		mg/Kg	1	4/13/2010 05:52 PM
Cobalt	6.4	1.0		mg/Kg	1	4/13/2010 05:52 PM
Copper	8.3	2.0		mg/Kg	1	4/13/2010 05:52 PM
Lead	4.6	1.0		mg/Kg	1	4/13/2010 05:52 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 05:52 PM
Nickel	28	1.0		mg/Kg	1	4/13/2010 05:52 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 05:52 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 05:52 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 05:52 PM
Vanadium	18	1.0		mg/Kg	1	4/13/2010 05:52 PM
Zinc	28	1.0		mg/Kg	1	4/13/2010 05:52 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413A	QC Batch: 63309			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 01:51 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B176-0
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-010A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413E	QC Batch: 63320			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 05:57 PM
Arsenic	1.4	1.0		mg/Kg	1	4/13/2010 05:57 PM
Barium	160	1.0		mg/Kg	1	4/13/2010 05:57 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 05:57 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 05:57 PM
Chromium	27	1.0		mg/Kg	1	4/13/2010 05:57 PM
Cobalt	6.3	1.0		mg/Kg	1	4/13/2010 05:57 PM
Copper	36	2.0		mg/Kg	1	4/13/2010 05:57 PM
Lead	34	1.0		mg/Kg	1	4/13/2010 05:57 PM
Molybdenum	2.9	1.0		mg/Kg	1	4/13/2010 05:57 PM
Nickel	32	1.0		mg/Kg	1	4/13/2010 05:57 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 05:57 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 05:57 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 05:57 PM
Vanadium	22	1.0		mg/Kg	1	4/13/2010 05:57 PM
Zinc	160	1.0		mg/Kg	1	4/13/2010 05:57 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413A	QC Batch: 63309			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 01:53 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B175-2
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-015A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413E	QC Batch: 63320			PrepDate: 4/13/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/13/2010 06:10 PM
Arsenic	ND	1.0		mg/Kg	1	4/13/2010 06:10 PM
Barium	37	1.0		mg/Kg	1	4/13/2010 06:10 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 06:10 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 06:10 PM
Chromium	28	1.0		mg/Kg	1	4/13/2010 06:10 PM
Cobalt	6.6	1.0		mg/Kg	1	4/13/2010 06:10 PM
Copper	8.0	2.0		mg/Kg	1	4/13/2010 06:10 PM
Lead	2.9	1.0		mg/Kg	1	4/13/2010 06:10 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 06:10 PM
Nickel	32	1.0		mg/Kg	1	4/13/2010 06:10 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 06:10 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 06:10 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 06:10 PM
Vanadium	20	1.0		mg/Kg	1	4/13/2010 06:10 PM
Zinc	25	1.0		mg/Kg	1	4/13/2010 06:10 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413A	QC Batch: 63309			PrepDate: 4/13/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/13/2010 01:59 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B173-1
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-020A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413E	QC Batch: 63320			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 06:15 PM
Arsenic	6.9	1.0		mg/Kg	1	4/13/2010 06:15 PM
Barium	200	1.0		mg/Kg	1	4/13/2010 06:15 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 06:15 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 06:15 PM
Chromium	24	1.0		mg/Kg	1	4/13/2010 06:15 PM
Cobalt	10	1.0		mg/Kg	1	4/13/2010 06:15 PM
Copper	24	2.0		mg/Kg	1	4/13/2010 06:15 PM
Lead	18	1.0		mg/Kg	1	4/13/2010 06:15 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 06:15 PM
Nickel	33	1.0		mg/Kg	1	4/13/2010 06:15 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 06:15 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 06:15 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 06:15 PM
Vanadium	34	1.0		mg/Kg	1	4/13/2010 06:15 PM
Zinc	65	1.0		mg/Kg	1	4/13/2010 06:15 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413A	QC Batch: 63309			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 02:01 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B171-0
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-025A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413E	QC Batch: 63320			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 06:20 PM
Arsenic	26	1.0		mg/Kg	1	4/13/2010 06:20 PM
Barium	220	1.0		mg/Kg	1	4/13/2010 06:20 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 06:20 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 06:20 PM
Chromium	39	1.0		mg/Kg	1	4/13/2010 06:20 PM
Cobalt	14	1.0		mg/Kg	1	4/13/2010 06:20 PM
Copper	26	2.0		mg/Kg	1	4/13/2010 06:20 PM
Lead	50	1.0		mg/Kg	1	4/13/2010 06:20 PM
Molybdenum	6.0	1.0		mg/Kg	1	4/13/2010 06:20 PM
Nickel	91	1.0		mg/Kg	1	4/13/2010 06:20 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 06:20 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 06:20 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 06:20 PM
Vanadium	27	1.0		mg/Kg	1	4/13/2010 06:20 PM
Zinc	98	1.0		mg/Kg	1	4/13/2010 06:20 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413A	QC Batch: 63309			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 02:03 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B170-1.5
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-030A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413E	QC Batch: 63320			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 06:25 PM
Arsenic	3.9	1.0		mg/Kg	1	4/13/2010 06:25 PM
Barium	230	1.0		mg/Kg	1	4/13/2010 06:25 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 06:25 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 06:25 PM
Chromium	18	1.0		mg/Kg	1	4/13/2010 06:25 PM
Cobalt	6.5	1.0		mg/Kg	1	4/13/2010 06:25 PM
Copper	12	2.0		mg/Kg	1	4/13/2010 06:25 PM
Lead	11	1.0		mg/Kg	1	4/13/2010 06:25 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 06:25 PM
Nickel	58	1.0		mg/Kg	1	4/13/2010 06:25 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 06:25 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 06:25 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 06:25 PM
Vanadium	18	1.0		mg/Kg	1	4/13/2010 06:25 PM
Zinc	53	1.0		mg/Kg	1	4/13/2010 06:25 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413A	QC Batch: 63309			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 02:05 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B168-1
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-035A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413E	QC Batch: 63320			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 06:29 PM
Arsenic	2.7	1.0		mg/Kg	1	4/13/2010 06:29 PM
Barium	200	1.0		mg/Kg	1	4/13/2010 06:29 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 06:29 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 06:29 PM
Chromium	21	1.0		mg/Kg	1	4/13/2010 06:29 PM
Cobalt	7.8	1.0		mg/Kg	1	4/13/2010 06:29 PM
Copper	15	2.0		mg/Kg	1	4/13/2010 06:29 PM
Lead	27	1.0		mg/Kg	1	4/13/2010 06:29 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 06:29 PM
Nickel	31	1.0		mg/Kg	1	4/13/2010 06:29 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 06:29 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 06:29 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 06:29 PM
Vanadium	32	1.0		mg/Kg	1	4/13/2010 06:29 PM
Zinc	41	1.0		mg/Kg	1	4/13/2010 06:29 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413A	QC Batch: 63309			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 02:07 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B166-0
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-040A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413E	QC Batch: 63320			PrepDate: 4/13/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 06:34 PM
Arsenic	ND	1.0		mg/Kg	1	4/13/2010 06:34 PM
Barium	94	1.0		mg/Kg	1	4/13/2010 06:34 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 06:34 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 06:34 PM
Chromium	21	1.0		mg/Kg	1	4/13/2010 06:34 PM
Cobalt	5.6	1.0		mg/Kg	1	4/13/2010 06:34 PM
Copper	22	2.0		mg/Kg	1	4/13/2010 06:34 PM
Lead	39	1.0		mg/Kg	1	4/13/2010 06:34 PM
Molybdenum	1.2	1.0		mg/Kg	1	4/13/2010 06:34 PM
Nickel	33	1.0		mg/Kg	1	4/13/2010 06:34 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 06:34 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 06:34 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 06:34 PM
Vanadium	18	1.0		mg/Kg	1	4/13/2010 06:34 PM
Zinc	76	1.0		mg/Kg	1	4/13/2010 06:34 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413A	QC Batch: 63309			PrepDate: 4/13/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 02:09 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B165-2
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-045A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413E	QC Batch: 63320			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 06:39 PM
Arsenic	4.6	1.0		mg/Kg	1	4/13/2010 06:39 PM
Barium	200	1.0		mg/Kg	1	4/13/2010 06:39 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 06:39 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 06:39 PM
Chromium	26	1.0		mg/Kg	1	4/13/2010 06:39 PM
Cobalt	7.7	1.0		mg/Kg	1	4/13/2010 06:39 PM
Copper	13	2.0		mg/Kg	1	4/13/2010 06:39 PM
Lead	10	1.0		mg/Kg	1	4/13/2010 06:39 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 06:39 PM
Nickel	43	1.0		mg/Kg	1	4/13/2010 06:39 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 06:39 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 06:39 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 06:39 PM
Vanadium	24	1.0		mg/Kg	1	4/13/2010 06:39 PM
Zinc	32	1.0		mg/Kg	1	4/13/2010 06:39 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413A	QC Batch: 63309			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 01:44 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B163-1
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-050A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413F	QC Batch: 63321			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 07:18 PM
Arsenic	1.2	1.0		mg/Kg	1	4/13/2010 07:18 PM
Barium	79	1.0		mg/Kg	1	4/13/2010 07:18 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 07:18 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 07:18 PM
Chromium	38	1.0		mg/Kg	1	4/13/2010 07:18 PM
Cobalt	8.5	1.0		mg/Kg	1	4/13/2010 07:18 PM
Copper	15	2.0		mg/Kg	1	4/13/2010 07:18 PM
Lead	6.4	1.0		mg/Kg	1	4/13/2010 07:18 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 07:18 PM
Nickel	87	1.0		mg/Kg	1	4/13/2010 07:18 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 07:18 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 07:18 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 07:18 PM
Vanadium	13	1.0		mg/Kg	1	4/13/2010 07:18 PM
Zinc	29	1.0		mg/Kg	1	4/13/2010 07:18 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413B	QC Batch: 63310			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 02:32 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B161-0
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-055A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413F	QC Batch: 63321			PrepDate: 4/13/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 07:23 PM
Arsenic	1.1	1.0		mg/Kg	1	4/13/2010 07:23 PM
Barium	140	1.0		mg/Kg	1	4/13/2010 07:23 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 07:23 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 07:23 PM
Chromium	21	1.0		mg/Kg	1	4/13/2010 07:23 PM
Cobalt	7.3	1.0		mg/Kg	1	4/13/2010 07:23 PM
Copper	46	2.0		mg/Kg	1	4/13/2010 07:23 PM
Lead	66	1.0		mg/Kg	1	4/13/2010 07:23 PM
Molybdenum	3.0	1.0		mg/Kg	1	4/13/2010 07:23 PM
Nickel	25	1.0		mg/Kg	1	4/13/2010 07:23 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 07:23 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 07:23 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 07:23 PM
Vanadium	16	1.0		mg/Kg	1	4/13/2010 07:23 PM
Zinc	360	1.0		mg/Kg	1	4/13/2010 07:23 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413B	QC Batch: 63310			PrepDate: 4/13/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 02:34 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B160-2
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-060A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413F	QC Batch: 63321			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 07:27 PM
Arsenic	2.2	1.0		mg/Kg	1	4/13/2010 07:27 PM
Barium	120	1.0		mg/Kg	1	4/13/2010 07:27 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 07:27 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 07:27 PM
Chromium	29	1.0		mg/Kg	1	4/13/2010 07:27 PM
Cobalt	7.4	1.0		mg/Kg	1	4/13/2010 07:27 PM
Copper	12	2.0		mg/Kg	1	4/13/2010 07:27 PM
Lead	13	1.0		mg/Kg	1	4/13/2010 07:27 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 07:27 PM
Nickel	63	1.0		mg/Kg	1	4/13/2010 07:27 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 07:27 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 07:27 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 07:27 PM
Vanadium	20	1.0		mg/Kg	1	4/13/2010 07:27 PM
Zinc	35	1.0		mg/Kg	1	4/13/2010 07:27 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413B	QC Batch: 63310			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 02:36 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B158-1
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-065A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413F	QC Batch: 63321			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 07:32 PM
Arsenic	1.4	1.0		mg/Kg	1	4/13/2010 07:32 PM
Barium	100	1.0		mg/Kg	1	4/13/2010 07:32 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 07:32 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 07:32 PM
Chromium	30	1.0		mg/Kg	1	4/13/2010 07:32 PM
Cobalt	8.5	1.0		mg/Kg	1	4/13/2010 07:32 PM
Copper	14	2.0		mg/Kg	1	4/13/2010 07:32 PM
Lead	12	1.0		mg/Kg	1	4/13/2010 07:32 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 07:32 PM
Nickel	75	1.0		mg/Kg	1	4/13/2010 07:32 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 07:32 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 07:32 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 07:32 PM
Vanadium	17	1.0		mg/Kg	1	4/13/2010 07:32 PM
Zinc	41	1.0		mg/Kg	1	4/13/2010 07:32 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413B	QC Batch: 63310			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 02:38 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B156-0
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-070A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413F	QC Batch: 63321			PrepDate: 4/13/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 07:37 PM
Arsenic	2.2	1.0		mg/Kg	1	4/13/2010 07:37 PM
Barium	130	1.0		mg/Kg	1	4/13/2010 07:37 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 07:37 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 07:37 PM
Chromium	26	1.0		mg/Kg	1	4/13/2010 07:37 PM
Cobalt	6.9	1.0		mg/Kg	1	4/13/2010 07:37 PM
Copper	29	2.0		mg/Kg	1	4/13/2010 07:37 PM
Lead	160	1.0		mg/Kg	1	4/13/2010 07:37 PM
Molybdenum	1.3	1.0		mg/Kg	1	4/13/2010 07:37 PM
Nickel	55	1.0		mg/Kg	1	4/13/2010 07:37 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 07:37 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 07:37 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 07:37 PM
Vanadium	21	1.0		mg/Kg	1	4/13/2010 07:37 PM
Zinc	140	1.0		mg/Kg	1	4/13/2010 07:37 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413B	QC Batch: 63310			PrepDate: 4/13/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 02:40 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B155-2
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-075A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413F	QC Batch: 63321			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 07:42 PM
Arsenic	2.2	1.0		mg/Kg	1	4/13/2010 07:42 PM
Barium	160	1.0		mg/Kg	1	4/13/2010 07:42 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 07:42 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 07:42 PM
Chromium	30	1.0		mg/Kg	1	4/13/2010 07:42 PM
Cobalt	9.3	1.0		mg/Kg	1	4/13/2010 07:42 PM
Copper	16	2.0		mg/Kg	1	4/13/2010 07:42 PM
Lead	30	1.0		mg/Kg	1	4/13/2010 07:42 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 07:42 PM
Nickel	55	1.0		mg/Kg	1	4/13/2010 07:42 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 07:42 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 07:42 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 07:42 PM
Vanadium	27	1.0		mg/Kg	1	4/13/2010 07:42 PM
Zinc	78	1.0		mg/Kg	1	4/13/2010 07:42 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413B	QC Batch: 63310			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 02:42 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B153-1
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-080A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100413F	QC Batch: 63321			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/13/2010 07:46 PM
Arsenic	1.7	1.0		mg/Kg	1	4/13/2010 07:46 PM
Barium	190	1.0		mg/Kg	1	4/13/2010 07:46 PM
Beryllium	ND	1.0		mg/Kg	1	4/13/2010 07:46 PM
Cadmium	ND	1.0		mg/Kg	1	4/13/2010 07:46 PM
Chromium	53	1.0		mg/Kg	1	4/13/2010 07:46 PM
Cobalt	11	1.0		mg/Kg	1	4/13/2010 07:46 PM
Copper	22	2.0		mg/Kg	1	4/13/2010 07:46 PM
Lead	5.9	1.0		mg/Kg	1	4/13/2010 07:46 PM
Molybdenum	ND	1.0		mg/Kg	1	4/13/2010 07:46 PM
Nickel	90	1.0		mg/Kg	1	4/13/2010 07:46 PM
Selenium	ND	1.0		mg/Kg	1	4/13/2010 07:46 PM
Silver	ND	1.0		mg/Kg	1	4/13/2010 07:46 PM
Thallium	ND	1.0		mg/Kg	1	4/13/2010 07:46 PM
Vanadium	27	1.0		mg/Kg	1	4/13/2010 07:46 PM
Zinc	37	1.0		mg/Kg	1	4/13/2010 07:46 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413B	QC Batch: 63310			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	0.14	0.10		mg/Kg	1	4/13/2010 02:49 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B151-0
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-085A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414B	QC Batch: 63321			PrepDate: 4/13/2010		Analyst: **RQ**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 10:03 AM
Arsenic	4.8	1.0		mg/Kg	1	4/14/2010 10:03 AM
Barium	200	1.0		mg/Kg	1	4/14/2010 10:03 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 10:03 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 10:03 AM
Chromium	27	1.0		mg/Kg	1	4/14/2010 10:03 AM
Cobalt	6.7	1.0		mg/Kg	1	4/14/2010 10:03 AM
Copper	47	2.0		mg/Kg	1	4/14/2010 10:03 AM
Lead	86	1.0		mg/Kg	1	4/14/2010 10:03 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 10:03 AM
Nickel	35	1.0		mg/Kg	1	4/14/2010 10:03 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 10:03 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 10:03 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 10:03 AM
Vanadium	23	1.0		mg/Kg	1	4/14/2010 10:03 AM
Zinc	590	1.0		mg/Kg	1	4/14/2010 10:03 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413B	QC Batch: 63310			PrepDate: 4/13/2010		Analyst: **IL**
Mercury	0.12	0.10		mg/Kg	1	4/13/2010 02:51 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference
	Results are wet unless otherwise specified
DO	Surrogate Diluted Out

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B150-2
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-090A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414B	QC Batch: 63321			PrepDate:	4/13/2010	Analyst: **RQ**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 10:05 AM
Arsenic	3.0	1.0		mg/Kg	1	4/14/2010 10:05 AM
Barium	130	1.0		mg/Kg	1	4/14/2010 10:05 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 10:05 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 10:05 AM
Chromium	20	1.0		mg/Kg	1	4/14/2010 10:05 AM
Cobalt	7.6	1.0		mg/Kg	1	4/14/2010 10:05 AM
Copper	11	2.0		mg/Kg	1	4/14/2010 10:05 AM
Lead	5.0	1.0		mg/Kg	1	4/14/2010 10:05 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 10:05 AM
Nickel	28	1.0		mg/Kg	1	4/14/2010 10:05 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 10:05 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 10:05 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 10:05 AM
Vanadium	25	1.0		mg/Kg	1	4/14/2010 10:05 AM
Zinc	22	1.0		mg/Kg	1	4/14/2010 10:05 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413B	QC Batch: 63310			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 02:53 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B148-1
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-095A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414B	QC Batch: 63321			PrepDate:	4/13/2010	Analyst: **RQ**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 10:07 AM
Arsenic	1.2	1.0		mg/Kg	1	4/14/2010 10:07 AM
Barium	140	1.0		mg/Kg	1	4/14/2010 10:07 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 10:07 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 10:07 AM
Chromium	14	1.0		mg/Kg	1	4/14/2010 10:07 AM
Cobalt	6.1	1.0		mg/Kg	1	4/14/2010 10:07 AM
Copper	9.8	2.0		mg/Kg	1	4/14/2010 10:07 AM
Lead	6.0	1.0		mg/Kg	1	4/14/2010 10:07 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 10:07 AM
Nickel	21	1.0		mg/Kg	1	4/14/2010 10:07 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 10:07 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 10:07 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 10:07 AM
Vanadium	11	1.0		mg/Kg	1	4/14/2010 10:07 AM
Zinc	15	1.0		mg/Kg	1	4/14/2010 10:07 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413B	QC Batch: 63310			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 02:28 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B146-0
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-100A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414C	QC Batch: 63322			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 10:24 AM
Arsenic	2.9	1.0		mg/Kg	1	4/14/2010 10:24 AM
Barium	120	1.0		mg/Kg	1	4/14/2010 10:24 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 10:24 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 10:24 AM
Chromium	18	1.0		mg/Kg	1	4/14/2010 10:24 AM
Cobalt	4.8	1.0		mg/Kg	1	4/14/2010 10:24 AM
Copper	25	2.0		mg/Kg	1	4/14/2010 10:24 AM
Lead	17	1.0		mg/Kg	1	4/14/2010 10:24 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 10:24 AM
Nickel	27	1.0		mg/Kg	1	4/14/2010 10:24 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 10:24 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 10:24 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 10:24 AM
Vanadium	19	1.0		mg/Kg	1	4/14/2010 10:24 AM
Zinc	140	1.0		mg/Kg	1	4/14/2010 10:24 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413C	QC Batch: 63311			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 03:15 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B145-2
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-105A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414C	QC Batch: 63322			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 10:25 AM
Arsenic	3.2	1.0		mg/Kg	1	4/14/2010 10:25 AM
Barium	160	1.0		mg/Kg	1	4/14/2010 10:25 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 10:25 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 10:25 AM
Chromium	21	1.0		mg/Kg	1	4/14/2010 10:25 AM
Cobalt	8.0	1.0		mg/Kg	1	4/14/2010 10:25 AM
Copper	14	2.0		mg/Kg	1	4/14/2010 10:25 AM
Lead	23	1.0		mg/Kg	1	4/14/2010 10:25 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 10:25 AM
Nickel	31	1.0		mg/Kg	1	4/14/2010 10:25 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 10:25 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 10:25 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 10:25 AM
Vanadium	26	1.0		mg/Kg	1	4/14/2010 10:25 AM
Zinc	42	1.0		mg/Kg	1	4/14/2010 10:25 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413C	QC Batch: 63311			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 03:18 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B143-1
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-110A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414C	QC Batch: 63322			PrepDate: 4/13/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 10:27 AM
Arsenic	2.5	1.0		mg/Kg	1	4/14/2010 10:27 AM
Barium	180	1.0		mg/Kg	1	4/14/2010 10:27 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 10:27 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 10:27 AM
Chromium	18	1.0		mg/Kg	1	4/14/2010 10:27 AM
Cobalt	7.3	1.0		mg/Kg	1	4/14/2010 10:27 AM
Copper	11	2.0		mg/Kg	1	4/14/2010 10:27 AM
Lead	6.6	1.0		mg/Kg	1	4/14/2010 10:27 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 10:27 AM
Nickel	22	1.0		mg/Kg	1	4/14/2010 10:27 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 10:27 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 10:27 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 10:27 AM
Vanadium	26	1.0		mg/Kg	1	4/14/2010 10:27 AM
Zinc	23	1.0		mg/Kg	1	4/14/2010 10:27 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413C	QC Batch: 63311			PrepDate: 4/13/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 03:20 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B141-0
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-115A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414C	QC Batch: 63322			PrepDate: 4/13/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 10:29 AM
Arsenic	2.8	1.0		mg/Kg	1	4/14/2010 10:29 AM
Barium	170	1.0		mg/Kg	1	4/14/2010 10:29 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 10:29 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 10:29 AM
Chromium	20	1.0		mg/Kg	1	4/14/2010 10:29 AM
Cobalt	6.5	1.0		mg/Kg	1	4/14/2010 10:29 AM
Copper	17	2.0		mg/Kg	1	4/14/2010 10:29 AM
Lead	8.1	1.0		mg/Kg	1	4/14/2010 10:29 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 10:29 AM
Nickel	29	1.0		mg/Kg	1	4/14/2010 10:29 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 10:29 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 10:29 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 10:29 AM
Vanadium	26	1.0		mg/Kg	1	4/14/2010 10:29 AM
Zinc	83	1.0		mg/Kg	1	4/14/2010 10:29 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413C	QC Batch: 63311			PrepDate: 4/13/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 03:22 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B140-2
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-120A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414C	QC Batch: 63322			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 10:31 AM
Arsenic	1.5	1.0		mg/Kg	1	4/14/2010 10:31 AM
Barium	130	1.0		mg/Kg	1	4/14/2010 10:31 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 10:31 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 10:31 AM
Chromium	12	1.0		mg/Kg	1	4/14/2010 10:31 AM
Cobalt	5.4	1.0		mg/Kg	1	4/14/2010 10:31 AM
Copper	7.6	2.0		mg/Kg	1	4/14/2010 10:31 AM
Lead	4.6	1.0		mg/Kg	1	4/14/2010 10:31 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 10:31 AM
Nickel	16	1.0		mg/Kg	1	4/14/2010 10:31 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 10:31 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 10:31 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 10:31 AM
Vanadium	16	1.0		mg/Kg	1	4/14/2010 10:31 AM
Zinc	14	1.0		mg/Kg	1	4/14/2010 10:31 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413C	QC Batch: 63311			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 03:24 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B138-1
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-125A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414C	QC Batch: 63322			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 10:32 AM
Arsenic	6.2	1.0		mg/Kg	1	4/14/2010 10:32 AM
Barium	220	1.0		mg/Kg	1	4/14/2010 10:32 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 10:32 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 10:32 AM
Chromium	28	1.0		mg/Kg	1	4/14/2010 10:32 AM
Cobalt	7.7	1.0		mg/Kg	1	4/14/2010 10:32 AM
Copper	17	2.0		mg/Kg	1	4/14/2010 10:32 AM
Lead	5.0	1.0		mg/Kg	1	4/14/2010 10:32 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 10:32 AM
Nickel	34	1.0		mg/Kg	1	4/14/2010 10:32 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 10:32 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 10:32 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 10:32 AM
Vanadium	28	1.0		mg/Kg	1	4/14/2010 10:32 AM
Zinc	36	1.0		mg/Kg	1	4/14/2010 10:32 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413C	QC Batch: 63311			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 03:26 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B136-0
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-130A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414C	QC Batch: 63322			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 10:38 AM
Arsenic	2.8	1.0		mg/Kg	1	4/14/2010 10:38 AM
Barium	130	1.0		mg/Kg	1	4/14/2010 10:38 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 10:38 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 10:38 AM
Chromium	18	1.0		mg/Kg	1	4/14/2010 10:38 AM
Cobalt	6.5	1.0		mg/Kg	1	4/14/2010 10:38 AM
Copper	10	2.0		mg/Kg	1	4/14/2010 10:38 AM
Lead	4.6	1.0		mg/Kg	1	4/14/2010 10:38 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 10:38 AM
Nickel	26	1.0		mg/Kg	1	4/14/2010 10:38 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 10:38 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 10:38 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 10:38 AM
Vanadium	26	1.0		mg/Kg	1	4/14/2010 10:38 AM
Zinc	24	1.0		mg/Kg	1	4/14/2010 10:38 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413C	QC Batch: 63311			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 03:28 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B135-2
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-135A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414C	QC Batch: 63322			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 10:40 AM
Arsenic	2.7	1.0		mg/Kg	1	4/14/2010 10:40 AM
Barium	92	1.0		mg/Kg	1	4/14/2010 10:40 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 10:40 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 10:40 AM
Chromium	21	1.0		mg/Kg	1	4/14/2010 10:40 AM
Cobalt	6.5	1.0		mg/Kg	1	4/14/2010 10:40 AM
Copper	9.3	2.0		mg/Kg	1	4/14/2010 10:40 AM
Lead	4.1	1.0		mg/Kg	1	4/14/2010 10:40 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 10:40 AM
Nickel	21	1.0		mg/Kg	1	4/14/2010 10:40 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 10:40 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 10:40 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 10:40 AM
Vanadium	31	1.0		mg/Kg	1	4/14/2010 10:40 AM
Zinc	21	1.0		mg/Kg	1	4/14/2010 10:40 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413C	QC Batch: 63311			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 03:30 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B133-1
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-140A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414C	QC Batch: 63322			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 10:42 AM
Arsenic	2.5	1.0		mg/Kg	1	4/14/2010 10:42 AM
Barium	160	1.0		mg/Kg	1	4/14/2010 10:42 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 10:42 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 10:42 AM
Chromium	19	1.0		mg/Kg	1	4/14/2010 10:42 AM
Cobalt	6.5	1.0		mg/Kg	1	4/14/2010 10:42 AM
Copper	12	2.0		mg/Kg	1	4/14/2010 10:42 AM
Lead	5.6	1.0		mg/Kg	1	4/14/2010 10:42 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 10:42 AM
Nickel	25	1.0		mg/Kg	1	4/14/2010 10:42 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 10:42 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 10:42 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 10:42 AM
Vanadium	25	1.0		mg/Kg	1	4/14/2010 10:42 AM
Zinc	25	1.0		mg/Kg	1	4/14/2010 10:42 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413C	QC Batch: 63311			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 03:32 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B131-0
Lab Order:	111139	**Collection Date:**	4/5/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111139-145A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414C	QC Batch: 63322			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 10:45 AM
Arsenic	2.6	1.0		mg/Kg	1	4/14/2010 10:45 AM
Barium	130	1.0		mg/Kg	1	4/14/2010 10:45 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 10:45 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 10:45 AM
Chromium	21	1.0		mg/Kg	1	4/14/2010 10:45 AM
Cobalt	5.0	1.0		mg/Kg	1	4/14/2010 10:45 AM
Copper	32	2.0		mg/Kg	1	4/14/2010 10:45 AM
Lead	31	1.0		mg/Kg	1	4/14/2010 10:45 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 10:45 AM
Nickel	28	1.0		mg/Kg	1	4/14/2010 10:45 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 10:45 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 10:45 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 10:45 AM
Vanadium	21	1.0		mg/Kg	1	4/14/2010 10:45 AM
Zinc	150	1.0		mg/Kg	1	4/14/2010 10:45 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413C	QC Batch: 63311			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 03:07 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference
	Results are wet unless otherwise specified
DO	Surrogate Diluted Out

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63320** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120130**
Client ID: **PBS** Batch ID: **63320** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1915170**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	0.057	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63320** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120130**
Client ID: **LCSS** Batch ID: **63320** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1915171**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	47.841	2.0	50.00	0	95.7	80	120				
Arsenic	47.035	1.0	50.00	0	94.1	80	120				
Barium	49.086	1.0	50.00	0	98.2	80	120				
Beryllium	48.383	1.0	50.00	0	96.8	80	120				
Cadmium	48.783	1.0	50.00	0	97.6	80	120				
Chromium	48.684	1.0	50.00	0	97.4	80	120				
Cobalt	49.556	1.0	50.00	0	99.1	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63320** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120130**
Client ID: **LCSS** Batch ID: **63320** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1915171**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	48.742	2.0	50.00	0	97.5	80	120				
Lead	49.795	1.0	50.00	0	99.6	80	120				
Molybdenum	50.703	1.0	50.00	0	101	80	120				
Nickel	49.049	1.0	50.00	0.05665	98.0	80	120				
Selenium	45.823	1.0	50.00	0	91.6	80	120				
Silver	48.160	1.0	50.00	0	96.3	80	120				
Thallium	49.388	1.0	50.00	0	98.8	80	120				
Vanadium	49.860	1.0	50.00	0	99.7	80	120				
Zinc	48.947	1.0	50.00	0	97.9	80	120				

Sample ID: **111139-045A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120130**
Client ID: **B165-2** Batch ID: **63320** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1915182**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0						0	0	20	
Arsenic	4.847	1.0						4.551	6.30	20	
Barium	202.131	1.0						202.9	0.395	20	
Beryllium	0.064	1.0						0.09580	0	20	
Cadmium	0.280	1.0						0.2634	0	20	
Chromium	25.064	1.0						26.21	4.49	20	
Cobalt	8.507	1.0						7.718	9.72	20	
Copper	12.839	2.0						12.78	0.458	20	
Lead	14.999	1.0						10.22	37.9	20	R
Molybdenum	0.750	1.0						0.5149	0	20	
Nickel	47.671	1.0						42.84	10.7	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	0.347	1.0						0.2418	0	20	
Vanadium	24.318	1.0						24.30	0.0541	20	
Zinc	34.563	1.0						31.65	8.80	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111139-045A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120130**
Client ID: **B165-2** Batch ID: **63320** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1915183**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	91.383	2.0	125.0	0	73.1	32	105				
Arsenic	108.274	1.0	125.0	4.551	83.0	49	106				
Barium	283.045	1.0	125.0	202.9	64.1	31	133				
Beryllium	106.241	1.0	125.0	0.09580	84.9	56	106				
Cadmium	99.186	1.0	125.0	0.2634	79.1	51	103				
Chromium	131.121	1.0	125.0	26.21	83.9	45	114				
Cobalt	107.147	1.0	125.0	7.718	79.5	52	106				
Copper	129.251	2.0	125.0	12.78	93.2	54	125				
Lead	119.533	1.0	125.0	10.22	87.4	34	126				
Molybdenum	106.644	1.0	125.0	0.5149	84.9	54	106				
Nickel	140.274	1.0	125.0	42.84	77.9	45	111				
Selenium	105.612	1.0	125.0	0	84.5	47	104				
Silver	109.384	1.0	125.0	0	87.5	56	112				
Thallium	103.847	1.0	125.0	0.2418	82.9	46	101				
Vanadium	133.262	1.0	125.0	24.30	87.2	54	114				
Zinc	135.023	1.0	125.0	31.65	82.7	28	125				

Sample ID: **111139-045A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120130**
Client ID: **B165-2** Batch ID: **63320** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1915184**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	90.461	2.0	125.0	0	72.4	32	105	91.38	1.01	20	
Arsenic	105.819	1.0	125.0	4.551	81.0	49	106	108.3	2.29	20	
Barium	306.086	1.0	125.0	202.9	82.5	31	133	283.0	7.82	20	
Beryllium	103.908	1.0	125.0	0.09580	83.0	56	106	106.2	2.22	20	
Cadmium	97.968	1.0	125.0	0.2634	78.2	51	103	99.19	1.24	20	
Chromium	133.045	1.0	125.0	26.21	85.5	45	114	131.1	1.46	20	
Cobalt	107.045	1.0	125.0	7.718	79.5	52	106	107.1	0.0954	20	
Copper	127.228	2.0	125.0	12.78	91.6	54	125	129.3	1.58	20	
Lead	123.646	1.0	125.0	10.22	90.7	34	126	119.5	3.38	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111139-045A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120130**
Client ID: **B165-2** Batch ID: **63320** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1915184**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	104.812	1.0	125.0	0.5149	83.4	54	106	106.6	1.73	20	
Nickel	143.708	1.0	125.0	42.84	80.7	45	111	140.3	2.42	20	
Selenium	101.583	1.0	125.0	0	81.3	47	104	105.6	3.89	20	
Silver	107.284	1.0	125.0	0	85.8	56	112	109.4	1.94	20	
Thallium	101.785	1.0	125.0	0.2418	81.2	46	101	103.8	2.01	20	
Vanadium	135.048	1.0	125.0	24.30	88.6	54	114	133.3	1.33	20	
Zinc	137.951	1.0	125.0	31.65	85.0	28	125	135.0	2.14	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits

Calculations are based on raw values

- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63321** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120131**
Client ID: **PBS** Batch ID: **63321** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1915185**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	ND	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63321** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120131**
Client ID: **LCSS** Batch ID: **63321** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/13/2010** SeqNo: **1915186**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	51.607	2.0	50.00	0	103	80	120				
Arsenic	50.843	1.0	50.00	0	102	80	120				
Barium	51.514	1.0	50.00	0	103	80	120				
Beryllium	49.687	1.0	50.00	0	99.4	80	120				
Cadmium	51.409	1.0	50.00	0	103	80	120				
Chromium	50.537	1.0	50.00	0	101	80	120				
Cobalt	51.936	1.0	50.00	0	104	80	120				
Copper	50.538	2.0	50.00	0	101	80	120				
Lead	51.744	1.0	50.00	0	103	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63321**	SampType: **LCS**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120131**
Client ID: **LCSS**	Batch ID: **63321**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/13/2010**	SeqNo: **1915186**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	55.077	1.0	50.00	0	110	80	120				
Nickel	50.223	1.0	50.00	0	100	80	120				
Selenium	50.133	1.0	50.00	0	100	80	120				
Silver	50.000	1.0	50.00	0	100	80	120				
Thallium	53.048	1.0	50.00	0	106	80	120				
Vanadium	51.139	1.0	50.00	0	102	80	120				
Zinc	52.114	1.0	50.00	0	104	80	120				

Sample ID: **111139-095A-DUP**	SampType: **DUP**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120140**
Client ID: **B148-1**	Batch ID: **63321**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/14/2010**	SeqNo: **1915340**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.309	2.0						0	0	20	
Arsenic	2.256	1.0						1.245	57.7	20	R
Barium	144.455	1.0						137.1	5.24	20	
Beryllium	0.383	1.0						0.2982	0	20	
Cadmium	0.115	1.0						0.07905	0	20	
Chromium	19.417	1.0						13.73	34.3	20	R
Cobalt	9.118	1.0						6.131	39.2	20	R
Copper	13.731	2.0						9.781	33.6	20	R
Lead	6.356	1.0						5.967	6.32	20	
Molybdenum	ND	1.0						0	0	20	
Nickel	31.585	1.0						21.11	39.7	20	R
Selenium	ND	1.0						0	0	20	
Silver	0.066	1.0						0.03315	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	17.605	1.0						11.21	44.4	20	R
Zinc	23.954	1.0						15.11	45.3	20	R

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111139-095A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120140**
Client ID: **B148-1** Batch ID: **63321** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915341**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	91.789	2.0	125.0	0	73.4	32	105				
Arsenic	98.118	1.0	125.0	1.245	77.5	49	106				
Barium	231.517	1.0	125.0	137.1	75.6	31	133				
Beryllium	102.512	1.0	125.0	0.2982	81.8	56	106				
Cadmium	95.226	1.0	125.0	0.07905	76.1	51	103				
Chromium	119.587	1.0	125.0	13.73	84.7	45	114				
Cobalt	104.246	1.0	125.0	6.131	78.5	52	106				
Copper	113.690	2.0	125.0	9.781	83.1	54	125				
Lead	102.291	1.0	125.0	5.967	77.1	34	126				
Molybdenum	95.446	1.0	125.0	0	76.4	54	106				
Nickel	121.835	1.0	125.0	21.11	80.6	45	111				
Selenium	95.947	1.0	125.0	0	76.8	47	104				
Silver	102.242	1.0	125.0	0.03315	81.8	56	112				
Thallium	94.058	1.0	125.0	0	75.2	46	101				
Vanadium	121.000	1.0	125.0	11.21	87.8	54	114				
Zinc	112.827	1.0	125.0	15.11	78.2	28	125				

Sample ID: **111139-095A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120140**
Client ID: **B148-1** Batch ID: **63321** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915342**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	91.724	2.0	125.0	0	73.4	32	105	91.79	0.0703	20	
Arsenic	98.496	1.0	125.0	1.245	77.8	49	106	98.12	0.384	20	
Barium	269.854	1.0	125.0	137.1	106	31	133	231.5	15.3	20	
Beryllium	103.934	1.0	125.0	0.2982	82.9	56	106	102.5	1.38	20	
Cadmium	97.648	1.0	125.0	0.07905	78.1	51	103	95.23	2.51	20	
Chromium	123.139	1.0	125.0	13.73	87.5	45	114	119.6	2.93	20	
Cobalt	106.998	1.0	125.0	6.131	80.7	52	106	104.2	2.61	20	
Copper	116.110	2.0	125.0	9.781	85.1	54	125	113.7	2.11	20	
Lead	104.905	1.0	125.0	5.967	79.2	34	126	102.3	2.52	20	

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111139-095A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120140**
Client ID: **B148-1** Batch ID: **63321** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915342**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	97.410	1.0	125.0	0	77.9	54	106	95.45	2.04	20	
Nickel	124.734	1.0	125.0	21.11	82.9	45	111	121.8	2.35	20	
Selenium	95.815	1.0	125.0	0	76.7	47	104	95.95	0.138	20	
Silver	103.909	1.0	125.0	0.03315	83.1	56	112	102.2	1.62	20	
Thallium	93.824	1.0	125.0	0	75.1	46	101	94.06	0.249	20	
Vanadium	124.688	1.0	125.0	11.21	90.8	54	114	121.0	3.00	20	
Zinc	117.675	1.0	125.0	15.11	82.1	28	125	112.8	4.21	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63322** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120141**
Client ID: **PBS** Batch ID: **63322** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915343**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	0.046	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	0.198	1.0									

Sample ID: **LCS-63322** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120141**
Client ID: **LCSS** Batch ID: **63322** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915344**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	46.880	2.0	50.00	0	93.8	80	120				
Arsenic	46.906	1.0	50.00	0	93.8	80	120				
Barium	49.948	1.0	50.00	0	99.9	80	120				
Beryllium	48.038	1.0	50.00	0	96.1	80	120				
Cadmium	47.706	1.0	50.00	0	95.4	80	120				
Chromium	47.922	1.0	50.00	0	95.8	80	120				
Cobalt	49.298	1.0	50.00	0	98.6	80	120				
Copper	48.038	2.0	50.00	0	96.1	80	120				
Lead	48.616	1.0	50.00	0	97.2	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63322** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120141**
Client ID: **LCSS** Batch ID: **63322** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915344**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	49.949	1.0	50.00	0	99.9	80	120				
Nickel	46.702	1.0	50.00	0.04600	93.3	80	120				
Selenium	44.904	1.0	50.00	0	89.8	80	120				
Silver	47.863	1.0	50.00	0	95.7	80	120				
Thallium	46.200	1.0	50.00	0	92.4	80	120				
Vanadium	49.445	1.0	50.00	0	98.9	80	120				
Zinc	46.262	1.0	50.00	0.1983	92.1	80	120				

Sample ID: **111139-145A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120141**
Client ID: **B131-0** Batch ID: **63322** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915355**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.643	2.0						0.8202	0	20	
Arsenic	2.786	1.0						2.572	7.96	20	
Barium	99.904	1.0						127.6	24.4	20	R
Beryllium	ND	1.0						0	0	20	
Cadmium	0.345	1.0						0.3328	0	20	
Chromium	20.241	1.0						20.96	3.49	20	
Cobalt	5.381	1.0						5.013	7.08	20	
Copper	25.924	2.0						32.03	21.1	20	R
Lead	28.006	1.0						31.45	11.6	20	
Molybdenum	ND	1.0						0	0	20	
Nickel	30.885	1.0						27.81	10.5	20	
Selenium	ND	1.0						0	0	20	
Silver	0.178	1.0						0.1209	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	23.423	1.0						21.07	10.6	20	
Zinc	131.302	1.0						149.8	13.1	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111139-145A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120141**
Client ID: **B131-0** Batch ID: **63322** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915356**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	95.878	2.0	125.0	0.8202	76.0	32	105				
Arsenic	104.331	1.0	125.0	2.572	81.4	49	106				
Barium	206.097	1.0	125.0	127.6	62.8	31	133				
Beryllium	106.127	1.0	125.0	0	84.9	56	106				
Cadmium	101.078	1.0	125.0	0.3328	80.6	51	103				
Chromium	124.061	1.0	125.0	20.96	82.5	45	114				
Cobalt	107.756	1.0	125.0	5.013	82.2	52	106				
Copper	129.609	2.0	125.0	32.03	78.1	54	125				
Lead	132.163	1.0	125.0	31.45	80.6	34	126				
Molybdenum	102.146	1.0	125.0	0	81.7	54	106				
Nickel	128.183	1.0	125.0	27.81	80.3	45	111				
Selenium	100.626	1.0	125.0	0	80.5	47	104				
Silver	106.407	1.0	125.0	0.1209	85.0	56	112				
Thallium	98.178	1.0	125.0	0	78.5	46	101				
Vanadium	131.026	1.0	125.0	21.07	88.0	54	114				
Zinc	206.336	1.0	125.0	149.8	45.2	28	125				

Sample ID: **111139-145A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120141**
Client ID: **B131-0** Batch ID: **63322** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915357**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	93.205	2.0	125.0	0.8202	73.9	32	105	95.88	2.83	20	
Arsenic	100.064	1.0	125.0	2.572	78.0	49	106	104.3	4.18	20	
Barium	190.689	1.0	125.0	127.6	50.4	31	133	206.1	7.77	20	
Beryllium	101.250	1.0	125.0	0	81.0	56	106	106.1	4.70	20	
Cadmium	98.272	1.0	125.0	0.3328	78.4	51	103	101.1	2.81	20	
Chromium	118.590	1.0	125.0	20.96	78.1	45	114	124.1	4.51	20	
Cobalt	104.167	1.0	125.0	5.013	79.3	52	106	107.8	3.39	20	
Copper	124.034	2.0	125.0	32.03	73.6	54	125	129.6	4.40	20	
Lead	128.620	1.0	125.0	31.45	77.7	34	126	132.2	2.72	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111139-145A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120141**
Client ID: **B131-0** Batch ID: **63322** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915357**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	98.573	1.0	125.0	0	78.9	54	106	102.1	3.56	20	
Nickel	125.463	1.0	125.0	27.81	78.1	45	111	128.2	2.14	20	
Selenium	97.306	1.0	125.0	0	77.8	47	104	100.6	3.35	20	
Silver	103.283	1.0	125.0	0.1209	82.5	56	112	106.4	2.98	20	
Thallium	94.656	1.0	125.0	0	75.7	46	101	98.18	3.65	20	
Vanadium	123.156	1.0	125.0	21.07	81.7	54	114	131.0	6.19	20	
Zinc	270.877	1.0	125.0	149.8	96.9	28	125	206.3	27.0	20	R

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63341A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120251**
Client ID: **PBS**	Batch ID: **63341**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917620**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-63341**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120251**
Client ID: **LCSS**	Batch ID: **63341**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917621**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	262.453	5.0	250.0	0	105	80	120				

Sample ID: **111139-013A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120251**
Client ID: **B175-0**	Batch ID: **63341**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917632**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	30.474	5.0						36.91	19.1	20	

Sample ID: **111139-013A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120251**
Client ID: **B175-0**	Batch ID: **63341**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917633**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	227.898	5.0	250.0	36.91	76.4	34	126				

Sample ID: **MB-63341B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120251**
Client ID: **PBS**	Batch ID: **63341**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917634**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111139-026A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120251**
Client ID: **B171-1**	Batch ID: **63341**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917645**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	12.953	5.0						16.08	21.6	20	R

Sample ID: **111139-026A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120251**
Client ID: **B171-1**	Batch ID: **63341**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917646**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	220.197	5.0	250.0	16.08	81.6	34	126				

Sample ID: **111139-026A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120251**
Client ID: **B171-1**	Batch ID: **63341**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917647**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	241.243	5.0	250.0	16.08	90.1	34	126	220.2	9.12	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63342A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120252**
Client ID: **PBS**	Batch ID: **63342**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917648**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-63342**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120252**
Client ID: **LCSS**	Batch ID: **63342**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917649**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	264.727	5.0	250.0	0	106	80	120				

Sample ID: **111139-038A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120252**
Client ID: **B167-1**	Batch ID: **63342**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917660**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	11.784	5.0						12.48	5.76	20	

Sample ID: **111139-038A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120252**
Client ID: **B167-1**	Batch ID: **63342**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917661**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	223.449	5.0	250.0	12.48	84.4	34	126				

Sample ID: **MB-63342B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120252**
Client ID: **PBS**	Batch ID: **63342**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917662**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111139-051A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120252**
Client ID: **B163-2**	Batch ID: **63342**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917673**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.794	5.0						3.444	50.9	20	R

Sample ID: **111139-051A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120252**
Client ID: **B163-2**	Batch ID: **63342**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917674**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	191.223	5.0	250.0	3.444	75.1	34	126				

Sample ID: **111139-051A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120252**
Client ID: **B163-2**	Batch ID: **63342**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917675**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	197.286	5.0	250.0	3.444	77.5	34	126	191.2	3.12	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63343A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120253**
Client ID: **PBS**	Batch ID: **63343**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917678**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.121	5.0									

Sample ID: **LCS-63343**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120253**
Client ID: **LCSS**	Batch ID: **63343**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917679**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	289.524	5.0	250.0	0.1211	116	80	120				

Sample ID: **111139-063A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120253**
Client ID: **B159-2**	Batch ID: **63343**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917690**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	11.412	5.0						14.01	20.5	20	R

Sample ID: **111139-063A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120253**
Client ID: **B159-2**	Batch ID: **63343**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917691**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	206.326	5.0	250.0	14.01	76.9	34	126				

Sample ID: **MB-63343B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120253**
Client ID: **PBS**	Batch ID: **63343**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917692**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111139-076A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120253**
Client ID: **B154-0**	Batch ID: **63343**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917703**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	29.035	5.0						43.00	38.8	20	R

Sample ID: **111139-076A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120253**
Client ID: **B154-0**	Batch ID: **63343**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917704**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	248.906	5.0	250.0	43.00	82.4	34	126				

Sample ID: **111139-076A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120253**
Client ID: **B154-0**	Batch ID: **63343**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917705**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	255.617	5.0	250.0	43.00	85.0	34	126	248.9	2.66	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63344A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120255**
Client ID: **PBS**	Batch ID: **63344**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917706**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.159	5.0									

Sample ID: **LCS-63344**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120255**
Client ID: **LCSS**	Batch ID: **63344**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917707**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	254.962	5.0	250.0	0.1592	102	80	120				

Sample ID: **111139-088A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120255**
Client ID: **B150-0**	Batch ID: **63344**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917718**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	26.064	5.0						28.98	10.6	20	

Sample ID: **111139-088A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120255**
Client ID: **B150-0**	Batch ID: **63344**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917719**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	240.199	5.0	250.0	28.98	84.5	34	126				

Sample ID: **MB-63344B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120255**
Client ID: **PBS**	Batch ID: **63344**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917720**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111139-101A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120255**
Client ID: **B146-1**	Batch ID: **63344**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917731**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	28.977	5.0						37.00	24.3	20	R

Sample ID: **111139-101A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120255**
Client ID: **B146-1**	Batch ID: **63344**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917732**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	245.164	5.0	250.0	37.00	83.3	34	126				

Sample ID: **111139-101A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120255**
Client ID: **B146-1**	Batch ID: **63344**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917733**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	318.496	5.0	250.0	37.00	113	34	126	245.2	26.0	20	R

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63345A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120270**
Client ID: **PBS**	Batch ID: **63345**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917869**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-63345**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120270**
Client ID: **LCSS**	Batch ID: **63345**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917870**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	251.631	5.0	250.0	0	101	80	120				

Sample ID: **111139-113A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120270**
Client ID: **B142-1**	Batch ID: **63345**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917881**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	78.007	5.0						43.43	56.9	20	R

Sample ID: **111139-113A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120270**
Client ID: **B142-1**	Batch ID: **63345**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917882**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	285.955	5.0	250.0	43.43	97.0	34	126				

Sample ID: **MB-63345B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120270**
Client ID: **PBS**	Batch ID: **63345**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917883**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111139-126A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120270**
Client ID: **B138-2**	Batch ID: **63345**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917894**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.920	5.0						4.094	0	20	

Sample ID: **111139-126A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120270**
Client ID: **B138-2**	Batch ID: **63345**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917895**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	209.804	5.0	250.0	4.094	82.3	34	126				

Sample ID: **111139-126A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120270**
Client ID: **B138-2**	Batch ID: **63345**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917896**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	203.037	5.0	250.0	4.094	79.6	34	126	209.8	3.28	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63346A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120274**
Client ID: **PBS**	Batch ID: **63346**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917912**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.333	5.0									

Sample ID: **LCS-63346**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120274**
Client ID: **LCSS**	Batch ID: **63346**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917913**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	280.749	5.0	250.0	0.3327	112	80	120				

Sample ID: **111139-138A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120274**
Client ID: **B134-2**	Batch ID: **63346**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917924**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	6.760	5.0						5.529	20.0	20	R

Sample ID: **111139-138A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120274**
Client ID: **B134-2**	Batch ID: **63346**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917925**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	231.121	5.0	250.0	5.529	90.2	34	126				

Sample ID: **MB-63346B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120274**
Client ID: **PBS**	Batch ID: **63346**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917926**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111139-147A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120274**
Client ID: **B131-2**	Batch ID: **63346**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917934**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.341	5.0						5.457	0	20	

Sample ID: **111139-147A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120274**
Client ID: **B131-2**	Batch ID: **63346**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917935**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	229.797	5.0	250.0	5.457	89.7	34	126				

Sample ID: **111139-147A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120274**
Client ID: **B131-2**	Batch ID: **63346**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917936**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	208.364	5.0	250.0	5.457	81.2	34	126	229.8	9.78	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63309**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120094**
Client ID: **PBS**	Batch ID: **63309**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914557**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63309**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120094**
Client ID: **LCSS**	Batch ID: **63309**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914558**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.786	0.10	0.8300	0	94.7	80	120				

Sample ID: **111139-045A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120094**
Client ID: **B165-2**	Batch ID: **63309**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914559**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.879	0.10	0.8300	0.09435	94.5	70	130				

Sample ID: **111139-045A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120094**
Client ID: **B165-2**	Batch ID: **63309**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914560**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.870	0.10	0.8300	0.09435	93.5	70	130	0.8790	1.02	20	

Sample ID: **111139-045A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120094**
Client ID: **B165-2**	Batch ID: **63309**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914562**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.095	0.10						0.09435	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63310**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120095**
Client ID: **PBS**	Batch ID: **63310**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914572**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63310**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120095**
Client ID: **LCSS**	Batch ID: **63310**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914573**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.867	0.10	0.8300	0	104	80	120				

Sample ID: **111139-095A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120095**
Client ID: **B148-1**	Batch ID: **63310**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914574**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.923	0.10	0.8300	0	111	70	130				

Sample ID: **111139-095A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120095**
Client ID: **B148-1**	Batch ID: **63310**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914575**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.921	0.10	0.8300	0	111	70	130	0.9230	0.266	20	

Sample ID: **111139-095A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120095**
Client ID: **B148-1**	Batch ID: **63310**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914577**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10						0	0	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits

Calculations are based on raw values

- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63311**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120097**
Client ID: **PBS**	Batch ID: **63311**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914616**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63311**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120097**
Client ID: **LCSS**	Batch ID: **63311**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914617**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.911	0.10	0.8300	0	110	80	120				

Sample ID: **111139-145A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120097**
Client ID: **B131-0**	Batch ID: **63311**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914618**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.956	0.10	0.8300	0.06090	108	70	130				

Sample ID: **111139-145A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120097**
Client ID: **B131-0**	Batch ID: **63311**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914619**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.959	0.10	0.8300	0.06090	108	70	130	0.9560	0.292	20	

Sample ID: **111139-145A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120097**
Client ID: **B131-0**	Batch ID: **63311**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914621**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.063	0.10						0.06090	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 9045_S

Sample ID: **111139-080ADUP** SampType: **DUP** TestCode: **9045_S** Units: **pH Units** Prep Date: RunNo: **120258**
Client ID: **B153-1** Batch ID: **R120258** TestNo: **EPA 9045C** Analysis Date: **4/16/2010** SeqNo: **1917749**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.220	0.10						7.370	2.06	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 9045_S

Sample ID: **111180-024ADUP** SampType: **DUP** TestCode: **9045_S** Units: **pH Units** Prep Date: RunNo: **120259**
Client ID: **ZZZZZZ** Batch ID: **R120259** TestNo: **EPA 9045C** Analysis Date: **4/16/2010** SeqNo: **1917760**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.920	0.10						7.950	0.378	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CHAIN OF CUSTODY RECORD

1 OF 5

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #:
Logged By: Date: 4/6/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FedEx ☐ Other: 950

Sample Condition Upon Receipt: 5.6 4.4
1. CHILLED Y ☑ N ☐ 4. SEALED Y ☐ N ☑
2. HEADSPACE (VOA) Y ☐ N ☐ (n/a) 5. # OF SPLS MATCH COC Y ☑ N ☐
3. CONTAINER INTACT Y ☑ N ☐ 6. PRESERVED Y ☐ N ☑

Client: Geocon Consultants, Inc.
Attention: Lauren Vigliottti
Address: 6671 Brisa Street
City: Livermore State: CA Zip Code: 94550
Tel:
Fax:

Project Name: I-580 WB HOV Lanes
Project #: E8474-06-01
Sampler: (Printed Name) CM/DW (Signature) C. MERRITT

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
CHRIS MERRITT	4-7-10	1645		4/8/10	935
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Lauren Vigliotti 4/7/2010
Print Name Date
CM
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:
20% Random select for CAM 17 metals ONLY, no total lead. 10% random select for pH

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides) | 8082 (PCB) | 8260B (Volatiles) | 8270C (BNA) | 6010B (Total Metal) | 8015B (GRO) / 8020 (BTEX) | 8015B (DRO) | 8021 (BTEX) | TITLE 22 / CAM 17 (6010 / 7000) | Total Lead (EPA 6010) | 10% Random pH (EPA 9045) | CAM17 Metals 20% Random, no lead

SPECIFY APPROPRIATE MATRIX: SOIL | WATER | GROUND WATER | WASTEWATER

PRESERVATION

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode_____ OTHER _____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample ID / Location	Date	Time	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	1111761-001, 2, 3	B179 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	4, 5, 6	B178 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	7, 8, 9	B177 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	10, 11, 12	B176 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	13, 14, 15	B175 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	16, 17, 18	B174 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	19, 20, 21	B173 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	22, 23, 24	B172 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	25, 26, 27	B171 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	28, 29, 30	B170 - 0,1,1.5	4/5/2010	VAR	E	1	B P	C	

(X X X in 6010B (Total Metal), TITLE 22 / CAM 17 (6010 / 7000), and SOIL for all rows)

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs | B = Emergency Next Workday | C = Critical 2 Workdays | D = Urgent 3 Workdays | E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives:
H=HCl N=HNO_3 S=H_2SO_4 C=4°C
Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FedEx ☐ Other: _____

Sample Condition Upon Receipt
1. CHILLED Y ☐ N ☐ 4. SEALED Y ☐ N ☐
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☐ N ☐
3. CONTAINER INTACT Y ☐ N ☐ 6. PRESERVED Y ☐ N ☐

Client: Geocon Consultants, Inc.
Attention: Lauren Vigliottti
Address: 6671 Brisa Street
City: Livermore State: CA Zip Code: 94550
Tel:
Fax:

Project Name: I-580 WB HOV Lanes
Project #: E8474-06-01
Sampler: (Printed Name) CM/DW (Signature) C. MERRITT

Relinquished by: (Signature and Printed Name) CHRIS MERRITT Date: 4-7-10 Time: 1645
Received by: (Signature and Printed Name) Date: 4/8/10 Time: 935
Relinquished by: (Signature and Printed Name) Date: Time:
Received by: (Signature and Printed Name) Date: Time:
Relinquished by: (Signature and Printed Name) Date: Time:
Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Chris Merritt 4/7/2010
Print Name Date
CM
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:
20% Random select for CAM 17 metals ONLY, no total lead. 10% random select for pH

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides) | 8082 (PCB) | 8260B (Volatiles) | 8270C (BNA) | 6010B (Total Metal) | 8015B (GRO) / 8020 (BTEX) | 8015B (DRO) | 8021 (BTEX) | TITLE 22 / CAM 17 (6010 / 7000) | Total Lead (EPA 6010) | 10% Random pH (EPA 9045) | CAM17 Metals 20% Random, no lead

SPECIFY APPROPRIATE MATRIX: SOIL | WATER | GROUND WATER | WASTEWATER

PRESERVATION

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode_____ OTHER _____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample ID / Location	Date	Time	TAT	Container(s): #	Type	PRESERVATION	REMARKS
1	1-13	B169 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	34,35,36	B168 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	37, 38, 39	B167 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	40, 41, 42	B166 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	43, 44, 45	B165 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	46, 47, 48	B164 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	49, 50, 51	B163 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	52, 53, 54	B162 - 0,1,1.5	4/5/2010	VAR	E	1	B P	C	
	55, 56, 57	B161 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	58, 59, 60	B160 - 0,1,2	4/5/2010	VAR	E	1	B P	C	

(For each row: X X X under TITLE 22 / CAM 17 (6010 / 7000), Total Lead (EPA 6010), 10% Random pH (EPA 9045); X under SOIL.)

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs | B = Emergency Next Workday | C = Critical 2 Workdays | D = Urgent 3 Workdays | E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl $N=HNO_3$ $S=H_2SO_4$ C=4°C $Z=Zn(AC)_2$ O=NaOH $T=Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

3 OF 5

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FedEx ☐ Other: _____

Sample Condition Upon Receipt:
1. CHILLED Y ☐ N ☐ 4. SEALED Y ☐ N ☐
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☐ N ☐
3. CONTAINER INTACT Y ☐ N ☐ 6. PRESERVED Y ☐ N ☐

Client: Geocon Consultants, Inc.
Attention: Lauren Vigliottti
Address: 6671 Brisa Street
City: Livermore State: CA Zip Code: 94550
Tel:
Fax:

Project Name: I-580 WB HOV Lanes
Project #: E8474-06-01
Sampler: (Printed Name) CM/DW (Signature) C. MERRITT

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
CHRIS MERRITT	4-7-10	1645		4/8/10	935

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Lauren Vigliotti 4/7/2010
Print Name Date
CM
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:
20% Random select for CAM 17 metals ONLY, no total lead. 10% random select for pH

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides) | 8082 (PCB) | 8260B (Volatiles) | 8270C (BNA) | 6010B (Total Metal) | 8015B (GRO) / 8020 (BTEX) | 8015B (DRO) | 8021 (BTEX) | TITLE 22 / CAM 17 (6010 / 7000) | Total Lead (EPA 6010) | 10% Random pH (EPA 9045) | CAM17 Metals 20% Random, no lead

SPECIFY APPROPRIATE MATRIX: SOIL | WATER | GROUND WATER | WASTEWATER

PRESERVATION

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode_____ OTHER _____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample ID / Location	Date	Time	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
1	11139-61,62,63	B159 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	64,65,66	B158 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	67,68,69	B157 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	70,71,72	B156 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	73,74,75	B155 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	76,77,78	B154 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	79,80,81	B153 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	82,83,84	B152 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	85,86,87	B151 - 0,1,2	4/5/2010	VAR	E	1	B P	C	
	88,89,90	B150 - 0,1,2	4/5/2010	VAR	E	1	B P	C	

(Each row: X X X X X)

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs; B = Emergency Next Workday; C = Critical 2 Workdays; D = Urgent 3 Workdays; E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FedEx ☐ Other: _____

Sample Condition Upon Receipt:
1. CHILLED Y ☐ N ☐ 4. SEALED Y ☐ N ☐
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☐ N ☐
3. CONTAINER INTACT Y ☐ N ☐ 6. PRESERVED Y ☐ N ☐

Client: Geocon Consultants, Inc.
Attention: Lauren Vigliottti
Address: 6671 Brisa Street
City: Livermore State: CA Zip Code: 94550
Tel:
Fax:

Project Name: I-580 WB HOV Lanes
Project #: E8474-06-01
Sampler: (Printed Name) CM/DW (Signature) C.MERRITT

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
CHRIS MERRITT	4-7-10	1645	Margo	4/8/10	935

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Lauren Vigliotti 4/7/2010
Print Name Date
CM
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:
20% Random select for CAM 17 metals ONLY, no total lead. 10% random select for pH

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode_____ OTHER _____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample ID / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / 8020 (BTEX)	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	Total Lead (EPA 6010)	10% Random pH (EPA 9045)	CAM17 Metals 20% Random, no lead	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	111(79) - 91, 92, 93	B149 - 0,1,2	4/5/2010	VAR									X	X	X		X					E	1	B P	C	
	94, 95, 96	B148 - 0,1,2	4/5/2010	VAR									X	X	X		X					E	1	B P	C	
	97, 98, 99	B147 - 0,1,2	4/5/2010	VAR									X	X	X		X					E	1	B P	C	
	100, 101, 102	B146 - 0,1,2	4/5/2010	VAR									X	X	X		X					E	1	B P	C	
	103, 104, 105	B145 - 0,1,2	4/5/2010	VAR									X	X	X		X					E	1	B P	C	
	106, 107, 108	B144 - 0,1,2	4/5/2010	VAR									X	X	X		X					E	1	B P	C	
	109, 110, 111	B143 - 0,1,2	4/5/2010	VAR									X	X	X		X					E	1	B P	C	
	112, 113, 114	B142 - 0,1,2	4/5/2010	VAR									X	X	X		X					E	1	B P	C	
	115, 116, 117	B141 - 0,1,2	4/5/2010	VAR									X	X	X		X					E	1	B P	C	
	118, 119, 120	B140 - 0,1,2	4/5/2010	VAR									X	X	X		X					E	1	B P	C	

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs B = Emergency Next Workday C = Critical 2 Workdays D = Urgent 3 Workdays E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl $N=HNO_3$ $S=H_2SO_4$ C=4°C $Z=Zn(AC)_2$ O=NaOH $T=Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

5 of 5

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____

Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FedEx ☐ Other: _____

Sample Condition Upon Receipt:
1. CHILLED Y ☐ N ☐ 4. SEALED Y ☐ N ☐
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☐ N ☐
3. CONTAINER INTACT Y ☐ N ☐ 6. PRESERVED Y ☐ N ☐

Client: Geocon Consultants, Inc.
Attention: Lauren Vigliottti
Address: 6671 Brisa Street
City: Livermore State: CA Zip Code: 94550
Tel:
Fax:

Project Name: I-580 WB HOV Lanes
Project #: E8474-06-01
Sampler: (Printed Name) CM/DW (Signature) C.MERRITT

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
CHRIS MERRITT	4-7-10	1645		4/8/10	935
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Lauren Vigliotti 4/7/2010
Print Name Date
CM
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:
20% Random select for CAM 17 metals ONLY, no total lead. 10% random select for pH

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides), 8082 (PCB), 8260B (Volatiles), 8270C (BNA), 6010B (Total Metal), 8015B (GRO) / 8020 (BTEX), 8015B (DRO), 8021 (BTEX), TITLE 22 / CAM 17 (6010 / 7000), Total Lead (EPA 6010), 10% Random pH (EPA 9045), CAM17 Metals 20% Random, no lead

SPECIFY APPROPRIATE MATRIX: SOIL, WATER, GROUND WATER, WASTEWATER

PRESERVATION

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode_____ OTHER _____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample ID / Location	Date	Time	8081A	8082	8260B	8270C	6010B	8015B (GRO)	8015B (DRO)	8021	TITLE 22	Total Lead	10% pH	CAM17	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	119-121, 122, 123	B139 - 0.1.2	4/5/2010	VAR									X	X	X		X				E	1	B	P	C
	124, 125, 126	B138 - 0.1.2	4/5/2010	VAR									X	X	X		X				E	1	B	P	C
	127, 128, 129	B137 - 0.1.2	4/5/2010	VAR									X	X	X		X				E	1	B	P	C
	130, 131, 132	B136 - 0.1.2	4/5/2010	VAR									X	X	X		X				E	1	B	P	C
	133, 134, 135	B135 - 0.1.2	4/5/2010	VAR									X	X	X		X				E	1	B	P	C
	136, 137, 138	B134 - 0.1.2	4/5/2010	VAR									X	X	X		X				E	1	B	P	C
	139, 140, 141	B133 - 0.1.2	4/5/2010	VAR									X	X	X		X				E	1	B	P	C
	142, 143, 144	B132 - 0.1.2	4/5/2010	VAR									X	X	X		X				E	1	B	P	C
	145, 146, 147	B131 - 0.1.2	4/5/2010	VAR									X	X	X		X				E	1	B	P	C
			4/5/2010	VAR									X	X	X		X				E	1	B	P	C

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs; B = Emergency Next Workday; C = Critical 2 Workdays; D = Urgent 3 Workdays; E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

April 27, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111139

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 08, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I-580 WB HOV Lanes, E8474-06-01
Lab Order: 111139

CASE NARRATIVE

Analytical Comments for Method 7420

Dilution was necessary for samples 111139-007A, 111139-022A, 111139-043A, 111139-046A, 111139-052A, 111139-061A and 111139-073A, due to sample matrix.

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 4/27/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (STLC)
WET/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111139
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111139-007A	B177-0	10	mg/L	63542	0.50	2	4/5/2010	4/23/2010
111139-008A	B177-1	2.9	mg/L	63542	0.25	1	4/5/2010	4/23/2010
111139-019A	B173-0	6.4	mg/L	63542	0.25	1	4/5/2010	4/23/2010
111139-022A	B172-0	12	mg/L	63542	0.50	2	4/5/2010	4/23/2010
111139-025A	B171-0	2.1	mg/L	63542	0.25	1	4/5/2010	4/23/2010
111139-043A	B165-0	17	mg/L	63542	0.50	2	4/5/2010	4/23/2010
111139-046A	B164-0	17	mg/L	63542	0.50	2	4/5/2010	4/23/2010
111139-049A	B163-0	3.3	mg/L	63542	0.25	1	4/5/2010	4/23/2010
111139-052A	B162-0	39	mg/L	63542	2.5	10	4/5/2010	4/23/2010
111139-055A	B161-0	4.3	mg/L	63542	0.25	1	4/5/2010	4/23/2010
111139-058A	B160-0	6.0	mg/L	63542	0.25	1	4/5/2010	4/23/2010
111139-061A	B159-0	23	mg/L	63542	2.5	10	4/5/2010	4/23/2010
111139-062A	B159-1	8.2	mg/L	63542	0.25	1	4/5/2010	4/23/2010
111139-064A	B158-0	1.4	mg/L	63542	0.25	1	4/5/2010	4/23/2010
111139-067A	B157-0	8.0	mg/L	63542	0.25	1	4/5/2010	4/23/2010
111139-068A	B157-1	4.1	mg/L	63542	0.25	1	4/5/2010	4/23/2010
111139-070A	B156-0	ND	mg/L	63542	0.25	1	4/5/2010	4/23/2010
111139-073A	B155-0	11	mg/L	63542	0.50	2	4/5/2010	4/23/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/27/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (STLC)
WET/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111139
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111139-074A	B155-1	3.2	mg/L	63542	0.25	1	4/5/2010	4/23/2010
111139-085A	B151-0	5.7	mg/L	63542	0.25	1	4/5/2010	4/23/2010
111139-086A	B151-1	3.0	mg/L	63543	0.25	1	4/5/2010	4/23/2010
111139-087A	B151-2	5.9	mg/L	63543	0.25	1	4/5/2010	4/23/2010
111139-098A	B147-1	5.9	mg/L	63543	0.25	1	4/5/2010	4/23/2010
111139-127A	B137-0	1.9	mg/L	63543	0.25	1	4/5/2010	4/23/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-63542A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120478**
Client ID: **PBS**	Batch ID: **63542**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922478**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63542**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120478**
Client ID: **LCSS**	Batch ID: **63542**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922479**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.823	0.25	5.000	0	96.5	80	120				

Sample ID: **111139-055A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120478**
Client ID: **B161-0**	Batch ID: **63542**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922490**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.314	0.25						4.276	0.886	20	

Sample ID: **111139-055A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120478**
Client ID: **B161-0**	Batch ID: **63542**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922491**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	9.250	0.50	5.000	4.276	99.5	80	120				

Sample ID: **MB-63542B**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120478**
Client ID: **PBS**	Batch ID: **63542**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922492**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **111139-085A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120478**
Client ID: **B151-0**	Batch ID: **63542**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922503**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.665	0.25						5.650	0.263	20	

Sample ID: **111139-085A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120478**
Client ID: **B151-0**	Batch ID: **63542**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922504**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	10.823	0.50	5.000	5.650	103	80	120				

Sample ID: **111139-085A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120478**
Client ID: **B151-0**	Batch ID: **63542**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922505**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	10.809	0.50	5.000	5.650	103	80	120	10.82	0.128	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-63543A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120479**
Client ID: **PBS**	Batch ID: **63543**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922506**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63543**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120479**
Client ID: **LCSS**	Batch ID: **63543**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922507**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.930	0.25	5.000	0	98.6	80	120				

Sample ID: **111162-089A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120479**
Client ID: **ZZZZZZ**	Batch ID: **63543**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922518**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	6.795	0.25						6.831	0.529	20	

Sample ID: **111162-089A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120479**
Client ID: **ZZZZZZ**	Batch ID: **63543**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922519**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	12.116	0.50	5.000	6.831	106	80	120				

Sample ID: **MB-63543B**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120479**
Client ID: **PBS**	Batch ID: **63543**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922520**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **111162-257A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120479**
Client ID: **ZZZZZZ**	Batch ID: **63543**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922531**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	7.810	0.25						7.840	0.389	20	

Sample ID: **111162-257A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120479**
Client ID: **ZZZZZZ**	Batch ID: **63543**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922532**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	13.498	0.50	5.000	7.840	113	80	120				

Sample ID: **111162-257A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120479**
Client ID: **ZZZZZZ**	Batch ID: **63543**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922533**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	13.026	0.50	5.000	7.840	104	80	120	13.50	3.56	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Tuesday, April 20, 2010 10:55 AM
To: Diane Galvan
Subject: I-580 WB project

Hi Diane:
Please run the following samples for WET lead under standard TAT, as follows. Thank you.

WO111180 B34-1

WO111139
B162-0 B164-0 B159-0 B165-0 B156-0 B155-0 B177-0 B173-0 B147-1
B155-1 B151-2 B160-0
B172-0 B151-0 B157-0
B151-1 B159-1 B163-0
B161-0 B177-1 B157-1
B158-0 B137-0 B171-0

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

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GEOTECHNICAL ENVIRONMENTAL MATERIALS

San Diego Murrieta Burbank Bakersfield Sacramento Livermore Carson City Las Vegas Portland

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May 05, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111139

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 08, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

Advanced Technology Laboratories

Date: 5/5/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION
WET DI/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111139
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111139-007A	B177-0	ND	mg/L	63741	0.25	1	4/5/2010	5/3/2010
111139-019A	B173-0	ND	mg/L	63741	0.25	1	4/5/2010	5/3/2010
111139-022A	B172-0	ND	mg/L	63741	0.25	1	4/5/2010	5/3/2010
111139-043A	B165-0	ND	mg/L	63741	0.25	1	4/5/2010	5/3/2010
111139-046A	B164-0	ND	mg/L	63741	0.25	1	4/5/2010	5/3/2010
111139-052A	B162-0	ND	mg/L	63741	0.25	1	4/5/2010	5/3/2010
111139-058A	B160-0	ND	mg/L	63741	0.25	1	4/5/2010	5/3/2010
111139-061A	B159-0	ND	mg/L	63741	0.25	1	4/5/2010	5/3/2010
111139-062A	B159-1	ND	mg/L	63741	0.25	1	4/5/2010	5/3/2010
111139-067A	B157-0	ND	mg/L	63741	0.25	1	4/5/2010	5/3/2010
111139-073A	B155-0	ND	mg/L	63741	0.25	1	4/5/2010	5/3/2010
111139-085A	B151-0	ND	mg/L	63741	0.25	1	4/5/2010	5/3/2010
111139-087A	B151-2	ND	mg/L	63741	0.25	1	4/5/2010	5/3/2010
111139-098A	B147-1	ND	mg/L	63741	0.25	1	4/5/2010	5/3/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 5/5/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (TCLP)
EPA 1311/ 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111139
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111139-007A	B177-0	0.25	mg/L	63835	0.25	1	4/5/2010	5/4/2010
111139-019A	B173-0	ND	mg/L	63835	0.25	1	4/5/2010	5/4/2010
111139-043A	B165-0	1.6	mg/L	63809	0.25	1	4/5/2010	5/3/2010
111139-046A	B164-0	0.92	mg/L	63809	0.25	1	4/5/2010	5/3/2010
111139-052A	B162-0	1.1	mg/L	63835	0.25	1	4/5/2010	5/4/2010
111139-058A	B160-0	0.31	mg/L	63835	0.25	1	4/5/2010	5/4/2010
111139-061A	B159-0	0.67	mg/L	63809	0.25	1	4/5/2010	5/3/2010
111139-073A	B155-0	ND	mg/L	63809	0.25	1	4/5/2010	5/3/2010
111139-098A	B147-1	ND	mg/L	63810	0.25	1	4/5/2010	5/3/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **MB-63741A**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120801**
Client ID: **PBS**	Batch ID: **63741**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928277**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63741**	SampType: **LCS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120801**
Client ID: **LCSS**	Batch ID: **63741**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928278**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.047	0.25	5.000	0	101	80	120				

Sample ID: **111139-058A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120801**
Client ID: **B160-0**	Batch ID: **63741**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928289**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111139-058A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120801**
Client ID: **B160-0**	Batch ID: **63741**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928290**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.070	0.25	5.000	0	101	70	130				

Sample ID: **MB-63741B**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120801**
Client ID: **PBS**	Batch ID: **63741**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928291**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **111139-098A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120801**
Client ID: **B147-1**	Batch ID: **63741**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928299**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111139-098A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120801**
Client ID: **B147-1**	Batch ID: **63741**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928300**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.121	0.25	5.000	0	102	70	130				

Sample ID: **111139-098A-MSD**	SampType: **MSD**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120801**
Client ID: **B147-1**	Batch ID: **63741**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/3/2010**	SeqNo: **1928301**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.073	0.25	5.000	0	101	70	130	5.121	0.951	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63809A**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **PBS**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927969**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63784A TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **PBS**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927970**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63809**	SampType: **LCS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **LCSS**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927971**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	1.029	0.25	1.000	0	103	80	120				

Sample ID: **111138-055A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **ZZZZZZ**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927982**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.223	0.25						0.2423	0	20	

Sample ID: **111138-055A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **ZZZZZZ**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927983**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.552	0.25	2.500	0.2423	92.4	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63809B**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **PBS**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927984**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63784B TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **PBS**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927985**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **111139-073A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **B155-0**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927992**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111139-073A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **B155-0**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927993**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.678	0.25	2.500	0	107	70	130				

Sample ID: **111139-073A-MSD**	SampType: **MSD**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120786**
Client ID: **B155-0**	Batch ID: **63809**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927994**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.675	0.25	2.500	0	107	70	130	2.678	0.119	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63810A**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120787**
Client ID: **PBS**	Batch ID: **63810**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927995**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63785A TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120787**
Client ID: **PBS**	Batch ID: **63810**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927996**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63810**	SampType: **LCS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120787**
Client ID: **LCSS**	Batch ID: **63810**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927997**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	1.070	0.25	1.000	0	107	80	120				

Sample ID: **111139-098A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120787**
Client ID: **B147-1**	Batch ID: **63810**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1928003**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.211	0.25						0.2185	0	20	

Sample ID: **111139-098A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120787**
Client ID: **B147-1**	Batch ID: **63810**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1928004**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.702	0.25	2.500	0.2185	99.3	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **111139-098A-MSD** SampType: **MSD** TestCode: **7420_TC** Units: **mg/L** Prep Date: **4/30/2010** RunNo: **120787**
Client ID: **B147-1** Batch ID: **63810** TestNo: **EPA 1311/ 74 EPA3010A** Analysis Date: **5/3/2010** SeqNo: **1928005**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.651	0.25	2.500	0.2185	97.3	70	130	2.702	1.91	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63835A**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/3/2010**	RunNo: **120832**
Client ID: **PBS**	Batch ID: **63835**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/4/2010**	SeqNo: **1928928**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63814A TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/3/2010**	RunNo: **120832**
Client ID: **PBS**	Batch ID: **63835**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/4/2010**	SeqNo: **1928929**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63835**	SampType: **LCS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/3/2010**	RunNo: **120832**
Client ID: **LCSS**	Batch ID: **63835**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/4/2010**	SeqNo: **1928930**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	1.036	0.25	1.000	0	104	80	120				

Sample ID: **111139-058A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/3/2010**	RunNo: **120832**
Client ID: **B160-0**	Batch ID: **63835**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/4/2010**	SeqNo: **1928935**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.272	0.25						0.3117	13.6	20	

Sample ID: **111139-058A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/3/2010**	RunNo: **120832**
Client ID: **B160-0**	Batch ID: **63835**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/4/2010**	SeqNo: **1928936**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.704	0.25	2.500	0.3117	95.7	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **111139-058A-MSD** SampType: **MSD** TestCode: **7420_TC** Units: **mg/L** Prep Date: **5/3/2010** RunNo: **120832**
Client ID: **B160-0** Batch ID: **63835** TestNo: **EPA 1311/ 74 EPA3010A** Analysis Date: **5/4/2010** SeqNo: **1928937**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.655	0.25	2.500	0.3117	93.7	70	130	2.704	1.81	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Tuesday, April 27, 2010 5:17 PM
To: Diane Galvan
Subject: I-580 project-WO111139

Hi Diane:
Please run soluble lead for the following samples, standard TAT.
DI-WET B151-0, B151-2, B147-1, B160-0, B173-0, B157-0, B159-1, B177-0, B155-0, B172-0, B165-0, B164-0, B159-0, B162-0
TCLP: B147-1, B160-0, B173-0, B177-0, B155-0, B165-0, B164-0, B159-0, B162-0

Trying to keep up with the continuous inflow of results, thanks!
-Lauren

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

Geocon Consultants, Inc
6671 Brisa Street
Livermore, CA 94550
Tel (925) 371-5900
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GEOCON

GEOTECHNICAL ENVIRONMENTAL MATERIALS

San Diego Murrieta Burbank Bakersfield Sacramento Livermore Carson City Las Vegas Portland

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May 26, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111139

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 08, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

Advanced Technology Laboratories

Date: 5/26/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (TCLP)
EPA 1311/ 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111139
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/8/2010 9:35:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111139-085A	B151-0	ND	mg/L	64254	0.25	1	4/5/2010	5/24/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-64254**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/21/2010**	RunNo: **121411**
Client ID: **PBS**	Batch ID: **64254**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/24/2010**	SeqNo: **1940560**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-64249A TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/21/2010**	RunNo: **121411**
Client ID: **PBS**	Batch ID: **64254**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/24/2010**	SeqNo: **1940561**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-64254**	SampType: **LCS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/21/2010**	RunNo: **121411**
Client ID: **LCSS**	Batch ID: **64254**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/24/2010**	SeqNo: **1940562**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	1.009	0.25	1.000	0	101	80	120				

Sample ID: **111139-085A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/21/2010**	RunNo: **121411**
Client ID: **B151-0**	Batch ID: **64254**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/24/2010**	SeqNo: **1940564**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0.2223	0	20	

Sample ID: **111139-085A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/21/2010**	RunNo: **121411**
Client ID: **B151-0**	Batch ID: **64254**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/24/2010**	SeqNo: **1940565**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.697	0.25	2.500	0.2223	99.0	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111139
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **111139-085A-MSD** SampType: **MSD** TestCode: **7420_TC** Units: **mg/L** Prep Date: **5/21/2010** RunNo: **121411**
Client ID: **B151-0** Batch ID: **64254** TestNo: **EPA 1311/ 74 EPA3010A** Analysis Date: **5/24/2010** SeqNo: **1940566**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.683	0.25	2.500	0.2223	98.4	70	130	2.697	0.517	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Wednesday, May 19, 2010 10:31 AM
To: Diane Galvan
Subject: WO111139

Hi Diane:
Please analyze sample B151-0 for TCLP lead, standard TAT. Thank you!

****

Lauren

April 16, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111159

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 09, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

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Advanced Technology Laboratories

Date: 4/16/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111159
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/9/2010 8:55:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111159-001A	B68-0	38	mg/Kg	63411	5.0	1	4/8/2010	4/15/2010
111159-003A	B68-2	ND	mg/Kg	63411	5.0	1	4/8/2010	4/15/2010
111159-004A	B69-0	18	mg/Kg	63411	5.0	1	4/8/2010	4/15/2010
111159-005A	B69-1	24	mg/Kg	63411	5.0	1	4/8/2010	4/15/2010
111159-006A	B69-2	35	mg/Kg	63411	5.0	1	4/8/2010	4/15/2010
111159-007A	B71-0	26	mg/Kg	63411	5.0	1	4/8/2010	4/15/2010
111159-008A	B71-1	11	mg/Kg	63411	5.0	1	4/8/2010	4/15/2010
111159-009A	B71-2	11	mg/Kg	63411	5.0	1	4/8/2010	4/15/2010
111159-011A	B72-1	7.9	mg/Kg	63411	5.0	1	4/8/2010	4/15/2010
111159-012A	B72-2	23	mg/Kg	63411	5.0	1	4/8/2010	4/15/2010
111159-013A	B79-0	33	mg/Kg	63411	5.0	1	4/8/2010	4/15/2010
111159-014A	B79-1	23	mg/Kg	63411	5.0	1	4/8/2010	4/15/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/16/2010

ANALYTICAL RESULTS

pH
EPA 9045C

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111159
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/9/2010 8:55:00 AM
Project No:		**Matrix:**	Soil
Analyte:	pH	**Analyst:**	CBB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111159-002A	B68-1	7.7	pH Units	R120213	0.10	1	4/8/2010	4/15/2010
111159-010A	B72-0	8.0	pH Units	R120213	0.10	1	4/8/2010	4/15/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B68-1
Lab Order:	111159	**Collection Date:**	4/8/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111159-002A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100415B	QC Batch: 63399			PrepDate: 4/15/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/15/2010 12:26 PM
Arsenic	5.6	1.0		mg/Kg	1	4/15/2010 12:26 PM
Barium	180	1.0		mg/Kg	1	4/15/2010 12:26 PM
Beryllium	ND	1.0		mg/Kg	1	4/15/2010 12:26 PM
Cadmium	ND	1.0		mg/Kg	1	4/15/2010 12:26 PM
Chromium	29	1.0		mg/Kg	1	4/15/2010 12:26 PM
Cobalt	9.2	1.0		mg/Kg	1	4/15/2010 12:26 PM
Copper	17	2.0		mg/Kg	1	4/15/2010 12:26 PM
Lead	9.3	1.0		mg/Kg	1	4/15/2010 12:26 PM
Molybdenum	ND	1.0		mg/Kg	1	4/15/2010 12:26 PM
Nickel	31	1.0		mg/Kg	1	4/15/2010 12:26 PM
Selenium	ND	1.0		mg/Kg	1	4/15/2010 12:26 PM
Silver	ND	1.0		mg/Kg	1	4/15/2010 12:26 PM
Thallium	ND	1.0		mg/Kg	1	4/15/2010 12:26 PM
Vanadium	44	1.0		mg/Kg	1	4/15/2010 12:26 PM
Zinc	40	1.0		mg/Kg	1	4/15/2010 12:26 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100415A	QC Batch: 63402			PrepDate: 4/15/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/15/2010 12:02 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B72-0
Lab Order:	111159	**Collection Date:**	4/8/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111159-010A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100415B	QC Batch: 63399			PrepDate:	4/15/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/15/2010 12:27 PM
Arsenic	4.5	1.0		mg/Kg	1	4/15/2010 12:27 PM
Barium	140	1.0		mg/Kg	1	4/15/2010 12:27 PM
Beryllium	ND	1.0		mg/Kg	1	4/15/2010 12:27 PM
Cadmium	ND	1.0		mg/Kg	1	4/15/2010 12:27 PM
Chromium	28	1.0		mg/Kg	1	4/15/2010 12:27 PM
Cobalt	7.5	1.0		mg/Kg	1	4/15/2010 12:27 PM
Copper	16	2.0		mg/Kg	1	4/15/2010 12:27 PM
Lead	22	1.0		mg/Kg	1	4/15/2010 12:27 PM
Molybdenum	ND	1.0		mg/Kg	1	4/15/2010 12:27 PM
Nickel	34	1.0		mg/Kg	1	4/15/2010 12:27 PM
Selenium	ND	1.0		mg/Kg	1	4/15/2010 12:27 PM
Silver	ND	1.0		mg/Kg	1	4/15/2010 12:27 PM
Thallium	ND	1.0		mg/Kg	1	4/15/2010 12:27 PM
Vanadium	34	1.0		mg/Kg	1	4/15/2010 12:27 PM
Zinc	41	1.0		mg/Kg	1	4/15/2010 12:27 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100415A	QC Batch: 63402			PrepDate:	4/15/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/15/2010 12:04 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B79-2
Lab Order:	111159	**Collection Date:**	4/8/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111159-015A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100415B	QC Batch: 63399			PrepDate:	4/15/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/15/2010 12:29 PM
Arsenic	6.0	1.0		mg/Kg	1	4/15/2010 12:29 PM
Barium	140	1.0		mg/Kg	1	4/15/2010 12:29 PM
Beryllium	ND	1.0		mg/Kg	1	4/15/2010 12:29 PM
Cadmium	ND	1.0		mg/Kg	1	4/15/2010 12:29 PM
Chromium	28	1.0		mg/Kg	1	4/15/2010 12:29 PM
Cobalt	7.6	1.0		mg/Kg	1	4/15/2010 12:29 PM
Copper	18	2.0		mg/Kg	1	4/15/2010 12:29 PM
Lead	56	1.0		mg/Kg	1	4/15/2010 12:29 PM
Molybdenum	ND	1.0		mg/Kg	1	4/15/2010 12:29 PM
Nickel	34	1.0		mg/Kg	1	4/15/2010 12:29 PM
Selenium	ND	1.0		mg/Kg	1	4/15/2010 12:29 PM
Silver	ND	1.0		mg/Kg	1	4/15/2010 12:29 PM
Thallium	ND	1.0		mg/Kg	1	4/15/2010 12:29 PM
Vanadium	36	1.0		mg/Kg	1	4/15/2010 12:29 PM
Zinc	53	1.0		mg/Kg	1	4/15/2010 12:29 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100415A	QC Batch: 63402			PrepDate:	4/15/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/15/2010 11:58 AM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Work Order: 111159
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63399** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/15/2010** RunNo: **120216**
Client ID: **PBS** Batch ID: **63399** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/15/2010** SeqNo: **1916763**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	0.268	1.0									
Beryllium	0.115	1.0									
Cadmium	0.098	1.0									
Chromium	0.173	1.0									
Cobalt	0.121	1.0									
Copper	ND	2.0									
Lead	0.127	1.0									
Molybdenum	0.116	1.0									
Nickel	0.178	1.0									
Selenium	ND	1.0									
Silver	0.079	1.0									
Thallium	ND	1.0									
Vanadium	0.143	1.0									
Zinc	0.405	1.0									

Sample ID: **LCS-63399** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/15/2010** RunNo: **120216**
Client ID: **LCSS** Batch ID: **63399** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/15/2010** SeqNo: **1916764**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	47.420	2.0	50.00	0	94.8	80	120				
Arsenic	47.914	1.0	50.00	0	95.8	80	120				
Barium	50.833	1.0	50.00	0.2683	101	80	120				
Beryllium	49.403	1.0	50.00	0.1151	98.6	80	120				
Cadmium	48.479	1.0	50.00	0.09769	96.8	80	120				
Chromium	48.668	1.0	50.00	0.1734	97.0	80	120				
Cobalt	50.072	1.0	50.00	0.1210	99.9	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111159
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63399** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/15/2010** RunNo: **120216**
Client ID: **LCSS** Batch ID: **63399** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/15/2010** SeqNo: **1916764**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	48.519	2.0	50.00	0	97.0	80	120				
Lead	48.987	1.0	50.00	0.1272	97.7	80	120				
Molybdenum	50.839	1.0	50.00	0.1162	101	80	120				
Nickel	47.586	1.0	50.00	0.1781	94.8	80	120				
Selenium	45.283	1.0	50.00	0	90.6	80	120				
Silver	48.091	1.0	50.00	0.07949	96.0	80	120				
Thallium	46.708	1.0	50.00	0	93.4	80	120				
Vanadium	50.604	1.0	50.00	0.1426	101	80	120				
Zinc	47.478	1.0	50.00	0.4051	94.1	80	120				

Sample ID: **111170-007A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/15/2010** RunNo: **120216**
Client ID: **ZZZZZZ** Batch ID: **63399** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/15/2010** SeqNo: **1916775**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0						0	0	20	
Arsenic	2.017	1.0						1.950	3.37	20	
Barium	60.978	1.0						59.68	2.14	20	
Cadmium	0.094	1.0						0.08340	0	20	
Chromium	8.121	1.0						7.807	3.93	20	
Cobalt	6.613	1.0						6.346	4.13	20	
Copper	6.473	2.0						6.242	3.64	20	
Lead	3.398	1.0						3.749	9.81	20	
Molybdenum	ND	1.0						0	0	20	
Nickel	4.373	1.0						4.375	0.0520	20	
Selenium	0.478	1.0						0.6394	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	32.926	1.0						31.90	3.16	20	
Zinc	90.247	1.0						86.29	4.49	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111159
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111170-007A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/15/2010** RunNo: **120216**
Client ID: **ZZZZZZ** Batch ID: **63399** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/15/2010** SeqNo: **1916776**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	77.874	2.0	125.0	0	62.3	32	105				
Arsenic	87.594	1.0	125.0	1.950	68.5	49	106				
Barium	149.128	1.0	125.0	59.68	71.6	31	133				
Cadmium	81.973	1.0	125.0	0.08340	65.5	51	103				
Chromium	94.582	1.0	125.0	7.807	69.4	45	114				
Cobalt	89.489	1.0	125.0	6.346	66.5	52	106				
Copper	95.971	2.0	125.0	6.242	71.8	54	125				
Lead	86.570	1.0	125.0	3.749	66.3	34	126				
Molybdenum	78.514	1.0	125.0	0	62.8	54	106				
Nickel	85.395	1.0	125.0	4.375	64.8	45	111				
Selenium	85.190	1.0	125.0	0.6394	67.6	47	104				
Silver	91.651	1.0	125.0	0	73.3	56	112				
Thallium	78.404	1.0	125.0	0	62.7	46	101				
Vanadium	124.692	1.0	125.0	31.90	74.2	54	114				
Zinc	171.428	1.0	125.0	86.29	68.1	28	125				

Sample ID: **111170-007A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/15/2010** RunNo: **120216**
Client ID: **ZZZZZZ** Batch ID: **63399** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/15/2010** SeqNo: **1916777**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	71.433	2.0	125.0	0	57.1	32	105	77.87	8.63	20	
Arsenic	81.619	1.0	125.0	1.950	63.7	49	106	87.59	7.06	20	
Barium	137.526	1.0	125.0	59.68	62.3	31	133	149.1	8.09	20	
Cadmium	76.170	1.0	125.0	0.08340	60.9	51	103	81.97	7.34	20	
Chromium	87.352	1.0	125.0	7.807	63.6	45	114	94.58	7.95	20	
Cobalt	83.416	1.0	125.0	6.346	61.7	52	106	89.49	7.02	20	
Copper	89.436	2.0	125.0	6.242	66.6	54	125	95.97	7.05	20	
Lead	80.635	1.0	125.0	3.749	61.5	34	126	86.57	7.10	20	
Molybdenum	73.243	1.0	125.0	0	58.6	54	106	78.51	6.95	20	
Nickel	79.282	1.0	125.0	4.375	59.9	45	111	85.39	7.42	20	

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111159
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111170-007A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/15/2010** RunNo: **120216**
Client ID: **ZZZZZZ** Batch ID: **63399** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/15/2010** SeqNo: **1916777**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	78.466	1.0	125.0	0.6394	62.3	47	104	85.19	8.22	20	
Silver	85.032	1.0	125.0	0	68.0	56	112	91.65	7.49	20	
Thallium	73.348	1.0	125.0	0	58.7	46	101	78.40	6.66	20	
Vanadium	113.176	1.0	125.0	31.90	65.0	54	114	124.7	9.68	20	
Zinc	154.055	1.0	125.0	86.29	54.2	28	125	171.4	10.7	20	

Sample ID: **111170-007A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/15/2010** RunNo: **120216**
Client ID: **ZZZZZZ** Batch ID: **63399** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/15/2010** SeqNo: **1916780**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	0.728	2.0						0.7068	0	20	

Sample ID: **111170-007A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/15/2010** RunNo: **120216**
Client ID: **ZZZZZZ** Batch ID: **63399** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/15/2010** SeqNo: **1916781**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	101.621	2.0	125.0	0.7068	80.7	56	106				

Sample ID: **111170-007A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/15/2010** RunNo: **120216**
Client ID: **ZZZZZZ** Batch ID: **63399** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/15/2010** SeqNo: **1916782**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	97.445	2.0	125.0	0.7068	77.4	56	106	101.6	4.20	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111159
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63411A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120226**
Client ID: **PBS**	Batch ID: **63411**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/15/2010**	SeqNo: **1916944**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-63411**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120226**
Client ID: **LCSS**	Batch ID: **63411**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/15/2010**	SeqNo: **1916945**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	259.499	5.0	250.0	0	104	80	120				

Sample ID: **111159-012A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120226**
Client ID: **B72-2**	Batch ID: **63411**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/15/2010**	SeqNo: **1916956**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	16.645	5.0									

Sample ID: **111159-012A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120226**
Client ID: **B72-2**	Batch ID: **63411**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/15/2010**	SeqNo: **1916957**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	215.216	5.0	250.0	0	86.1	34	126				

Sample ID: **MB-63411B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120226**
Client ID: **PBS**	Batch ID: **63411**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/15/2010**	SeqNo: **1916958**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111159
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111159-014A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120226**
Client ID: **B79-1**	Batch ID: **63411**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/15/2010**	SeqNo: **1916961**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	25.553	5.0									

Sample ID: **111159-014A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120226**
Client ID: **B79-1**	Batch ID: **63411**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/15/2010**	SeqNo: **1916962**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	233.420	5.0	250.0	0	93.4	34	126				

Sample ID: **111159-014A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120226**
Client ID: **B79-1**	Batch ID: **63411**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/15/2010**	SeqNo: **1916963**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	208.775	5.0	250.0	0	83.5	34	126	233.4	11.1	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111159
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63402**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120202**
Client ID: **PBS**	Batch ID: **63402**	TestNo: **EPA 7471A**		Analysis Date: **4/15/2010**	SeqNo: **1916526**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63402**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120202**
Client ID: **LCSS**	Batch ID: **63402**	TestNo: **EPA 7471A**		Analysis Date: **4/15/2010**	SeqNo: **1916527**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.840	0.10	0.8300	0	101	80	120				

Sample ID: **111159-015A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120202**
Client ID: **B79-2**	Batch ID: **63402**	TestNo: **EPA 7471A**		Analysis Date: **4/15/2010**	SeqNo: **1916528**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.864	0.10	0.8300	0.02519	101	70	130				

Sample ID: **111159-015A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120202**
Client ID: **B79-2**	Batch ID: **63402**	TestNo: **EPA 7471A**		Analysis Date: **4/15/2010**	SeqNo: **1916529**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.869	0.10	0.8300	0.02519	102	70	130	0.8638	0.551	20	

Sample ID: **111159-015A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/15/2010**	RunNo: **120202**
Client ID: **B79-2**	Batch ID: **63402**	TestNo: **EPA 7471A**		Analysis Date: **4/15/2010**	SeqNo: **1916531**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.026	0.10						0.02519	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111159
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 9045_S

Sample ID: **111159-010ADUP** SampType: **DUP** TestCode: **9045_S** Units: **pH Units** Prep Date: RunNo: **120213**
Client ID: **B72-0** Batch ID: **R120213** TestNo: **EPA 9045C** Analysis Date: **4/15/2010** SeqNo: **1916717**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.990	0.10						8.040	0.624	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: 4/9/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☒ FedEx ☐ Other: GSO

Sample Condition Upon Receipt: 4.6
1. CHILLED Y ☑ N ☐ | 4. SEALED Y ☐ N ☑
2. HEADSPACE (VOA) Y ☐ N/A N ☐ | 5. # OF SPLS MATCH COC Y ☑ N ☐
3. CONTAINER INTACT Y ☑ N ☐ | 6. PRESERVED Y ☐ N ☑

Client: Geocon Consultants, Inc.
Address: 6671 Brisa Street
Tel: 925-371-5900
Attention: Lauren Vigliottti
City: Livermore State: CA Zip Code: 94550
Fax: 925-371-5915

Project Name: I-580 WB HOV Lanes
Project #: E8474-06-01
Sampler: (Printed Name) Lauren Vigliotti (Signature)

Relinquished by: (Signature and Printed Name) Lauren Vigliotti Date: 4/8/10 Time: 1645
Received by: (Signature and Printed Name) Mary Date: 4/9/10 Time: 855

Relinquished by: (Signature and Printed Name) Date: Time:
Received by: (Signature and Printed Name) Date: Time:

Relinquished by: (Signature and Printed Name) Date: Time:
Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Lauren Vigliotti 4/8/2010
Print Name Date
Lauren Vigliotti
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:
20% Random select for CAM 17 metals ONLY, no total lead. 10% random select for pH

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides) | 8082 (PCB) | 8260B (Volatiles) | 8270C (BNA) | 6010B (Total Metal) | 8015B (GRO) / 8020 (BTEX) | 8015B (DRO) | 8021 (BTEX) | TITLE 22 / CAM 17 (6010 / 7000) | Total Lead (EPA 6010) | 10% Random pH (EPA 9045) | CAM17 Metals 20% Random, no lead

SPECIFY APPROPRIATE MATRIX: SOIL | WATER | GROUND WATER | WASTEWATER

PRESERVATION

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode_____ OTHER _____

ITEM	LAB USE ONLY: Batch # / Lab No.	Sample ID / Location	Date	Time	8081A	8082	8260B	8270C	6010B	8015B (GRO)	8015B (DRO)	8021	TITLE 22	Total Lead	10% Random pH	CAM17	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	1111 55-1,2,3	B68-0,-1,-2	4/8/2010	1200									X	X	X		X					E	1	B P	C	
	4,5,6	B69-0,-1,-2	4/8/2010	1045									X	X	X		X					E	1	B P	C	
	7,8,9	B71-0,-1,-2	4/8/2010	1135									X	X	X		X					E	1	B P	C	
	10,11,12	B72-0,-1,-2	4/8/2010	1130									X	X	X		X					E	1	B P	C	
	13,14,15	B79-0,-1,-2	4/8/2010	1100									X	X	X		X					E	1	B P	C	
													X	X	X		X					E	1	B P	C	
													X	X	X		X					E	1	B P	C	
													X	X	X		X					E	1	B P	C	
													X	X	X		X					E	1	B P	C	
													X	X	X		X					E	1	B P	C	

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs | B = Emergency Next Workday | C = Critical 2 Workdays | D = Urgent 3 Workdays | E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

April 23, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111159

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 09, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

Advanced Technology Laboratories

Date: 4/23/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (STLC)
WET/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111159
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/9/2010 8:55:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111159-015A	B79-2	1.7	mg/L	63450	0.25	1	4/8/2010	4/20/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111159
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-63450A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **PBS**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919936**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63450**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **LCSS**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919937**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.873	0.25	5.000	0	97.5	80	120				

Sample ID: **111138-111A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **ZZZZZZ**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919948**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	24.451	2.5						24.48	0.114	20	

Sample ID: **111138-111A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **ZZZZZZ**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919949**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	28.538	2.5	5.000	24.48	81.2	80	120				

Sample ID: **MB-63450B**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **PBS**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919950**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111159
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **111138-112A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **ZZZZZZ**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919953**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.037	0.25						3.950	2.18	20	

Sample ID: **111138-112A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **ZZZZZZ**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919954**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	8.437	0.25	5.000	3.950	89.7	80	120				

Sample ID: **111138-112A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/18/2010**	RunNo: **120370**
Client ID: **ZZZZZZ**	Batch ID: **63450**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/20/2010**	SeqNo: **1919955**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	8.421	0.25	5.000	3.950	89.4	80	120	8.437	0.186	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Friday, April 16, 2010 4:37 PM
To: Diane Galvan
Subject: RE: Results/EDD - I-580 WB HOV Lanes (111159)

Please analyze sample B79-2 for WET lead, standard TAT. Thank you!

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

Geocon Consultants, Inc
6671 Brisa Street
Livermore, CA 94550
Tel (925) 371-5900
Cell (925) 768-9874

GEOCON

GEOTECHNICAL ENVIRONMENTAL MATERIALS

San Diego Murrieta Burbank Bakersfield Sacramento Livermore Carson City Las Vegas Portland

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April 19, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111180

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 10, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I-580 WB HOV Lanes, E8474-06-01
Lab Order: 111180

CASE NARRATIVE

Analytical Comments for Method 6010

RPD for Duplicate (DUP) is outside criteria for samples 111180-039ADUP, 111180-048ADUP and 111180-057ADUP; however, the Laboratory Control Sample (LCS) validated the analytical batch.

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 4/19/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111180
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/10/2010 8:05:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111180-001A	B49-0	14	mg/Kg	63347	5.0	1	4/9/2010	4/16/2010
111180-002A	B49-1	ND	mg/Kg	63347	5.0	1	4/9/2010	4/16/2010
111180-004A	B48-0	21	mg/Kg	63347	5.0	1	4/9/2010	4/16/2010
111180-005A	B48-1	ND	mg/Kg	63347	5.0	1	4/9/2010	4/16/2010
111180-006A	B48-2	ND	mg/Kg	63347	5.0	1	4/9/2010	4/16/2010
111180-007A	B47-0	14	mg/Kg	63347	5.0	1	4/9/2010	4/16/2010
111180-009A	B47-2	5.2	mg/Kg	63347	5.0	1	4/9/2010	4/16/2010
111180-010A	B46-0	28	mg/Kg	63347	5.0	1	4/9/2010	4/16/2010
111180-011A	B46-1	5.4	mg/Kg	63347	5.0	1	4/9/2010	4/16/2010
111180-012A	B46-2	5.5	mg/Kg	63347	5.0	1	4/9/2010	4/16/2010
111180-014A	B45-1	ND	mg/Kg	63347	5.0	1	4/9/2010	4/16/2010
111180-015A	B45-2	7.1	mg/Kg	63348	5.0	1	4/9/2010	4/16/2010
111180-016A	B44-0	ND	mg/Kg	63348	5.0	1	4/9/2010	4/16/2010
111180-017A	B44-1	ND	mg/Kg	63348	5.0	1	4/9/2010	4/16/2010
111180-019A	B43-0	ND	mg/Kg	63348	5.0	1	4/9/2010	4/16/2010
111180-020A	B43-1	ND	mg/Kg	63348	5.0	1	4/9/2010	4/16/2010
111180-021A	B43-2	ND	mg/Kg	63348	5.0	1	4/9/2010	4/16/2010
111180-022A	B42-0	18	mg/Kg	63348	5.0	1	4/9/2010	4/16/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/19/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111180
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/10/2010 8:05:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111180-024A	B42-2	19	mg/Kg	63348	5.0	1	4/9/2010	4/16/2010
111180-025A	B41-0	26	mg/Kg	63348	5.0	1	4/9/2010	4/16/2010
111180-026A	B41-1	19	mg/Kg	63348	5.0	1	4/9/2010	4/16/2010
111180-027A	B41-2	25	mg/Kg	63348	5.0	1	4/9/2010	4/16/2010
111180-029A	B40-1	21	mg/Kg	63348	5.0	1	4/9/2010	4/16/2010
111180-030A	B40-2	13	mg/Kg	63348	5.0	1	4/9/2010	4/16/2010
111180-031A	B39-0	17	mg/Kg	63348	5.0	1	4/9/2010	4/16/2010
111180-032A	B39-1	ND	mg/Kg	63348	5.0	1	4/9/2010	4/16/2010
111180-034A	B38-0	27	mg/Kg	63348	5.0	1	4/9/2010	4/16/2010
111180-035A	B38-1	17	mg/Kg	63348	5.0	1	4/9/2010	4/16/2010
111180-036A	B38-2	33	mg/Kg	63348	5.0	1	4/9/2010	4/16/2010
111180-037A	B37-0	13	mg/Kg	63348	5.0	1	4/9/2010	4/16/2010
111180-039A	B37-2	11	mg/Kg	63348	5.0	1	4/9/2010	4/16/2010
111180-040A	B36-0	22	mg/Kg	63349	5.0	1	4/9/2010	4/16/2010
111180-041A	B36-1	31	mg/Kg	63349	5.0	1	4/9/2010	4/16/2010
111180-042A	B36-2	31	mg/Kg	63349	5.0	1	4/9/2010	4/16/2010
111180-044A	B35-1	ND	mg/Kg	63349	5.0	1	4/9/2010	4/16/2010
111180-045A	B35-2	10	mg/Kg	63349	5.0	1	4/9/2010	4/16/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/19/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111180
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/10/2010 8:05:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111180-046A	B34-0	18	mg/Kg	63349	5.0	1	4/9/2010	4/16/2010
111180-047A	B34-1	56	mg/Kg	63349	5.0	1	4/9/2010	4/16/2010
111180-049A	B33-0	17	mg/Kg	63349	5.0	1	4/9/2010	4/16/2010
111180-050A	B33-1	20	mg/Kg	63349	5.0	1	4/9/2010	4/16/2010
111180-051A	B33-2	25	mg/Kg	63349	5.0	1	4/9/2010	4/16/2010
111180-052A	B32-0	13	mg/Kg	63349	5.0	1	4/9/2010	4/16/2010
111180-054A	B32-1.5	5.7	mg/Kg	63349	5.0	1	4/9/2010	4/16/2010
111180-055A	B31-0	27	mg/Kg	63349	5.0	1	4/9/2010	4/16/2010
111180-056A	B31-1	16	mg/Kg	63349	5.0	1	4/9/2010	4/16/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/19/2010

ANALYTICAL RESULTS

pH
EPA 9045C

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111180
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/10/2010 8:05:00 AM
Project No:		**Matrix:**	Soil
Analyte:	pH	**Analyst:**	CBB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111180-002A	B49-1	8.3	pH Units	R120259	0.10	1	4/9/2010	4/16/2010
111180-013A	B45-0	7.0	pH Units	R120259	0.10	1	4/9/2010	4/16/2010
111180-024A	B42-2	8.0	pH Units	R120259	0.10	1	4/9/2010	4/16/2010
111180-035A	B38-1	8.3	pH Units	R120259	0.10	1	4/9/2010	4/16/2010
111180-046A	B34-0	8.0	pH Units	R120259	0.10	1	4/9/2010	4/16/2010
111180-057A	B31-2	7.2	pH Units	R120261	0.10	1	4/9/2010	4/16/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B49-2
Lab Order:	111180	**Collection Date:**	4/9/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111180-003A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414D	QC Batch: 63323			PrepDate: 4/13/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 11:19 AM
Arsenic	5.3	1.0		mg/Kg	1	4/14/2010 11:19 AM
Barium	130	1.0		mg/Kg	1	4/14/2010 11:19 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 11:19 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 11:19 AM
Chromium	25	1.0		mg/Kg	1	4/14/2010 11:19 AM
Cobalt	10	1.0		mg/Kg	1	4/14/2010 11:19 AM
Copper	20	2.0		mg/Kg	1	4/14/2010 11:19 AM
Lead	6.3	1.0		mg/Kg	1	4/14/2010 11:19 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 11:19 AM
Nickel	28	1.0		mg/Kg	1	4/14/2010 11:19 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 11:19 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 11:19 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 11:19 AM
Vanadium	40	1.0		mg/Kg	1	4/14/2010 11:19 AM
Zinc	38	1.0		mg/Kg	1	4/14/2010 11:19 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413D	QC Batch: 63312			PrepDate: 4/13/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 03:55 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B47-1
Lab Order:	111180	**Collection Date:**	4/9/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111180-008A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414D	QC Batch: 63323			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 11:21 AM
Arsenic	5.2	1.0		mg/Kg	1	4/14/2010 11:21 AM
Barium	160	1.0		mg/Kg	1	4/14/2010 11:21 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 11:21 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 11:21 AM
Chromium	25	1.0		mg/Kg	1	4/14/2010 11:21 AM
Cobalt	9.2	1.0		mg/Kg	1	4/14/2010 11:21 AM
Copper	19	2.0		mg/Kg	1	4/14/2010 11:21 AM
Lead	6.3	1.0		mg/Kg	1	4/14/2010 11:21 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 11:21 AM
Nickel	26	1.0		mg/Kg	1	4/14/2010 11:21 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 11:21 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 11:21 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 11:21 AM
Vanadium	38	1.0		mg/Kg	1	4/14/2010 11:21 AM
Zinc	36	1.0		mg/Kg	1	4/14/2010 11:21 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413D	QC Batch: 63312			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 03:57 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B45-0
Lab Order:	111180	**Collection Date:**	4/9/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111180-013A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414D	QC Batch: 63323			PrepDate: 4/13/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 11:27 AM
Arsenic	2.7	1.0		mg/Kg	1	4/14/2010 11:27 AM
Barium	160	1.0		mg/Kg	1	4/14/2010 11:27 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 11:27 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 11:27 AM
Chromium	23	1.0		mg/Kg	1	4/14/2010 11:27 AM
Cobalt	5.8	1.0		mg/Kg	1	4/14/2010 11:27 AM
Copper	19	2.0		mg/Kg	1	4/14/2010 11:27 AM
Lead	4.6	1.0		mg/Kg	1	4/14/2010 11:27 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 11:27 AM
Nickel	33	1.0		mg/Kg	1	4/14/2010 11:27 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 11:27 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 11:27 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 11:27 AM
Vanadium	17	1.0		mg/Kg	1	4/14/2010 11:27 AM
Zinc	42	1.0		mg/Kg	1	4/14/2010 11:27 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413D	QC Batch: 63312			PrepDate: 4/13/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 04:03 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B44-2
Lab Order:	111180	**Collection Date:**	4/9/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111180-018A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414D	QC Batch: 63323			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 11:29 AM
Arsenic	2.9	1.0		mg/Kg	1	4/14/2010 11:29 AM
Barium	68	1.0		mg/Kg	1	4/14/2010 11:29 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 11:29 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 11:29 AM
Chromium	27	1.0		mg/Kg	1	4/14/2010 11:29 AM
Cobalt	6.4	1.0		mg/Kg	1	4/14/2010 11:29 AM
Copper	14	2.0		mg/Kg	1	4/14/2010 11:29 AM
Lead	3.0	1.0		mg/Kg	1	4/14/2010 11:29 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 11:29 AM
Nickel	62	1.0		mg/Kg	1	4/14/2010 11:29 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 11:29 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 11:29 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 11:29 AM
Vanadium	16	1.0		mg/Kg	1	4/14/2010 11:29 AM
Zinc	25	1.0		mg/Kg	1	4/14/2010 11:29 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413D	QC Batch: 63312			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 04:05 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B42-1
Lab Order:	111180	**Collection Date:**	4/9/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111180-023A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414D	QC Batch: 63323			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 11:31 AM
Arsenic	31	1.0		mg/Kg	1	4/14/2010 11:31 AM
Barium	120	1.0		mg/Kg	1	4/14/2010 11:31 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 11:31 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 11:31 AM
Chromium	26	1.0		mg/Kg	1	4/14/2010 11:31 AM
Cobalt	7.7	1.0		mg/Kg	1	4/14/2010 11:31 AM
Copper	19	2.0		mg/Kg	1	4/14/2010 11:31 AM
Lead	17	1.0		mg/Kg	1	4/14/2010 11:31 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 11:31 AM
Nickel	29	1.0		mg/Kg	1	4/14/2010 11:31 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 11:31 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 11:31 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 11:31 AM
Vanadium	34	1.0		mg/Kg	1	4/14/2010 11:31 AM
Zinc	48	1.0		mg/Kg	1	4/14/2010 11:31 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413D	QC Batch: 63312			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 04:07 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B40-0
Lab Order:	111180	**Collection Date:**	4/9/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111180-028A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414D	QC Batch: 63323			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 11:33 AM
Arsenic	5.2	1.0		mg/Kg	1	4/14/2010 11:33 AM
Barium	130	1.0		mg/Kg	1	4/14/2010 11:33 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 11:33 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 11:33 AM
Chromium	31	1.0		mg/Kg	1	4/14/2010 11:33 AM
Cobalt	8.1	1.0		mg/Kg	1	4/14/2010 11:33 AM
Copper	28	2.0		mg/Kg	1	4/14/2010 11:33 AM
Lead	25	1.0		mg/Kg	1	4/14/2010 11:33 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 11:33 AM
Nickel	41	1.0		mg/Kg	1	4/14/2010 11:33 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 11:33 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 11:33 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 11:33 AM
Vanadium	28	1.0		mg/Kg	1	4/14/2010 11:33 AM
Zinc	150	1.0		mg/Kg	1	4/14/2010 11:33 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413D	QC Batch: 63312			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 04:09 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B39-2
Lab Order:	111180	**Collection Date:**	4/9/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111180-033A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414D	QC Batch: 63323			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 11:35 AM
Arsenic	2.8	1.0		mg/Kg	1	4/14/2010 11:35 AM
Barium	79	1.0		mg/Kg	1	4/14/2010 11:35 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 11:35 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 11:35 AM
Chromium	61	1.0		mg/Kg	1	4/14/2010 11:35 AM
Cobalt	13	1.0		mg/Kg	1	4/14/2010 11:35 AM
Copper	29	2.0		mg/Kg	1	4/14/2010 11:35 AM
Lead	8.3	1.0		mg/Kg	1	4/14/2010 11:35 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 11:35 AM
Nickel	45	1.0		mg/Kg	1	4/14/2010 11:35 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 11:35 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 11:35 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 11:35 AM
Vanadium	28	1.0		mg/Kg	1	4/14/2010 11:35 AM
Zinc	54	1.0		mg/Kg	1	4/14/2010 11:35 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413D	QC Batch: 63312			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 04:11 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B37-1
Lab Order:	111180	**Collection Date:**	4/9/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111180-038A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414D	QC Batch: 63323			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 11:37 AM
Arsenic	3.9	1.0		mg/Kg	1	4/14/2010 11:37 AM
Barium	120	1.0		mg/Kg	1	4/14/2010 11:37 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 11:37 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 11:37 AM
Chromium	24	1.0		mg/Kg	1	4/14/2010 11:37 AM
Cobalt	6.9	1.0		mg/Kg	1	4/14/2010 11:37 AM
Copper	18	2.0		mg/Kg	1	4/14/2010 11:37 AM
Lead	16	1.0		mg/Kg	1	4/14/2010 11:37 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 11:37 AM
Nickel	35	1.0		mg/Kg	1	4/14/2010 11:37 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 11:37 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 11:37 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 11:37 AM
Vanadium	25	1.0		mg/Kg	1	4/14/2010 11:37 AM
Zinc	75	1.0		mg/Kg	1	4/14/2010 11:37 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413D	QC Batch: 63312			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 04:13 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B35-0
Lab Order:	111180	**Collection Date:**	4/9/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111180-043A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414D	QC Batch: 63323			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 11:39 AM
Arsenic	6.0	1.0		mg/Kg	1	4/14/2010 11:39 AM
Barium	170	1.0		mg/Kg	1	4/14/2010 11:39 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 11:39 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 11:39 AM
Chromium	34	1.0		mg/Kg	1	4/14/2010 11:39 AM
Cobalt	7.2	1.0		mg/Kg	1	4/14/2010 11:39 AM
Copper	56	2.0		mg/Kg	1	4/14/2010 11:39 AM
Lead	22	1.0		mg/Kg	1	4/14/2010 11:39 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 11:39 AM
Nickel	41	1.0		mg/Kg	1	4/14/2010 11:39 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 11:39 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 11:39 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 11:39 AM
Vanadium	29	1.0		mg/Kg	1	4/14/2010 11:39 AM
Zinc	380	1.0		mg/Kg	1	4/14/2010 11:39 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413D	QC Batch: 63312			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 04:15 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B34-1.5
Lab Order:	111180	**Collection Date:**	4/9/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111180-048A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414D	QC Batch: 63323			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 11:41 AM
Arsenic	2.6	1.0		mg/Kg	1	4/14/2010 11:41 AM
Barium	40	1.0		mg/Kg	1	4/14/2010 11:41 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 11:41 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 11:41 AM
Chromium	16	1.0		mg/Kg	1	4/14/2010 11:41 AM
Cobalt	3.1	1.0		mg/Kg	1	4/14/2010 11:41 AM
Copper	7.0	2.0		mg/Kg	1	4/14/2010 11:41 AM
Lead	5.1	1.0		mg/Kg	1	4/14/2010 11:41 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 11:41 AM
Nickel	20	1.0		mg/Kg	1	4/14/2010 11:41 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 11:41 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 11:41 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 11:41 AM
Vanadium	16	1.0		mg/Kg	1	4/14/2010 11:41 AM
Zinc	15	1.0		mg/Kg	1	4/14/2010 11:41 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413D	QC Batch: 63312			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 03:51 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B32-1
Lab Order:	111180	**Collection Date:**	4/9/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111180-053A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414E	QC Batch: 63324			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 11:58 AM
Arsenic	4.8	1.0		mg/Kg	1	4/14/2010 11:58 AM
Barium	53	1.0		mg/Kg	1	4/14/2010 11:58 AM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 11:58 AM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 11:58 AM
Chromium	18	1.0		mg/Kg	1	4/14/2010 11:58 AM
Cobalt	5.0	1.0		mg/Kg	1	4/14/2010 11:58 AM
Copper	7.7	2.0		mg/Kg	1	4/14/2010 11:58 AM
Lead	9.3	1.0		mg/Kg	1	4/14/2010 11:58 AM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 11:58 AM
Nickel	18	1.0		mg/Kg	1	4/14/2010 11:58 AM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 11:58 AM
Silver	ND	1.0		mg/Kg	1	4/14/2010 11:58 AM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 11:58 AM
Vanadium	18	1.0		mg/Kg	1	4/14/2010 11:58 AM
Zinc	34	1.0		mg/Kg	1	4/14/2010 11:58 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413E	QC Batch: 63313			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 04:38 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B31-2
Lab Order:	111180	**Collection Date:**	4/9/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111180-057A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414E	QC Batch: 63324			PrepDate:	4/13/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/14/2010 12:00 PM
Arsenic	4.7	1.0		mg/Kg	1	4/14/2010 12:00 PM
Barium	150	1.0		mg/Kg	1	4/14/2010 12:00 PM
Beryllium	ND	1.0		mg/Kg	1	4/14/2010 12:00 PM
Cadmium	ND	1.0		mg/Kg	1	4/14/2010 12:00 PM
Chromium	29	1.0		mg/Kg	1	4/14/2010 12:00 PM
Cobalt	9.1	1.0		mg/Kg	1	4/14/2010 12:00 PM
Copper	20	2.0		mg/Kg	1	4/14/2010 12:00 PM
Lead	20	1.0		mg/Kg	1	4/14/2010 12:00 PM
Molybdenum	ND	1.0		mg/Kg	1	4/14/2010 12:00 PM
Nickel	40	1.0		mg/Kg	1	4/14/2010 12:00 PM
Selenium	ND	1.0		mg/Kg	1	4/14/2010 12:00 PM
Silver	ND	1.0		mg/Kg	1	4/14/2010 12:00 PM
Thallium	ND	1.0		mg/Kg	1	4/14/2010 12:00 PM
Vanadium	28	1.0		mg/Kg	1	4/14/2010 12:00 PM
Zinc	43	1.0		mg/Kg	1	4/14/2010 12:00 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100413E	QC Batch: 63313			PrepDate:	4/13/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/13/2010 04:34 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111180
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63323** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120142**
Client ID: **PBS** Batch ID: **63323** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915358**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	0.008	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	0.041	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	0.070	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63323** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120142**
Client ID: **LCSS** Batch ID: **63323** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915359**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	45.920	2.0	50.00	0	91.8	80	120				
Arsenic	46.350	1.0	50.00	0	92.7	80	120				
Barium	48.816	1.0	50.00	0	97.6	80	120				
Beryllium	46.778	1.0	50.00	0	93.6	80	120				
Cadmium	46.563	1.0	50.00	0.007972	93.1	80	120				
Chromium	46.605	1.0	50.00	0	93.2	80	120				
Cobalt	48.102	1.0	50.00	0	96.2	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111180
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63323**	SampType: **LCS**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120142**
Client ID: **LCSS**	Batch ID: **63323**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/14/2010**	SeqNo: **1915359**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	46.544	2.0	50.00	0	93.1	80	120				
Lead	47.027	1.0	50.00	0	94.1	80	120				
Molybdenum	48.363	1.0	50.00	0	96.7	80	120				
Nickel	45.248	1.0	50.00	0.04145	90.4	80	120				
Selenium	43.586	1.0	50.00	0	87.2	80	120				
Silver	46.342	1.0	50.00	0	92.7	80	120				
Thallium	45.295	1.0	50.00	0	90.6	80	120				
Vanadium	48.361	1.0	50.00	0.06976	96.6	80	120				
Zinc	44.981	1.0	50.00	0	90.0	80	120				

Sample ID: **111180-048A-DUP**	SampType: **DUP**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120142**
Client ID: **B34-1.5**	Batch ID: **63323**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/14/2010**	SeqNo: **1915370**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.351	2.0						0.3848	0	20	
Arsenic	3.565	1.0						2.593	31.6	20	R
Barium	52.458	1.0						40.03	26.9	20	R
Beryllium	ND	1.0						0	0	20	
Cadmium	0.105	1.0						0.06195	0	20	
Chromium	19.319	1.0						15.80	20.0	20	R
Cobalt	4.439	1.0						3.126	34.7	20	R
Copper	9.969	2.0						6.977	35.3	20	R
Lead	5.321	1.0						5.066	4.91	20	
Molybdenum	ND	1.0						0	0	20	
Nickel	27.591	1.0						19.73	33.2	20	R
Selenium	ND	1.0						0	0	20	
Silver	0.092	1.0						0.07585	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	16.953	1.0						15.65	8.01	20	
Zinc	21.653	1.0						14.84	37.3	20	R

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111180
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111180-048A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120142**
Client ID: **B34-1.5** Batch ID: **63323** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915371**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	107.899	2.0	125.0	0.3848	86.0	32	105				
Arsenic	111.513	1.0	125.0	2.593	87.1	49	106				
Barium	162.595	1.0	125.0	40.03	98.1	31	133				
Beryllium	116.445	1.0	125.0	0	93.2	56	106				
Cadmium	111.602	1.0	125.0	0.06195	89.2	51	103				
Chromium	130.164	1.0	125.0	15.80	91.5	45	114				
Cobalt	116.458	1.0	125.0	3.126	90.7	52	106				
Copper	122.672	2.0	125.0	6.977	92.6	54	125				
Lead	113.702	1.0	125.0	5.066	86.9	34	126				
Molybdenum	109.600	1.0	125.0	0	87.7	54	106				
Nickel	131.451	1.0	125.0	19.73	89.4	45	111				
Selenium	108.035	1.0	125.0	0	86.4	47	104				
Silver	115.050	1.0	125.0	0.07585	92.0	56	112				
Thallium	106.938	1.0	125.0	0	85.6	46	101				
Vanadium	133.096	1.0	125.0	15.65	94.0	54	114				
Zinc	126.727	1.0	125.0	14.84	89.5	28	125				

Sample ID: **111180-048A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120142**
Client ID: **B34-1.5** Batch ID: **63323** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915372**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	104.965	2.0	125.0	0.3848	83.7	32	105	107.9	2.76	20	
Arsenic	110.209	1.0	125.0	2.593	86.1	49	106	111.5	1.18	20	
Barium	159.482	1.0	125.0	40.03	95.6	31	133	162.6	1.93	20	
Beryllium	112.326	1.0	125.0	0	89.9	56	106	116.4	3.60	20	
Cadmium	106.914	1.0	125.0	0.06195	85.5	51	103	111.6	4.29	20	
Chromium	131.446	1.0	125.0	15.80	92.5	45	114	130.2	0.980	20	
Cobalt	112.602	1.0	125.0	3.126	87.6	52	106	116.5	3.37	20	
Copper	119.083	2.0	125.0	6.977	89.7	54	125	122.7	2.97	20	
Lead	113.382	1.0	125.0	5.066	86.7	34	126	113.7	0.283	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111180
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111180-048A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120142**
Client ID: **B34-1.5** Batch ID: **63323** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915372**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	107.568	1.0	125.0	0	86.1	54	106	109.6	1.87	20	
Nickel	132.150	1.0	125.0	19.73	89.9	45	111	131.5	0.530	20	
Selenium	105.904	1.0	125.0	0	84.7	47	104	108.0	1.99	20	
Silver	111.619	1.0	125.0	0.07585	89.2	56	112	115.1	3.03	20	
Thallium	104.982	1.0	125.0	0	84.0	46	101	106.9	1.85	20	
Vanadium	129.726	1.0	125.0	15.65	91.3	54	114	133.1	2.56	20	
Zinc	124.777	1.0	125.0	14.84	87.9	28	125	126.7	1.55	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111180
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63324** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120143**
Client ID: **PBS** Batch ID: **63324** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915373**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	0.047	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	0.031	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63324** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120143**
Client ID: **LCSS** Batch ID: **63324** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915374**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	47.919	2.0	50.00	0	95.8	80	120				
Arsenic	48.301	1.0	50.00	0	96.6	80	120				
Barium	51.211	1.0	50.00	0	102	80	120				
Beryllium	49.255	1.0	50.00	0	98.5	80	120				
Cadmium	48.834	1.0	50.00	0	97.7	80	120				
Chromium	49.185	1.0	50.00	0	98.4	80	120				
Cobalt	50.634	1.0	50.00	0	101	80	120				
Copper	49.139	2.0	50.00	0	98.3	80	120				
Lead	49.629	1.0	50.00	0	99.3	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111180
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63324** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120143**
Client ID: **LCSS** Batch ID: **63324** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915374**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	50.851	1.0	50.00	0	102	80	120				
Nickel	47.918	1.0	50.00	0.04727	95.7	80	120				
Selenium	45.899	1.0	50.00	0	91.8	80	120				
Silver	48.920	1.0	50.00	0	97.8	80	120				
Thallium	47.405	1.0	50.00	0	94.8	80	120				
Vanadium	50.897	1.0	50.00	0.03072	102	80	120				
Zinc	47.279	1.0	50.00	0	94.6	80	120				

Sample ID: **111180-057A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120143**
Client ID: **B31-2** Batch ID: **63324** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915377**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.734	2.0						0.6366	0	20	
Arsenic	4.369	1.0						4.677	6.80	20	
Barium	147.889	1.0						151.7	2.57	20	
Beryllium	0.113	1.0						0.1769	0	20	
Cadmium	0.204	1.0						0.2104	0	20	
Chromium	32.806	1.0						29.26	11.4	20	
Cobalt	7.742	1.0						9.094	16.1	20	
Copper	18.962	2.0						19.71	3.86	20	
Lead	25.106	1.0						20.28	21.3	20	R
Molybdenum	ND	1.0						0	0	20	
Nickel	39.224	1.0						40.08	2.17	20	
Selenium	ND	1.0						0.4712	0	20	
Silver	0.119	1.0						0.1103	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	29.976	1.0						28.19	6.12	20	
Zinc	43.983	1.0						42.97	2.33	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111180
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111180-057A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120143**
Client ID: **B31-2** Batch ID: **63324** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915378**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	82.384	2.0	125.0	0.6366	65.4	32	105				
Arsenic	96.405	1.0	125.0	4.677	73.4	49	106				
Barium	272.566	1.0	125.0	151.7	96.7	31	133				
Beryllium	97.401	1.0	125.0	0.1769	77.8	56	106				
Cadmium	91.010	1.0	125.0	0.2104	72.6	51	103				
Chromium	129.882	1.0	125.0	29.26	80.5	45	114				
Cobalt	101.176	1.0	125.0	9.094	73.7	52	106				
Copper	117.388	2.0	125.0	19.71	78.1	54	125				
Lead	133.332	1.0	125.0	20.28	90.4	34	126				
Molybdenum	88.356	1.0	125.0	0	70.7	54	106				
Nickel	132.488	1.0	125.0	40.08	73.9	45	111				
Selenium	90.656	1.0	125.0	0.4712	72.1	47	104				
Silver	99.200	1.0	125.0	0.1103	79.3	56	112				
Thallium	87.322	1.0	125.0	0	69.9	46	101				
Vanadium	132.043	1.0	125.0	28.19	83.1	54	114				
Zinc	140.195	1.0	125.0	42.97	77.8	28	125				

Sample ID: **111180-057A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120143**
Client ID: **B31-2** Batch ID: **63324** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915379**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	85.176	2.0	125.0	0.6366	67.6	32	105	82.38	3.33	20	
Arsenic	99.541	1.0	125.0	4.677	75.9	49	106	96.40	3.20	20	
Barium	245.376	1.0	125.0	151.7	74.9	31	133	272.6	10.5	20	
Beryllium	98.490	1.0	125.0	0.1769	78.7	56	106	97.40	1.11	20	
Cadmium	90.271	1.0	125.0	0.2104	72.0	51	103	91.01	0.815	20	
Chromium	128.386	1.0	125.0	29.26	79.3	45	114	129.9	1.16	20	
Cobalt	99.269	1.0	125.0	9.094	72.1	52	106	101.2	1.90	20	
Copper	119.323	2.0	125.0	19.71	79.7	54	125	117.4	1.63	20	
Lead	113.433	1.0	125.0	20.28	74.5	34	126	133.3	16.1	20	

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111180
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111180-057A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/13/2010** RunNo: **120143**
Client ID: **B31-2** Batch ID: **63324** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/14/2010** SeqNo: **1915379**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	99.105	1.0	125.0	0	79.3	54	106	88.36	11.5	20	
Nickel	130.179	1.0	125.0	40.08	72.1	45	111	132.5	1.76	20	
Selenium	93.003	1.0	125.0	0.4712	74.0	47	104	90.66	2.56	20	
Silver	100.953	1.0	125.0	0.1103	80.7	56	112	99.20	1.75	20	
Thallium	87.202	1.0	125.0	0	69.8	46	101	87.32	0.137	20	
Vanadium	133.856	1.0	125.0	28.19	84.5	54	114	132.0	1.36	20	
Zinc	137.469	1.0	125.0	42.97	75.6	28	125	140.2	1.96	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111180
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63347A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120276**
Client ID: **PBS**	Batch ID: **63347**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917958**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-63347**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120276**
Client ID: **LCSS**	Batch ID: **63347**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917959**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	268.747	5.0	250.0	0	107	80	120				

Sample ID: **111180-001A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120276**
Client ID: **B49-0**	Batch ID: **63347**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917961**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	15.096	5.0						14.32	5.26	20	

Sample ID: **111180-001A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120276**
Client ID: **B49-0**	Batch ID: **63347**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917962**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	230.247	5.0	250.0	14.32	86.4	34	126				

Sample ID: **MB-63347B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120276**
Client ID: **PBS**	Batch ID: **63347**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917963**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111180
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111180-014A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120276**
Client ID: **B45-1**	Batch ID: **63347**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917974**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	3.554	5.0						4.333	0	20	

Sample ID: **111180-014A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120276**
Client ID: **B45-1**	Batch ID: **63347**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917975**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	234.335	5.0	250.0	4.333	92.0	34	126				

Sample ID: **111180-014A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120276**
Client ID: **B45-1**	Batch ID: **63347**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917976**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	242.099	5.0	250.0	4.333	95.1	34	126	234.3	3.26	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111180
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63348A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120277**
Client ID: **PBS**	Batch ID: **63348**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917977**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-63348**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120277**
Client ID: **LCSS**	Batch ID: **63348**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917978**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	268.460	5.0	250.0	0	107	80	120				

Sample ID: **111180-026A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120277**
Client ID: **B41-1**	Batch ID: **63348**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917989**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	17.974	5.0						19.36	7.40	20	

Sample ID: **111180-026A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120277**
Client ID: **B41-1**	Batch ID: **63348**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917990**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	231.713	5.0	250.0	19.36	84.9	34	126				

Sample ID: **MB-63348B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120277**
Client ID: **PBS**	Batch ID: **63348**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1917991**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111180
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111180-039A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120277**
Client ID: **B37-2**	Batch ID: **63348**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1918002**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	15.198	5.0						11.27	29.7	20	R

Sample ID: **111180-039A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120277**
Client ID: **B37-2**	Batch ID: **63348**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1918003**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	242.172	5.0	250.0	11.27	92.4	34	126				

Sample ID: **111180-039A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120277**
Client ID: **B37-2**	Batch ID: **63348**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1918004**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	224.982	5.0	250.0	11.27	85.5	34	126	242.2	7.36	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111180
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63349A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120278**
Client ID: **PBS**	Batch ID: **63349**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1918006**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-63349**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120278**
Client ID: **LCSS**	Batch ID: **63349**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1918007**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	247.794	5.0	250.0	0	99.1	80	120				

Sample ID: **111180-051A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120278**
Client ID: **B33-2**	Batch ID: **63349**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1918018**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	26.920	5.0						24.67	8.74	20	

Sample ID: **111180-051A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120278**
Client ID: **B33-2**	Batch ID: **63349**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1918019**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	252.453	5.0	250.0	24.67	91.1	34	126				

Sample ID: **MB-63349B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120278**
Client ID: **PBS**	Batch ID: **63349**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1918020**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111180
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111180-056A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120278**
Client ID: **B31-1**	Batch ID: **63349**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1918025**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	13.934	5.0						15.78	12.4	20	

Sample ID: **111180-056A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120278**
Client ID: **B31-1**	Batch ID: **63349**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1918026**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	248.095	5.0	250.0	15.78	92.9	34	126				

Sample ID: **111180-056A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120278**
Client ID: **B31-1**	Batch ID: **63349**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/16/2010**	SeqNo: **1918027**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	243.640	5.0	250.0	15.78	91.1	34	126	248.1	1.81	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111180
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63312**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120104**
Client ID: **PBS**	Batch ID: **63312**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914709**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63312**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120104**
Client ID: **LCSS**	Batch ID: **63312**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914710**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.930	0.10	0.8300	0	112	80	120				

Sample ID: **111180-048A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120104**
Client ID: **B34-1.5**	Batch ID: **63312**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914711**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.995	0.10	0.8300	0	120	70	130				

Sample ID: **111180-048A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120104**
Client ID: **B34-1.5**	Batch ID: **63312**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914712**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	1.000	0.10	0.8300	0	120	70	130	0.9955	0.426	20	

Sample ID: **111180-048A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120104**
Client ID: **B34-1.5**	Batch ID: **63312**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914714**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111180
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63313**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120105**
Client ID: **PBS**	Batch ID: **63313**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914734**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63313**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120105**
Client ID: **LCSS**	Batch ID: **63313**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914735**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.898	0.10	0.8300	0	108	80	120				

Sample ID: **111180-057A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120105**
Client ID: **B31-2**	Batch ID: **63313**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914736**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.964	0.10	0.8300	0.03902	111	70	130				

Sample ID: **111180-057A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120105**
Client ID: **B31-2**	Batch ID: **63313**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914737**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.961	0.10	0.8300	0.03902	111	70	130	0.9636	0.320	20	

Sample ID: **111180-057A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/13/2010**	RunNo: **120105**
Client ID: **B31-2**	Batch ID: **63313**	TestNo: **EPA 7471A**		Analysis Date: **4/13/2010**	SeqNo: **1914739**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.040	0.10						0.03902	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111180
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 9045_S

Sample ID: **111180-024ADUP** SampType: **DUP** TestCode: **9045_S** Units: **pH Units** Prep Date: RunNo: **120259**
Client ID: **B42-2** Batch ID: **R120259** TestNo: **EPA 9045C** Analysis Date: **4/16/2010** SeqNo: **1917760**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.920	0.10						7.950	0.378	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111180
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 9045_S

Sample ID: **111180-057ADUP** SampType: **DUP** TestCode: **9045_S** Units: **pH Units** Prep Date: RunNo: **120261**
Client ID: **B31-2** Batch ID: **R120261** TestNo: **EPA 9045C** Analysis Date: **4/16/2010** SeqNo: **1917784**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.260	0.10						7.160	1.39	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: 4/10/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FedEx ☐ Other: GSO

Sample Condition Upon Receipt
1. CHILLED 7.0 Y ☑ N ☐ 4. SEALED Y ☐ N ☑
2. HEADSPACE (VOA) N/A Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☐ N ☐
3. CONTAINER INTACT Y ☑ N ☐ 6. PRESERVED Y ☐ N ☑

Client: Geocon Consultants, Inc.
Attention: Lauren Vigliottti
Address: 6671 Brisa Street
City: Livermore State: CA Zip Code: 94550
Tel:
Fax:

Project Name: I-580 WB HOV Lanes
Project #: E8474-06-01
Sampler: (Printed Name) CM/DW (Signature) CHRIS MERRITT

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
CHRIS MERRITT	4-9-10	1700	FEDEX	4/10/10	0805
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Chris Merritt 4/9/2010
Print Name Date
CM
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:
20% Random select for CAM 17 metals ONLY, no total lead. 10% random select for pH

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides); 8082 (PCB); 8260B (Volatiles); 8270C (BNA); 6010B (Total Metal); 8015B (GRO) / 8020 (BTEX); 8015B (DRO); 8021 (BTEX); TITLE 22 / CAM 17 (6010 / 7000); Total Lead (EPA 6010); 10% Random pH (EPA 9045); CAM17 Metals 20% Random, no lead

SPECIFY APPROPRIATE MATRIX: SOIL; WATER; GROUND WATER; WASTEWATER

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode_____ OTHER _____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample ID / Location	Date	Time	8081A	8082	8260B	8270C	6010B	8015B (GRO)	8015B (DRO)	8021 (BTEX)	TITLE 22	Total Lead	10% Random pH	CAM17 Metals	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	11180 - 6a(1,2,3	B49 - 0, 1, 2	4/9/2010										X	X	X		X				E	1	B P	C	
	-4,5,6	B48 - 0, 1, 2	4/9/2010										X	X	X		X				E	1	B P	C	
	7,8,9	B47 - 0, 1, 2	4/9/2010										X	X	X		X				E	1	B P	C	
	-10,11,12	B46 - 0, 1, 2	4/9/2010										X	X	X		X				E	1	B P	C	
	-13,14,15	B45 - 0, 1, 2	4/9/2010										X	X	X		X				E	1	B P	C	
	-16,17,18	B44 - 0, 1, 2	4/9/2010										X	X	X		X				E	1	B P	C	
	-19,20,21	B43 - 0, 1, 2	4/9/2010										X	X	X		X				E	1	B P	C	
	-22,23,24	B42 - 0, 1, 2	4/9/2010										X	X	X		X				E	1	B P	C	
	-25,26,27	B41 - 0, 1, 2	4/9/2010										X	X	X		X				E	1	B P	C	
	28,29,30	B40 - 0, 1, 2	4/9/2010										X	X	X		X				E	1	B P	C	

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs; B = Emergency Next Workday; C = Critical 2 Workdays; D = Urgent 3 Workdays; E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

P 2 of 2

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FedEx ☐ Other: GSO

Sample Condition Upon Receipt:
1. CHILLED Y ☑ N ☐ 4. SEALED Y ☐ N ☐
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☐ N ☐
3. CONTAINER INTACT Y ☐ N ☐ 6. PRESERVED Y ☐ N ☐

Client: Geocon Consultants, Inc.
Attention: Lauren Vigliottti
Address: 6671 Brisa Street
City: Livermore State: CA Zip Code: 94550
Tel:
Fax:

Project Name: I-580 WB HOV Lanes
Project #: E8474-06-01
Sampler: (Printed Name) CM/DW (Signature) CHRIS MERRITT

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
CHRIS MERRITT	4-9-10	1700	FPDiwa	4/10/10	0905

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Chris Merritt 4/9/2010
Print Name Date
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:
20% Random select for CAM 17 metals ONLY, no total lead. 10% random select for pH

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides), 8082 (PCB), 8260B (Volatiles), 8270C (BNA), 6010B (Total Metal), 8015B (GRO) / 8020 (BTEX), 8015B (DRO), 8021 (BTEX), TITLE 22 / CAM 17 (6010 / 7000), Total Lead (EPA 6010), 10% Random pH (EPA 9045), CAM17 Metals 20% Random, no lead

SPECIFY APPROPRIATE MATRIX: SOIL, WATER, GROUND WATER, WASTEWATER

PRESERVATION

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode _____ OTHER _____

ITEM	LAB USE ONLY: Batch # / Lab No.	Sample ID / Location	Date	Time	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	1111520 – 31,34,33	B39 - 0, 1, 2	4/9/2010		E	1	B P	C	
	– 36, 37, 35	B38 - 0, 1, 2	4/9/2010		E	1	B P	C	
	– 37, 38, 39	B37 - 0, 1, 2	4/9/2010		E	1	B P	C	
	– 40, 41, 42	B36 - 0, 1, 2	4/9/2010		E	1	B P	C	
	– 43, 44, 45	B35 - 0, 1, 2	4/9/2010		E	1	B P	C	
	– 46, 47, 48	B34 - 0, 1, 2	4/9/2010		E	1	B P	C	
	– 49, 50, 51	B33 - 0, 1, 2	4/9/2010		E	1	B P	C	
	– 52, 53, 54	B32 - 0, 1, 1.5	4/9/2010		E	1	B P	C	
	– 55, 56, 57	B31 - 0, 1, 2	4/9/2010		E	1	B P	C	
			4/9/2010		E	1	B P	C	

(Each sample row: X X X in TITLE 22 / CAM 17 (6010 / 7000); X in SOIL)

■ TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs B = Emergency Next Workday C = Critical 2 Workdays D = Urgent 3 Workdays E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives:
H=HCl $N=HNO_3$ $S=H_2SO_4$ C=4°C
$Z=Zn(AC)_2$ O=NaOH $T=Na_2S_2O_3$

Diane Galvan

From: Fernando Diwa
Sent: Wednesday, April 14, 2010 11:30 AM
To: Carmen Aguila; Diane Galvan
Cc: Beth Alpante; Ed Caballero; Eddie Rodriguez; Edgar Morrison
Subject: FW: I-580 WB HOV Lanes, E8474-06-01

From: Chris Merritt [mailto:merritt@geoconinc.com]
Sent: Tuesday, April 13, 2010 3:20 PM
To: Fernando Diwa
Subject: RE: I-580 WB HOV Lanes, E8474-06-01

B34-1.5 is the correct labeling, we are running the chains off on the computer and didn't adjust that one.

-----Original Message-----
From: Fernando Diwa [mailto:fernando@atlglobal.com]
Sent: Tuesday, April 13, 2010 10:50 AM
To: Chris Merritt
Cc: Carmen Aguila; Diane Galvan; Edric Caballero; Katherine Roura
Subject: RE: I-580 WB HOV Lanes, E8474-06-01

Hi Chris,

From the batch of samples that we received last Saturday (4/10/10), the sample for B34-2 was labeled as B34-1.5, Please advise.

-----Original Message-----
From: Chris Merritt [mailto:merritt@geoconinc.com]
Sent: Monday, April 12, 2010 2:10 PM
To: Carmen Aguila
Subject: RE: I-580 WB HOV Lanes, E8474-06-01

Yes, that is correct Carmen.

-----Original Message-----
From: Carmen Aguila [mailto:Carmen@atlglobal.com]
Sent: Monday, April 12, 2010 10:21 AM
To: merritt@geoconinc.com
Cc: Diane Galvan
Subject: I-580 WB HOV Lanes, E8474-06-01

Hi Chris,

Per our conversation last Friday, there was no sample submitted for B98-2.0, this should be B98-1.5 as indicated on the sample container that was received.

Please reply to confirm.

Thank you,
Carmen Aguila
Sample Control Manager

Advanced Technology Laboratories
www.atlglobal.com
Tel: (562) 989-4045 ext. 245

Fax: (562) 989-4040

Advanced Technology Laboratories is a full-service environmental lab providing organic and inorganic analyses of soil, water, wastewater, storm water and hazardous waste samples. ATL is accredited by the State of California, NELAP and State of Nevada and holds various SBE, DBE and MBE certificates and a USDA soil permit. ATL takes pride in providing our customers with quick turnaround time, excellent customer service and defensible data while offering very competitive rates. *Advanced Technology Labs - Your Partner for Quality Environmental Testing*

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April 27, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111180

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 10, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

Advanced Technology Laboratories

Date: 4/27/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (STLC)
WET/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111180
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/10/2010 8:05:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111180-047A	B34-1	2.8	mg/L	63544	0.25	1	4/9/2010	4/23/2010

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Work Order: 111180
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-63544A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120480**
Client ID: **PBS**	Batch ID: **63544**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922534**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63544**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120480**
Client ID: **LCSS**	Batch ID: **63544**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922535**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.056	0.25	5.000	0	101	80	120				

Sample ID: **111180-047A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120480**
Client ID: **B34-1**	Batch ID: **63544**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922539**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.808	0.25						2.829	0.747	20	

Sample ID: **111180-047A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120480**
Client ID: **B34-1**	Batch ID: **63544**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922540**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	7.761	0.25	5.000	2.829	98.6	80	120				

Sample ID: **111180-047A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120480**
Client ID: **B34-1**	Batch ID: **63544**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922541**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	7.742	0.25	5.000	2.829	98.3	80	120	7.761	0.246	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Tuesday, April 20, 2010 10:55 AM
To: Diane Galvan
Subject: I-580 WB project

Hi Diane:
Please run the following samples for WET lead under standard TAT, as follows. Thank you.

WO111180 B34-1

WO111139
B162-0 B164-0 B159-0 B165-0 B156-0 B155-0 B177-0 B173-0 B147-1
B155-1 B151-2 B160-0
B172-0 B151-0 B157-0
B151-1 B159-1 B163-0
B161-0 B177-1 B157-1
B158-0 B137-0 B171-0

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

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GEOTECHNICAL ENVIRONMENTAL MATERIALS

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April 21, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111239

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 14, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

Advanced Technology Laboratories

Date: 4/21/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111239
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/14/2010 8:00:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111239-001A	B274-0	ND	mg/Kg	63488	5.0	1	4/13/2010	4/20/2010
111239-002A	B274-1	14	mg/Kg	63488	5.0	1	4/13/2010	4/20/2010
111239-003A	B274-2	130	mg/Kg	63488	5.0	1	4/13/2010	4/20/2010
111239-004A	B275-0	24	mg/Kg	63488	5.0	1	4/13/2010	4/20/2010
111239-006A	B275-2	ND	mg/Kg	63488	5.0	1	4/13/2010	4/20/2010
111239-007A	B277-0	7.9	mg/Kg	63488	5.0	1	4/13/2010	4/20/2010
111239-008A	B277-1	5.6	mg/Kg	63488	5.0	1	4/13/2010	4/20/2010
111239-009A	B277-2	10	mg/Kg	63488	5.0	1	4/13/2010	4/20/2010
111239-011A	B280-1	6.6	mg/Kg	63488	5.0	1	4/13/2010	4/20/2010
111239-012A	B280-2	6.0	mg/Kg	63488	5.0	1	4/13/2010	4/20/2010
111239-013A	B282-0	8.0	mg/Kg	63488	5.0	1	4/13/2010	4/20/2010
111239-014A	B282-1	19	mg/Kg	63488	5.0	1	4/13/2010	4/20/2010
111239-016A	B284-0	10	mg/Kg	63488	5.0	1	4/13/2010	4/20/2010
111239-017A	B284-1	6.9	mg/Kg	63488	5.0	1	4/13/2010	4/20/2010
111239-018A	B284-2	7.2	mg/Kg	63488	5.0	1	4/13/2010	4/20/2010
111239-019A	B285-0	ND	mg/Kg	63488	5.0	1	4/13/2010	4/20/2010
111239-021A	B285-2	9.8	mg/Kg	63488	5.0	1	4/13/2010	4/20/2010
111239-022A	B288-0	95	mg/Kg	63488	5.0	1	4/13/2010	4/20/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/21/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111239
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/14/2010 8:00:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111239-023A	B288-1	11	mg/Kg	63488	5.0	1	4/13/2010	4/20/2010
111239-024A	B288-2	ND	mg/Kg	63488	5.0	1	4/13/2010	4/20/2010
111239-026A	B289-1	ND	mg/Kg	63489	5.0	1	4/13/2010	4/20/2010
111239-027A	B289-2	ND	mg/Kg	63489	5.0	1	4/13/2010	4/20/2010
111239-028A	B290-0	250	mg/Kg	63489	5.0	1	4/13/2010	4/20/2010
111239-029A	B290-1	160	mg/Kg	63489	5.0	1	4/13/2010	4/20/2010
111239-031A	B291-0	47	mg/Kg	63489	5.0	1	4/13/2010	4/20/2010
111239-032A	B291-1	67	mg/Kg	63489	5.0	1	4/13/2010	4/20/2010
111239-033A	B291-2	8.2	mg/Kg	63489	5.0	1	4/13/2010	4/20/2010
111239-034A	B292-0	150	mg/Kg	63489	5.0	1	4/13/2010	4/20/2010
111239-036A	B292-2	18	mg/Kg	63489	5.0	1	4/13/2010	4/20/2010
111239-037A	B293-0	61	mg/Kg	63489	5.0	1	4/13/2010	4/20/2010
111239-038A	B293-1	27	mg/Kg	63489	5.0	1	4/13/2010	4/20/2010
111239-039A	B293-2	5.1	mg/Kg	63489	5.0	1	4/13/2010	4/20/2010
111239-041A	B294-1	37	mg/Kg	63489	5.0	1	4/13/2010	4/20/2010
111239-042A	B294-2	13	mg/Kg	63489	5.0	1	4/13/2010	4/20/2010
111239-043A	B295-0	36	mg/Kg	63489	5.0	1	4/13/2010	4/20/2010
111239-044A	B295-1	ND	mg/Kg	63489	5.0	1	4/13/2010	4/20/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/21/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111239
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/14/2010 8:00:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111239-046A	B296-0	28	mg/Kg	63489	5.0	1	4/13/2010	4/20/2010
111239-047A	B296-1	32	mg/Kg	63489	5.0	1	4/13/2010	4/20/2010
111239-048A	B296-2	5.0	mg/Kg	63489	5.0	1	4/13/2010	4/20/2010
111239-049A	B297-0	7.3	mg/Kg	63489	5.0	1	4/13/2010	4/20/2010
111239-051A	B297-2	5.3	mg/Kg	63490	5.0	1	4/13/2010	4/20/2010
111239-052A	B298-0	7.3	mg/Kg	63490	5.0	1	4/13/2010	4/20/2010
111239-053A	B298-1	6.0	mg/Kg	63490	5.0	1	4/13/2010	4/20/2010
111239-054A	B298-2	5.5	mg/Kg	63490	5.0	1	4/13/2010	4/20/2010
111239-056A	B299-1	ND	mg/Kg	63490	5.0	1	4/13/2010	4/20/2010
111239-057A	B299-2	5.6	mg/Kg	63490	5.0	1	4/13/2010	4/20/2010
111239-058A	B300-0	21	mg/Kg	63490	5.0	1	4/13/2010	4/20/2010
111239-059A	B300-1	5.9	mg/Kg	63490	5.0	1	4/13/2010	4/20/2010
111239-061A	B301-0	7.0	mg/Kg	63490	5.0	1	4/13/2010	4/20/2010
111239-062A	B301-1	10	mg/Kg	63490	5.0	1	4/13/2010	4/20/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/21/2010

ANALYTICAL RESULTS

pH
EPA 9045C

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111239
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/14/2010 8:00:00 AM
Project No:		**Matrix:**	Soil
Analyte:	pH	**Analyst:**	CBB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111239-001A	B274-0	8.1	pH Units	R120359	0.10	1	4/13/2010	4/20/2010
111239-010A	B280-0	8.0	pH Units	R120359	0.10	1	4/13/2010	4/20/2010
111239-020A	B285-1	8.0	pH Units	R120359	0.10	1	4/13/2010	4/20/2010
111239-030A	B290-2	7.2	pH Units	R120359	0.10	1	4/13/2010	4/20/2010
111239-040A	B294-0	7.9	pH Units	R120359	0.10	1	4/13/2010	4/20/2010
111239-050A	B297-1	7.3	pH Units	R120359	0.10	1	4/13/2010	4/20/2010
111239-060A	B300-2	8.6	pH Units	R120359	0.10	1	4/13/2010	4/20/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B275-1
Lab Order:	111239	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111239-005A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100419F	QC Batch: 63481			PrepDate:	4/19/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/19/2010 05:57 PM
Arsenic	ND	1.0		mg/Kg	1	4/19/2010 05:57 PM
Barium	190	1.0		mg/Kg	1	4/19/2010 05:57 PM
Beryllium	ND	1.0		mg/Kg	1	4/19/2010 05:57 PM
Cadmium	ND	1.0		mg/Kg	1	4/19/2010 05:57 PM
Chromium	36	1.0		mg/Kg	1	4/19/2010 05:57 PM
Cobalt	9.3	1.0		mg/Kg	1	4/19/2010 05:57 PM
Copper	14	2.0		mg/Kg	1	4/19/2010 05:57 PM
Lead	9.7	1.0		mg/Kg	1	4/19/2010 05:57 PM
Molybdenum	ND	1.0		mg/Kg	1	4/19/2010 05:57 PM
Nickel	70	1.0		mg/Kg	1	4/19/2010 05:57 PM
Selenium	ND	1.0		mg/Kg	1	4/19/2010 05:57 PM
Silver	ND	1.0		mg/Kg	1	4/19/2010 05:57 PM
Thallium	ND	1.0		mg/Kg	1	4/19/2010 05:57 PM
Vanadium	27	1.0		mg/Kg	1	4/19/2010 05:57 PM
Zinc	35	1.0		mg/Kg	1	4/19/2010 05:57 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419A	QC Batch: 63472			PrepDate:	4/19/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/19/2010 01:46 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B280-0
Lab Order:	111239	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111239-010A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100419F	QC Batch: 63481			PrepDate: 4/19/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/19/2010 06:00 PM
Arsenic	ND	1.0		mg/Kg	1	4/19/2010 06:00 PM
Barium	150	1.0		mg/Kg	1	4/19/2010 06:00 PM
Beryllium	ND	1.0		mg/Kg	1	4/19/2010 06:00 PM
Cadmium	ND	1.0		mg/Kg	1	4/19/2010 06:00 PM
Chromium	32	1.0		mg/Kg	1	4/19/2010 06:00 PM
Cobalt	7.1	1.0		mg/Kg	1	4/19/2010 06:00 PM
Copper	26	2.0		mg/Kg	1	4/19/2010 06:00 PM
Lead	31	1.0		mg/Kg	1	4/19/2010 06:00 PM
Molybdenum	ND	1.0		mg/Kg	1	4/19/2010 06:00 PM
Nickel	37	1.0		mg/Kg	1	4/19/2010 06:00 PM
Selenium	ND	1.0		mg/Kg	1	4/19/2010 06:00 PM
Silver	ND	1.0		mg/Kg	1	4/19/2010 06:00 PM
Thallium	ND	1.0		mg/Kg	1	4/19/2010 06:00 PM
Vanadium	27	1.0		mg/Kg	1	4/19/2010 06:00 PM
Zinc	130	1.0		mg/Kg	1	4/19/2010 06:00 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419A	QC Batch: 63472			PrepDate: 4/19/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/19/2010 01:48 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B282-2
Lab Order:	111239	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111239-015A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100419F	QC Batch: 63481			PrepDate: 4/19/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/19/2010 06:03 PM
Arsenic	1.5	1.0		mg/Kg	1	4/19/2010 06:03 PM
Barium	170	1.0		mg/Kg	1	4/19/2010 06:03 PM
Beryllium	ND	1.0		mg/Kg	1	4/19/2010 06:03 PM
Cadmium	ND	1.0		mg/Kg	1	4/19/2010 06:03 PM
Chromium	43	1.0		mg/Kg	1	4/19/2010 06:03 PM
Cobalt	8.6	1.0		mg/Kg	1	4/19/2010 06:03 PM
Copper	15	2.0		mg/Kg	1	4/19/2010 06:03 PM
Lead	72	1.0		mg/Kg	1	4/19/2010 06:03 PM
Molybdenum	ND	1.0		mg/Kg	1	4/19/2010 06:03 PM
Nickel	41	1.0		mg/Kg	1	4/19/2010 06:03 PM
Selenium	ND	1.0		mg/Kg	1	4/19/2010 06:03 PM
Silver	ND	1.0		mg/Kg	1	4/19/2010 06:03 PM
Thallium	ND	1.0		mg/Kg	1	4/19/2010 06:03 PM
Vanadium	31	1.0		mg/Kg	1	4/19/2010 06:03 PM
Zinc	68	1.0		mg/Kg	1	4/19/2010 06:03 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419A	QC Batch: 63472			PrepDate: 4/19/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/19/2010 01:50 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B285-1
Lab Order:	111239	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111239-020A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100419F	QC Batch: 63481			PrepDate: 4/19/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/19/2010 06:06 PM
Arsenic	5.7	1.0		mg/Kg	1	4/19/2010 06:06 PM
Barium	180	1.0		mg/Kg	1	4/19/2010 06:06 PM
Beryllium	ND	1.0		mg/Kg	1	4/19/2010 06:06 PM
Cadmium	ND	1.0		mg/Kg	1	4/19/2010 06:06 PM
Chromium	31	1.0		mg/Kg	1	4/19/2010 06:06 PM
Cobalt	10	1.0		mg/Kg	1	4/19/2010 06:06 PM
Copper	25	2.0		mg/Kg	1	4/19/2010 06:06 PM
Lead	28	1.0		mg/Kg	1	4/19/2010 06:06 PM
Molybdenum	ND	1.0		mg/Kg	1	4/19/2010 06:06 PM
Nickel	33	1.0		mg/Kg	1	4/19/2010 06:06 PM
Selenium	ND	1.0		mg/Kg	1	4/19/2010 06:06 PM
Silver	ND	1.0		mg/Kg	1	4/19/2010 06:06 PM
Thallium	ND	1.0		mg/Kg	1	4/19/2010 06:06 PM
Vanadium	44	1.0		mg/Kg	1	4/19/2010 06:06 PM
Zinc	68	1.0		mg/Kg	1	4/19/2010 06:06 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419A	QC Batch: 63472			PrepDate: 4/19/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/19/2010 01:56 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B289-0
Lab Order:	111239	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111239-025A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100419F	QC Batch: 63481			PrepDate: 4/19/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/19/2010 06:09 PM
Arsenic	ND	1.0		mg/Kg	1	4/19/2010 06:09 PM
Barium	92	1.0		mg/Kg	1	4/19/2010 06:09 PM
Beryllium	ND	1.0		mg/Kg	1	4/19/2010 06:09 PM
Cadmium	ND	1.0		mg/Kg	1	4/19/2010 06:09 PM
Chromium	23	1.0		mg/Kg	1	4/19/2010 06:09 PM
Cobalt	7.3	1.0		mg/Kg	1	4/19/2010 06:09 PM
Copper	15	2.0		mg/Kg	1	4/19/2010 06:09 PM
Lead	52	1.0		mg/Kg	1	4/19/2010 06:09 PM
Molybdenum	ND	1.0		mg/Kg	1	4/19/2010 06:09 PM
Nickel	34	1.0		mg/Kg	1	4/19/2010 06:09 PM
Selenium	ND	1.0		mg/Kg	1	4/19/2010 06:09 PM
Silver	ND	1.0		mg/Kg	1	4/19/2010 06:09 PM
Thallium	ND	1.0		mg/Kg	1	4/19/2010 06:09 PM
Vanadium	27	1.0		mg/Kg	1	4/19/2010 06:09 PM
Zinc	62	1.0		mg/Kg	1	4/19/2010 06:09 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419A	QC Batch: 63472			PrepDate: 4/19/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/19/2010 01:58 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B290-2
Lab Order:	111239	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111239-030A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100419F	QC Batch: 63481			PrepDate: 4/19/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/19/2010 06:13 PM
Arsenic	ND	1.0		mg/Kg	1	4/19/2010 06:13 PM
Barium	130	1.0		mg/Kg	1	4/19/2010 06:13 PM
Beryllium	ND	1.0		mg/Kg	1	4/19/2010 06:13 PM
Cadmium	ND	1.0		mg/Kg	1	4/19/2010 06:13 PM
Chromium	19	1.0		mg/Kg	1	4/19/2010 06:13 PM
Cobalt	8.6	1.0		mg/Kg	1	4/19/2010 06:13 PM
Copper	11	2.0		mg/Kg	1	4/19/2010 06:13 PM
Lead	7.2	1.0		mg/Kg	1	4/19/2010 06:13 PM
Molybdenum	ND	1.0		mg/Kg	1	4/19/2010 06:13 PM
Nickel	19	1.0		mg/Kg	1	4/19/2010 06:13 PM
Selenium	ND	1.0		mg/Kg	1	4/19/2010 06:13 PM
Silver	ND	1.0		mg/Kg	1	4/19/2010 06:13 PM
Thallium	ND	1.0		mg/Kg	1	4/19/2010 06:13 PM
Vanadium	26	1.0		mg/Kg	1	4/19/2010 06:13 PM
Zinc	21	1.0		mg/Kg	1	4/19/2010 06:13 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419A	QC Batch: 63472			PrepDate: 4/19/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/19/2010 02:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B292-1
Lab Order:	111239	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111239-035A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100419F	QC Batch: 63481			PrepDate: 4/19/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/19/2010 06:25 PM
Arsenic	1.3	1.0		mg/Kg	1	4/19/2010 06:25 PM
Barium	480	1.0		mg/Kg	1	4/19/2010 06:25 PM
Beryllium	ND	1.0		mg/Kg	1	4/19/2010 06:25 PM
Cadmium	ND	1.0		mg/Kg	1	4/19/2010 06:25 PM
Chromium	27	1.0		mg/Kg	1	4/19/2010 06:25 PM
Cobalt	7.6	1.0		mg/Kg	1	4/19/2010 06:25 PM
Copper	14	2.0		mg/Kg	1	4/19/2010 06:25 PM
Lead	6.6	1.0		mg/Kg	1	4/19/2010 06:25 PM
Molybdenum	ND	1.0		mg/Kg	1	4/19/2010 06:25 PM
Nickel	29	1.0		mg/Kg	1	4/19/2010 06:25 PM
Selenium	ND	1.0		mg/Kg	1	4/19/2010 06:25 PM
Silver	ND	1.0		mg/Kg	1	4/19/2010 06:25 PM
Thallium	ND	1.0		mg/Kg	1	4/19/2010 06:25 PM
Vanadium	31	1.0		mg/Kg	1	4/19/2010 06:25 PM
Zinc	31	1.0		mg/Kg	1	4/19/2010 06:25 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419A	QC Batch: 63472			PrepDate: 4/19/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/19/2010 02:02 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B294-0
Lab Order:	111239	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111239-040A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100419F	QC Batch: 63481			PrepDate:	4/19/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/19/2010 06:29 PM
Arsenic	ND	1.0		mg/Kg	1	4/19/2010 06:29 PM
Barium	130	1.0		mg/Kg	1	4/19/2010 06:29 PM
Beryllium	ND	1.0		mg/Kg	1	4/19/2010 06:29 PM
Cadmium	ND	1.0		mg/Kg	1	4/19/2010 06:29 PM
Chromium	25	1.0		mg/Kg	1	4/19/2010 06:29 PM
Cobalt	10	1.0		mg/Kg	1	4/19/2010 06:29 PM
Copper	15	2.0		mg/Kg	1	4/19/2010 06:29 PM
Lead	22	1.0		mg/Kg	1	4/19/2010 06:29 PM
Molybdenum	ND	1.0		mg/Kg	1	4/19/2010 06:29 PM
Nickel	31	1.0		mg/Kg	1	4/19/2010 06:29 PM
Selenium	ND	1.0		mg/Kg	1	4/19/2010 06:29 PM
Silver	ND	1.0		mg/Kg	1	4/19/2010 06:29 PM
Thallium	ND	1.0		mg/Kg	1	4/19/2010 06:29 PM
Vanadium	26	1.0		mg/Kg	1	4/19/2010 06:29 PM
Zinc	47	1.0		mg/Kg	1	4/19/2010 06:29 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419A	QC Batch: 63472			PrepDate:	4/19/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/19/2010 02:04 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B295-2
Lab Order:	111239	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111239-045A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100419F	QC Batch: 63481			PrepDate:	4/19/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/19/2010 06:32 PM
Arsenic	1.3	1.0		mg/Kg	1	4/19/2010 06:32 PM
Barium	140	1.0		mg/Kg	1	4/19/2010 06:32 PM
Beryllium	ND	1.0		mg/Kg	1	4/19/2010 06:32 PM
Cadmium	ND	1.0		mg/Kg	1	4/19/2010 06:32 PM
Chromium	24	1.0		mg/Kg	1	4/19/2010 06:32 PM
Cobalt	8.5	1.0		mg/Kg	1	4/19/2010 06:32 PM
Copper	13	2.0		mg/Kg	1	4/19/2010 06:32 PM
Lead	5.4	1.0		mg/Kg	1	4/19/2010 06:32 PM
Molybdenum	ND	1.0		mg/Kg	1	4/19/2010 06:32 PM
Nickel	29	1.0		mg/Kg	1	4/19/2010 06:32 PM
Selenium	ND	1.0		mg/Kg	1	4/19/2010 06:32 PM
Silver	ND	1.0		mg/Kg	1	4/19/2010 06:32 PM
Thallium	ND	1.0		mg/Kg	1	4/19/2010 06:32 PM
Vanadium	24	1.0		mg/Kg	1	4/19/2010 06:32 PM
Zinc	28	1.0		mg/Kg	1	4/19/2010 06:32 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419A	QC Batch: 63472			PrepDate:	4/19/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/19/2010 02:06 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B297-1
Lab Order:	111239	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111239-050A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100419F	QC Batch: 63481			PrepDate:	4/19/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/19/2010 06:35 PM
Arsenic	2.2	1.0		mg/Kg	1	4/19/2010 06:35 PM
Barium	89	1.0		mg/Kg	1	4/19/2010 06:35 PM
Beryllium	ND	1.0		mg/Kg	1	4/19/2010 06:35 PM
Cadmium	ND	1.0		mg/Kg	1	4/19/2010 06:35 PM
Chromium	21	1.0		mg/Kg	1	4/19/2010 06:35 PM
Cobalt	9.3	1.0		mg/Kg	1	4/19/2010 06:35 PM
Copper	12	2.0		mg/Kg	1	4/19/2010 06:35 PM
Lead	5.8	1.0		mg/Kg	1	4/19/2010 06:35 PM
Molybdenum	ND	1.0		mg/Kg	1	4/19/2010 06:35 PM
Nickel	25	1.0		mg/Kg	1	4/19/2010 06:35 PM
Selenium	ND	1.0		mg/Kg	1	4/19/2010 06:35 PM
Silver	ND	1.0		mg/Kg	1	4/19/2010 06:35 PM
Thallium	ND	1.0		mg/Kg	1	4/19/2010 06:35 PM
Vanadium	34	1.0		mg/Kg	1	4/19/2010 06:35 PM
Zinc	26	1.0		mg/Kg	1	4/19/2010 06:35 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419A	QC Batch: 63472			PrepDate:	4/19/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/19/2010 01:42 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B299-0
Lab Order:	111239	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111239-055A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100419G	QC Batch: 63482			PrepDate: 4/19/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/19/2010 07:12 PM
Arsenic	2.5	1.0		mg/Kg	1	4/19/2010 07:12 PM
Barium	150	1.0		mg/Kg	1	4/19/2010 07:12 PM
Beryllium	ND	1.0		mg/Kg	1	4/19/2010 07:12 PM
Cadmium	ND	1.0		mg/Kg	1	4/19/2010 07:12 PM
Chromium	24	1.0		mg/Kg	1	4/19/2010 07:12 PM
Cobalt	10	1.0		mg/Kg	1	4/19/2010 07:12 PM
Copper	18	2.0		mg/Kg	1	4/19/2010 07:12 PM
Lead	24	1.0		mg/Kg	1	4/19/2010 07:12 PM
Molybdenum	ND	1.0		mg/Kg	1	4/19/2010 07:12 PM
Nickel	27	1.0		mg/Kg	1	4/19/2010 07:12 PM
Selenium	ND	1.0		mg/Kg	1	4/19/2010 07:12 PM
Silver	ND	1.0		mg/Kg	1	4/19/2010 07:12 PM
Thallium	ND	1.0		mg/Kg	1	4/19/2010 07:12 PM
Vanadium	42	1.0		mg/Kg	1	4/19/2010 07:12 PM
Zinc	61	1.0		mg/Kg	1	4/19/2010 07:12 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419B	QC Batch: 63473			PrepDate: 4/19/2010	Analyst: **IL**	
Mercury	0.38	0.10		mg/Kg	1	4/19/2010 02:29 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B300-2
Lab Order:	111239	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111239-060A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100419G	QC Batch: 63482			PrepDate: 4/19/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/19/2010 07:15 PM
Arsenic	7.2	1.0		mg/Kg	1	4/19/2010 07:15 PM
Barium	100	1.0		mg/Kg	1	4/19/2010 07:15 PM
Beryllium	ND	1.0		mg/Kg	1	4/19/2010 07:15 PM
Cadmium	ND	1.0		mg/Kg	1	4/19/2010 07:15 PM
Chromium	29	1.0		mg/Kg	1	4/19/2010 07:15 PM
Cobalt	10	1.0		mg/Kg	1	4/19/2010 07:15 PM
Copper	37	2.0		mg/Kg	1	4/19/2010 07:15 PM
Lead	7.5	1.0		mg/Kg	1	4/19/2010 07:15 PM
Molybdenum	ND	1.0		mg/Kg	1	4/19/2010 07:15 PM
Nickel	29	1.0		mg/Kg	1	4/19/2010 07:15 PM
Selenium	ND	1.0		mg/Kg	1	4/19/2010 07:15 PM
Silver	ND	1.0		mg/Kg	1	4/19/2010 07:15 PM
Thallium	ND	1.0		mg/Kg	1	4/19/2010 07:15 PM
Vanadium	45	1.0		mg/Kg	1	4/19/2010 07:15 PM
Zinc	72	1.0		mg/Kg	1	4/19/2010 07:15 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419B	QC Batch: 63473			PrepDate: 4/19/2010		Analyst: **IL**
Mercury	0.47	0.10		mg/Kg	1	4/19/2010 02:31 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B301-2
Lab Order:	111239	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111239-063A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100419G	QC Batch: 63482			PrepDate: 4/19/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/19/2010 07:18 PM
Arsenic	6.1	1.0		mg/Kg	1	4/19/2010 07:18 PM
Barium	83	1.0		mg/Kg	1	4/19/2010 07:18 PM
Beryllium	ND	1.0		mg/Kg	1	4/19/2010 07:18 PM
Cadmium	ND	1.0		mg/Kg	1	4/19/2010 07:18 PM
Chromium	31	1.0		mg/Kg	1	4/19/2010 07:18 PM
Cobalt	12	1.0		mg/Kg	1	4/19/2010 07:18 PM
Copper	30	2.0		mg/Kg	1	4/19/2010 07:18 PM
Lead	7.8	1.0		mg/Kg	1	4/19/2010 07:18 PM
Molybdenum	ND	1.0		mg/Kg	1	4/19/2010 07:18 PM
Nickel	26	1.0		mg/Kg	1	4/19/2010 07:18 PM
Selenium	ND	1.0		mg/Kg	1	4/19/2010 07:18 PM
Silver	ND	1.0		mg/Kg	1	4/19/2010 07:18 PM
Thallium	ND	1.0		mg/Kg	1	4/19/2010 07:18 PM
Vanadium	47	1.0		mg/Kg	1	4/19/2010 07:18 PM
Zinc	63	1.0		mg/Kg	1	4/19/2010 07:18 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419B	QC Batch: 63473			PrepDate: 4/19/2010	Analyst: **IL**	
Mercury	0.82	0.10		mg/Kg	1	4/19/2010 02:33 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63481** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120339**
Client ID: **PBS** Batch ID: **63481** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/19/2010** SeqNo: **1919356**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	0.059	1.0									
Nickel	ND	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63481** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120339**
Client ID: **LCSS** Batch ID: **63481** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/19/2010** SeqNo: **1919357**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	45.420	2.0	50.00	0	90.8	80	120				
Arsenic	44.560	1.0	50.00	0	89.1	80	120				
Barium	47.790	1.0	50.00	0	95.6	80	120				
Beryllium	46.476	1.0	50.00	0	93.0	80	120				
Cadmium	45.583	1.0	50.00	0	91.2	80	120				
Chromium	46.682	1.0	50.00	0	93.4	80	120				
Cobalt	47.703	1.0	50.00	0	95.4	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63481** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120339**
Client ID: **LCSS** Batch ID: **63481** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/19/2010** SeqNo: **1919357**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	46.579	2.0	50.00	0	93.2	80	120				
Lead	46.557	1.0	50.00	0	93.1	80	120				
Molybdenum	47.110	1.0	50.00	0.05929	94.1	80	120				
Nickel	46.173	1.0	50.00	0	92.3	80	120				
Selenium	43.448	1.0	50.00	0	86.9	80	120				
Silver	45.929	1.0	50.00	0	91.9	80	120				
Thallium	46.807	1.0	50.00	0	93.6	80	120				
Vanadium	47.398	1.0	50.00	0	94.8	80	120				
Zinc	44.573	1.0	50.00	0	89.1	80	120				

Sample ID: **111239-050A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120339**
Client ID: **B297-1** Batch ID: **63481** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/19/2010** SeqNo: **1919368**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.577	2.0						0.3930	0	20	
Arsenic	2.154	1.0						2.198	2.02	20	
Barium	84.138	1.0						89.43	6.10	20	
Beryllium	ND	1.0						0	0	20	
Cadmium	0.232	1.0						0.2258	0	20	
Chromium	22.766	1.0						21.23	7.00	20	
Cobalt	9.453	1.0						9.342	1.18	20	
Copper	12.418	2.0						11.97	3.64	20	
Lead	5.624	1.0						5.845	3.85	20	
Molybdenum	0.379	1.0						0.3717	0	20	
Nickel	25.149	1.0						24.63	2.08	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	37.839	1.0						34.36	9.62	20	
Zinc	26.614	1.0						25.65	3.68	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111239-050A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120339**
Client ID: **B297-1** Batch ID: **63481** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/19/2010** SeqNo: **1919369**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	82.396	2.0	125.0	0.3930	65.6	32	105				
Arsenic	92.631	1.0	125.0	2.198	72.3	49	106				
Barium	199.348	1.0	125.0	89.43	87.9	31	133				
Beryllium	96.924	1.0	125.0	0	77.5	56	106				
Cadmium	90.670	1.0	125.0	0.2258	72.4	51	103				
Chromium	119.347	1.0	125.0	21.23	78.5	45	114				
Cobalt	102.130	1.0	125.0	9.342	74.2	52	106				
Copper	112.708	2.0	125.0	11.97	80.6	54	125				
Lead	97.813	1.0	125.0	5.845	73.6	34	126				
Molybdenum	92.381	1.0	125.0	0.3717	73.6	54	106				
Nickel	119.441	1.0	125.0	24.63	75.8	45	111				
Selenium	91.084	1.0	125.0	0	72.9	47	104				
Silver	96.089	1.0	125.0	0	76.9	56	112				
Thallium	88.784	1.0	125.0	0	71.0	46	101				
Vanadium	135.717	1.0	125.0	34.36	81.1	54	114				
Zinc	118.198	1.0	125.0	25.65	74.0	28	125				

Sample ID: **111239-050A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120339**
Client ID: **B297-1** Batch ID: **63481** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/19/2010** SeqNo: **1919370**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	79.463	2.0	125.0	0.3930	63.3	32	105	82.40	3.62	20	
Arsenic	93.275	1.0	125.0	2.198	72.9	49	106	92.63	0.692	20	
Barium	226.971	1.0	125.0	89.43	110	31	133	199.3	13.0	20	
Beryllium	96.671	1.0	125.0	0	77.3	56	106	96.92	0.261	20	
Cadmium	92.614	1.0	125.0	0.2258	73.9	51	103	90.67	2.12	20	
Chromium	121.965	1.0	125.0	21.23	80.6	45	114	119.3	2.17	20	
Cobalt	103.556	1.0	125.0	9.342	75.4	52	106	102.1	1.39	20	
Copper	115.109	2.0	125.0	11.97	82.5	54	125	112.7	2.11	20	
Lead	98.587	1.0	125.0	5.845	74.2	34	126	97.81	0.789	20	

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111239-050A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120339**
Client ID: **B297-1** Batch ID: **63481** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/19/2010** SeqNo: **1919370**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	93.101	1.0	125.0	0.3717	74.2	54	106	92.38	0.776	20	
Nickel	121.042	1.0	125.0	24.63	77.1	45	111	119.4	1.33	20	
Selenium	91.850	1.0	125.0	0	73.5	47	104	91.08	0.838	20	
Silver	98.302	1.0	125.0	0	78.6	56	112	96.09	2.28	20	
Thallium	89.757	1.0	125.0	0	71.8	46	101	88.78	1.09	20	
Vanadium	140.817	1.0	125.0	34.36	85.2	54	114	135.7	3.69	20	
Zinc	120.872	1.0	125.0	25.65	76.2	28	125	118.2	2.24	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63482** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120340**
Client ID: **PBS** Batch ID: **63482** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/19/2010** SeqNo: **1919371**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	0.062	1.0									
Nickel	ND	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63482** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120340**
Client ID: **LCSS** Batch ID: **63482** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/19/2010** SeqNo: **1919372**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	48.179	2.0	50.00	0	96.4	80	120				
Arsenic	47.301	1.0	50.00	0	94.6	80	120				
Barium	50.345	1.0	50.00	0	101	80	120				
Beryllium	48.438	1.0	50.00	0	96.9	80	120				
Cadmium	48.388	1.0	50.00	0	96.8	80	120				
Chromium	49.200	1.0	50.00	0	98.4	80	120				
Cobalt	50.397	1.0	50.00	0	101	80	120				
Copper	49.096	2.0	50.00	0	98.2	80	120				
Lead	49.428	1.0	50.00	0	98.9	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63482**	SampType: **LCS**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120340**
Client ID: **LCSS**	Batch ID: **63482**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/19/2010**	SeqNo: **1919372**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	49.766	1.0	50.00	0.06206	99.4	80	120				
Nickel	48.816	1.0	50.00	0	97.6	80	120				
Selenium	46.175	1.0	50.00	0	92.4	80	120				
Silver	48.699	1.0	50.00	0	97.4	80	120				
Thallium	49.627	1.0	50.00	0	99.3	80	120				
Vanadium	49.714	1.0	50.00	0	99.4	80	120				
Zinc	47.342	1.0	50.00	0	94.7	80	120				

Sample ID: **111240-030A-DUP**	SampType: **DUP**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120340**
Client ID: **ZZZZZZ**	Batch ID: **63482**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/19/2010**	SeqNo: **1919383**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.680	2.0						0.8055	0	20	
Arsenic	2.184	1.0						1.790	19.8	20	
Barium	136.741	1.0						155.9	13.1	20	
Beryllium	ND	1.0						0	0	20	
Cadmium	0.379	1.0						0.3727	0	20	
Chromium	33.687	1.0						37.06	9.54	20	
Cobalt	8.693	1.0						9.456	8.41	20	
Copper	18.727	2.0						19.31	3.07	20	
Lead	29.332	1.0						30.18	2.83	20	
Molybdenum	0.490	1.0						0.5063	0	20	
Nickel	40.419	1.0						42.22	4.36	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	30.456	1.0						33.77	10.3	20	
Zinc	63.103	1.0						68.74	8.55	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111240-030A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120340**
Client ID: **ZZZZZZ** Batch ID: **63482** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/19/2010** SeqNo: **1919384**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	74.525	2.0	125.0	0.8055	59.0	32	105				
Arsenic	90.858	1.0	125.0	1.790	71.3	49	106				
Barium	238.359	1.0	125.0	155.9	65.9	31	133				
Beryllium	95.217	1.0	125.0	0	76.2	56	106				
Cadmium	90.414	1.0	125.0	0.3727	72.0	51	103				
Chromium	130.951	1.0	125.0	37.06	75.1	45	114				
Cobalt	100.500	1.0	125.0	9.456	72.8	52	106				
Copper	119.506	2.0	125.0	19.31	80.2	54	125				
Lead	115.404	1.0	125.0	30.18	68.2	34	126				
Molybdenum	90.367	1.0	125.0	0.5063	71.9	54	106				
Nickel	129.284	1.0	125.0	42.22	69.7	45	111				
Selenium	89.221	1.0	125.0	0	71.4	47	104				
Silver	99.590	1.0	125.0	0	79.7	56	112				
Thallium	86.088	1.0	125.0	0	68.9	46	101				
Vanadium	131.219	1.0	125.0	33.77	78.0	54	114				
Zinc	154.683	1.0	125.0	68.74	68.8	28	125				

Sample ID: **111240-030A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120340**
Client ID: **ZZZZZZ** Batch ID: **63482** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/19/2010** SeqNo: **1919385**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	77.318	2.0	125.0	0.8055	61.2	32	105	74.52	3.68	20	
Arsenic	94.105	1.0	125.0	1.790	73.9	49	106	90.86	3.51	20	
Barium	240.139	1.0	125.0	155.9	67.4	31	133	238.4	0.744	20	
Beryllium	97.290	1.0	125.0	0	77.8	56	106	95.22	2.15	20	
Cadmium	91.557	1.0	125.0	0.3727	72.9	51	103	90.41	1.26	20	
Chromium	137.042	1.0	125.0	37.06	80.0	45	114	131.0	4.55	20	
Cobalt	104.106	1.0	125.0	9.456	75.7	52	106	100.5	3.52	20	
Copper	122.092	2.0	125.0	19.31	82.2	54	125	119.5	2.14	20	
Lead	117.952	1.0	125.0	30.18	70.2	34	126	115.4	2.18	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference
- DO Surrogate Diluted Out

Calculations are based on raw values

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111240-030A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120340**
Client ID: **ZZZZZZ** Batch ID: **63482** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/19/2010** SeqNo: **1919385**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	93.795	1.0	125.0	0.5063	74.6	54	106	90.37	3.72	20	
Nickel	135.993	1.0	125.0	42.22	75.0	45	111	129.3	5.06	20	
Selenium	92.770	1.0	125.0	0	74.2	47	104	89.22	3.90	20	
Silver	102.181	1.0	125.0	0	81.7	56	112	99.59	2.57	20	
Thallium	89.260	1.0	125.0	0	71.4	46	101	86.09	3.62	20	
Vanadium	135.018	1.0	125.0	33.77	81.0	54	114	131.2	2.85	20	
Zinc	155.648	1.0	125.0	68.74	69.5	28	125	154.7	0.622	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63488A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120376**
Client ID: **PBS**	Batch ID: **63488**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920068**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.288	5.0									

Sample ID: **LCS-63488**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120376**
Client ID: **LCSS**	Batch ID: **63488**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920069**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	276.751	5.0	250.0	0.2875	111	80	120				

Sample ID: **111239-012A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120376**
Client ID: **B280-2**	Batch ID: **63488**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920080**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.762	5.0						5.963	0	20	

Sample ID: **111239-012A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120376**
Client ID: **B280-2**	Batch ID: **63488**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920081**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	221.184	5.0	250.0	5.963	86.1	34	126				

Sample ID: **MB-63488B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120376**
Client ID: **PBS**	Batch ID: **63488**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920082**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111239-024A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120376**
Client ID: **B288-2**	Batch ID: **63488**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920093**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.714	5.0						3.977	0	20	

Sample ID: **111239-024A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120376**
Client ID: **B288-2**	Batch ID: **63488**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920094**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	232.106	5.0	250.0	3.977	91.3	34	126				

Sample ID: **111239-024A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120376**
Client ID: **B288-2**	Batch ID: **63488**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920095**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	235.755	5.0	250.0	3.977	92.7	34	126	232.1	1.56	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63489A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120377**
Client ID: **PBS**	Batch ID: **63489**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920097**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-63489**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120377**
Client ID: **LCSS**	Batch ID: **63489**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920098**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	271.027	5.0	250.0	0	108	80	120				

Sample ID: **111239-037A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120377**
Client ID: **B293-0**	Batch ID: **63489**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920109**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	62.743	5.0						61.22	2.45	20	

Sample ID: **111239-037A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120377**
Client ID: **B293-0**	Batch ID: **63489**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920110**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	294.465	5.0	250.0	61.22	93.3	34	126				

Sample ID: **MB-63489B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120377**
Client ID: **PBS**	Batch ID: **63489**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920111**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111239-049A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120377**
Client ID: **B297-0**	Batch ID: **63489**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920122**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	7.147	5.0						7.293	2.01	20	

Sample ID: **111239-049A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120377**
Client ID: **B297-0**	Batch ID: **63489**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920123**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	237.849	5.0	250.0	7.293	92.2	34	126				

Sample ID: **111239-049A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120377**
Client ID: **B297-0**	Batch ID: **63489**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920124**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	235.173	5.0	250.0	7.293	91.2	34	126	237.8	1.13	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63490A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120379**
Client ID: **PBS**	Batch ID: **63490**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920156**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.129	5.0									

Sample ID: **LCS-63490**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120379**
Client ID: **LCSS**	Batch ID: **63490**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920157**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	290.174	5.0	250.0	0.1295	116	80	120				

Sample ID: **111239-062A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120379**
Client ID: **B301-1**	Batch ID: **63490**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920168**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	8.762	5.0						10.33	16.4	20	

Sample ID: **111239-062A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120379**
Client ID: **B301-1**	Batch ID: **63490**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920169**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	220.271	5.0	250.0	10.33	84.0	34	126				

Sample ID: **MB-63490B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120379**
Client ID: **PBS**	Batch ID: **63490**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920170**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111240-013A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120379**
Client ID: **ZZZZZZ**	Batch ID: **63490**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920181**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	25.620	5.0						22.22	14.2	20	

Sample ID: **111240-013A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120379**
Client ID: **ZZZZZZ**	Batch ID: **63490**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920182**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	247.573	5.0	250.0	22.22	90.1	34	126				

Sample ID: **111240-013A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120379**
Client ID: **ZZZZZZ**	Batch ID: **63490**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920183**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	259.463	5.0	250.0	22.22	94.9	34	126	247.6	4.69	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63472**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120317**
Client ID: **PBS**	Batch ID: **63472**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1918875**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63472**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120317**
Client ID: **LCSS**	Batch ID: **63472**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1918876**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.838	0.10	0.8300	0	101	80	120				

Sample ID: **111239-050A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120317**
Client ID: **B297-1**	Batch ID: **63472**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1918877**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.765	0.10	0.8300	0.03288	88.3	70	130				

Sample ID: **111239-050A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120317**
Client ID: **B297-1**	Batch ID: **63472**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1918878**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.765	0.10	0.8300	0.03288	88.2	70	130	0.7654	0.00886	20	

Sample ID: **111239-050A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120317**
Client ID: **B297-1**	Batch ID: **63472**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1918880**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.031	0.10						0.03288	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63473**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120320**
Client ID: **PBS**	Batch ID: **63473**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1918956**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63473**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120320**
Client ID: **LCSS**	Batch ID: **63473**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1918957**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.840	0.10	0.8300	0	101	80	120				

Sample ID: **111240-030A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120320**
Client ID: **ZZZZZZ**	Batch ID: **63473**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1918958**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.843	0.10	0.8300	0.03242	97.7	70	130				

Sample ID: **111240-030A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120320**
Client ID: **ZZZZZZ**	Batch ID: **63473**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1918959**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.844	0.10	0.8300	0.03242	97.8	70	130	0.8430	0.135	20	

Sample ID: **111240-030A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120320**
Client ID: **ZZZZZZ**	Batch ID: **63473**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1918961**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.030	0.10						0.03242	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 9045_S

Sample ID: **111239-060ADUP** SampType: **DUP** TestCode: **9045_S** Units: **pH Units** Prep Date: RunNo: **120359**
Client ID: **B300-2** Batch ID: **R120359** TestNo: **EPA 9045C** Analysis Date: **4/20/2010** SeqNo: **1919747**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	8.620	0.10						8.630	0.116	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #:
Logged By: Date: 4/14/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☒ FedEx ☐ Other: GSO

Sample Condition Upon Receipt
1. CHILLED 5.4 Y ☑ N ☐ 4. SEALED Y ☐ N ☑
2. HEADSPACE (VOA) Y ☐ N/A N ☐ 5. # OF SPLS MATCH COC Y ☑ N ☐
3. CONTAINER INTACT Y ☑ N ☐ 6. PRESERVED Y ☐ N ☑

Client: Geocon Consultants, Inc. | Address: 6671 Brisa Street | Tel: 9253715900
Attention: Lauren Vigliottti | City: Livermore | State: CA | Zip Code: 94550 | Fax: 9253715915
Project Name: I-580 WB HOV Lanes | Project #: E8474-06-01 | Sampler: (Printed Name) Lauren Vigliotti (Signature)

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Lauren Vigliotti	4/13/10	1630	Marsh Alp	4/14/10	800
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Lauren Vigliotti 4/13/2010
Print Name Date
Lauren Vigliotti
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:
20% Random select for CAM 17 metals ONLY, no total lead. 10% random select for pH

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides) | 8082 (PCB) | 8260B (Volatiles) | 8270C (BNA) | 6010B (Total Metal) | 8015B (GRO) / 8020 (BTEX) | 8015B (DRO) | 8021 (BTEX) | TITLE 22 / CAM 17 (6010 / 7000) | Total Lead (EPA 6010) | 10% Random pH (EPA 9045) | CAM17 Metals 20% Random, no lead

SPECIFY APPROPRIATE MATRIX: SOIL | WATER | GROUND WATER | WASTEWATER

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample ID / Location	Date	Time	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	1112379-1,2,3	B274-0,-1,-2	4/13/2010	0850	E	1	B P	C	
	4,5,6	B275-0,-1,-2	4/13/2010	0900	E	1	B P	C	
	7,8,9	B277-0,-1,-2	4/13/2010	0910	E	1	B P	C	
	10,11,12	B280-0,-1,-2	4/13/2010	0925	E	1	B P	C	
	13,14,15	B282-0,-1,-2	4/13/2010	0930	E	1	B P	C	
	16,17,18	B284-0,-1,-2	4/13/2010	0945	E	1	B P	C	
	19,20,21	B285-0,-1,-2	4/13/2010	0955	E	1	B P	C	
	22,23,24	B288-0,-1,-2	4/13/2010	1015	E	1	B P	C	
	25,26,27	B289-0,-1,-2	4/13/2010	1020	E	1	B P	C	
	28,29,30	B290-0,-1,-2	4/13/2010	1035	E	1	B P	C	

(Each sample: X X X under TITLE 22 / CAM 17; X under SOIL)

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs | B = Emergency Next Workday | C = Critical 2 Workdays | D = Urgent 3 Workdays | E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☒ FedEx ☐ Other: _____

Sample Condition Upon Receipt: 1. CHILLED Y ☐ N ☐ 2. HEADSPACE (VOA) Y ☐ N ☐ 3. CONTAINER INTACT Y ☐ N ☐ 4. SEALED Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☐ N ☐ 6. PRESERVED Y ☐ N ☐

Client: Geocon Consultants, Inc.
Attention: Lauren Vigliottti
Address: 6671 Brisa Street
City: Livermore State: CA Zip Code: 94550
Tel:
Fax:

Project Name: I-580 WB HOV Lanes
Project #: E8474-06-01
Sampler: (Printed Name) Lauren Vigliotti (Signature)

Relinquished by: (Signature and Printed Name) Lauren Vigliotti Date: 4/13/10 Time: 1630
Received by: (Signature and Printed Name) Mary Date: 4/14/10 Time: 800
Relinquished by: (Signature and Printed Name) Date: Time:
Received by: (Signature and Printed Name) Date: Time:
Relinquished by: (Signature and Printed Name) Date: Time:
Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Lauren Vigliotti 4/13/2010
Print Name Date
Lauren Vigliotti
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:
20% Random select for CAM 17 metals ONLY, no total lead. 10% random select for pH

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode_____ OTHER _____

ITEM	LAB USE ONLY: Batch # / Lab No.	Sample ID / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / 8020 (BTEX)	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	Total Lead (EPA 6010)	10% Random pH (EPA 9045)	CAM17 Metals 20% Random, no lead	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
1	1739-31,32,33	B291-0,-1,-2	4/13/2010	1030									X	X	X		X				E	1	B P	C	
	34,35,36	B292-0,-1,-2	4/13/2010	1040									X	X	X		X				E	1	B P	C	
	37,38,39	B293-0,-1,-2	4/13/2010	1100									X	X	X		X				E	1	B P	C	
	40,41,42	B294-0,-1,-2	4/13/2010	1050									X	X	X		X				E	1	B P	C	
	43,44,45	B295-0,-1,-2	4/13/2010	1105									X	X	X		X				E	1	B P	C	
	46,47,48	B296-0,-1,-2	4/13/2010	1110									X	X	X		X				E	1	B P	C	
	49,50,51	B297-0,-1,-2	4/13/2010	1150									X	X	X		X				E	1	B P	C	
	52,53,54	B298-0,-1,-2	4/13/2010	1125									X	X	X		X				E	1	B P	C	
	55,56,57	B299-0,-1,-2	4/13/2010	1155									X	X	X		X				E	1	B P	C	
	58,59,60	B300-0,-1,-2	4/13/2010	1135									X	X	X		X				E	1	B P	C	
	61,62,63	B301-0,-1,-2		1200									X	X	X		X				E	1	B P	C	

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs B = Emergency Next Workday C = Critical 2 Workdays D = Urgent 3 Workdays E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

May 04, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111239

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 14, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I-580 WB HOV Lanes, E8474-06-01
Lab Order: 111239

CASE NARRATIVE

Analytical Comments for Method 7420

Dilution was necessary for sample 111239-034A, due to sample matrix.

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 5/4/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (STLC)
WET/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111239
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/14/2010 8:00:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111239-003A	B274-2	7.4	mg/L	63742	0.25	1	4/13/2010	5/3/2010
111239-015A	B282-2	1.1	mg/L	63742	0.25	1	4/13/2010	5/3/2010
111239-022A	B288-0	4.7	mg/L	63742	0.25	1	4/13/2010	5/3/2010
111239-025A	B289-0	4.1	mg/L	63742	0.25	1	4/13/2010	5/3/2010
111239-028A	B290-0	4.7	mg/L	63742	0.25	1	4/13/2010	5/3/2010
111239-029A	B290-1	3.4	mg/L	63742	0.25	1	4/13/2010	5/3/2010
111239-032A	B291-1	3.1	mg/L	63742	0.25	1	4/13/2010	5/3/2010
111239-034A	B292-0	16	mg/L	63742	0.50	2	4/13/2010	5/3/2010
111239-037A	B293-0	2.1	mg/L	63742	0.25	1	4/13/2010	5/3/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-63742A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120803**
Client ID: **PBS**	Batch ID: **63742**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928308**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63742**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120803**
Client ID: **LCSS**	Batch ID: **63742**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928309**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.807	0.25	5.000	0	96.1	80	120				

Sample ID: **111240-002A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120803**
Client ID: **ZZZZZZ**	Batch ID: **63742**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928320**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	3.278	0.25						3.340	1.88	20	

Sample ID: **111240-002A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120803**
Client ID: **ZZZZZZ**	Batch ID: **63742**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928321**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	8.222	0.25	5.000	3.340	97.6	80	120				

Sample ID: **MB-63742B**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120803**
Client ID: **PBS**	Batch ID: **63742**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928322**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **111240-082A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120803**
Client ID: **ZZZZZZ**	Batch ID: **63742**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928333**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	15.163	0.50						15.21	0.309	20	

Sample ID: **111240-082A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120803**
Client ID: **ZZZZZZ**	Batch ID: **63742**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928334**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	20.469	1.0	5.000	15.21	105	80	120				

Sample ID: **111240-082A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120803**
Client ID: **ZZZZZZ**	Batch ID: **63742**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928335**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	20.504	1.0	5.000	15.21	106	80	120	20.47	0.175	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Tuesday, April 27, 2010 12:18 PM
To: Diane Galvan
Subject: I-580 project

Hi Diane:

Please run the following samples for WET lead under a standard TAT. Thanks!

WO:

111239 B289-0, B293-0, B291-1, B282-2, B288-0, B274-2, B292-0, B290-1, B290-0

111240 B12-0, B25-1, B10-0, B6-0, B15-1, B30-1, B4-0, B13-2, B28-2, B2-0, B18-0, B1-0

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

Geocon Consultants, Inc
6671 Brisa Street
Livermore, CA 94550
Tel (925) 371-5900
Cell (925) 768-9874

GEOCON

GEOTECHNICAL ENVIRONMENTAL MATERIALS

San Diego Murrieta Burbank Bakersfield Sacramento Livermore Carson City Las Vegas Portland

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May 11, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111239

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 14, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I-580 WB HOV Lanes, E8474-06-01
Lab Order: 111239

CASE NARRATIVE

Analytical Comments for Method 7420

Matrix Spike (MS) and /or Matrix Spike Duplicate (MSD) are/is outside recovery criteria for samples 111240-085AMS and 111240-085AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 5/11/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION
WET DI/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111239
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/14/2010 8:00:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111239-003A	B274-2	ND	mg/L	63918	0.25	1	4/13/2010	5/10/2010
111239-034A	B292-0	ND	mg/L	63918	0.25	1	4/13/2010	5/10/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 5/11/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (TCLP)
EPA 1311/ 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111239
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/14/2010 8:00:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111239-003A	B274-2	0.28	mg/L	63970	0.25	1	4/13/2010	5/10/2010
111239-034A	B292-0	ND	mg/L	63970	0.25	1	4/13/2010	5/10/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **MB-63918A**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/6/2010**	RunNo: **121002**
Client ID: **PBS**	Batch ID: **63918**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/10/2010**	SeqNo: **1932529**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63918**	SampType: **LCS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/6/2010**	RunNo: **121002**
Client ID: **LCSS**	Batch ID: **63918**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/10/2010**	SeqNo: **1932530**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.977	0.25	5.000	0	99.5	80	120				

Sample ID: **111240-085A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/6/2010**	RunNo: **121002**
Client ID: **ZZZZZZ**	Batch ID: **63918**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/10/2010**	SeqNo: **1932539**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111240-085A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/6/2010**	RunNo: **121002**
Client ID: **ZZZZZZ**	Batch ID: **63918**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/10/2010**	SeqNo: **1932540**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.946	0.25	5.000	0	98.9	70	130				

Sample ID: **111240-085A-MSD**	SampType: **MSD**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/6/2010**	RunNo: **121002**
Client ID: **ZZZZZZ**	Batch ID: **63918**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/10/2010**	SeqNo: **1932541**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.002	0.25	5.000	0	100	70	130	4.946	1.12	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63970**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/7/2010**	RunNo: **121003**
Client ID: **PBS**	Batch ID: **63970**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/10/2010**	SeqNo: **1932542**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63948A TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/7/2010**	RunNo: **121003**
Client ID: **PBS**	Batch ID: **63970**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/10/2010**	SeqNo: **1932543**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63970**	SampType: **LCS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/7/2010**	RunNo: **121003**
Client ID: **LCSS**	Batch ID: **63970**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/10/2010**	SeqNo: **1932544**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.970	0.25	1.000	0	97.0	80	120				

Sample ID: **111240-085A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/7/2010**	RunNo: **121003**
Client ID: **ZZZZZZ**	Batch ID: **63970**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/10/2010**	SeqNo: **1932551**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	1.655	0.25						1.662	0.441	20	

Sample ID: **111240-085A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/7/2010**	RunNo: **121003**
Client ID: **ZZZZZZ**	Batch ID: **63970**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/10/2010**	SeqNo: **1932552**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.529	0.25	2.500	1.662	155	70	130				S

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111239
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **111240-085A-MSD** SampType: **MSD** TestCode: **7420_TC** Units: **mg/L** Prep Date: **5/7/2010** RunNo: **121003**
Client ID: **ZZZZZZ** Batch ID: **63970** TestNo: **EPA 1311/ 74 EPA3010A** Analysis Date: **5/10/2010** SeqNo: **1932553**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.558	0.25	2.500	1.662	156	70	130	5.529	0.534	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Tuesday, May 04, 2010 4:20 PM
To: Diane Galvan
Subject: I-580 WB HOV project

Hi Diane:
Please run the following samples for soluble lead as Indicated, standard TATA. Thanks!

WO	ID	DI-WET	TCLP
111239	B274-2	X	X
111239	B292-0	X	X
111240	B4-0	X	
111240	B15-1	X	
111240	B28-2	X	X
111240	B18-0	X	X
111240	B2-0	X	X
111240	B1-0	X	X

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

Geocon Consultants, Inc
6671 Brisa Street
Livermore, CA 94550
Tel (925) 371-5900
Cell (925) 768-9874

GEOCON

GEOTECHNICAL ENVIRONMENTAL MATERIALS

San Diego Murrieta Burbank Bakersfield Sacramento Livermore Carson City Las Vegas Portland

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April 21, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111240

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 14, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I-580 WB HOV Lanes, E8474-06-01
Lab Order: 111240

CASE NARRATIVE

Analytical Comments for Method 6010

RPD for Duplicate (DUP) is outside criteria for samples 111240-051ADUP, 111240-076ADUP and 111240-087ADUP; however, the Laboratory Control Sample (LCS) validated the analytical batch.

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 4/21/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111240
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/14/2010 8:00:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111240-002A	B30-1	88	mg/Kg	63490	5.0	1	4/13/2010	4/20/2010
111240-003A	B30-2	9.2	mg/Kg	63490	5.0	1	4/13/2010	4/20/2010
111240-004A	B29-0	16	mg/Kg	63490	5.0	1	4/13/2010	4/20/2010
111240-006A	B29-2	12	mg/Kg	63490	5.0	1	4/13/2010	4/20/2010
111240-007A	B28-0	18	mg/Kg	63490	5.0	1	4/13/2010	4/20/2010
111240-008A	B28-1	30	mg/Kg	63490	5.0	1	4/13/2010	4/20/2010
111240-009A	B28-2	160	mg/Kg	63490	5.0	1	4/13/2010	4/20/2010
111240-011A	B27-1	12	mg/Kg	63490	5.0	1	4/13/2010	4/20/2010
111240-012A	B27-2	6.5	mg/Kg	63490	5.0	1	4/13/2010	4/20/2010
111240-013A	B26-0	22	mg/Kg	63490	5.0	1	4/13/2010	4/20/2010
111240-014A	B26-1	ND	mg/Kg	63491	5.0	1	4/13/2010	4/20/2010
111240-016A	B25-1	53	mg/Kg	63491	5.0	1	4/13/2010	4/20/2010
111240-017A	B25-2	ND	mg/Kg	63491	5.0	1	4/13/2010	4/20/2010
111240-018A	B24-0	25	mg/Kg	63491	5.0	1	4/13/2010	4/20/2010
111240-019A	B24-1	8.9	mg/Kg	63491	5.0	1	4/13/2010	4/20/2010
111240-021A	B23-0	26	mg/Kg	63491	5.0	1	4/13/2010	4/20/2010
111240-022A	B23-1	12	mg/Kg	63491	5.0	1	4/13/2010	4/20/2010
111240-023A	B23-2	10	mg/Kg	63491	5.0	1	4/13/2010	4/20/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/21/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111240
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/14/2010 8:00:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111240-024A	B22-0	22	mg/Kg	63491	5.0	1	4/13/2010	4/20/2010
111240-026A	B22-2	6.3	mg/Kg	63491	5.0	1	4/13/2010	4/20/2010
111240-027A	B21-0	18	mg/Kg	63491	5.0	1	4/13/2010	4/20/2010
111240-028A	B21-1	14	mg/Kg	63491	5.0	1	4/13/2010	4/20/2010
111240-029A	B21-2	20	mg/Kg	63491	5.0	1	4/13/2010	4/20/2010
111240-031A	B20-1	42	mg/Kg	63491	5.0	1	4/13/2010	4/20/2010
111240-032A	B20-2	7.7	mg/Kg	63491	5.0	1	4/13/2010	4/20/2010
111240-033A	B19-0	26	mg/Kg	63491	5.0	1	4/13/2010	4/20/2010
111240-034A	B19-1	36	mg/Kg	63491	5.0	1	4/13/2010	4/20/2010
111240-036A	B18-0	260	mg/Kg	63491	5.0	1	4/13/2010	4/20/2010
111240-037A	B18-1	10	mg/Kg	63491	5.0	1	4/13/2010	4/20/2010
111240-038A	B18-2	7.7	mg/Kg	63491	5.0	1	4/13/2010	4/20/2010
111240-039A	B17-0	41	mg/Kg	63492	5.0	1	4/13/2010	4/20/2010
111240-041A	B16-0	10	mg/Kg	63492	5.0	1	4/13/2010	4/20/2010
111240-042A	B16-1	35	mg/Kg	63492	5.0	1	4/13/2010	4/20/2010
111240-043A	B15-0	43	mg/Kg	63492	5.0	1	4/13/2010	4/20/2010
111240-044A	B15-1	81	mg/Kg	63492	5.0	1	4/13/2010	4/20/2010
111240-046A	B14-0	38	mg/Kg	63492	5.0	1	4/13/2010	4/20/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/21/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111240
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/14/2010 8:00:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111240-047A	B14-1	ND	mg/Kg	63492	5.0	1	4/13/2010	4/20/2010
111240-048A	B14-2	6.6	mg/Kg	63492	5.0	1	4/13/2010	4/20/2010
111240-049A	B13-0	14	mg/Kg	63492	5.0	1	4/13/2010	4/20/2010
111240-051A	B13-2	120	mg/Kg	63492	5.0	1	4/13/2010	4/20/2010
111240-052A	B12-0	50	mg/Kg	63492	5.0	1	4/13/2010	4/20/2010
111240-053A	B12-1	8.6	mg/Kg	63492	5.0	1	4/13/2010	4/20/2010
111240-054A	B12-2	5.3	mg/Kg	63492	5.0	1	4/13/2010	4/20/2010
111240-056A	B11-1	17	mg/Kg	63492	5.0	1	4/13/2010	4/20/2010
111240-057A	B11-2	20	mg/Kg	63492	5.0	1	4/13/2010	4/20/2010
111240-058A	B10-0	68	mg/Kg	63492	5.0	1	4/13/2010	4/20/2010
111240-059A	B10-1	20	mg/Kg	63492	5.0	1	4/13/2010	4/20/2010
111240-061A	B9-0	27	mg/Kg	63492	5.0	1	4/13/2010	4/20/2010
111240-062A	B9-1	16	mg/Kg	63492	5.0	1	4/13/2010	4/20/2010
111240-063A	B9-2	9.1	mg/Kg	63492	5.0	1	4/13/2010	4/20/2010
111240-064A	B8-0	25	mg/Kg	63493	5.0	1	4/13/2010	4/20/2010
111240-066A	B8-2	5.6	mg/Kg	63493	5.0	1	4/13/2010	4/20/2010
111240-067A	B7-0	17	mg/Kg	63493	5.0	1	4/13/2010	4/20/2010
111240-068A	B7-1	17	mg/Kg	63493	5.0	1	4/13/2010	4/20/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/21/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111240
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/14/2010 8:00:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111240-069A	B7-2	6.9	mg/Kg	63493	5.0	1	4/13/2010	4/20/2010
111240-071A	B6-1	5.5	mg/Kg	63493	5.0	1	4/13/2010	4/20/2010
111240-072A	B6-2	6.3	mg/Kg	63493	5.0	1	4/13/2010	4/20/2010
111240-073A	B5-0	39	mg/Kg	63493	5.0	1	4/13/2010	4/20/2010
111240-074A	B5-1	7.2	mg/Kg	63493	5.0	1	4/13/2010	4/20/2010
111240-076A	B4-0	96	mg/Kg	63493	5.0	1	4/13/2010	4/20/2010
111240-077A	B4-1	7.8	mg/Kg	63493	5.0	1	4/13/2010	4/20/2010
111240-078A	B4-2	6.8	mg/Kg	63493	5.0	1	4/13/2010	4/20/2010
111240-079A	B3-0	35	mg/Kg	63493	5.0	1	4/13/2010	4/20/2010
111240-081A	B3-2	9.5	mg/Kg	63493	5.0	1	4/13/2010	4/20/2010
111240-082A	B2-0	180	mg/Kg	63493	5.0	1	4/13/2010	4/20/2010
111240-083A	B2-1	40	mg/Kg	63493	5.0	1	4/13/2010	4/20/2010
111240-084A	B2-2	11	mg/Kg	63493	5.0	1	4/13/2010	4/20/2010
111240-086A	B1-1	29	mg/Kg	63493	5.0	1	4/13/2010	4/20/2010
111240-087A	B1-2	22	mg/Kg	63493	5.0	1	4/13/2010	4/20/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/21/2010

ANALYTICAL RESULTS

pH
EPA 9045C

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111240
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/14/2010 8:00:00 AM
Project No:		**Matrix:**	Soil
Analyte:	pH	**Analyst:**	CBB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111240-010A	B27-0	7.1	pH Units	R120360	0.10	1	4/13/2010	4/20/2010
111240-020A	B24-2	8.5	pH Units	R120360	0.10	1	4/13/2010	4/20/2010
111240-030A	B20-0	7.8	pH Units	R120360	0.10	1	4/13/2010	4/20/2010
111240-040A	B17-1	8.0	pH Units	R120360	0.10	1	4/13/2010	4/20/2010
111240-050A	B13-1	7.6	pH Units	R120360	0.10	1	4/13/2010	4/20/2010
111240-060A	B10-2	6.2	pH Units	R120360	0.10	1	4/13/2010	4/20/2010
111240-070A	B6-0	7.2	pH Units	R120360	0.10	1	4/13/2010	4/20/2010
111240-080A	B3-1	7.1	pH Units	R120360	0.10	1	4/13/2010	4/20/2010
111240-087A	B1-2	7.6	pH Units	R120360	0.10	1	4/13/2010	4/20/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B30-0
Lab Order:	111240	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111240-001A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100419G	QC Batch: 63482			PrepDate: 4/19/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/19/2010 07:21 PM
Arsenic	ND	1.0		mg/Kg	1	4/19/2010 07:21 PM
Barium	170	1.0		mg/Kg	1	4/19/2010 07:21 PM
Beryllium	ND	1.0		mg/Kg	1	4/19/2010 07:21 PM
Cadmium	ND	1.0		mg/Kg	1	4/19/2010 07:21 PM
Chromium	34	1.0		mg/Kg	1	4/19/2010 07:21 PM
Cobalt	7.7	1.0		mg/Kg	1	4/19/2010 07:21 PM
Copper	41	2.0		mg/Kg	1	4/19/2010 07:21 PM
Lead	32	1.0		mg/Kg	1	4/19/2010 07:21 PM
Molybdenum	2.2	1.0		mg/Kg	1	4/19/2010 07:21 PM
Nickel	38	1.0		mg/Kg	1	4/19/2010 07:21 PM
Selenium	ND	1.0		mg/Kg	1	4/19/2010 07:21 PM
Silver	ND	1.0		mg/Kg	1	4/19/2010 07:21 PM
Thallium	ND	1.0		mg/Kg	1	4/19/2010 07:21 PM
Vanadium	24	1.0		mg/Kg	1	4/19/2010 07:21 PM
Zinc	260	1.0		mg/Kg	1	4/19/2010 07:21 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419B	QC Batch: 63473			PrepDate: 4/19/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/19/2010 02:35 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B29-1
Lab Order:	111240	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111240-005A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100419G	QC Batch: 63482			PrepDate:	4/19/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/19/2010 07:25 PM
Arsenic	ND	1.0		mg/Kg	1	4/19/2010 07:25 PM
Barium	100	1.0		mg/Kg	1	4/19/2010 07:25 PM
Beryllium	ND	1.0		mg/Kg	1	4/19/2010 07:25 PM
Cadmium	ND	1.0		mg/Kg	1	4/19/2010 07:25 PM
Chromium	37	1.0		mg/Kg	1	4/19/2010 07:25 PM
Cobalt	9.7	1.0		mg/Kg	1	4/19/2010 07:25 PM
Copper	20	2.0		mg/Kg	1	4/19/2010 07:25 PM
Lead	39	1.0		mg/Kg	1	4/19/2010 07:25 PM
Molybdenum	ND	1.0		mg/Kg	1	4/19/2010 07:25 PM
Nickel	47	1.0		mg/Kg	1	4/19/2010 07:25 PM
Selenium	ND	1.0		mg/Kg	1	4/19/2010 07:25 PM
Silver	ND	1.0		mg/Kg	1	4/19/2010 07:25 PM
Thallium	ND	1.0		mg/Kg	1	4/19/2010 07:25 PM
Vanadium	29	1.0		mg/Kg	1	4/19/2010 07:25 PM
Zinc	43	1.0		mg/Kg	1	4/19/2010 07:25 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419B	QC Batch: 63473			PrepDate:	4/19/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/19/2010 02:37 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B27-0
Lab Order:	111240	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111240-010A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100419G	QC Batch: 63482			PrepDate: 4/19/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/19/2010 07:28 PM
Arsenic	ND	1.0		mg/Kg	1	4/19/2010 07:28 PM
Barium	140	1.0		mg/Kg	1	4/19/2010 07:28 PM
Beryllium	ND	1.0		mg/Kg	1	4/19/2010 07:28 PM
Cadmium	ND	1.0		mg/Kg	1	4/19/2010 07:28 PM
Chromium	43	1.0		mg/Kg	1	4/19/2010 07:28 PM
Cobalt	8.1	1.0		mg/Kg	1	4/19/2010 07:28 PM
Copper	20	2.0		mg/Kg	1	4/19/2010 07:28 PM
Lead	16	1.0		mg/Kg	1	4/19/2010 07:28 PM
Molybdenum	ND	1.0		mg/Kg	1	4/19/2010 07:28 PM
Nickel	34	1.0		mg/Kg	1	4/19/2010 07:28 PM
Selenium	ND	1.0		mg/Kg	1	4/19/2010 07:28 PM
Silver	ND	1.0		mg/Kg	1	4/19/2010 07:28 PM
Thallium	ND	1.0		mg/Kg	1	4/19/2010 07:28 PM
Vanadium	27	1.0		mg/Kg	1	4/19/2010 07:28 PM
Zinc	160	1.0		mg/Kg	1	4/19/2010 07:28 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419B	QC Batch: 63473			PrepDate: 4/19/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/19/2010 02:40 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B25-0
Lab Order:	111240	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111240-015A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100419G	QC Batch: 63482			PrepDate: 4/19/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/19/2010 07:31 PM
Arsenic	1.3	1.0		mg/Kg	1	4/19/2010 07:31 PM
Barium	140	1.0		mg/Kg	1	4/19/2010 07:31 PM
Beryllium	ND	1.0		mg/Kg	1	4/19/2010 07:31 PM
Cadmium	ND	1.0		mg/Kg	1	4/19/2010 07:31 PM
Chromium	45	1.0		mg/Kg	1	4/19/2010 07:31 PM
Cobalt	9.8	1.0		mg/Kg	1	4/19/2010 07:31 PM
Copper	29	2.0		mg/Kg	1	4/19/2010 07:31 PM
Lead	31	1.0		mg/Kg	1	4/19/2010 07:31 PM
Molybdenum	ND	1.0		mg/Kg	1	4/19/2010 07:31 PM
Nickel	46	1.0		mg/Kg	1	4/19/2010 07:31 PM
Selenium	ND	1.0		mg/Kg	1	4/19/2010 07:31 PM
Silver	ND	1.0		mg/Kg	1	4/19/2010 07:31 PM
Thallium	ND	1.0		mg/Kg	1	4/19/2010 07:31 PM
Vanadium	30	1.0		mg/Kg	1	4/19/2010 07:31 PM
Zinc	500	1.0		mg/Kg	1	4/19/2010 07:31 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419B	QC Batch: 63473			PrepDate: 4/19/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/19/2010 02:46 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B24-2
Lab Order:	111240	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111240-020A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100419G	QC Batch: 63482			PrepDate:	4/19/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/19/2010 07:34 PM
Arsenic	1.4	1.0		mg/Kg	1	4/19/2010 07:34 PM
Barium	170	1.0		mg/Kg	1	4/19/2010 07:34 PM
Beryllium	ND	1.0		mg/Kg	1	4/19/2010 07:34 PM
Cadmium	ND	1.0		mg/Kg	1	4/19/2010 07:34 PM
Chromium	27	1.0		mg/Kg	1	4/19/2010 07:34 PM
Cobalt	8.6	1.0		mg/Kg	1	4/19/2010 07:34 PM
Copper	12	2.0		mg/Kg	1	4/19/2010 07:34 PM
Lead	5.5	1.0		mg/Kg	1	4/19/2010 07:34 PM
Molybdenum	ND	1.0		mg/Kg	1	4/19/2010 07:34 PM
Nickel	29	1.0		mg/Kg	1	4/19/2010 07:34 PM
Selenium	ND	1.0		mg/Kg	1	4/19/2010 07:34 PM
Silver	ND	1.0		mg/Kg	1	4/19/2010 07:34 PM
Thallium	ND	1.0		mg/Kg	1	4/19/2010 07:34 PM
Vanadium	36	1.0		mg/Kg	1	4/19/2010 07:34 PM
Zinc	31	1.0		mg/Kg	1	4/19/2010 07:34 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419B	QC Batch: 63473			PrepDate:	4/19/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/19/2010 02:48 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B22-1
Lab Order:	111240	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111240-025A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100419G	QC Batch: 63482			PrepDate:	4/19/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/19/2010 07:38 PM
Arsenic	ND	1.0		mg/Kg	1	4/19/2010 07:38 PM
Barium	120	1.0		mg/Kg	1	4/19/2010 07:38 PM
Beryllium	ND	1.0		mg/Kg	1	4/19/2010 07:38 PM
Cadmium	ND	1.0		mg/Kg	1	4/19/2010 07:38 PM
Chromium	32	1.0		mg/Kg	1	4/19/2010 07:38 PM
Cobalt	7.0	1.0		mg/Kg	1	4/19/2010 07:38 PM
Copper	12	2.0		mg/Kg	1	4/19/2010 07:38 PM
Lead	25	1.0		mg/Kg	1	4/19/2010 07:38 PM
Molybdenum	ND	1.0		mg/Kg	1	4/19/2010 07:38 PM
Nickel	37	1.0		mg/Kg	1	4/19/2010 07:38 PM
Selenium	ND	1.0		mg/Kg	1	4/19/2010 07:38 PM
Silver	ND	1.0		mg/Kg	1	4/19/2010 07:38 PM
Thallium	ND	1.0		mg/Kg	1	4/19/2010 07:38 PM
Vanadium	26	1.0		mg/Kg	1	4/19/2010 07:38 PM
Zinc	96	1.0		mg/Kg	1	4/19/2010 07:38 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419B	QC Batch: 63473			PrepDate:	4/19/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/19/2010 02:50 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B20-0
Lab Order:	111240	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111240-030A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100419G	QC Batch: 63482			PrepDate:	4/19/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/19/2010 07:41 PM
Arsenic	1.8	1.0		mg/Kg	1	4/19/2010 07:41 PM
Barium	160	1.0		mg/Kg	1	4/19/2010 07:41 PM
Beryllium	ND	1.0		mg/Kg	1	4/19/2010 07:41 PM
Cadmium	ND	1.0		mg/Kg	1	4/19/2010 07:41 PM
Chromium	37	1.0		mg/Kg	1	4/19/2010 07:41 PM
Cobalt	9.5	1.0		mg/Kg	1	4/19/2010 07:41 PM
Copper	19	2.0		mg/Kg	1	4/19/2010 07:41 PM
Lead	30	1.0		mg/Kg	1	4/19/2010 07:41 PM
Molybdenum	ND	1.0		mg/Kg	1	4/19/2010 07:41 PM
Nickel	42	1.0		mg/Kg	1	4/19/2010 07:41 PM
Selenium	ND	1.0		mg/Kg	1	4/19/2010 07:41 PM
Silver	ND	1.0		mg/Kg	1	4/19/2010 07:41 PM
Thallium	ND	1.0		mg/Kg	1	4/19/2010 07:41 PM
Vanadium	34	1.0		mg/Kg	1	4/19/2010 07:41 PM
Zinc	69	1.0		mg/Kg	1	4/19/2010 07:41 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419B	QC Batch: 63473			PrepDate:	4/19/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/19/2010 02:25 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B19-2
Lab Order:	111240	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111240-035A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100420C	QC Batch: 63483			PrepDate: 4/19/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/20/2010 12:00 PM
Arsenic	ND	1.0		mg/Kg	1	4/20/2010 12:00 PM
Barium	120	1.0		mg/Kg	1	4/20/2010 12:00 PM
Beryllium	ND	1.0		mg/Kg	1	4/20/2010 12:00 PM
Cadmium	ND	1.0		mg/Kg	1	4/20/2010 12:00 PM
Chromium	32	1.0		mg/Kg	1	4/20/2010 12:00 PM
Cobalt	8.5	1.0		mg/Kg	1	4/20/2010 12:00 PM
Copper	20	2.0		mg/Kg	1	4/20/2010 12:00 PM
Lead	32	1.0		mg/Kg	1	4/20/2010 12:00 PM
Molybdenum	ND	1.0		mg/Kg	1	4/20/2010 12:00 PM
Nickel	35	1.0		mg/Kg	1	4/20/2010 12:00 PM
Selenium	ND	1.0		mg/Kg	1	4/20/2010 12:00 PM
Silver	ND	1.0		mg/Kg	1	4/20/2010 12:00 PM
Thallium	ND	1.0		mg/Kg	1	4/20/2010 12:00 PM
Vanadium	34	1.0		mg/Kg	1	4/20/2010 12:00 PM
Zinc	43	1.0		mg/Kg	1	4/20/2010 12:00 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419C	QC Batch: 63474			PrepDate: 4/19/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/19/2010 03:13 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B17-1
Lab Order:	111240	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111240-040A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100420C	QC Batch: 63483			PrepDate: 4/19/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/20/2010 12:03 PM
Arsenic	ND	1.0		mg/Kg	1	4/20/2010 12:03 PM
Barium	130	1.0		mg/Kg	1	4/20/2010 12:03 PM
Beryllium	ND	1.0		mg/Kg	1	4/20/2010 12:03 PM
Cadmium	ND	1.0		mg/Kg	1	4/20/2010 12:03 PM
Chromium	22	1.0		mg/Kg	1	4/20/2010 12:03 PM
Cobalt	5.6	1.0		mg/Kg	1	4/20/2010 12:03 PM
Copper	17	2.0		mg/Kg	1	4/20/2010 12:03 PM
Lead	27	1.0		mg/Kg	1	4/20/2010 12:03 PM
Molybdenum	ND	1.0		mg/Kg	1	4/20/2010 12:03 PM
Nickel	29	1.0		mg/Kg	1	4/20/2010 12:03 PM
Selenium	ND	1.0		mg/Kg	1	4/20/2010 12:03 PM
Silver	ND	1.0		mg/Kg	1	4/20/2010 12:03 PM
Thallium	ND	1.0		mg/Kg	1	4/20/2010 12:03 PM
Vanadium	15	1.0		mg/Kg	1	4/20/2010 12:03 PM
Zinc	100	1.0		mg/Kg	1	4/20/2010 12:03 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419C	QC Batch: 63474			PrepDate: 4/19/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/19/2010 03:15 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B15-2
Lab Order:	111240	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111240-045A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100420C	QC Batch: 63483			PrepDate: 4/19/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/20/2010 12:07 PM
Arsenic	1.1	1.0		mg/Kg	1	4/20/2010 12:07 PM
Barium	110	1.0		mg/Kg	1	4/20/2010 12:07 PM
Beryllium	ND	1.0		mg/Kg	1	4/20/2010 12:07 PM
Cadmium	ND	1.0		mg/Kg	1	4/20/2010 12:07 PM
Chromium	35	1.0		mg/Kg	1	4/20/2010 12:07 PM
Cobalt	7.5	1.0		mg/Kg	1	4/20/2010 12:07 PM
Copper	13	2.0		mg/Kg	1	4/20/2010 12:07 PM
Lead	23	1.0		mg/Kg	1	4/20/2010 12:07 PM
Molybdenum	ND	1.0		mg/Kg	1	4/20/2010 12:07 PM
Nickel	40	1.0		mg/Kg	1	4/20/2010 12:07 PM
Selenium	ND	1.0		mg/Kg	1	4/20/2010 12:07 PM
Silver	ND	1.0		mg/Kg	1	4/20/2010 12:07 PM
Thallium	ND	1.0		mg/Kg	1	4/20/2010 12:07 PM
Vanadium	24	1.0		mg/Kg	1	4/20/2010 12:07 PM
Zinc	41	1.0		mg/Kg	1	4/20/2010 12:07 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419C	QC Batch: 63474			PrepDate: 4/19/2010	Analyst: **IL**	
Mercury	0.11	0.10		mg/Kg	1	4/19/2010 03:17 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B13-1
Lab Order:	111240	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111240-050A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100420C	QC Batch: 63483			PrepDate: 4/19/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/20/2010 12:10 PM
Arsenic	ND	1.0		mg/Kg	1	4/20/2010 12:10 PM
Barium	93	1.0		mg/Kg	1	4/20/2010 12:10 PM
Beryllium	ND	1.0		mg/Kg	1	4/20/2010 12:10 PM
Cadmium	ND	1.0		mg/Kg	1	4/20/2010 12:10 PM
Chromium	35	1.0		mg/Kg	1	4/20/2010 12:10 PM
Cobalt	9.6	1.0		mg/Kg	1	4/20/2010 12:10 PM
Copper	19	2.0		mg/Kg	1	4/20/2010 12:10 PM
Lead	20	1.0		mg/Kg	1	4/20/2010 12:10 PM
Molybdenum	ND	1.0		mg/Kg	1	4/20/2010 12:10 PM
Nickel	46	1.0		mg/Kg	1	4/20/2010 12:10 PM
Selenium	ND	1.0		mg/Kg	1	4/20/2010 12:10 PM
Silver	ND	1.0		mg/Kg	1	4/20/2010 12:10 PM
Thallium	ND	1.0		mg/Kg	1	4/20/2010 12:10 PM
Vanadium	31	1.0		mg/Kg	1	4/20/2010 12:10 PM
Zinc	53	1.0		mg/Kg	1	4/20/2010 12:10 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419C	QC Batch: 63474			PrepDate: 4/19/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/19/2010 03:19 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B11-0
Lab Order:	111240	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111240-055A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100420C	QC Batch: 63483			PrepDate: 4/19/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/20/2010 12:13 PM
Arsenic	4.5	1.0		mg/Kg	1	4/20/2010 12:13 PM
Barium	92	1.0		mg/Kg	1	4/20/2010 12:13 PM
Beryllium	ND	1.0		mg/Kg	1	4/20/2010 12:13 PM
Cadmium	ND	1.0		mg/Kg	1	4/20/2010 12:13 PM
Chromium	34	1.0		mg/Kg	1	4/20/2010 12:13 PM
Cobalt	11	1.0		mg/Kg	1	4/20/2010 12:13 PM
Copper	25	2.0		mg/Kg	1	4/20/2010 12:13 PM
Lead	12	1.0		mg/Kg	1	4/20/2010 12:13 PM
Molybdenum	ND	1.0		mg/Kg	1	4/20/2010 12:13 PM
Nickel	36	1.0		mg/Kg	1	4/20/2010 12:13 PM
Selenium	ND	1.0		mg/Kg	1	4/20/2010 12:13 PM
Silver	ND	1.0		mg/Kg	1	4/20/2010 12:13 PM
Thallium	ND	1.0		mg/Kg	1	4/20/2010 12:13 PM
Vanadium	39	1.0		mg/Kg	1	4/20/2010 12:13 PM
Zinc	63	1.0		mg/Kg	1	4/20/2010 12:13 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419C	QC Batch: 63474			PrepDate: 4/19/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/19/2010 03:21 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B10-2
Lab Order:	111240	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111240-060A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100420C	QC Batch: 63483			PrepDate: 4/19/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/20/2010 12:16 PM
Arsenic	4.4	1.0		mg/Kg	1	4/20/2010 12:16 PM
Barium	72	1.0		mg/Kg	1	4/20/2010 12:16 PM
Beryllium	ND	1.0		mg/Kg	1	4/20/2010 12:16 PM
Cadmium	ND	1.0		mg/Kg	1	4/20/2010 12:16 PM
Chromium	30	1.0		mg/Kg	1	4/20/2010 12:16 PM
Cobalt	9.5	1.0		mg/Kg	1	4/20/2010 12:16 PM
Copper	19	2.0		mg/Kg	1	4/20/2010 12:16 PM
Lead	5.8	1.0		mg/Kg	1	4/20/2010 12:16 PM
Molybdenum	ND	1.0		mg/Kg	1	4/20/2010 12:16 PM
Nickel	31	1.0		mg/Kg	1	4/20/2010 12:16 PM
Selenium	ND	1.0		mg/Kg	1	4/20/2010 12:16 PM
Silver	ND	1.0		mg/Kg	1	4/20/2010 12:16 PM
Thallium	ND	1.0		mg/Kg	1	4/20/2010 12:16 PM
Vanadium	35	1.0		mg/Kg	1	4/20/2010 12:16 PM
Zinc	42	1.0		mg/Kg	1	4/20/2010 12:16 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419C	QC Batch: 63474			PrepDate: 4/19/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/19/2010 03:23 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B8-1
Lab Order:	111240	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111240-065A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100420C	QC Batch: 63483			PrepDate: 4/19/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/20/2010 12:19 PM
Arsenic	ND	1.0		mg/Kg	1	4/20/2010 12:19 PM
Barium	78	1.0		mg/Kg	1	4/20/2010 12:19 PM
Beryllium	ND	1.0		mg/Kg	1	4/20/2010 12:19 PM
Cadmium	ND	1.0		mg/Kg	1	4/20/2010 12:19 PM
Chromium	25	1.0		mg/Kg	1	4/20/2010 12:19 PM
Cobalt	6.1	1.0		mg/Kg	1	4/20/2010 12:19 PM
Copper	12	2.0		mg/Kg	1	4/20/2010 12:19 PM
Lead	19	1.0		mg/Kg	1	4/20/2010 12:19 PM
Molybdenum	ND	1.0		mg/Kg	1	4/20/2010 12:19 PM
Nickel	30	1.0		mg/Kg	1	4/20/2010 12:19 PM
Selenium	ND	1.0		mg/Kg	1	4/20/2010 12:19 PM
Silver	ND	1.0		mg/Kg	1	4/20/2010 12:19 PM
Thallium	ND	1.0		mg/Kg	1	4/20/2010 12:19 PM
Vanadium	22	1.0		mg/Kg	1	4/20/2010 12:19 PM
Zinc	31	1.0		mg/Kg	1	4/20/2010 12:19 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419C	QC Batch: 63474			PrepDate: 4/19/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/19/2010 03:25 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B6-0
Lab Order:	111240	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111240-070A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100420C	QC Batch: 63483			PrepDate: 4/19/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/20/2010 12:31 PM
Arsenic	4.6	1.0		mg/Kg	1	4/20/2010 12:31 PM
Barium	90	1.0		mg/Kg	1	4/20/2010 12:31 PM
Beryllium	ND	1.0		mg/Kg	1	4/20/2010 12:31 PM
Cadmium	ND	1.0		mg/Kg	1	4/20/2010 12:31 PM
Chromium	29	1.0		mg/Kg	1	4/20/2010 12:31 PM
Cobalt	7.4	1.0		mg/Kg	1	4/20/2010 12:31 PM
Copper	23	2.0		mg/Kg	1	4/20/2010 12:31 PM
Lead	71	1.0		mg/Kg	1	4/20/2010 12:31 PM
Molybdenum	ND	1.0		mg/Kg	1	4/20/2010 12:31 PM
Nickel	33	1.0		mg/Kg	1	4/20/2010 12:31 PM
Selenium	ND	1.0		mg/Kg	1	4/20/2010 12:31 PM
Silver	ND	1.0		mg/Kg	1	4/20/2010 12:31 PM
Thallium	ND	1.0		mg/Kg	1	4/20/2010 12:31 PM
Vanadium	27	1.0		mg/Kg	1	4/20/2010 12:31 PM
Zinc	110	1.0		mg/Kg	1	4/20/2010 12:31 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419C	QC Batch: 63474			PrepDate: 4/19/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/19/2010 03:27 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B5-2
Lab Order:	111240	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111240-075A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100420C	QC Batch: 63483			PrepDate: 4/19/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/20/2010 12:35 PM
Arsenic	5.0	1.0		mg/Kg	1	4/20/2010 12:35 PM
Barium	90	1.0		mg/Kg	1	4/20/2010 12:35 PM
Beryllium	ND	1.0		mg/Kg	1	4/20/2010 12:35 PM
Cadmium	ND	1.0		mg/Kg	1	4/20/2010 12:35 PM
Chromium	33	1.0		mg/Kg	1	4/20/2010 12:35 PM
Cobalt	9.6	1.0		mg/Kg	1	4/20/2010 12:35 PM
Copper	21	2.0		mg/Kg	1	4/20/2010 12:35 PM
Lead	6.2	1.0		mg/Kg	1	4/20/2010 12:35 PM
Molybdenum	ND	1.0		mg/Kg	1	4/20/2010 12:35 PM
Nickel	33	1.0		mg/Kg	1	4/20/2010 12:35 PM
Selenium	ND	1.0		mg/Kg	1	4/20/2010 12:35 PM
Silver	ND	1.0		mg/Kg	1	4/20/2010 12:35 PM
Thallium	ND	1.0		mg/Kg	1	4/20/2010 12:35 PM
Vanadium	37	1.0		mg/Kg	1	4/20/2010 12:35 PM
Zinc	50	1.0		mg/Kg	1	4/20/2010 12:35 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419C	QC Batch: 63474			PrepDate: 4/19/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/19/2010 03:30 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B3-1
Lab Order:	111240	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111240-080A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100420C	QC Batch: 63483			PrepDate: 4/19/2010	Analyst: **SRB**	
Antimony	ND	2.0		mg/Kg	1	4/20/2010 12:38 PM
Arsenic	5.7	1.0		mg/Kg	1	4/20/2010 12:38 PM
Barium	80	1.0		mg/Kg	1	4/20/2010 12:38 PM
Beryllium	ND	1.0		mg/Kg	1	4/20/2010 12:38 PM
Cadmium	ND	1.0		mg/Kg	1	4/20/2010 12:38 PM
Chromium	33	1.0		mg/Kg	1	4/20/2010 12:38 PM
Cobalt	12	1.0		mg/Kg	1	4/20/2010 12:38 PM
Copper	23	2.0		mg/Kg	1	4/20/2010 12:38 PM
Lead	6.7	1.0		mg/Kg	1	4/20/2010 12:38 PM
Molybdenum	ND	1.0		mg/Kg	1	4/20/2010 12:38 PM
Nickel	37	1.0		mg/Kg	1	4/20/2010 12:38 PM
Selenium	ND	1.0		mg/Kg	1	4/20/2010 12:38 PM
Silver	ND	1.0		mg/Kg	1	4/20/2010 12:38 PM
Thallium	ND	1.0		mg/Kg	1	4/20/2010 12:38 PM
Vanadium	40	1.0		mg/Kg	1	4/20/2010 12:38 PM
Zinc	50	1.0		mg/Kg	1	4/20/2010 12:38 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419C	QC Batch: 63474			PrepDate: 4/19/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/19/2010 03:04 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B1-0
Lab Order:	111240	**Collection Date:**	4/13/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111240-085A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100420A	QC Batch: 63484			PrepDate: 4/19/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/20/2010 09:53 AM
Arsenic	6.4	1.0		mg/Kg	1	4/20/2010 09:53 AM
Barium	110	1.0		mg/Kg	1	4/20/2010 09:53 AM
Beryllium	ND	1.0		mg/Kg	1	4/20/2010 09:53 AM
Cadmium	ND	1.0		mg/Kg	1	4/20/2010 09:53 AM
Chromium	30	1.0		mg/Kg	1	4/20/2010 09:53 AM
Cobalt	6.8	1.0		mg/Kg	1	4/20/2010 09:53 AM
Copper	41	2.0		mg/Kg	1	4/20/2010 09:53 AM
Lead	490	1.0		mg/Kg	1	4/20/2010 09:53 AM
Molybdenum	ND	1.0		mg/Kg	1	4/20/2010 09:53 AM
Nickel	32	1.0		mg/Kg	1	4/20/2010 09:53 AM
Selenium	ND	1.0		mg/Kg	1	4/20/2010 09:53 AM
Silver	ND	1.0		mg/Kg	1	4/20/2010 09:53 AM
Thallium	ND	1.0		mg/Kg	1	4/20/2010 09:53 AM
Vanadium	27	1.0		mg/Kg	1	4/20/2010 09:53 AM
Zinc	150	1.0		mg/Kg	1	4/20/2010 09:53 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100419D	QC Batch: 63475			PrepDate: 4/19/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/19/2010 03:48 PM

Qualifiers:				
	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63482**	SampType: **MBLK**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120340**
Client ID: **PBS**	Batch ID: **63482**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/19/2010**	SeqNo: **1919371**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	0.062	1.0									
Nickel	ND	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63482**	SampType: **LCS**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120340**
Client ID: **LCSS**	Batch ID: **63482**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/19/2010**	SeqNo: **1919372**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	48.179	2.0	50.00	0	96.4	80	120				
Arsenic	47.301	1.0	50.00	0	94.6	80	120				
Barium	50.345	1.0	50.00	0	101	80	120				
Beryllium	48.438	1.0	50.00	0	96.9	80	120				
Cadmium	48.388	1.0	50.00	0	96.8	80	120				
Chromium	49.200	1.0	50.00	0	98.4	80	120				
Cobalt	50.397	1.0	50.00	0	101	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63482** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120340**
Client ID: **LCSS** Batch ID: **63482** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/19/2010** SeqNo: **1919372**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	49.096	2.0	50.00	0	98.2	80	120				
Lead	49.428	1.0	50.00	0	98.9	80	120				
Molybdenum	49.766	1.0	50.00	0.06206	99.4	80	120				
Nickel	48.816	1.0	50.00	0	97.6	80	120				
Selenium	46.175	1.0	50.00	0	92.4	80	120				
Silver	48.699	1.0	50.00	0	97.4	80	120				
Thallium	49.627	1.0	50.00	0	99.3	80	120				
Vanadium	49.714	1.0	50.00	0	99.4	80	120				
Zinc	47.342	1.0	50.00	0	94.7	80	120				

Sample ID: **111240-030A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120340**
Client ID: **B20-0** Batch ID: **63482** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/19/2010** SeqNo: **1919383**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.680	2.0						0.8055	0	20	
Arsenic	2.184	1.0						1.790	19.8	20	
Barium	136.741	1.0						155.9	13.1	20	
Beryllium	ND	1.0						0	0	20	
Cadmium	0.379	1.0						0.3727	0	20	
Chromium	33.687	1.0						37.06	9.54	20	
Cobalt	8.693	1.0						9.456	8.41	20	
Copper	18.727	2.0						19.31	3.07	20	
Lead	29.332	1.0						30.18	2.83	20	
Molybdenum	0.490	1.0						0.5063	0	20	
Nickel	40.419	1.0						42.22	4.36	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	30.456	1.0						33.77	10.3	20	
Zinc	63.103	1.0						68.74	8.55	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111240-030A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120340**
Client ID: **B20-0** Batch ID: **63482** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/19/2010** SeqNo: **1919384**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	74.525	2.0	125.0	0.8055	59.0	32	105				
Arsenic	90.858	1.0	125.0	1.790	71.3	49	106				
Barium	238.359	1.0	125.0	155.9	65.9	31	133				
Beryllium	95.217	1.0	125.0	0	76.2	56	106				
Cadmium	90.414	1.0	125.0	0.3727	72.0	51	103				
Chromium	130.951	1.0	125.0	37.06	75.1	45	114				
Cobalt	100.500	1.0	125.0	9.456	72.8	52	106				
Copper	119.506	2.0	125.0	19.31	80.2	54	125				
Lead	115.404	1.0	125.0	30.18	68.2	34	126				
Molybdenum	90.367	1.0	125.0	0.5063	71.9	54	106				
Nickel	129.284	1.0	125.0	42.22	69.7	45	111				
Selenium	89.221	1.0	125.0	0	71.4	47	104				
Silver	99.590	1.0	125.0	0	79.7	56	112				
Thallium	86.088	1.0	125.0	0	68.9	46	101				
Vanadium	131.219	1.0	125.0	33.77	78.0	54	114				
Zinc	154.683	1.0	125.0	68.74	68.8	28	125				

Sample ID: **111240-030A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120340**
Client ID: **B20-0** Batch ID: **63482** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/19/2010** SeqNo: **1919385**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	77.318	2.0	125.0	0.8055	61.2	32	105	74.52	3.68	20	
Arsenic	94.105	1.0	125.0	1.790	73.9	49	106	90.86	3.51	20	
Barium	240.139	1.0	125.0	155.9	67.4	31	133	238.4	0.744	20	
Beryllium	97.290	1.0	125.0	0	77.8	56	106	95.22	2.15	20	
Cadmium	91.557	1.0	125.0	0.3727	72.9	51	103	90.41	1.26	20	
Chromium	137.042	1.0	125.0	37.06	80.0	45	114	131.0	4.55	20	
Cobalt	104.106	1.0	125.0	9.456	75.7	52	106	100.5	3.52	20	
Copper	122.092	2.0	125.0	19.31	82.2	54	125	119.5	2.14	20	
Lead	117.952	1.0	125.0	30.18	70.2	34	126	115.4	2.18	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111240-030A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120340**
Client ID: **B20-0** Batch ID: **63482** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/19/2010** SeqNo: **1919385**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	93.795	1.0	125.0	0.5063	74.6	54	106	90.37	3.72	20	
Nickel	135.993	1.0	125.0	42.22	75.0	45	111	129.3	5.06	20	
Selenium	92.770	1.0	125.0	0	74.2	47	104	89.22	3.90	20	
Silver	102.181	1.0	125.0	0	81.7	56	112	99.59	2.57	20	
Thallium	89.260	1.0	125.0	0	71.4	46	101	86.09	3.62	20	
Vanadium	135.018	1.0	125.0	33.77	81.0	54	114	131.2	2.85	20	
Zinc	155.648	1.0	125.0	68.74	69.5	28	125	154.7	0.622	20	

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63483** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120371**
Client ID: **PBS** Batch ID: **63483** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/20/2010** SeqNo: **1919958**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	0.047	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63483** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120371**
Client ID: **LCSS** Batch ID: **63483** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/20/2010** SeqNo: **1919959**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	46.149	2.0	50.00	0	92.3	80	120				
Arsenic	44.190	1.0	50.00	0	88.4	80	120				
Barium	47.631	1.0	50.00	0	95.3	80	120				
Beryllium	46.736	1.0	50.00	0	93.5	80	120				
Cadmium	45.621	1.0	50.00	0	91.2	80	120				
Chromium	46.302	1.0	50.00	0	92.6	80	120				
Cobalt	47.521	1.0	50.00	0	95.0	80	120				
Copper	46.730	2.0	50.00	0	93.5	80	120				
Lead	46.197	1.0	50.00	0	92.4	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63483** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120371**
Client ID: **LCSS** Batch ID: **63483** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/20/2010** SeqNo: **1919959**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	47.375	1.0	50.00	0	94.8	80	120				
Nickel	45.791	1.0	50.00	0.04666	91.5	80	120				
Selenium	43.526	1.0	50.00	0	87.1	80	120				
Silver	45.677	1.0	50.00	0	91.4	80	120				
Thallium	46.913	1.0	50.00	0	93.8	80	120				
Vanadium	46.957	1.0	50.00	0	93.9	80	120				
Zinc	44.587	1.0	50.00	0	89.2	80	120				

Sample ID: **111240-080A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120371**
Client ID: **B3-1** Batch ID: **63483** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/20/2010** SeqNo: **1919970**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.737	2.0						0.5815	0	20	
Arsenic	5.526	1.0						5.721	3.46	20	
Barium	79.489	1.0						79.86	0.471	20	
Beryllium	ND	1.0						0	0	20	
Cadmium	0.541	1.0						0.5232	0	20	
Chromium	33.856	1.0						33.32	1.58	20	
Cobalt	11.513	1.0						12.19	5.74	20	
Copper	22.499	2.0						22.90	1.77	20	
Lead	6.851	1.0						6.729	1.80	20	
Molybdenum	0.670	1.0						0.6972	0	20	
Nickel	35.397	1.0						36.67	3.52	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	40.774	1.0						40.05	1.79	20	
Zinc	49.730	1.0						49.72	0.0253	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111240-080A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120371**
Client ID: **B3-1** Batch ID: **63483** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/20/2010** SeqNo: **1919971**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	73.020	2.0	125.0	0.5815	58.0	32	105				
Arsenic	96.527	1.0	125.0	5.721	72.6	49	106				
Barium	175.922	1.0	125.0	79.86	76.8	31	133				
Beryllium	94.720	1.0	125.0	0	75.8	56	106				
Cadmium	91.009	1.0	125.0	0.5232	72.4	51	103				
Chromium	128.618	1.0	125.0	33.32	76.2	45	114				
Cobalt	101.603	1.0	125.0	12.19	71.5	52	106				
Copper	123.108	2.0	125.0	22.90	80.2	54	125				
Lead	99.005	1.0	125.0	6.729	73.8	34	126				
Molybdenum	93.069	1.0	125.0	0.6972	73.9	54	106				
Nickel	125.825	1.0	125.0	36.67	71.3	45	111				
Selenium	92.203	1.0	125.0	0	73.8	47	104				
Silver	96.465	1.0	125.0	0	77.2	56	112				
Thallium	89.547	1.0	125.0	0	71.6	46	101				
Vanadium	136.579	1.0	125.0	40.05	77.2	54	114				
Zinc	138.088	1.0	125.0	49.72	70.7	28	125				

Sample ID: **111240-080A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120371**
Client ID: **B3-1** Batch ID: **63483** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/20/2010** SeqNo: **1919972**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	75.389	2.0	125.0	0.5815	59.8	32	105	73.02	3.19	20	
Arsenic	97.177	1.0	125.0	5.721	73.2	49	106	96.53	0.671	20	
Barium	177.295	1.0	125.0	79.86	77.9	31	133	175.9	0.777	20	
Beryllium	96.277	1.0	125.0	0	77.0	56	106	94.72	1.63	20	
Cadmium	91.873	1.0	125.0	0.5232	73.1	51	103	91.01	0.944	20	
Chromium	130.850	1.0	125.0	33.32	78.0	45	114	128.6	1.72	20	
Cobalt	103.095	1.0	125.0	12.19	72.7	52	106	101.6	1.46	20	
Copper	124.724	2.0	125.0	22.90	81.5	54	125	123.1	1.30	20	
Lead	102.341	1.0	125.0	6.729	76.5	34	126	99.01	3.31	20	

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111240-080A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120371**
Client ID: **B3-1** Batch ID: **63483** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/20/2010** SeqNo: **1919972**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	94.075	1.0	125.0	0.6972	74.7	54	106	93.07	1.08	20	
Nickel	127.305	1.0	125.0	36.67	72.5	45	111	125.8	1.17	20	
Selenium	92.472	1.0	125.0	0	74.0	47	104	92.20	0.291	20	
Silver	98.124	1.0	125.0	0	78.5	56	112	96.46	1.71	20	
Thallium	90.142	1.0	125.0	0	72.1	46	101	89.55	0.662	20	
Vanadium	138.858	1.0	125.0	40.05	79.0	54	114	136.6	1.66	20	
Zinc	140.566	1.0	125.0	49.72	72.7	28	125	138.1	1.78	20	

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63484** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120350**
Client ID: **PBS** Batch ID: **63484** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/20/2010** SeqNo: **1919595**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	0.036	1.0									
Selenium	ND	1.0									
Silver	0.026	1.0									
Thallium	ND	1.0									
Vanadium	0.055	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63484** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120350**
Client ID: **LCSS** Batch ID: **63484** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/20/2010** SeqNo: **1919596**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	46.991	2.0	50.00	0	94.0	80	120				
Arsenic	46.428	1.0	50.00	0	92.9	80	120				
Barium	49.420	1.0	50.00	0	98.8	80	120				
Beryllium	49.527	1.0	50.00	0	99.1	80	120				
Cadmium	47.149	1.0	50.00	0	94.3	80	120				
Chromium	47.753	1.0	50.00	0	95.5	80	120				
Cobalt	49.021	1.0	50.00	0	98.0	80	120				
Copper	48.662	2.0	50.00	0	97.3	80	120				
Lead	48.243	1.0	50.00	0	96.5	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63484** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120350**
Client ID: **LCSS** Batch ID: **63484** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/20/2010** SeqNo: **1919596**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	50.020	1.0	50.00	0	100	80	120				
Nickel	47.441	1.0	50.00	0.03619	94.8	80	120				
Selenium	45.699	1.0	50.00	0	91.4	80	120				
Silver	47.836	1.0	50.00	0.02553	95.6	80	120				
Thallium	46.843	1.0	50.00	0	93.7	80	120				
Vanadium	48.779	1.0	50.00	0.05525	97.4	80	120				
Zinc	46.462	1.0	50.00	0	92.9	80	120				

Sample ID: **111266-015A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120350**
Client ID: **ZZZZZZ** Batch ID: **63484** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/20/2010** SeqNo: **1919607**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.320	2.0						0.4503	0	20	
Arsenic	5.757	1.0						5.279	8.67	20	
Barium	118.819	1.0						117.9	0.745	20	
Beryllium	ND	1.0						0	0	20	
Cadmium	0.155	1.0						0.1172	0	20	
Chromium	17.066	1.0						16.33	4.40	20	
Cobalt	4.233	1.0						4.130	2.45	20	
Copper	14.692	2.0						14.11	4.05	20	
Lead	2.785	1.0						2.719	2.39	20	
Molybdenum	ND	1.0						0	0	20	
Nickel	10.639	1.0						10.32	3.00	20	
Selenium	ND	1.0						0	0	20	
Silver	0.504	1.0						0.4754	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	25.352	1.0						25.86	1.97	20	
Zinc	26.186	1.0						24.31	7.45	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111266-015A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120350**
Client ID: **ZZZZZZ** Batch ID: **63484** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/20/2010** SeqNo: **1919608**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	79.996	2.0	125.0	0.4503	63.6	32	105				
Arsenic	105.469	1.0	125.0	5.279	80.2	49	106				
Barium	217.846	1.0	125.0	117.9	79.9	31	133				
Beryllium	99.800	1.0	125.0	0	79.8	56	106				
Cadmium	91.734	1.0	125.0	0.1172	73.3	51	103				
Chromium	113.552	1.0	125.0	16.33	77.8	45	114				
Cobalt	95.734	1.0	125.0	4.130	73.3	52	106				
Copper	115.357	2.0	125.0	14.11	81.0	54	125				
Lead	95.697	1.0	125.0	2.719	74.4	34	126				
Molybdenum	94.609	1.0	125.0	0	75.7	54	106				
Nickel	101.816	1.0	125.0	10.32	73.2	45	111				
Selenium	100.074	1.0	125.0	0	80.1	47	104				
Silver	108.215	1.0	125.0	0.4754	86.2	56	112				
Thallium	89.791	1.0	125.0	0	71.8	46	101				
Vanadium	127.963	1.0	125.0	25.86	81.7	54	114				
Zinc	115.539	1.0	125.0	24.31	73.0	28	125				

Sample ID: **111266-015A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120350**
Client ID: **ZZZZZZ** Batch ID: **63484** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/20/2010** SeqNo: **1919609**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	77.567	2.0	125.0	0.4503	61.7	32	105	80.00	3.08	20	
Arsenic	106.711	1.0	125.0	5.279	81.1	49	106	105.5	1.17	20	
Barium	221.595	1.0	125.0	117.9	82.9	31	133	217.8	1.71	20	
Beryllium	99.096	1.0	125.0	0	79.3	56	106	99.80	0.709	20	
Cadmium	91.652	1.0	125.0	0.1172	73.2	51	103	91.73	0.0900	20	
Chromium	113.808	1.0	125.0	16.33	78.0	45	114	113.6	0.226	20	
Cobalt	95.944	1.0	125.0	4.130	73.5	52	106	95.73	0.219	20	
Copper	116.625	2.0	125.0	14.11	82.0	54	125	115.4	1.09	20	
Lead	95.702	1.0	125.0	2.719	74.4	34	126	95.70	0.00466	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111266-015A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/19/2010** RunNo: **120350**
Client ID: **ZZZZZZ** Batch ID: **63484** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/20/2010** SeqNo: **1919609**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	95.482	1.0	125.0	0	76.4	54	106	94.61	0.918	20	
Nickel	101.698	1.0	125.0	10.32	73.1	45	111	101.8	0.116	20	
Selenium	100.677	1.0	125.0	0	80.5	47	104	100.1	0.601	20	
Silver	108.386	1.0	125.0	0.4754	86.3	56	112	108.2	0.158	20	
Thallium	90.244	1.0	125.0	0	72.2	46	101	89.79	0.504	20	
Vanadium	129.047	1.0	125.0	25.86	82.6	54	114	128.0	0.843	20	
Zinc	115.229	1.0	125.0	24.31	72.7	28	125	115.5	0.269	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63490A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120379**
Client ID: **PBS**	Batch ID: **63490**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920156**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.129	5.0									

Sample ID: **LCS-63490**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120379**
Client ID: **LCSS**	Batch ID: **63490**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920157**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	290.174	5.0	250.0	0.1295	116	80	120				

Sample ID: **111239-062A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120379**
Client ID: **ZZZZZZ**	Batch ID: **63490**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920168**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	8.762	5.0						10.33	16.4	20	

Sample ID: **111239-062A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120379**
Client ID: **ZZZZZZ**	Batch ID: **63490**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920169**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	220.271	5.0	250.0	10.33	84.0	34	126				

Sample ID: **MB-63490B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120379**
Client ID: **PBS**	Batch ID: **63490**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920170**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111240-013A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120379**
Client ID: **B26-0**	Batch ID: **63490**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920181**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	25.620	5.0						22.22	14.2	20	

Sample ID: **111240-013A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120379**
Client ID: **B26-0**	Batch ID: **63490**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920182**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	247.573	5.0	250.0	22.22	90.1	34	126				

Sample ID: **111240-013A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120379**
Client ID: **B26-0**	Batch ID: **63490**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920183**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	259.463	5.0	250.0	22.22	94.9	34	126	247.6	4.69	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63491A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120378**
Client ID: **PBS**	Batch ID: **63491**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920126**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-63491**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120378**
Client ID: **LCSS**	Batch ID: **63491**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920127**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	278.779	5.0	250.0	0	112	80	120				

Sample ID: **111240-026A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120378**
Client ID: **B22-2**	Batch ID: **63491**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920138**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.991	5.0						6.344	5.73	20	

Sample ID: **111240-026A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120378**
Client ID: **B22-2**	Batch ID: **63491**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920139**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	236.328	5.0	250.0	6.344	92.0	34	126				

Sample ID: **MB-63491B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120378**
Client ID: **PBS**	Batch ID: **63491**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920140**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111240-038A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120378**
Client ID: **B18-2**	Batch ID: **63491**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920151**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	7.479	5.0						7.720	3.18	20	

Sample ID: **111240-038A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120378**
Client ID: **B18-2**	Batch ID: **63491**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920152**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	231.237	5.0	250.0	7.720	89.4	34	126				

Sample ID: **111240-038A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120378**
Client ID: **B18-2**	Batch ID: **63491**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920153**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	210.681	5.0	250.0	7.720	81.2	34	126	231.2	9.30	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63492A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120383**
Client ID: **PBS**	Batch ID: **63492**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920260**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-63492**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120383**
Client ID: **LCSS**	Batch ID: **63492**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920261**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	282.389	5.0	250.0	0	113	80	120				

Sample ID: **111240-051A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120383**
Client ID: **B13-2**	Batch ID: **63492**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920272**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	83.863	5.0						117.3	33.3	20	R

Sample ID: **111240-051A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120383**
Client ID: **B13-2**	Batch ID: **63492**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920273**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	278.811	5.0	250.0	117.3	64.6	34	126				

Sample ID: **MB-63492B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120383**
Client ID: **PBS**	Batch ID: **63492**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920274**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111240-063A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120383**
Client ID: **B9-2**	Batch ID: **63492**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920285**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	8.321	5.0						9.135	9.33	20	

Sample ID: **111240-063A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120383**
Client ID: **B9-2**	Batch ID: **63492**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920286**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	213.740	5.0	250.0	9.135	81.8	34	126	236.2	9.97	20	

Sample ID: **111240-063A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120383**
Client ID: **B9-2**	Batch ID: **63492**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920287**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	236.164	5.0	250.0	9.135	90.8	34	126				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63493A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120385**
Client ID: **PBS**	Batch ID: **63493**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920294**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-63493**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120385**
Client ID: **LCSS**	Batch ID: **63493**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920295**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	227.181	5.0	250.0	0	90.9	80	120				

Sample ID: **111240-076A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120385**
Client ID: **B4-0**	Batch ID: **63493**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920306**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	152.434	5.0						95.66	45.8	20	R

Sample ID: **111240-076A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120385**
Client ID: **B4-0**	Batch ID: **63493**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920307**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	331.945	5.0	250.0	95.66	94.5	34	126				

Sample ID: **MB-63493B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120385**
Client ID: **PBS**	Batch ID: **63493**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920308**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111240-087A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120385**
Client ID: **B1-2**	Batch ID: **63493**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920318**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	14.346	5.0						22.21	43.0	20	R

Sample ID: **111240-087A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120385**
Client ID: **B1-2**	Batch ID: **63493**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920319**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	217.394	5.0	250.0	22.21	78.1	34	126				

Sample ID: **111240-087A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/20/2010**	RunNo: **120385**
Client ID: **B1-2**	Batch ID: **63493**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/20/2010**	SeqNo: **1920320**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	213.551	5.0	250.0	22.21	76.5	34	126	217.4	1.78	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63473**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120320**
Client ID: **PBS**	Batch ID: **63473**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1918956**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63473**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120320**
Client ID: **LCSS**	Batch ID: **63473**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1918957**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.840	0.10	0.8300	0	101	80	120				

Sample ID: **111240-030A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120320**
Client ID: **B20-0**	Batch ID: **63473**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1918958**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.843	0.10	0.8300	0.03242	97.7	70	130				

Sample ID: **111240-030A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120320**
Client ID: **B20-0**	Batch ID: **63473**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1918959**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.844	0.10	0.8300	0.03242	97.8	70	130	0.8430	0.135	20	

Sample ID: **111240-030A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120320**
Client ID: **B20-0**	Batch ID: **63473**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1918961**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.030	0.10						0.03242	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63474**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120325**
Client ID: **PBS**	Batch ID: **63474**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1919046**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63474**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120325**
Client ID: **LCSS**	Batch ID: **63474**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1919047**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.848	0.10	0.8300	0	102	80	120				

Sample ID: **111240-080A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120325**
Client ID: **B3-1**	Batch ID: **63474**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1919048**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.931	0.10	0.8300	0.03778	108	70	130				

Sample ID: **111240-080A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120325**
Client ID: **B3-1**	Batch ID: **63474**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1919049**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.931	0.10	0.8300	0.03778	108	70	130	0.9309	0.00518	20	

Sample ID: **111240-080A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120325**
Client ID: **B3-1**	Batch ID: **63474**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1919051**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.036	0.10						0.03778	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63475**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120326**
Client ID: **PBS**	Batch ID: **63475**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1919061**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63475**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120326**
Client ID: **LCSS**	Batch ID: **63475**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1919062**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.900	0.10	0.8300	0	108	80	120				

Sample ID: **111240-085A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120326**
Client ID: **B1-0**	Batch ID: **63475**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1919063**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.978	0.10	0.8300	0.07769	108	70	130				

Sample ID: **111240-085A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120326**
Client ID: **B1-0**	Batch ID: **63475**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1919064**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.975	0.10	0.8300	0.07769	108	70	130	0.9780	0.319	20	

Sample ID: **111240-085A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/19/2010**	RunNo: **120326**
Client ID: **B1-0**	Batch ID: **63475**	TestNo: **EPA 7471A**		Analysis Date: **4/19/2010**	SeqNo: **1919066**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.083	0.10						0.07769	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 9045_S

Sample ID: **111240-087ADUP** SampType: **DUP** TestCode: **9045_S** Units: **pH Units** Prep Date: RunNo: **120360**
Client ID: **B1-2** Batch ID: **R120360** TestNo: **EPA 9045C** Analysis Date: **4/20/2010** SeqNo: **1919758**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.540	0.10						7.550	0.133	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: 4/15/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FedEx ☐ Other: GSO

Sample Condition Upon Receipt
1. CHILLED 5.4 Y ☑ N ☐ 4. SEALED Y ☐ N ☑
2. HEADSPACE (VOA) Y ☐ N/A ☐ 5. # OF SPLS MATCH COC Y ☑ N ☐
3. CONTAINER INTACT Y ☑ N ☐ 6. PRESERVED Y ☐ N ☑

Client: Geocon Consultants, Inc.
Attention: Lauren Vigliottti
Address: 6671 Brisa Street
City: Livermore State: CA Zip Code: 94550
Tel: 925-371-5900
Fax: 925-371-5915

Project Name: I-580 WB HOV Lanes
Project #: E8474-06-01
Sampler: (Printed Name) CM/DW (Signature) CHRIS MERRITT

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
CHRIS MERRITT	4-13-10	1645		4/14/10	820
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Lauren Vigliotti 4/13/2010
Print Name Date
CM
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:
20% Random select for CAM 17 metals ONLY, no total lead. 10% random select for pH

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides) | 8082 (PCB) | 8260B (Volatiles) | 8270C (BNA) | 6010B (Total Metal) | 8015B (GRO) / 8020 (BTEX) | 8015B (DRO) | 8021 (BTEX) | TITLE 22 / CAM 17 (6010 / 7000) | Total Lead (EPA 6010) | 10% Random pH (EPA 9045) | CAM17 Metals 20% Random, no lead

SPECIFY APPROPRIATE MATRIX: SOIL | WATER | GROUND WATER | WASTEWATER

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample ID / Location	Date	Time	8081A	8082	8260B	8270C	6010B	8015B (GRO)	8015B (DRO)	8021	TITLE 22	Total Lead	10% Random pH	CAM17 Metals	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	111240-1, 2, 3	B30 - 0,1,2	4/13/2010										X	X	X		X					E	1	B P	C	
	4, 5, 6	B29 - 0,1,2	4/13/2010										X	X	X		X					E	1	B P	C	
	7, 8, 9	B28 - 0,1,2	4/13/2010										X	X	X		X					E	1	B P	C	
	10, 11, 12	B27 - 0,1,2	4/13/2010										X	X	X		X					E	1	B P	C	
	13, 14	B26 - 0,1 CM	4/13/2010										X	X	X		X					E	1	B P	C	
	15, 16, 17	B25 - 0,1,2	4/13/2010										X	X	X		X					E	1	B P	C	
	18, 19, 20	B24 - 0,1,2	4/13/2010										X	X	X		X					E	1	B P	C	
	21, 22, 23	B23 - 0,1,2	4/13/2010										X	X	X		X					E	1	B P	C	
	24, 25, 26	B22 - 0,1,2	4/13/2010										X	X	X		X					E	1	B P	C	
	27, 28, 29	B21 - 0,1,2	4/13/2010										X	X	X		X					E	1	B P	C	

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode _____ OTHER _____

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs; B = Emergency Next Workday; C = Critical 2 Workdays; D = Urgent 3 Workdays; E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl $N=HNO_3$ $S=H_2SO_4$ C=4°C $Z=Zn(AC)_2$ O=NaOH $T=Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

P 2 OF 3

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FedEx ☐ Other: _____

Sample Condition Upon Receipt:
1. CHILLED Y ☐ N ☐ 4. SEALED Y ☐ N ☐
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☐ N ☐
3. CONTAINER INTACT Y ☐ N ☐ 6. PRESERVED Y ☐ N ☐

Client: Geocon Consultants, Inc. | Address: 6671 Brisa Street | Tel: 925-371-5900
Attention: Lauren Vigliottti | City: Livermore | State: CA | Zip Code: 94550 | Fax: 925-371-5915

Project Name: I-580 WB HOV Lanes | Project #: E8474-06-01 | Sampler: (Printed Name) CM/DW (Signature) CHRIS MERRITT

Relinquished by: (Signature and Printed Name)	Date	Time	Received by: (Signature and Printed Name)	Date	Time
CHRIS MERRITT	4-13-10	1645	Mark Mc	4/14/10	830

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter: Lauren Vigliotti 4/13/2010
Print Name Date
CM
Signature

Send Report To:
Attn: Same as above
Co: _____
Addr: _____
City: State: Zip:

Bill To:
Attn: Same as above
Co: _____
Addr: _____
City: State: Zip:

Special Instructions/Comments:
20% Random select for CAM 17 metals ONLY, no total lead. 10% random select for pH

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides) | 8082 (PCB) | 8260B (Volatiles) | 8270C (BNA) | 6010B (Total Metal) | 8015B (GRO) / 8020 (BTEX) | 8015B (DRO) | 8021 (BTEX) | TITLE 22 / CAM 17 (6010 / 7000) | Total Lead (EPA 6010) | 10% Random pH (EPA 9045) | CAM17 Metals 20% Random, no lead

SPECIFY APPROPRIATE MATRIX: SOIL | WATER | GROUND WATER | WASTEWATER

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode_____ OTHER _____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample ID / Location	Date	Time	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
1	32, 33, 34	B20 - 0,1,2	4/13/2010		E	1	B	P	C	
	33, 34, 35	B19 - 0,1,2	4/13/2010		E	1	B	P	C	
	36, 37, 38	B18 - 0,1,2	4/13/2010		E	1	B	P	C	
	39, 40	B17 - 0,1 CM	4/13/2010		E	1	B	P	C	
	41, 42	B16 - 0,1 CM	4/13/2010		E	1	B	P	C	
	43, 44, 45	B15 - 0,1,2	4/13/2010		E	1	B	P	C	
	46, 47, 48	B14 - 0,1,2	4/13/2010		E	1	B	P	C	
	49, 50, 51	B13 - 0,1,2	4/13/2010		E	1	B	P	C	
	52, 53, 54	B12 - 0,1,2	4/13/2010		E	1	B	P	C	
	55, 56, 57	B11 - 0,1,2	4/13/2010		E	1	B	P	C	

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs | B = Emergency Next Workday | C = Critical 2 Workdays | D = Urgent 3 Workdays | E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

P 3 of 3

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: ______
Logged By: ______ Date: ______

Method of Transport	
Client	☐
ATL	☐
CA OverN	☐
FedEx	☐
Other: ______	

Sample Condition Upon Receipt					
1. CHILLED	Y ☐	N ☐	4. SEALED	Y ☐	N ☐
2. HEADSPACE (VOA)	Y ☐	N ☐	5. # OF SPLS MATCH COC	Y ☐	N ☐
3. CONTAINER INTACT	Y ☐	N ☐	6. PRESERVED	Y ☐	N ☐

Client: Geocon Consultants, Inc.
Attention: Lauren Vigliottti
Address: 6671 Brisa Street
City: Livermore State: CA Zip Code: 94550
Tel: 925-371-5900
Fax: 925-371-5915

Project Name: I-580 WB HOV Lanes
Project #: E8474-06-01
Sampler: (Printed Name) CM/DW (Signature) Chris Merritt

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Chris Merritt	4-13-10	1645	[signature]	4/14/10	800

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Lauren Vigliotti 4/13/2010
Print Name Date
CM
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:
20% Random select for CAM 17 metals ONLY, no total lead. 10% random select for pH

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode______ OTHER ______

ITEM	LAB USE ONLY: Batch #: Lab No.	Sample ID / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / 8020 (BTEX)	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	Total Lead (EPA 6010)	10% Random pH (EPA 9045)	CAM17 Metals 20% Random, no lead	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	#	Type	PRESERVATION	REMARKS
111	240-58,59,60	B10 - 0,1,2	4/13/2010											X	X	X	X				E	1	B P	C	
	61,62,63	B9 - 0,1,2	4/13/2010											X	X	X	X				E	1	B P	C	
	64,65,66	B8 - 0,1,2	4/13/2010											X	X	X	X				E	1	B P	C	
	67,68,69	B7 - 0,1,2	4/13/2010											X	X	X	X				E	1	B P	C	
	70,71,72	B6 - 0,1,2	4/13/2010											X	X	X	X				E	1	B P	C	
	73,74,75	B5 - 0,1,2	4/13/2010											X	X	X	X				E	1	B P	C	
	76,77,78	B4 - 0,1,2	4/13/2010											X	X	X	X				E	1	B P	C	
	79,80,81	B3 - 0,1,2	4/13/2010											X	X	X	X				E	1	B P	C	
	82,83,84	B2 - 0,1,2	4/13/2010											X	X	X	X				E	1	B P	C	
	85,86,87	B1 - 0,1,2	4/13/2010											X	X	X	X				E	1	B P	C	

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs; B = Emergency Next Workday; C = Critical 2 Workdays; D = Urgent 3 Workdays; E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

May 04, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111240

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 14, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I-580 WB HOV Lanes, E8474-06-01
Lab Order: 111240

CASE NARRATIVE

Analytical Comments for Method 7420

Dilution was necessary for samples 111240-036A, 111240-082A and 111240-085A, due to sample matrix.

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 5/4/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (STLC)
WET/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111240
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/14/2010 8:00:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111240-002A	B30-1	3.3	mg/L	63742	0.25	1	4/13/2010	5/3/2010
111240-009A	B28-2	7.9	mg/L	63742	0.25	1	4/13/2010	5/3/2010
111240-016A	B25-1	1.0	mg/L	63742	0.25	1	4/13/2010	5/3/2010
111240-036A	B18-0	11	mg/L	63742	0.50	2	4/13/2010	5/3/2010
111240-044A	B15-1	6.0	mg/L	63742	0.25	1	4/13/2010	5/3/2010
111240-051A	B13-2	2.7	mg/L	63742	0.25	1	4/13/2010	5/3/2010
111240-052A	B12-0	1.3	mg/L	63742	0.25	1	4/13/2010	5/3/2010
111240-058A	B10-0	2.6	mg/L	63742	0.25	1	4/13/2010	5/3/2010
111240-070A	B6-0	3.0	mg/L	63742	0.25	1	4/13/2010	5/3/2010
111240-076A	B4-0	5.1	mg/L	63742	0.25	1	4/13/2010	5/3/2010
111240-082A	B2-0	15	mg/L	63742	0.50	2	4/13/2010	5/3/2010
111240-085A	B1-0	23	mg/L	63743	1.2	5	4/13/2010	5/3/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-63742A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120803**
Client ID: **PBS**	Batch ID: **63742**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928308**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63742**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120803**
Client ID: **LCSS**	Batch ID: **63742**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928309**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.807	0.25	5.000	0	96.1	80	120				

Sample ID: **111240-002A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120803**
Client ID: **B30-1**	Batch ID: **63742**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928320**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	3.278	0.25						3.340	1.88	20	

Sample ID: **111240-002A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120803**
Client ID: **B30-1**	Batch ID: **63742**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928321**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	8.222	0.25	5.000	3.340	97.6	80	120				

Sample ID: **MB-63742B**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120803**
Client ID: **PBS**	Batch ID: **63742**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928322**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **111240-082A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120803**
Client ID: **B2-0**	Batch ID: **63742**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928333**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	15.163	0.50						15.21	0.309	20	

Sample ID: **111240-082A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120803**
Client ID: **B2-0**	Batch ID: **63742**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928334**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	20.469	1.0	5.000	15.21	105	80	120				

Sample ID: **111240-082A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120803**
Client ID: **B2-0**	Batch ID: **63742**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928335**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	20.504	1.0	5.000	15.21	106	80	120	20.47	0.175	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-63743A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120802**
Client ID: **PBS**	Batch ID: **63743**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928302**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63743**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120802**
Client ID: **LCSS**	Batch ID: **63743**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928303**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.807	0.25	5.000	0	96.1	80	120				

Sample ID: **111240-085A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120802**
Client ID: **B1-0**	Batch ID: **63743**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928305**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	23.267	1.2						23.11	0.698	20	

Sample ID: **111240-085A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120802**
Client ID: **B1-0**	Batch ID: **63743**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928306**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	28.144	1.2	5.000	23.11	101	80	120				

Sample ID: **111240-085A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/1/2010**	RunNo: **120802**
Client ID: **B1-0**	Batch ID: **63743**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/3/2010**	SeqNo: **1928307**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	28.056	1.2	5.000	23.11	99.0	80	120	28.14	0.315	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Tuesday, April 27, 2010 12:18 PM
To: Diane Galvan
Subject: I-580 project

Hi Diane:
Please run the following samples for WET lead under a standard TAT. Thanks!
WO:

111239 B289-0, B293-0, B291-1, B282-2, B288-0, B274-2, B292-0, B290-1, B290-0
111240 B12-0, B25-1, B10-0, B6-0, B15-1, B30-1, B4-0, B13-2, B28-2, B2-0, B18-0, B1-0
****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

Geocon Consultants, Inc
6671 Brisa Street
Livermore, CA 94550
Tel (925) 371-5900
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GEOCON

GEOTECHNICAL ENVIRONMENTAL MATERIALS

San Diego Murrieta Burbank Bakersfield Sacramento Livermore Carson City Las Vegas Portland

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CLIENT: Geocon Consultants, Inc.
Project: I-580 WB HOV Lanes, E8474-06-01
Lab Order: 111240

CASE NARRATIVE

Analytical Comments for Method 7420

Matrix Spike (MS) and /or Matrix Spike Duplicate (MSD) are/is outside recovery criteria for samples 111240-085AMS and 111240-085AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 5/11/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION
WET DI/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111240
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/14/2010 8:00:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111240-009A	B28-2	ND	mg/L	63918	0.25	1	4/13/2010	5/10/2010
111240-036A	B18-0	ND	mg/L	63918	0.25	1	4/13/2010	5/10/2010
111240-044A	B15-1	ND	mg/L	63918	0.25	1	4/13/2010	5/10/2010
111240-076A	B4-0	ND	mg/L	63918	0.25	1	4/13/2010	5/10/2010
111240-082A	B2-0	ND	mg/L	63918	0.25	1	4/13/2010	5/10/2010
111240-085A	B1-0	ND	mg/L	63918	0.25	1	4/13/2010	5/10/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 5/11/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (TCLP)
EPA 1311/ 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111240
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/14/2010 8:00:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111240-009A	B28-2	ND	mg/L	63970	0.25	1	4/13/2010	5/10/2010
111240-036A	B18-0	0.28	mg/L	63970	0.25	1	4/13/2010	5/10/2010
111240-082A	B2-0	2.0	mg/L	63970	0.25	1	4/13/2010	5/10/2010
111240-085A	B1-0	1.7	mg/L	63970	0.25	1	4/13/2010	5/10/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **MB-63918A**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/6/2010**	RunNo: **121002**
Client ID: **PBS**	Batch ID: **63918**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/10/2010**	SeqNo: **1932529**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63918**	SampType: **LCS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/6/2010**	RunNo: **121002**
Client ID: **LCSS**	Batch ID: **63918**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/10/2010**	SeqNo: **1932530**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.977	0.25	5.000	0	99.5	80	120				

Sample ID: **111240-085A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/6/2010**	RunNo: **121002**
Client ID: **B1-0**	Batch ID: **63918**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/10/2010**	SeqNo: **1932539**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111240-085A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/6/2010**	RunNo: **121002**
Client ID: **B1-0**	Batch ID: **63918**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/10/2010**	SeqNo: **1932540**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.946	0.25	5.000	0	98.9	70	130				

Sample ID: **111240-085A-MSD**	SampType: **MSD**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/6/2010**	RunNo: **121002**
Client ID: **B1-0**	Batch ID: **63918**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/10/2010**	SeqNo: **1932541**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.002	0.25	5.000	0	100	70	130	4.946	1.12	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63970**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/7/2010**	RunNo: **121003**
Client ID: **PBS**	Batch ID: **63970**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/10/2010**	SeqNo: **1932542**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63948A TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/7/2010**	RunNo: **121003**
Client ID: **PBS**	Batch ID: **63970**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/10/2010**	SeqNo: **1932543**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63970**	SampType: **LCS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/7/2010**	RunNo: **121003**
Client ID: **LCSS**	Batch ID: **63970**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/10/2010**	SeqNo: **1932544**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.970	0.25	1.000	0	97.0	80	120				

Sample ID: **111240-085A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/7/2010**	RunNo: **121003**
Client ID: **B1-0**	Batch ID: **63970**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/10/2010**	SeqNo: **1932551**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	1.655	0.25						1.662	0.441	20	

Sample ID: **111240-085A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/7/2010**	RunNo: **121003**
Client ID: **B1-0**	Batch ID: **63970**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/10/2010**	SeqNo: **1932552**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.529	0.25	2.500	1.662	155	70	130				S

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111240
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **111240-085A-MSD** SampType: **MSD** TestCode: **7420_TC** Units: **mg/L** Prep Date: **5/7/2010** RunNo: **121003**
Client ID: **B1-0** Batch ID: **63970** TestNo: **EPA 1311/ 74 EPA3010A** Analysis Date: **5/10/2010** SeqNo: **1932553**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.558	0.25	2.500	1.662	156	70	130	5.529	0.534	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

May 04, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111422

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 23, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I-580 WB HOV Lanes, E8474-06-01
Lab Order: 111422

CASE NARRATIVE

Analytical Comments for Method 6010

Matrix Spike (MS) and /or Matrix Spike Duplicate (MSD) are/is outside recovery criteria for samples 111457-001AMS and 111457-001AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

RPD for Duplicate (DUP) is outside criteria for sample 111422-020CDUP; however, the Laboratory Control Sample (LCS) validated the analytical batch.

Analytical Comments for Method 8015 (DRO/ORO)

Dilution was necessary for samples 111422-001A, 111422-003A, 111422-004A, 111422-005A, 111422-018A and 111422-019A, due to sample matrix.

Surrogate recovery was diluted out for samples 111422-003A, 111422-004A, 111422-005A, 111422-018A and 111422-019A.

RPD for Duplicate (DUP) is outside criteria for sample 111422-002ADUP; however, the Laboratory Control Sample (LCS) validated the analytical batch.

Analytical Comments for Method 8021

Matrix Spike (MS) and /or Matrix Spike Duplicate (MSD) are/is outside recovery criteria for sample 111422-008AMS; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

RPD for Matrix Spike (MS)/Matrix Spike Duplicate (MSD) is outside criteria for sample 111422-008AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW15-0
Lab Order:	111422	**Collection Date:**	4/22/2010 9:00:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-001		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100429D	QC Batch: 63719			PrepDate: 4/28/2010		Analyst: **CL**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:16 PM
Arsenic	3.6	1.0		mg/Kg	1	4/29/2010 05:16 PM
Barium	210	1.0		mg/Kg	1	4/29/2010 05:16 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:16 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:16 PM
Chromium	21	1.0		mg/Kg	1	4/29/2010 05:16 PM
Cobalt	8.1	1.0		mg/Kg	1	4/29/2010 05:16 PM
Copper	9.8	2.0		mg/Kg	1	4/29/2010 05:16 PM
Lead	11	1.0		mg/Kg	1	4/29/2010 05:16 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 05:16 PM
Nickel	30	1.0		mg/Kg	1	4/29/2010 05:16 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:16 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:16 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:16 PM
Vanadium	31	1.0		mg/Kg	1	4/29/2010 05:16 PM
Zinc	25	1.0		mg/Kg	1	4/29/2010 05:16 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC16_100428B	QC Batch: 63728			PrepDate: 4/28/2010		Analyst: **CBR**
DRO	24	2.0		mg/Kg	2	4/28/2010 06:12 PM
ORO	80	2.0		mg/Kg	2	4/28/2010 06:12 PM
Surr: p-Terphenyl	67.3	30-128		%REC	2	4/28/2010 06:12 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429A	QC Batch: 63722			PrepDate: 4/28/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 10:31 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111422-002

Client Sample ID: RW14-0
Collection Date: 4/22/2010 9:55:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100429D	QC Batch: 63719			PrepDate:	4/28/2010	Analyst: **CL**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:19 PM
Arsenic	1.2	1.0		mg/Kg	1	4/29/2010 05:19 PM
Barium	95	1.0		mg/Kg	1	4/29/2010 05:19 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:19 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:19 PM
Chromium	16	1.0		mg/Kg	1	4/29/2010 05:19 PM
Cobalt	6.6	1.0		mg/Kg	1	4/29/2010 05:19 PM
Copper	16	2.0		mg/Kg	1	4/29/2010 05:19 PM
Lead	12	1.0		mg/Kg	1	4/29/2010 05:19 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 05:19 PM
Nickel	27	1.0		mg/Kg	1	4/29/2010 05:19 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:19 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:19 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:19 PM
Vanadium	23	1.0		mg/Kg	1	4/29/2010 05:19 PM
Zinc	31	1.0		mg/Kg	1	4/29/2010 05:19 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC16_100428B	QC Batch: 63728			PrepDate:	4/28/2010	Analyst: **CBR**
DRO	5.9	1.0		mg/Kg	1	4/28/2010 04:42 PM
ORO	3.4	1.0		mg/Kg	1	4/28/2010 04:42 PM
Surr: p-Terphenyl	109	30-128		%REC	1	4/28/2010 04:42 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429A	QC Batch: 63722			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 10:33 AM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW13-0
Lab Order:	111422	**Collection Date:**	4/22/2010 10:05:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-003		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP8_100429D	QC Batch: 63719			PrepDate:	4/28/2010	Analyst: **CL**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:23 PM
Arsenic	ND	1.0		mg/Kg	1	4/29/2010 05:23 PM
Barium	120	1.0		mg/Kg	1	4/29/2010 05:23 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:23 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:23 PM
Chromium	32	1.0		mg/Kg	1	4/29/2010 05:23 PM
Cobalt	6.6	1.0		mg/Kg	1	4/29/2010 05:23 PM
Copper	52	2.0		mg/Kg	1	4/29/2010 05:23 PM
Lead	37	1.0		mg/Kg	1	4/29/2010 05:23 PM
Molybdenum	3.8	1.0		mg/Kg	1	4/29/2010 05:23 PM
Nickel	36	1.0		mg/Kg	1	4/29/2010 05:23 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:23 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:23 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:23 PM
Vanadium	24	1.0		mg/Kg	1	4/29/2010 05:23 PM
Zinc	180	1.0		mg/Kg	1	4/29/2010 05:23 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
EPA 3550B				**EPA 8015B(M)**		
RunID: GC16_100428B	QC Batch: 63728			PrepDate:	4/28/2010	Analyst: **CBR**
DRO	120	20		mg/Kg	10	4/28/2010 05:10 PM
ORO	420	20		mg/Kg	10	4/28/2010 05:10 PM
Surr: p-Terphenyl	0	30-128	SDO	%REC	10	4/28/2010 05:10 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429A	QC Batch: 63722			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 10:35 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111422-004

Client Sample ID: RW12-0
Collection Date: 4/22/2010 10:15:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100429D	QC Batch: 63719			PrepDate:	4/28/2010	Analyst: **CL**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:26 PM
Arsenic	1.6	1.0		mg/Kg	1	4/29/2010 05:26 PM
Barium	120	1.0		mg/Kg	1	4/29/2010 05:26 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:26 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:26 PM
Chromium	22	1.0		mg/Kg	1	4/29/2010 05:26 PM
Cobalt	5.5	1.0		mg/Kg	1	4/29/2010 05:26 PM
Copper	53	2.0		mg/Kg	1	4/29/2010 05:26 PM
Lead	45	1.0		mg/Kg	1	4/29/2010 05:26 PM
Molybdenum	2.4	1.0		mg/Kg	1	4/29/2010 05:26 PM
Nickel	37	1.0		mg/Kg	1	4/29/2010 05:26 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:26 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:26 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:26 PM
Vanadium	21	1.0		mg/Kg	1	4/29/2010 05:26 PM
Zinc	150	1.0		mg/Kg	1	4/29/2010 05:26 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC16_100428B	QC Batch: 63728			PrepDate:	4/28/2010	Analyst: **CBR**
DRO	140	20		mg/Kg	10	4/28/2010 05:21 PM
ORO	500	20		mg/Kg	10	4/28/2010 05:21 PM
Surr: p-Terphenyl	0	30-128	SDO	%REC	10	4/28/2010 05:21 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429A	QC Batch: 63722			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	0.10	0.10		mg/Kg	1	4/29/2010 10:42 AM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW11-0
Lab Order:	111422	**Collection Date:**	4/22/2010 10:30:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-005		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP8_100429D	QC Batch: 63719			PrepDate:	4/28/2010	Analyst: **CL**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:30 PM
Arsenic	1.4	1.0		mg/Kg	1	4/29/2010 05:30 PM
Barium	130	1.0		mg/Kg	1	4/29/2010 05:30 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:30 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:30 PM
Chromium	25	1.0		mg/Kg	1	4/29/2010 05:30 PM
Cobalt	5.9	1.0		mg/Kg	1	4/29/2010 05:30 PM
Copper	27	2.0		mg/Kg	1	4/29/2010 05:30 PM
Lead	20	1.0		mg/Kg	1	4/29/2010 05:30 PM
Molybdenum	2.3	1.0		mg/Kg	1	4/29/2010 05:30 PM
Nickel	36	1.0		mg/Kg	1	4/29/2010 05:30 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:30 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:30 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:30 PM
Vanadium	22	1.0		mg/Kg	1	4/29/2010 05:30 PM
Zinc	160	1.0		mg/Kg	1	4/29/2010 05:30 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
EPA 3550B				**EPA 8015B(M)**		
RunID: GC16_100428B	QC Batch: 63728			PrepDate:	4/28/2010	Analyst: **CBR**
DRO	220	20		mg/Kg	10	4/28/2010 05:32 PM
ORO	740	20		mg/Kg	10	4/28/2010 05:32 PM
Surr: p-Terphenyl	0	30-128	SDO	%REC	10	4/28/2010 05:32 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429A	QC Batch: 63722			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 10:44 AM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW10-0
Lab Order:	111422	**Collection Date:**	4/22/2010 10:40:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-006		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP8_100429D	QC Batch: 63719			PrepDate: 4/28/2010		Analyst: **CL**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:33 PM
Arsenic	ND	1.0		mg/Kg	1	4/29/2010 05:33 PM
Barium	82	1.0		mg/Kg	1	4/29/2010 05:33 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:33 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:33 PM
Chromium	18	1.0		mg/Kg	1	4/29/2010 05:33 PM
Cobalt	5.2	1.0		mg/Kg	1	4/29/2010 05:33 PM
Copper	14	2.0		mg/Kg	1	4/29/2010 05:33 PM
Lead	4.1	1.0		mg/Kg	1	4/29/2010 05:33 PM
Molybdenum	1.4	1.0		mg/Kg	1	4/29/2010 05:33 PM
Nickel	34	1.0		mg/Kg	1	4/29/2010 05:33 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:33 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:33 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:33 PM
Vanadium	20	1.0		mg/Kg	1	4/29/2010 05:33 PM
Zinc	25	1.0		mg/Kg	1	4/29/2010 05:33 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
EPA 3550B				**EPA 8015B(M)**		
RunID: GC16_100428B	QC Batch: 63728			PrepDate: 4/28/2010		Analyst: **CBR**
DRO	5.0	1.0		mg/Kg	1	4/28/2010 04:03 PM
ORO	ND	1.0		mg/Kg	1	4/28/2010 04:03 PM
Surr: p-Terphenyl	125	30-128		%REC	1	4/28/2010 04:03 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429A	QC Batch: 63722			PrepDate: 4/28/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 10:46 AM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW9-0
Lab Order:	111422	**Collection Date:**	4/22/2010 11:00:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-007		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100429D	QC Batch: 63719			PrepDate: 4/28/2010		Analyst: **CL**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:37 PM
Arsenic	1.7	1.0		mg/Kg	1	4/29/2010 05:37 PM
Barium	160	1.0		mg/Kg	1	4/29/2010 05:37 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:37 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:37 PM
Chromium	28	1.0		mg/Kg	1	4/29/2010 05:37 PM
Cobalt	12	1.0		mg/Kg	1	4/29/2010 05:37 PM
Copper	15	2.0		mg/Kg	1	4/29/2010 05:37 PM
Lead	12	1.0		mg/Kg	1	4/29/2010 05:37 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 05:37 PM
Nickel	54	1.0		mg/Kg	1	4/29/2010 05:37 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:37 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:37 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:37 PM
Vanadium	25	1.0		mg/Kg	1	4/29/2010 05:37 PM
Zinc	190	1.0		mg/Kg	1	4/29/2010 05:37 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC16_100428B	QC Batch: 63728			PrepDate: 4/28/2010		Analyst: **CBR**
DRO	10	1.0		mg/Kg	1	4/28/2010 04:52 PM
ORO	25	1.0		mg/Kg	1	4/28/2010 04:52 PM
Surr: p-Terphenyl	65.7	30-128		%REC	1	4/28/2010 04:52 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429A	QC Batch: 63722			PrepDate: 4/28/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 10:48 AM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW15-4
Lab Order:	111422	**Collection Date:**	4/22/2010 9:00:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-008		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP8_100429D	QC Batch: 63719			PrepDate: 4/28/2010		Analyst: **CL**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:51 PM
Arsenic	2.1	1.0		mg/Kg	1	4/29/2010 05:51 PM
Barium	130	1.0		mg/Kg	1	4/29/2010 05:51 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:51 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:51 PM
Chromium	30	1.0		mg/Kg	1	4/29/2010 05:51 PM
Cobalt	8.2	1.0		mg/Kg	1	4/29/2010 05:51 PM
Copper	13	2.0		mg/Kg	1	4/29/2010 05:51 PM
Lead	5.5	1.0		mg/Kg	1	4/29/2010 05:51 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 05:51 PM
Nickel	40	1.0		mg/Kg	1	4/29/2010 05:51 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:51 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:51 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:51 PM
Vanadium	28	1.0		mg/Kg	1	4/29/2010 05:51 PM
Zinc	33	1.0		mg/Kg	1	4/29/2010 05:51 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100429C	QC Batch: E10VS109			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 01:13 AM
Surr: Bromofluorobenzene (FID)	117	56-137		%REC	1	4/30/2010 01:13 AM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100429C	QC Batch: E10VS109			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 01:13 AM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 01:13 AM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 01:13 AM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 01:13 AM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 01:13 AM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 01:13 AM
Surr: Bromofluorobenzene (PID)	103	64-116		%REC	1	4/30/2010 01:13 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429A	QC Batch: 63722			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW15-4
Lab Order:	111422	**Collection Date:**	4/22/2010 9:00:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-008		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
		EPA 7471A				
RunID: AA1_100429A	QC Batch: 63722			PrepDate: 4/28/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 10:50 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW14-4
Lab Order:	111422	**Collection Date:**	4/22/2010 9:55:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-009		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP8_100429D	QC Batch: 63719			PrepDate: 4/28/2010		Analyst: **CL**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:54 PM
Arsenic	5.5	1.0		mg/Kg	1	4/29/2010 05:54 PM
Barium	320	1.0		mg/Kg	1	4/29/2010 05:54 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:54 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:54 PM
Chromium	23	1.0		mg/Kg	1	4/29/2010 05:54 PM
Cobalt	9.5	1.0		mg/Kg	1	4/29/2010 05:54 PM
Copper	14	2.0		mg/Kg	1	4/29/2010 05:54 PM
Lead	15	1.0		mg/Kg	1	4/29/2010 05:54 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 05:54 PM
Nickel	31	1.0		mg/Kg	1	4/29/2010 05:54 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:54 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:54 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:54 PM
Vanadium	27	1.0		mg/Kg	1	4/29/2010 05:54 PM
Zinc	33	1.0		mg/Kg	1	4/29/2010 05:54 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100429C	QC Batch: E10VS109			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 01:42 AM
Surr: Bromofluorobenzene (FID)	112	56-137		%REC	1	4/30/2010 01:42 AM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100429C	QC Batch: E10VS109			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 01:42 AM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 01:42 AM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 01:42 AM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 01:42 AM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 01:42 AM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 01:42 AM
Surr: Bromofluorobenzene (PID)	98.4	64-116		%REC	1	4/30/2010 01:42 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429A	QC Batch: 63722			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW14-4
Lab Order:	111422	**Collection Date:**	4/22/2010 9:55:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-009		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
	EPA 7471A					
RunID: AA1_100429A	QC Batch: 63722			PrepDate: 4/28/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 10:52 AM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW13-4
Lab Order:	111422	**Collection Date:**	4/22/2010 10:05:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-010		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP8_100429D	QC Batch: 63719			PrepDate: 4/28/2010		Analyst: **CL**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:57 PM
Arsenic	ND	1.0		mg/Kg	1	4/29/2010 05:57 PM
Barium	93	1.0		mg/Kg	1	4/29/2010 05:57 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:57 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:57 PM
Chromium	44	1.0		mg/Kg	1	4/29/2010 05:57 PM
Cobalt	7.8	1.0		mg/Kg	1	4/29/2010 05:57 PM
Copper	12	2.0		mg/Kg	1	4/29/2010 05:57 PM
Lead	4.3	1.0		mg/Kg	1	4/29/2010 05:57 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 05:57 PM
Nickel	52	1.0		mg/Kg	1	4/29/2010 05:57 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:57 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:57 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:57 PM
Vanadium	20	1.0		mg/Kg	1	4/29/2010 05:57 PM
Zinc	32	1.0		mg/Kg	1	4/29/2010 05:57 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100429C	QC Batch: E10VS109			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 01:57 AM
Surr: Bromofluorobenzene (FID)	121	56-137		%REC	1	4/30/2010 01:57 AM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100429C	QC Batch: E10VS109			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 01:57 AM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 01:57 AM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 01:57 AM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 01:57 AM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 01:57 AM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 01:57 AM
Surr: Bromofluorobenzene (PID)	106	64-116		%REC	1	4/30/2010 01:57 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429A	QC Batch: 63722			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW13-4
Lab Order:	111422	**Collection Date:**	4/22/2010 10:05:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-010		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
	EPA 7471A					
RunID: AA1_100429A	QC Batch: 63722			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 10:27 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111422-011

Client Sample ID: RW12-4
Collection Date: 4/22/2010 10:15:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B / **EPA 6010B**						
RunID: ICP8_100429B	QC Batch: 63720			PrepDate: 4/28/2010		Analyst: **CL**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 01:46 PM
Arsenic	7.0	1.0		mg/Kg	1	4/29/2010 01:46 PM
Barium	57	1.0		mg/Kg	1	4/29/2010 01:46 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 01:46 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 01:46 PM
Chromium	14	1.0		mg/Kg	1	4/29/2010 01:46 PM
Cobalt	4.8	1.0		mg/Kg	1	4/29/2010 01:46 PM
Copper	6.3	2.0		mg/Kg	1	4/29/2010 01:46 PM
Lead	2.2	1.0		mg/Kg	1	4/29/2010 01:46 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 01:46 PM
Nickel	30	1.0		mg/Kg	1	4/29/2010 01:46 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 01:46 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 01:46 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 01:46 PM
Vanadium	12	1.0		mg/Kg	1	4/29/2010 01:46 PM
Zinc	18	1.0		mg/Kg	1	4/29/2010 01:46 PM
GASOLINE RANGE ORGANICS BY GC/FID						
EPA 8015B(M)						
RunID: GC2_100429C	QC Batch: E10VS109			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 02:12 AM
Surr: Bromofluorobenzene (FID)	117	56-137		%REC	1	4/30/2010 02:12 AM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
EPA 8021B						
RunID: GC2_100429C	QC Batch: E10VS109			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 02:12 AM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 02:12 AM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 02:12 AM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 02:12 AM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 02:12 AM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 02:12 AM
Surr: Bromofluorobenzene (PID)	103	64-116		%REC	1	4/30/2010 02:12 AM
MERCURY BY COLD VAPOR TECHNIQUE						
EPA 7471A						
RunID: AA1_100429B	QC Batch: 63723			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference
DO Surrogate Diluted Out
E Value above quantitation range
ND Not Detected at the Reporting Limit
Results are wet unless otherwise specified

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW12-4
Lab Order:	111422	**Collection Date:**	4/22/2010 10:15:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-011		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
		EPA 7471A				
RunID: AA1_100429B	QC Batch: 63723			PrepDate: 4/28/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 11:11 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111422-012

Client Sample ID: RW11-4
Collection Date: 4/22/2010 10:30:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B / **EPA 6010B**						
RunID: ICP8_100429B	QC Batch: 63720			PrepDate: 4/28/2010		Analyst: **CL**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 01:51 PM
Arsenic	7.3	1.0		mg/Kg	1	4/29/2010 01:51 PM
Barium	100	1.0		mg/Kg	1	4/29/2010 01:51 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 01:51 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 01:51 PM
Chromium	21	1.0		mg/Kg	1	4/29/2010 01:51 PM
Cobalt	6.8	1.0		mg/Kg	1	4/29/2010 01:51 PM
Copper	9.7	2.0		mg/Kg	1	4/29/2010 01:51 PM
Lead	2.0	1.0		mg/Kg	1	4/29/2010 01:51 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 01:51 PM
Nickel	93	1.0		mg/Kg	1	4/29/2010 01:51 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 01:51 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 01:51 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 01:51 PM
Vanadium	13	1.0		mg/Kg	1	4/29/2010 01:51 PM
Zinc	15	1.0		mg/Kg	1	4/29/2010 01:51 PM
GASOLINE RANGE ORGANICS BY GC/FID						
EPA 8015B(M)						
RunID: GC2_100429C	QC Batch: E10VS109			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 02:26 AM
Surr: Bromofluorobenzene (FID)	115	56-137		%REC	1	4/30/2010 02:26 AM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
EPA 8021B						
RunID: GC2_100429C	QC Batch: E10VS109			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 02:26 AM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 02:26 AM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 02:26 AM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 02:26 AM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 02:26 AM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 02:26 AM
Surr: Bromofluorobenzene (PID)	101	64-116		%REC	1	4/30/2010 02:26 AM
MERCURY BY COLD VAPOR TECHNIQUE						
EPA 7471A						
RunID: AA1_100429B	QC Batch: 63723			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

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CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW11-4
Lab Order:	111422	**Collection Date:**	4/22/2010 10:30:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-012		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
		EPA 7471A				
RunID: AA1_100429B	QC Batch: 63723			PrepDate: 4/28/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 11:15 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111422-013

Client Sample ID: RW10-4
Collection Date: 4/22/2010 10:40:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B / **EPA 6010B**						
RunID: ICP8_100429B	QC Batch: 63720			PrepDate: 4/28/2010		Analyst: **CL**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 01:55 PM
Arsenic	2.6	1.0		mg/Kg	1	4/29/2010 01:55 PM
Barium	150	1.0		mg/Kg	1	4/29/2010 01:55 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 01:55 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 01:55 PM
Chromium	25	1.0		mg/Kg	1	4/29/2010 01:55 PM
Cobalt	6.9	1.0		mg/Kg	1	4/29/2010 01:55 PM
Copper	10	2.0		mg/Kg	1	4/29/2010 01:55 PM
Lead	5.7	1.0		mg/Kg	1	4/29/2010 01:55 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 01:55 PM
Nickel	30	1.0		mg/Kg	1	4/29/2010 01:55 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 01:55 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 01:55 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 01:55 PM
Vanadium	27	1.0		mg/Kg	1	4/29/2010 01:55 PM
Zinc	24	1.0		mg/Kg	1	4/29/2010 01:55 PM
GASOLINE RANGE ORGANICS BY GC/FID						
EPA 8015B(M)						
RunID: GC2_100429C	QC Batch: E10VS109			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 02:41 AM
Surr: Bromofluorobenzene (FID)	119	56-137		%REC	1	4/30/2010 02:41 AM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
EPA 8021B						
RunID: GC2_100429C	QC Batch: E10VS109			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 02:41 AM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 02:41 AM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 02:41 AM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 02:41 AM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 02:41 AM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 02:41 AM
Surr: Bromofluorobenzene (PID)	105	64-116		%REC	1	4/30/2010 02:41 AM
MERCURY BY COLD VAPOR TECHNIQUE						
EPA 7471A						
RunID: AA1_100429B	QC Batch: 63723			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW10-4
Lab Order:	111422	**Collection Date:**	4/22/2010 10:40:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-013		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
	EPA 7471A					
RunID: AA1_100429B	QC Batch: 63723			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 11:17 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW9-4
Lab Order:	111422	**Collection Date:**	4/22/2010 11:00:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-014		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B / **EPA 6010B**						
RunID: ICP8_100429B	QC Batch: 63720			PrepDate: 4/28/2010		Analyst: **CL**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 02:00 PM
Arsenic	4.6	1.0		mg/Kg	1	4/29/2010 02:00 PM
Barium	250	1.0		mg/Kg	1	4/29/2010 02:00 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 02:00 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 02:00 PM
Chromium	20	1.0		mg/Kg	1	4/29/2010 02:00 PM
Cobalt	6.1	1.0		mg/Kg	1	4/29/2010 02:00 PM
Copper	8.5	2.0		mg/Kg	1	4/29/2010 02:00 PM
Lead	3.0	1.0		mg/Kg	1	4/29/2010 02:00 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 02:00 PM
Nickel	26	1.0		mg/Kg	1	4/29/2010 02:00 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 02:00 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 02:00 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 02:00 PM
Vanadium	29	1.0		mg/Kg	1	4/29/2010 02:00 PM
Zinc	20	1.0		mg/Kg	1	4/29/2010 02:00 PM
GASOLINE RANGE ORGANICS BY GC/FID						
EPA 8015B(M)						
RunID: GC2_100429C	QC Batch: E10VS109			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 02:56 AM
Surr: Bromofluorobenzene (FID)	116	56-137		%REC	1	4/30/2010 02:56 AM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
EPA 8021B						
RunID: GC2_100429C	QC Batch: E10VS109			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 02:56 AM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 02:56 AM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 02:56 AM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 02:56 AM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 02:56 AM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 02:56 AM
Surr: Bromofluorobenzene (PID)	101	64-116		%REC	1	4/30/2010 02:56 AM
MERCURY BY COLD VAPOR TECHNIQUE						
EPA 7471A						
RunID: AA1_100429B	QC Batch: 63723			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW9-4
Lab Order:	111422	**Collection Date:**	4/22/2010 11:00:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-014		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
		EPA 7471A				
RunID: AA1_100429B	QC Batch: 63723			PrepDate: 4/28/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 11:19 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	SS1-4
Lab Order:	111422	**Collection Date:**	4/22/2010 1:00:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-015		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP8_100429B	QC Batch: 63720			PrepDate: 4/28/2010		Analyst: **CL**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 02:03 PM
Arsenic	3.4	1.0		mg/Kg	1	4/29/2010 02:03 PM
Barium	95	1.0		mg/Kg	1	4/29/2010 02:03 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 02:03 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 02:03 PM
Chromium	28	1.0		mg/Kg	1	4/29/2010 02:03 PM
Cobalt	9.1	1.0		mg/Kg	1	4/29/2010 02:03 PM
Copper	15	2.0		mg/Kg	1	4/29/2010 02:03 PM
Lead	5.8	1.0		mg/Kg	1	4/29/2010 02:03 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 02:03 PM
Nickel	38	1.0		mg/Kg	1	4/29/2010 02:03 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 02:03 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 02:03 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 02:03 PM
Vanadium	32	1.0		mg/Kg	1	4/29/2010 02:03 PM
Zinc	32	1.0		mg/Kg	1	4/29/2010 02:03 PM
GASOLINE RANGE ORGANICS BY GC/FID						
EPA 8015B(M)						
RunID: GC2_100429C	QC Batch: E10VS109			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 03:11 AM
Surr: Bromofluorobenzene (FID)	118	56-137		%REC	1	4/30/2010 03:11 AM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
EPA 8021B						
RunID: GC2_100429C	QC Batch: E10VS109			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 03:11 AM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 03:11 AM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 03:11 AM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 03:11 AM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 03:11 AM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 03:11 AM
Surr: Bromofluorobenzene (PID)	103	64-116		%REC	1	4/30/2010 03:11 AM
MERCURY BY COLD VAPOR TECHNIQUE						
EPA 7471A						
RunID: AA1_100429B	QC Batch: 63723			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

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CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	SS1-4
Lab Order:	111422	**Collection Date:**	4/22/2010 1:00:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-015		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
	EPA 7471A					
RunID: AA1_100429B	QC Batch: 63723			PrepDate: 4/28/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/29/2010 11:21 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111422-016

Client Sample ID: RW28-4
Collection Date: 4/22/2010 2:30:00 PM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100429B	QC Batch: 63720			PrepDate: 4/28/2010		Analyst: **CL**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 02:39 PM
Arsenic	5.1	1.0		mg/Kg	1	4/29/2010 02:39 PM
Barium	290	1.0		mg/Kg	1	4/29/2010 02:39 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 02:39 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 02:39 PM
Chromium	16	1.0		mg/Kg	1	4/29/2010 02:39 PM
Cobalt	7.8	1.0		mg/Kg	1	4/29/2010 02:39 PM
Copper	14	2.0		mg/Kg	1	4/29/2010 02:39 PM
Lead	5.1	1.0		mg/Kg	1	4/29/2010 02:39 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 02:39 PM
Nickel	23	1.0		mg/Kg	1	4/29/2010 02:39 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 02:39 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 02:39 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 02:39 PM
Vanadium	30	1.0		mg/Kg	1	4/29/2010 02:39 PM
Zinc	31	1.0		mg/Kg	1	4/29/2010 02:39 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100429C	QC Batch: E10VS109			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 03:25 AM
Surr: Bromofluorobenzene (FID)	117	56-137		%REC	1	4/30/2010 03:25 AM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100429C	QC Batch: E10VS109			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 03:25 AM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 03:25 AM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 03:25 AM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 03:25 AM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 03:25 AM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 03:25 AM
Surr: Bromofluorobenzene (PID)	102	64-116		%REC	1	4/30/2010 03:25 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429B	QC Batch: 63723			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW28-4
Lab Order:	111422	**Collection Date:**	4/22/2010 2:30:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-016		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
		EPA 7471A				
RunID: AA1_100429B	QC Batch: 63723			PrepDate: 4/28/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 11:23 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111422-017

Client Sample ID: RW27-4
Collection Date: 4/22/2010 3:45:00 PM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100429B	QC Batch: 63720			PrepDate: 4/28/2010		Analyst: **CL**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 02:43 PM
Arsenic	ND	1.0		mg/Kg	1	4/29/2010 02:43 PM
Barium	130	1.0		mg/Kg	1	4/29/2010 02:43 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 02:43 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 02:43 PM
Chromium	48	1.0		mg/Kg	1	4/29/2010 02:43 PM
Cobalt	9.3	1.0		mg/Kg	1	4/29/2010 02:43 PM
Copper	14	2.0		mg/Kg	1	4/29/2010 02:43 PM
Lead	4.0	1.0		mg/Kg	1	4/29/2010 02:43 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 02:43 PM
Nickel	56	1.0		mg/Kg	1	4/29/2010 02:43 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 02:43 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 02:43 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 02:43 PM
Vanadium	22	1.0		mg/Kg	1	4/29/2010 02:43 PM
Zinc	28	1.0		mg/Kg	1	4/29/2010 02:43 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100429C	QC Batch: E10VS109			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 03:40 AM
Surr: Bromofluorobenzene (FID)	121	56-137		%REC	1	4/30/2010 03:40 AM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100429C	QC Batch: E10VS109			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 03:40 AM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 03:40 AM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 03:40 AM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 03:40 AM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 03:40 AM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 03:40 AM
Surr: Bromofluorobenzene (PID)	106	64-116		%REC	1	4/30/2010 03:40 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429B	QC Batch: 63723			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW27-4
Lab Order:	111422	**Collection Date:**	4/22/2010 3:45:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-017		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
		EPA 7471A				
RunID: AA1_100429B	QC Batch: 63723			PrepDate: 4/28/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 11:25 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW-28-0
Lab Order:	111422	**Collection Date:**	4/22/2010 2:30:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111422-018		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100429B	QC Batch: 63720			PrepDate:	4/28/2010	Analyst: **CL**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 02:47 PM
Arsenic	ND	1.0		mg/Kg	1	4/29/2010 02:47 PM
Barium	120	1.0		mg/Kg	1	4/29/2010 02:47 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 02:47 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 02:47 PM
Chromium	23	1.0		mg/Kg	1	4/29/2010 02:47 PM
Cobalt	6.7	1.0		mg/Kg	1	4/29/2010 02:47 PM
Copper	19	2.0		mg/Kg	1	4/29/2010 02:47 PM
Lead	10	1.0		mg/Kg	1	4/29/2010 02:47 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 02:47 PM
Nickel	36	1.0		mg/Kg	1	4/29/2010 02:47 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 02:47 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 02:47 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 02:47 PM
Vanadium	21	1.0		mg/Kg	1	4/29/2010 02:47 PM
Zinc	77	1.0		mg/Kg	1	4/29/2010 02:47 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC16_100428B	QC Batch: 63728			PrepDate:	4/28/2010	Analyst: **CBR**
DRO	220	40		mg/Kg	20	4/28/2010 05:41 PM
ORO	730	40		mg/Kg	20	4/28/2010 05:41 PM
Surr: p-Terphenyl	0	30-128	SDO	%REC	20	4/28/2010 05:41 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429B	QC Batch: 63723			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 11:31 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111422-019

Client Sample ID: RW-27-0
Collection Date: 4/22/2010 3:45:00 PM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100429B	QC Batch: 63720			PrepDate:	4/28/2010	Analyst: **CL**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 02:50 PM
Arsenic	1.8	1.0		mg/Kg	1	4/29/2010 02:50 PM
Barium	73	1.0		mg/Kg	1	4/29/2010 02:50 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 02:50 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 02:50 PM
Chromium	16	1.0		mg/Kg	1	4/29/2010 02:50 PM
Cobalt	4.7	1.0		mg/Kg	1	4/29/2010 02:50 PM
Copper	13	2.0		mg/Kg	1	4/29/2010 02:50 PM
Lead	48	1.0		mg/Kg	1	4/29/2010 02:50 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 02:50 PM
Nickel	29	1.0		mg/Kg	1	4/29/2010 02:50 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 02:50 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 02:50 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 02:50 PM
Vanadium	22	1.0		mg/Kg	1	4/29/2010 02:50 PM
Zinc	26	1.0		mg/Kg	1	4/29/2010 02:50 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC16_100428B	QC Batch: 63728			PrepDate:	4/28/2010	Analyst: **CBR**
DRO	1900	120		mg/Kg	20	4/28/2010 05:51 PM
ORO	6100	120		mg/Kg	20	4/28/2010 05:51 PM
Surr: p-Terphenyl	0	30-128	SDO	%REC	20	4/28/2010 05:51 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429B	QC Batch: 63723			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 11:33 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111422-020

Client Sample ID: SS1-GW
Collection Date: 4/22/2010 9:15:00 AM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3010A			**EPA 6010B**		
RunID: ICP8_100427A	QC Batch: 63674			PrepDate: 4/26/2010		Analyst: **CL**
Antimony	0.025	0.0050		mg/L	1	4/27/2010 06:09 PM
Arsenic	0.091	0.010		mg/L	1	4/27/2010 06:09 PM
Barium	9.5	0.0030		mg/L	1	4/27/2010 06:09 PM
Beryllium	0.0044	0.0030		mg/L	1	4/27/2010 06:09 PM
Cadmium	0.013	0.0030		mg/L	1	4/27/2010 06:09 PM
Chromium	1.3	0.0030		mg/L	1	4/27/2010 06:09 PM
Cobalt	0.34	0.0030		mg/L	1	4/27/2010 06:09 PM
Copper	0.70	0.0050		mg/L	1	4/27/2010 06:09 PM
Lead	0.20	0.0050		mg/L	1	4/27/2010 06:09 PM
Molybdenum	0.029	0.0050		mg/L	1	4/27/2010 06:09 PM
Nickel	1.3	0.0050		mg/L	1	4/27/2010 06:09 PM
Selenium	0.021	0.010		mg/L	1	4/27/2010 06:09 PM
Silver	ND	0.0030		mg/L	1	4/27/2010 06:09 PM
Thallium	ND	0.015		mg/L	1	4/27/2010 06:09 PM
Vanadium	1.4	0.0030		mg/L	1	4/27/2010 06:09 PM
Zinc	1.9	0.010		mg/L	1	4/27/2010 06:09 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3510C			**EPA 8015B(M)**		
RunID: GC16_100427A	QC Batch: 63656			PrepDate: 4/26/2010		Analyst: **CBR**
DRO	ND	0.062		mg/L	1	4/27/2010 11:19 AM
ORO	ND	0.062		mg/L	1	4/27/2010 11:19 AM
Surr: p-Terphenyl	106	36-126		%REC	1	4/27/2010 11:19 AM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
GRO	ND	0.050		mg/L	1	5/1/2010 12:55 PM
Surr: Bromofluorobenzene (FID)	102	70-130		%REC	1	5/1/2010 12:55 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
Benzene	ND	0.50		µg/L	1	5/1/2010 12:55 PM
Ethylbenzene	ND	0.50		µg/L	1	5/1/2010 12:55 PM
m,p-Xylene	ND	1.0		µg/L	1	5/1/2010 12:55 PM
Methyl tert-butyl ether	ND	0.50		µg/L	1	5/1/2010 12:55 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike/Surrogate outside of limits due to matrix interference
- Results are wet unless otherwise specified
- DO Surrogate Diluted Out

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	SS1-GW
Lab Order:	111422	**Collection Date:**	4/22/2010 9:15:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	GROUNDWATER
Lab ID:	111422-020		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
			EPA 8021B			
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
o-Xylene	ND	0.50		µg/L	1	5/1/2010 12:55 PM
Toluene	ND	0.50		µg/L	1	5/1/2010 12:55 PM
Surr: Bromofluorobenzene (PID)	92.3	70-130		%REC	1	5/1/2010 12:55 PM
MERCURY BY COLD VAPOR TECHNIQUE						
			EPA 7470A			
RunID: AA1_100427C	QC Batch: 63659			PrepDate:	4/27/2010	Analyst: **IL**
Mercury	2.3	0.20		µg/L	1	4/27/2010 03:39 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Lab Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111422-021

Client Sample ID: RW15-GW
Collection Date: 4/22/2010 1:30:00 PM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3010A			**EPA 6010B**		
RunID: ICP8_100427A	QC Batch: 63674			PrepDate: 4/26/2010		Analyst: **CL**
Antimony	0.025	0.0050		mg/L	1	4/27/2010 06:16 PM
Arsenic	0.38	0.010		mg/L	1	4/27/2010 06:16 PM
Barium	11	0.0030		mg/L	1	4/27/2010 06:16 PM
Beryllium	ND	0.0030		mg/L	1	4/27/2010 06:16 PM
Cadmium	0.016	0.0030		mg/L	1	4/27/2010 06:16 PM
Chromium	1.3	0.0030		mg/L	1	4/27/2010 06:16 PM
Cobalt	0.59	0.0030		mg/L	1	4/27/2010 06:16 PM
Copper	1.1	0.0050		mg/L	1	4/27/2010 06:16 PM
Lead	0.31	0.0050		mg/L	1	4/27/2010 06:16 PM
Molybdenum	0.10	0.0050		mg/L	1	4/27/2010 06:16 PM
Nickel	2.4	0.0050		mg/L	1	4/27/2010 06:16 PM
Selenium	0.018	0.010		mg/L	1	4/27/2010 06:16 PM
Silver	ND	0.0030		mg/L	1	4/27/2010 06:16 PM
Thallium	ND	0.015		mg/L	1	4/27/2010 06:16 PM
Vanadium	1.7	0.0030		mg/L	1	4/27/2010 06:16 PM
Zinc	4.6	0.010		mg/L	1	4/27/2010 06:16 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3510C			**EPA 8015B(M)**		
RunID: GC16_100427A	QC Batch: 63656			PrepDate: 4/26/2010		Analyst: **CBR**
DRO	0.19	0.077		mg/L	1	4/27/2010 12:59 PM
ORO	0.25	0.077		mg/L	1	4/27/2010 12:59 PM
Surr: p-Terphenyl	81.3	36-126		%REC	1	4/27/2010 12:59 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
GRO	ND	0.050		mg/L	1	5/1/2010 01:33 PM
Surr: Bromofluorobenzene (FID)	104	70-130		%REC	1	5/1/2010 01:33 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
Benzene	ND	0.50		µg/L	1	5/1/2010 01:33 PM
Ethylbenzene	ND	0.50		µg/L	1	5/1/2010 01:33 PM
m,p-Xylene	ND	1.0		µg/L	1	5/1/2010 01:33 PM
Methyl tert-butyl ether	ND	0.50		µg/L	1	5/1/2010 01:33 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW15-GW
Lab Order:	111422	**Collection Date:**	4/22/2010 1:30:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	GROUNDWATER
Lab ID:	111422-021		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
			EPA 8021B			
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
o-Xylene	ND	0.50		µg/L	1	5/1/2010 01:33 PM
Toluene	ND	0.50		µg/L	1	5/1/2010 01:33 PM
Surr: Bromofluorobenzene (PID)	93.6	70-130		%REC	1	5/1/2010 01:33 PM
MERCURY BY COLD VAPOR TECHNIQUE						
			EPA 7470A			
RunID: AA1_100427C	QC Batch: 63659			PrepDate:	4/27/2010	Analyst: **IL**
Mercury	9.7	0.20		µg/L	1	4/27/2010 03:44 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63719** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120726**
Client ID: **PBS** Batch ID: **63719** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926633**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	ND	1.0									
Selenium	ND	1.0									
Silver	0.017	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63719** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120726**
Client ID: **LCSS** Batch ID: **63719** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926634**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	43.543	2.0	50.00	0	87.1	80	120				
Arsenic	44.830	1.0	50.00	0	89.7	80	120				
Barium	46.105	1.0	50.00	0	92.2	80	120				
Beryllium	45.160	1.0	50.00	0	90.3	80	120				
Cadmium	45.750	1.0	50.00	0	91.5	80	120				
Chromium	45.439	1.0	50.00	0	90.9	80	120				
Cobalt	45.331	1.0	50.00	0	90.7	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63719**	SampType: **LCS**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120726**
Client ID: **LCSS**	Batch ID: **63719**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/29/2010**	SeqNo: **1926634**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	46.062	2.0	50.00	0	92.1	80	120				
Lead	45.957	1.0	50.00	0	91.9	80	120				
Molybdenum	46.152	1.0	50.00	0	92.3	80	120				
Nickel	44.212	1.0	50.00	0	88.4	80	120				
Selenium	41.462	1.0	50.00	0	82.9	80	120				
Silver	44.446	1.0	50.00	0.01733	88.9	80	120				
Thallium	45.904	1.0	50.00	0	91.8	80	120				
Vanadium	46.082	1.0	50.00	0	92.2	80	120				
Zinc	45.328	1.0	50.00	0	90.7	80	120				

Sample ID: **111422-010A-DUP**	SampType: **DUP**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120726**
Client ID: **RW13-4**	Batch ID: **63719**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/29/2010**	SeqNo: **1926645**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.628	2.0						0.5533	0	20	
Arsenic	ND	1.0						0	0	20	
Barium	89.934	1.0						92.64	2.97	20	
Beryllium	ND	1.0						0	0	20	
Cadmium	0.221	1.0						0.2136	0	20	
Chromium	43.759	1.0						43.54	0.513	20	
Cobalt	7.849	1.0						7.806	0.553	20	
Copper	11.206	2.0						11.67	4.04	20	
Lead	3.981	1.0						4.296	7.62	20	
Molybdenum	0.118	1.0						0.09870	0	20	
Nickel	51.713	1.0						51.80	0.163	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	20.198	1.0						20.27	0.345	20	
Zinc	31.993	1.0						32.27	0.851	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111422-010A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120726**
Client ID: **RW13-4** Batch ID: **63719** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926646**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	94.317	2.0	125.0	0.5533	75.0	32	105				
Arsenic	97.603	1.0	125.0	0	78.1	49	106				
Barium	192.120	1.0	125.0	92.64	79.6	31	133				
Beryllium	104.255	1.0	125.0	0	83.4	56	106				
Cadmium	97.923	1.0	125.0	0.2136	78.2	51	103				
Chromium	147.771	1.0	125.0	43.54	83.4	45	114				
Cobalt	103.701	1.0	125.0	7.806	76.7	52	106				
Copper	123.353	2.0	125.0	11.67	89.3	54	125				
Lead	103.756	1.0	125.0	4.296	79.6	34	126				
Molybdenum	101.469	1.0	125.0	0.09870	81.1	54	106				
Nickel	147.199	1.0	125.0	51.80	76.3	45	111				
Selenium	93.419	1.0	125.0	0	74.7	47	104				
Silver	103.968	1.0	125.0	0	83.2	56	112				
Thallium	98.673	1.0	125.0	0	78.9	46	101				
Vanadium	123.671	1.0	125.0	20.27	82.7	54	114				
Zinc	128.380	1.0	125.0	32.27	76.9	28	125				

Sample ID: **111422-010A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120726**
Client ID: **RW13-4** Batch ID: **63719** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926647**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	91.694	2.0	125.0	0.5533	72.9	32	105	94.32	2.82	20	
Arsenic	95.229	1.0	125.0	0	76.2	49	106	97.60	2.46	20	
Barium	185.039	1.0	125.0	92.64	73.9	31	133	192.1	3.75	20	
Beryllium	101.974	1.0	125.0	0	81.6	56	106	104.3	2.21	20	
Cadmium	97.101	1.0	125.0	0.2136	77.5	51	103	97.92	0.843	20	
Chromium	142.381	1.0	125.0	43.54	79.1	45	114	147.8	3.72	20	
Cobalt	102.731	1.0	125.0	7.806	75.9	52	106	103.7	0.940	20	
Copper	121.454	2.0	125.0	11.67	87.8	54	125	123.4	1.55	20	
Lead	100.058	1.0	125.0	4.296	76.6	34	126	103.8	3.63	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111422-010A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120726**
Client ID: **RW13-4** Batch ID: **63719** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926647**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	98.379	1.0	125.0	0.09870	78.6	54	106	101.5	3.09	20	
Nickel	143.887	1.0	125.0	51.80	73.7	45	111	147.2	2.28	20	
Selenium	89.969	1.0	125.0	0	72.0	47	104	93.42	3.76	20	
Silver	102.813	1.0	125.0	0	82.3	56	112	104.0	1.12	20	
Thallium	95.892	1.0	125.0	0	76.7	46	101	98.67	2.86	20	
Vanadium	121.707	1.0	125.0	20.27	81.2	54	114	123.7	1.60	20	
Zinc	126.595	1.0	125.0	32.27	75.5	28	125	128.4	1.40	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63720** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120696**
Client ID: **PBS** Batch ID: **63720** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926200**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	ND	1.0									
Selenium	ND	1.0									
Silver	0.027	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63720** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120696**
Client ID: **LCSS** Batch ID: **63720** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926201**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	44.137	2.0	50.00	0	88.3	80	120				
Arsenic	44.723	1.0	50.00	0	89.4	80	120				
Barium	47.004	1.0	50.00	0	94.0	80	120				
Beryllium	44.784	1.0	50.00	0	89.6	80	120				
Cadmium	44.742	1.0	50.00	0	89.5	80	120				
Chromium	46.233	1.0	50.00	0	92.5	80	120				
Cobalt	46.912	1.0	50.00	0	93.8	80	120				
Copper	46.584	2.0	50.00	0	93.2	80	120				
Lead	45.472	1.0	50.00	0	90.9	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63720**	SampType: **LCS**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120696**
Client ID: **LCSS**	Batch ID: **63720**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/29/2010**	SeqNo: **1926201**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	48.094	1.0	50.00	0	96.2	80	120				
Nickel	45.164	1.0	50.00	0	90.3	80	120				
Selenium	41.269	1.0	50.00	0	82.5	80	120				
Silver	45.644	1.0	50.00	0.02723	91.2	80	120				
Thallium	46.118	1.0	50.00	0	92.2	80	120				
Vanadium	46.790	1.0	50.00	0	93.6	80	120				
Zinc	43.800	1.0	50.00	0	87.6	80	120				

Sample ID: **111432-019A-DUP**	SampType: **DUP**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120696**
Client ID: **ZZZZZZ**	Batch ID: **63720**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/29/2010**	SeqNo: **1926203**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0						0	0	20	
Arsenic	ND	1.0						0	0	20	
Barium	38.731	1.0						37.63	2.88	20	
Beryllium	ND	1.0						0	0	20	
Cadmium	0.245	1.0						0.2094	0	20	
Chromium	10.906	1.0						9.724	11.5	20	
Cobalt	3.522	1.0						3.632	3.07	20	
Copper	4.266	2.0						3.651	15.6	20	
Lead	2.317	1.0						2.290	1.15	20	
Molybdenum	0.414	1.0						0.3914	0	20	
Nickel	7.134	1.0						6.456	9.97	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	14.648	1.0						13.26	9.95	20	
Zinc	17.130	1.0						15.33	11.1	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111432-019A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120696**
Client ID: **ZZZZZZ** Batch ID: **63720** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926204**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	88.930	2.0	125.0	0	71.1	32	105				
Arsenic	93.414	1.0	125.0	0	74.7	49	106				
Barium	134.329	1.0	125.0	37.63	77.4	31	133				
Beryllium	98.222	1.0	125.0	0	78.6	56	106				
Cadmium	92.026	1.0	125.0	0.2094	73.5	51	103				
Chromium	109.538	1.0	125.0	9.724	79.9	45	114				
Cobalt	99.111	1.0	125.0	3.632	76.4	52	106				
Copper	108.667	2.0	125.0	3.651	84.0	54	125				
Lead	95.453	1.0	125.0	2.290	74.5	34	126				
Molybdenum	98.378	1.0	125.0	0.3914	78.4	54	106				
Nickel	100.260	1.0	125.0	6.456	75.0	45	111				
Selenium	88.639	1.0	125.0	0	70.9	47	104				
Silver	100.165	1.0	125.0	0	80.1	56	112				
Thallium	93.897	1.0	125.0	0	75.1	46	101				
Vanadium	113.225	1.0	125.0	13.26	80.0	54	114				
Zinc	108.478	1.0	125.0	15.33	74.5	28	125				

Sample ID: **111432-019A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120696**
Client ID: **ZZZZZZ** Batch ID: **63720** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926205**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	88.908	2.0	125.0	0	71.1	32	105	88.93	0.0249	20	
Arsenic	93.231	1.0	125.0	0	74.6	49	106	93.41	0.197	20	
Barium	139.776	1.0	125.0	37.63	81.7	31	133	134.3	3.97	20	
Beryllium	98.493	1.0	125.0	0	78.8	56	106	98.22	0.276	20	
Cadmium	91.951	1.0	125.0	0.2094	73.4	51	103	92.03	0.0822	20	
Chromium	109.533	1.0	125.0	9.724	79.8	45	114	109.5	0.00496	20	
Cobalt	100.122	1.0	125.0	3.632	77.2	52	106	99.11	1.02	20	
Copper	108.828	2.0	125.0	3.651	84.1	54	125	108.7	0.148	20	
Lead	94.844	1.0	125.0	2.290	74.0	34	126	95.45	0.640	20	

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111432-019A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120696**
Client ID: **ZZZZZZ** Batch ID: **63720** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926205**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	97.897	1.0	125.0	0.3914	78.0	54	106	98.38	0.489	20	
Nickel	100.451	1.0	125.0	6.456	75.2	45	111	100.3	0.191	20	
Selenium	87.977	1.0	125.0	0	70.4	47	104	88.64	0.750	20	
Silver	100.223	1.0	125.0	0	80.2	56	112	100.2	0.0581	20	
Thallium	93.989	1.0	125.0	0	75.2	46	101	93.90	0.0980	20	
Vanadium	113.319	1.0	125.0	13.26	80.0	54	114	113.2	0.0830	20	
Zinc	105.973	1.0	125.0	15.33	72.5	28	125	108.5	2.34	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_W

Sample ID: **LCS-63674** SampType: **LCS** TestCode: **6010_W** Units: **mg/L** Prep Date: **4/26/2010** RunNo: **120578**
Client ID: **LCSW** Batch ID: **63674** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **4/27/2010** SeqNo: **1924162**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.980	0.0050	1.000	0	98.0	85	115				
Arsenic	1.002	0.010	1.000	0	100	85	115				
Barium	1.031	0.0030	1.000	0	103	85	115				
Beryllium	0.987	0.0030	1.000	0	98.7	85	115				
Cadmium	0.990	0.0030	1.000	0	99.0	85	115				
Chromium	0.986	0.0030	1.000	0	98.6	85	115				
Cobalt	1.022	0.0030	1.000	0	102	85	115				
Copper	1.000	0.0050	1.000	0	100	85	115				
Lead	0.989	0.0050	1.000	0	98.9	85	115				
Molybdenum	1.016	0.0050	1.000	0	102	85	115				
Nickel	0.987	0.0050	1.000	0	98.7	85	115				
Selenium	0.937	0.010	1.000	0	93.7	85	115				
Silver	1.002	0.0030	1.000	0	100	85	115				
Thallium	1.004	0.015	1.000	0	100	85	115				
Vanadium	0.997	0.0030	1.000	0	99.7	85	115				
Zinc	1.002	0.010	1.000	0	100	85	115				

Sample ID: **111457-001A-MS** SampType: **MS** TestCode: **6010_W** Units: **mg/L** Prep Date: **4/26/2010** RunNo: **120578**
Client ID: **ZZZZZZ** Batch ID: **63674** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **4/27/2010** SeqNo: **1924164**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	2.665	0.0050	2.500	0.01605	106	73	128				
Arsenic	3.000	0.010	2.500	0.03752	118	79	121				
Barium	2.606	0.0030	2.500	0.1400	98.7	82	118				
Beryllium	2.327	0.0030	2.500	0	93.1	84	119				
Cadmium	2.438	0.0030	2.500	0.002765	97.4	79	117				
Chromium	4.227	0.0030	2.500	1.651	103	78	115				
Cobalt	2.427	0.0030	2.500	0.02597	96.0	80	118				
Copper	3.182	0.0050	2.500	0.3389	114	81	127				
Lead	2.356	0.0050	2.500	0	94.2	80	118				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_W

Sample ID: **111457-001A-MS** SampType: **MS** TestCode: **6010_W** Units: **mg/L** Prep Date: **4/26/2010** RunNo: **120578**
Client ID: **ZZZZZZ** Batch ID: **63674** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **4/27/2010** SeqNo: **1924164**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	2.695	0.0050	2.500	0.1604	101	81	118				
Nickel	34.430	0.0050	2.500	30.24	168	78	120				S
Selenium	3.162	0.010	2.500	0.03829	125	78	120				S
Silver	2.852	0.0030	2.500	0.005113	114	79	125				
Thallium	2.272	0.015	2.500	0	90.9	74	115				
Vanadium	2.595	0.0030	2.500	0.08659	100	84	119				
Zinc	4.581	0.010	2.500	1.942	106	75	122				

Sample ID: **111457-001A-MSD** SampType: **MSD** TestCode: **6010_W** Units: **mg/L** Prep Date: **4/26/2010** RunNo: **120578**
Client ID: **ZZZZZZ** Batch ID: **63674** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **4/27/2010** SeqNo: **1924165**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	2.708	0.0050	2.500	0.01605	108	73	128	2.665	1.60	20	
Arsenic	3.032	0.010	2.500	0.03752	120	79	121	3.000	1.07	20	
Barium	2.581	0.0030	2.500	0.1400	97.7	82	118	2.606	0.965	20	
Beryllium	2.370	0.0030	2.500	0	94.8	84	119	2.327	1.85	20	
Cadmium	2.418	0.0030	2.500	0.002765	96.6	79	117	2.438	0.831	20	
Chromium	4.111	0.0030	2.500	1.651	98.4	78	115	4.227	2.78	20	
Cobalt	2.412	0.0030	2.500	0.02597	95.5	80	118	2.427	0.589	20	
Copper	3.123	0.0050	2.500	0.3389	111	81	127	3.182	1.87	20	
Lead	2.374	0.0050	2.500	0	95.0	80	118	2.356	0.786	20	
Molybdenum	2.713	0.0050	2.500	0.1604	102	81	118	2.695	0.669	20	
Nickel	32.636	0.0050	2.500	30.24	95.9	78	120	34.43	5.35	20	
Selenium	3.177	0.010	2.500	0.03829	126	78	120	3.162	0.471	20	S
Silver	2.821	0.0030	2.500	0.005113	113	79	125	2.852	1.09	20	
Thallium	2.312	0.015	2.500	0	92.5	74	115	2.272	1.76	20	
Vanadium	2.572	0.0030	2.500	0.08659	99.4	84	119	2.595	0.888	20	
Zinc	4.459	0.010	2.500	1.942	101	75	122	4.581	2.70	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_W

Sample ID: **MB-63674** SampType: **MBLK** TestCode: **6010_W** Units: **mg/L** Prep Date: **4/26/2010** RunNo: **120578**
Client ID: **PBW** Batch ID: **63674** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **4/27/2010** SeqNo: **1924167**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	0.0050									
Arsenic	ND	0.010									
Barium	ND	0.0030									
Beryllium	ND	0.0030									
Cadmium	ND	0.0030									
Chromium	ND	0.0030									
Cobalt	ND	0.0030									
Copper	ND	0.0050									
Lead	ND	0.0050									
Molybdenum	ND	0.0050									
Nickel	ND	0.0050									
Selenium	ND	0.010									
Silver	ND	0.0030									
Thallium	ND	0.015									
Vanadium	ND	0.0030									
Zinc	ND	0.010									

Sample ID: **111422-020C-DUP** SampType: **DUP** TestCode: **6010_W** Units: **mg/L** Prep Date: **4/26/2010** RunNo: **120578**
Client ID: **SS1-GW** Batch ID: **63674** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **4/27/2010** SeqNo: **1924810**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.020	0.0050						0.02502	20.3	20	R
Arsenic	0.040	0.010						0.09145	77.7	20	R
Barium	7.803	0.0030						9.526	19.9	20	
Beryllium	ND	0.0030						0.004365	0	20	
Cadmium	0.010	0.0030						0.01300	27.7	20	R
Chromium	1.063	0.0030						1.275	18.2	20	
Cobalt	0.261	0.0030						0.3350	24.7	20	R
Copper	0.526	0.0050						0.6984	28.1	20	R
Lead	0.157	0.0050						0.2037	25.7	20	R

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_W

Sample ID: **111422-020C-DUP** SampType: **DUP** TestCode: **6010_W** Units: **mg/L** Prep Date: **4/26/2010** RunNo: **120578**
Client ID: **SS1-GW** Batch ID: **63674** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **4/27/2010** SeqNo: **1924810**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	0.025	0.0050						0.02874	12.4	20	
Nickel	1.012	0.0050						1.275	23.0	20	R
Selenium	0.007	0.010						0.02081	0	20	
Silver	ND	0.0030						0	0	20	
Thallium	ND	0.015						0	0	20	
Vanadium	1.154	0.0030						1.399	19.2	20	
Zinc	1.508	0.010						1.904	23.2	20	R

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7470_W

Sample ID: **MB-63659**	SampType: **MBLK**	TestCode: **7470_W**	Units: **µg/L**	Prep Date: **4/27/2010**	RunNo: **120600**
Client ID: **PBW**	Batch ID: **63659**	TestNo: **EPA 7470A**		Analysis Date: **4/27/2010**	SeqNo: **1924467**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.116	0.20									

Sample ID: **LCS-63659**	SampType: **LCS**	TestCode: **7470_W**	Units: **µg/L**	Prep Date: **4/27/2010**	RunNo: **120600**
Client ID: **LCSW**	Batch ID: **63659**	TestNo: **EPA 7470A**		Analysis Date: **4/27/2010**	SeqNo: **1924468**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	10.174	0.20	10.00	0.1165	101	85	115				

Sample ID: **111428-001A-MS**	SampType: **MS**	TestCode: **7470_W**	Units: **µg/L**	Prep Date: **4/27/2010**	RunNo: **120600**
Client ID: **ZZZZZZ**	Batch ID: **63659**	TestNo: **EPA 7470A**		Analysis Date: **4/27/2010**	SeqNo: **1924469**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	10.291	0.20	10.00	0.1296	102	70	130				

Sample ID: **111428-001A-MSD**	SampType: **MSD**	TestCode: **7470_W**	Units: **µg/L**	Prep Date: **4/27/2010**	RunNo: **120600**
Client ID: **ZZZZZZ**	Batch ID: **63659**	TestNo: **EPA 7470A**		Analysis Date: **4/27/2010**	SeqNo: **1924470**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	10.336	0.20	10.00	0.1296	102	70	130	10.29	0.433	20	

Sample ID: **111422-020C-DUP**	SampType: **DUP**	TestCode: **7470_W**	Units: **µg/L**	Prep Date: **4/27/2010**	RunNo: **120600**
Client ID: **SS1-GW**	Batch ID: **63659**	TestNo: **EPA 7470A**		Analysis Date: **4/27/2010**	SeqNo: **1924477**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	2.192	0.20						2.285	4.19	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63722**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120677**
Client ID: **PBS**	Batch ID: **63722**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1925752**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63722**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120677**
Client ID: **LCSS**	Batch ID: **63722**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1925753**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.786	0.10	0.8300	0	94.7	80	120				

Sample ID: **111422-010A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120677**
Client ID: **RW13-4**	Batch ID: **63722**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1925754**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.823	0.10	0.8300	0	99.2	70	130				

Sample ID: **111422-010A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120677**
Client ID: **RW13-4**	Batch ID: **63722**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1925755**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.823	0.10	0.8300	0	99.2	70	130	0.8230	0.0553	20	

Sample ID: **111422-010A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120677**
Client ID: **RW13-4**	Batch ID: **63722**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1925757**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63723**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120679**
Client ID: **PBS**	Batch ID: **63723**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1925801**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63723**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120679**
Client ID: **LCSS**	Batch ID: **63723**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1925802**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.802	0.10	0.8300	0	96.6	80	120				

Sample ID: **111422-011A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120679**
Client ID: **RW12-4**	Batch ID: **63723**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1925803**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.871	0.10	0.8300	0.06686	96.9	70	130				

Sample ID: **111422-011A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120679**
Client ID: **RW12-4**	Batch ID: **63723**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1925804**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.872	0.10	0.8300	0.06686	97.0	70	130	0.8707	0.149	20	

Sample ID: **111422-011A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120679**
Client ID: **RW12-4**	Batch ID: **63723**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1925806**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.070	0.10						0.06686	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_DM LL

Sample ID: **MB-63728**	SampType: **MBLK**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120675**
Client ID: **PBS**	Batch ID: **63728**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **4/28/2010**	SeqNo: **1926065**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	ND	1.0									
ORO	ND	1.0									
Surr: p-Terphenyl	2.771		2.670		104	30	128				

Sample ID: **LCS-63728**	SampType: **LCS**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120675**
Client ID: **LCSS**	Batch ID: **63728**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **4/28/2010**	SeqNo: **1926066**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	28.905	1.0	33.00	0	87.6	35	118				
Surr: p-Terphenyl	2.788		2.670		104	30	128				

Sample ID: **111422-002AMS**	SampType: **MS**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120675**
Client ID: **RW14-0**	Batch ID: **63728**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **4/28/2010**	SeqNo: **1926068**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	29.509	1.0	33.00	5.862	71.7	25	129				
Surr: p-Terphenyl	3.192		2.670		120	30	128				

Sample ID: **111422-002AMSD**	SampType: **MSD**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120675**
Client ID: **RW14-0**	Batch ID: **63728**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **4/28/2010**	SeqNo: **1926069**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	28.371	1.0	66.00	5.862	34.1	25	129	29.51	3.93	20	
Surr: p-Terphenyl	3.558		5.340		66.6	30	128		0	0	

Sample ID: **111422-002ADUP**	SampType: **DUP**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120675**
Client ID: **RW14-0**	Batch ID: **63728**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **4/28/2010**	SeqNo: **1926070**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_DM LL

Sample ID: **111422-002ADUP** SampType: **DUP** TestCode: **8015_S_DM L** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120675**
Client ID: **RW14-0** Batch ID: **63728** TestNo: **EPA 8015B(M EPA 3550B** Analysis Date: **4/28/2010** SeqNo: **1926070**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	2.878	1.0						5.862	68.3	20	R
ORO	1.227	1.0						3.354	92.9	20	R
Surr: p-Terphenyl	3.371		2.670		126	30	128		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_GAS

Sample ID: **E100429MB3**	SampType: **MBLK**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120759**
Client ID: **PBS**	Batch ID: **E10VS109**	TestNo: **EPA 8015B(M**		Analysis Date: **4/30/2010**	SeqNo: **1927373**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	1.0									
Surr: Bromofluorobenzene (FID)	111.720		100.0		112	56	137				

Sample ID: **111422-008ADUP**	SampType: **DUP**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120759**
Client ID: **RW15-4**	Batch ID: **E10VS109**	TestNo: **EPA 8015B(M**		Analysis Date: **4/30/2010**	SeqNo: **1927375**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	0.162	1.0						0	0	20	
Surr: Bromofluorobenzene (FID)	118.728		100.0		119	56	137		0	0	

Sample ID: **111422-008AMS**	SampType: **MS**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120759**
Client ID: **RW15-4**	Batch ID: **E10VS109**	TestNo: **EPA 8015B(M**		Analysis Date: **4/30/2010**	SeqNo: **1927385**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	3.995	1.0	5.000	0	79.9	40	121				
Surr: Bromofluorobenzene (FID)	121.051		100.0		121	56	137				

Sample ID: **111422-008AMSD**	SampType: **MSD**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120759**
Client ID: **RW15-4**	Batch ID: **E10VS109**	TestNo: **EPA 8015B(M**		Analysis Date: **4/30/2010**	SeqNo: **1927386**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	3.937	1.0	5.000	0	78.7	40	121	3.995	1.46	20	
Surr: Bromofluorobenzene (FID)	121.370		100.0		121	56	137		0	0	

Sample ID: **E100429LCS5**	SampType: **LCS**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120759**
Client ID: **LCSS**	Batch ID: **E10VS109**	TestNo: **EPA 8015B(M**		Analysis Date: **4/30/2010**	SeqNo: **1927395**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.632	1.0	5.000	0	92.6	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_GAS

Sample ID: **E100429LCS5**	SampType: **LCS**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120759**
Client ID: **LCSS**	Batch ID: **E10VS109**	TestNo: **EPA 8015B(M**		Analysis Date: **4/30/2010**	SeqNo: **1927395**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (FID)	120.246		100.0		120	56	137				

Sample ID: **E100429LCS5D**	SampType: **LCSD**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120759**
Client ID: **LCSS02**	Batch ID: **E10VS109**	TestNo: **EPA 8015B(M**		Analysis Date: **4/30/2010**	SeqNo: **1927397**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.597	1.0	5.000	0	91.9	70	130	4.632	0.758	20	
Surr: Bromofluorobenzene (FID)	119.392		100.0		119	56	137		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_DM_LL

Sample ID: **MB-63656**	SampType: **MBLK**	TestCode: **8015_W_DM_**	Units: **mg/L**	Prep Date: **4/26/2010**	RunNo: **120587**
Client ID: **PBW**	Batch ID: **63656**	TestNo: **EPA 8015B(M**	**EPA 3510C**	Analysis Date: **4/27/2010**	SeqNo: **1924342**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	ND	0.050									
ORO	ND	0.050									
Surr: p-Terphenyl	0.074		0.08000		92.7	36	126				

Sample ID: **LCS-63656**	SampType: **LCS**	TestCode: **8015_W_DM_**	Units: **mg/L**	Prep Date: **4/26/2010**	RunNo: **120587**
Client ID: **LCSW**	Batch ID: **63656**	TestNo: **EPA 8015B(M**	**EPA 3510C**	Analysis Date: **4/27/2010**	SeqNo: **1924343**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	0.862	0.050	1.000	0	86.2	52	128				
Surr: p-Terphenyl	0.085		0.08000		107	36	126				

Sample ID: **MB-63656MS**	SampType: **MS**	TestCode: **8015_W_DM_**	Units: **mg/L**	Prep Date: **4/26/2010**	RunNo: **120587**
Client ID: **ZZZZZZ**	Batch ID: **63656**	TestNo: **EPA 8015B(M**	**EPA 3510C**	Analysis Date: **4/27/2010**	SeqNo: **1924344**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	0.884	0.050	1.000	0	88.4	52	128				
Surr: p-Terphenyl	0.075		0.08000		93.8	36	126				

Sample ID: **MB-63656MSD**	SampType: **MSD**	TestCode: **8015_W_DM_**	Units: **mg/L**	Prep Date: **4/26/2010**	RunNo: **120587**
Client ID: **ZZZZZZ**	Batch ID: **63656**	TestNo: **EPA 8015B(M**	**EPA 3510C**	Analysis Date: **4/27/2010**	SeqNo: **1924345**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	0.940	0.050	1.000	0	94.0	52	128	0.8839	6.12	20	
Surr: p-Terphenyl	0.087		0.08000		108	36	126		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_GP LL

Sample ID: **E100501LCS2**	SampType: **LCS**	TestCode: **8015_W_GP**	Units: **mg/L**	Prep Date:	RunNo: **120774**
Client ID: **LCSW**	Batch ID: **E10VW019**	TestNo: **EPA 8015B(M**		Analysis Date: **5/1/2010**	SeqNo: **1928426**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	0.919	0.050	1.000	0	91.9	70	130				
Surr: Bromofluorobenzene (FID)	107.589		100.0		108	70	130				

Sample ID: **E100501MB1MS1**	SampType: **MS**	TestCode: **8015_W_GP**	Units: **mg/L**	Prep Date:	RunNo: **120774**
Client ID: **ZZZZZZ**	Batch ID: **E10VW019**	TestNo: **EPA 8015B(M**		Analysis Date: **5/1/2010**	SeqNo: **1928428**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	1.162	0.050	1.000	0	116	70	130				
Surr: Bromofluorobenzene (FID)	105.450		100.0		105	70	130				

Sample ID: **E100501MB1MS1D**	SampType: **MSD**	TestCode: **8015_W_GP**	Units: **mg/L**	Prep Date:	RunNo: **120774**
Client ID: **ZZZZZZ**	Batch ID: **E10VW019**	TestNo: **EPA 8015B(M**		Analysis Date: **5/1/2010**	SeqNo: **1928429**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	0.956	0.050	1.000	0	95.6	70	130	1.162	19.5	20	
Surr: Bromofluorobenzene (FID)	104.437		100.0		104	70	130		0	0	

Sample ID: **E100501MB1**	SampType: **MBLK**	TestCode: **8015_W_GP**	Units: **mg/L**	Prep Date:	RunNo: **120774**
Client ID: **PBW**	Batch ID: **E10VW019**	TestNo: **EPA 8015B(M**		Analysis Date: **5/1/2010**	SeqNo: **1928430**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	0.050									
Surr: Bromofluorobenzene (FID)	100.955		100.0		101	70	130				

Sample ID: **111422-020ADUP**	SampType: **DUP**	TestCode: **8015_W_GP**	Units: **mg/L**	Prep Date:	RunNo: **120774**
Client ID: **SS1-GW**	Batch ID: **E10VW019**	TestNo: **EPA 8015B(M**		Analysis Date: **5/1/2010**	SeqNo: **1928432**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	0.050						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_GP LL

Sample ID: **111422-020ADUP** SampType: **DUP** TestCode: **8015_W_GP** Units: **mg/L** Prep Date: RunNo: **120774**
Client ID: **SS1-GW** Batch ID: **E10VW019** TestNo: **EPA 8015B(M** Analysis Date: **5/1/2010** SeqNo: **1928432**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (FID)	104.136		100.0		104	70	130		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_S_BTEX

Sample ID: **E100429MB3** SampType: **MBLK** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120759**
Client ID: **PBS** Batch ID: **E10VS109** TestNo: **EPA 8021B** Analysis Date: **4/30/2010** SeqNo: **1927398**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	5.0									
Ethylbenzene	ND	5.0									
m,p-Xylene	ND	10									
Methyl tert-butyl ether	ND	5.0									
o-Xylene	ND	5.0									
Toluene	ND	5.0									
Surr: Bromofluorobenzene (PID)	98.263		100.0		98.3	64	116				

Sample ID: **111422-008ADUP** SampType: **DUP** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120759**
Client ID: **RW15-4** Batch ID: **E10VS109** TestNo: **EPA 8021B** Analysis Date: **4/30/2010** SeqNo: **1927400**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	5.0						0	0	20	
Ethylbenzene	ND	5.0						0	0	20	
m,p-Xylene	ND	10						0	0	20	
Methyl tert-butyl ether	ND	5.0						0	0	20	
o-Xylene	ND	5.0						0	0	20	
Toluene	ND	5.0						0	0	20	
Surr: Bromofluorobenzene (PID)	104.601		100.0		105	64	116		0	0	

Sample ID: **111422-008AMS** SampType: **MS** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120759**
Client ID: **RW15-4** Batch ID: **E10VS109** TestNo: **EPA 8021B** Analysis Date: **4/30/2010** SeqNo: **1927410**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	34.295	5.0	22.15	0	155	41	112				S
Ethylbenzene	33.309	5.0	42.30	0	78.7	26	100				
m,p-Xylene	134.267	10	180.2	0	74.5	32	106				
Methyl tert-butyl ether	357.661	5.0	578.9	0	61.8	44	124				
o-Xylene	52.454	5.0	64.80	0	80.9	30	100				
Toluene	137.282	5.0	172.6	0	79.5	38	112				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_S_BTEX

Sample ID: **111422-008AMS** SampType: **MS** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120759**
Client ID: **RW15-4** Batch ID: **E10VS109** TestNo: **EPA 8021B** Analysis Date: **4/30/2010** SeqNo: **1927410**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (PID)	107.099		100.0		107	64	116				

Sample ID: **111422-008AMSD** SampType: **MSD** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120759**
Client ID: **RW15-4** Batch ID: **E10VS109** TestNo: **EPA 8021B** Analysis Date: **4/30/2010** SeqNo: **1927411**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	17.474	5.0	22.15	0	78.9	41	112	34.30	65.0	20	R
Ethylbenzene	33.072	5.0	42.30	0	78.2	26	100	33.31	0.714	20	
m,p-Xylene	134.142	10	180.2	0	74.4	32	106	134.3	0.0931	20	
Methyl tert-butyl ether	333.295	5.0	578.9	0	57.6	44	124	357.7	7.05	20	
o-Xylene	48.769	5.0	64.80	0	75.3	30	100	52.45	7.28	20	
Toluene	89.691	5.0	172.6	0	51.9	38	112	137.3	41.9	20	R
Surr: Bromofluorobenzene (PID)	103.383		100.0		103	64	116		0	20	

Sample ID: **E100429LCS4** SampType: **LCS** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120759**
Client ID: **LCSS** Batch ID: **E10VS109** TestNo: **EPA 8021B** Analysis Date: **4/30/2010** SeqNo: **1927412**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	91.326	5.0	100.0	0	91.3	70	130				
Ethylbenzene	89.928	5.0	100.0	0	89.9	70	130				
m,p-Xylene	181.316	10	200.0	0	90.7	70	130				
Methyl tert-butyl ether	87.764	5.0	100.0	0	87.8	70	130				
o-Xylene	92.891	5.0	100.0	0	92.9	70	130				
Toluene	92.231	5.0	100.0	0	92.2	70	130				
Surr: Bromofluorobenzene (PID)	99.808		100.0		99.8	64	116				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_S_BTEX

Sample ID: **E100429LCS4D** SampType: **LCSD** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120759**
Client ID: **LCSS02** Batch ID: **E10VS109** TestNo: **EPA 8021B** Analysis Date: **4/30/2010** SeqNo: **1927414**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	92.126	5.0	100.0	0	92.1	70	130	91.33	0.872	20	
Ethylbenzene	90.853	5.0	100.0	0	90.9	70	130	89.93	1.02	20	
m,p-Xylene	182.961	10	200.0	0	91.5	70	130	181.3	0.903	20	
Methyl tert-butyl ether	90.069	5.0	100.0	0	90.1	70	130	87.76	2.59	20	
o-Xylene	93.718	5.0	100.0	0	93.7	70	130	92.89	0.886	20	
Toluene	93.245	5.0	100.0	0	93.2	70	130	92.23	1.09	20	
Surr: Bromofluorobenzene (PID)	101.034		100.0		101	64	116		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_WP_BTEX

Sample ID: **E100501LCS1** SampType: **LCS** TestCode: **8021_WP_BT** Units: **µg/L** Prep Date: RunNo: **120774**
Client ID: **LCSW** Batch ID: **E10VW019** TestNo: **EPA 8021B** Analysis Date: **5/1/2010** SeqNo: **1928446**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	94.041	0.50	100.0	0	94.0	70	130				
Toluene	92.798	0.50	100.0	0	92.8	70	130				
Ethylbenzene	92.375	0.50	100.0	0	92.4	70	130				
m,p-Xylene	188.423	1.0	200.0	0	94.2	70	130				
o-Xylene	94.041	0.50	100.0	0	94.0	70	130				
Methyl tert-butyl ether	95.708	0.50	100.0	0	95.7	70	130				
Surr: Bromofluorobenzene (PID)	94.344		100.0		94.3	70	130				

Sample ID: **E100501LCS1D** SampType: **LCSD** TestCode: **8021_WP_BT** Units: **µg/L** Prep Date: RunNo: **120774**
Client ID: **LCSS02** Batch ID: **E10VW019** TestNo: **EPA 8021B** Analysis Date: **5/1/2010** SeqNo: **1928448**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	93.762	0.50	100.0	0	93.8	70	130	94.04	0.297	20	
Toluene	92.228	0.50	100.0	0	92.2	70	130	92.80	0.616	20	
Ethylbenzene	91.633	0.50	100.0	0	91.6	70	130	92.38	0.806	20	
m,p-Xylene	186.904	1.0	200.0	0	93.5	70	130	188.4	0.809	20	
o-Xylene	93.708	0.50	100.0	0	93.7	70	130	94.04	0.355	20	
Methyl tert-butyl ether	99.584	0.50	100.0	0	99.6	70	130	95.71	3.97	20	
Surr: Bromofluorobenzene (PID)	92.945		100.0		92.9	70	130		0	0	

Sample ID: **E100501MB1** SampType: **MBLK** TestCode: **8021_WP_BT** Units: **µg/L** Prep Date: RunNo: **120774**
Client ID: **PBW** Batch ID: **E10VW019** TestNo: **EPA 8021B** Analysis Date: **5/1/2010** SeqNo: **1928451**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Toluene	ND	0.50									
Ethylbenzene	ND	0.50									
m,p-Xylene	ND	1.0									
o-Xylene	ND	0.50									
Methyl tert-butyl ether	ND	0.50									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111422
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_WP_BTEX

Sample ID: **E100501MB1**	SampType: **MBLK**	TestCode: **8021_WP_BT**	Units: **µg/L**	Prep Date:	RunNo: **120774**
Client ID: **PBW**	Batch ID: **E10VW019**	TestNo: **EPA 8021B**		Analysis Date: **5/1/2010**	SeqNo: **1928451**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (PID)	91.574		100.0		91.6	70	130				

Sample ID: **111422-020ADUP**	SampType: **DUP**	TestCode: **8021_WP_BT**	Units: **µg/L**	Prep Date:	RunNo: **120774**
Client ID: **SS1-GW**	Batch ID: **E10VW019**	TestNo: **EPA 8021B**		Analysis Date: **5/1/2010**	SeqNo: **1928453**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50						0	0	20	
Toluene	ND	0.50						0	0	20	
Ethylbenzene	ND	0.50						0	0	20	
m,p-Xylene	ND	1.0						0	0	20	
o-Xylene	ND	0.50						0	0	20	
Methyl tert-butyl ether	ND	0.50						0	0	20	
Surr: Bromofluorobenzene (PID)	94.628		100.0		94.6	70	130		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: 4/23/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☒ FedEx ☐ Other: GSO

Sample Condition Upon Receipt: 9.2
1. CHILLED Y ☒ N ☐ 4. SEALED Y ☐ N ☒
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☒ N ☐
3. CONTAINER INTACT Y ☒ N ☐ 6. PRESERVED Y ☒ N ☐

Client: Geocon Consultants, Inc. | Address: 6671 Brisa Street | Tel: 925-371-5900
Attention: Lauren Vigliottti | City: Livermore State: CA Zip Code: 94550 | Fax: 925-371-5915

Project Name: I-580 WB HOV Lanes | Project #: E8474-06-01 | Sampler: (Printed Name) Lauren Vigliotti (Signature)

Relinquished by: (Signature and Printed Name) Lauren Vigliotti Date: 4/22/10 Time: 1645 Received by: (Signature and Printed Name) Date: 4/23/10 Time: 913
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Lauren Vigliotti 4/22/2010
Print Name Date
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

QA/QC: RTNE ☐ CT ☒ SWRCB ☐ Logcode _____ OTHER _____

ITEM	LAB USE ONLY: Batch # / Lab No.	Sample Description: Sample ID / Location	Date	Time	Circle or Add Analysis(es) Requested: 8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / 8020 (BTEX) + MTBE	8015B (DRO) TORO	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	Total Lead (EPA 6010)	SPECIFY APPROPRIATE MATRIX: SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	111422-1	RW15-0	4/22/2010	0900					X		X				X				E	1	T	P	C
	-2	RW14-0	4/22/2010	0955					X		X								E	1	T	P	C
	-3	RW13-0	4/22/2010	1005					X		X								E	1	T	P	C
	-4	RW12-0	4/22/2010	1015					X		X								E	1	T	P	C
	-5	RW11-0	4/22/2010	1030					X		X								E	1	T	P	C
	-6	RW10-0	4/22/2010	1040					X		X								E	1	T	P	C
	-7	RW9-0	4/22/2010	1100					X		X								E	1	T	P	C
	-8	RW15-4	4/22/2010	0900					X		X								E	1	T	P	C
	-9	RW14-4	4/22/2010	0955					X		X								E	1	T	P	C
	-10	RW13-4	4/22/2010	1005					X		X								E	1	T	P	C

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs | B = Emergency Next Workday | C = Critical 2 Workdays | D = Urgent 3 Workdays | E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl $N=HNO_3$ $S=H_2SO_4$ C=4°C $Z=Zn(AC)_2$ O=NaOH $T=Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel. (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: 4/23/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☒ FedEx ☐ Other: _____

Sample Condition Upon Receipt
1. CHILLED Y ☐ N ☐ 4. SEALED Y ☐ N ☐
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☐ N ☐
3. CONTAINER INTACT Y ☐ N ☐ 6. PRESERVED Y ☐ N ☐

Client: Geocon Consultants, Inc. | Address: 6671 Brisa Street | Tel: 925-371-5900
Attention: Lauren Vigliottti | City: Livermore | State: CA | Zip Code: 94550 | Fax: 925-371-5915

Project Name: I-580 WB HOV Lanes | Project #: E8474-06-01 | Sampler: (Printed Name) Lauren Vigliotti (Signature)

Relinquished by (Signature and Printed Name): Lauren Vigliotti | Date: 4/22/10 | Time: 1645 | Received by: (Signature and Printed Name) | Date: 4/23/10 | Time: 913
Relinquished by (Signature and Printed Name): | Date: | Time: | Received by: (Signature and Printed Name) | Date: | Time:
Relinquished by: (Signature and Printed Name) | Date: | Time: | Received by: (Signature and Printed Name) | Date: | Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Lauren Vigliotti 4/22/2010
Print Name Date
Signature

Send Report To:
Attn: Same as above
Co: _____
Addr: _____
City: State: Zip:

Bill To:
Attn: Same as above
Co: _____
Addr: _____
City: State: Zip:

Special Instructions/Comments:

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides); 8082 (PCB); 8260B (Volatiles); 8270C (BNA); 6010B (Total Metal); 8015B (GRO) / 8020 (BTEX) HMTBE; 8015B (DRO) + GRO; 8021 (BTEX) + V; TITLE 22 / CAM 17 (6010 / 7000); Total Lead (EPA 6010)

SPECIFY APPROPRIATE MATRIX: SOIL; WATER; GROUND WATER; WASTEWATER

PRESERVATION

QA/QC: RTNE ☐ CT ☒ SWRCB ☐ Logcode_____ OTHER _____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample ID / Location	Date	Time	TAT	Container(s): #	Type	PRESERVATION	REMARKS
	1114 22-11	RW12-4	4/22/2010	1015	E	1	T	P C	
	-12	RW11-4	4/22/2010	1030	E	1		P C	
	-13	RW10-4	4/22/2010	1040	E	1		P C	
	-14	RW9-4	4/22/2010	1100	E	1		P C	
	-15	SS1-4	4/22/2010	1300	E	1		P C	
	-16	RW28-4	4/22/2010	1430	E	1		P C	
	-17	RW27-4	4/22/2010	1545	E	1		P C	
	-18	RW-28-0	4/22/2010	1430	E	1		P C	
	-19	RW-27-0	4/22/2010	1545	E	1	V	P C	
	-20,21	SS1-GW & RW15-GW	4/22/2010	0915/1330	E	10	VP	P C	

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs; B = Emergency Next Workday; C = Critical 2 Workdays; D = Urgent 3 Workdays; E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl $N=HNO_3$ $S=H_2SO_4$ C=4°C Z=$Zn(AC)_2$ O=NaOH $T=Na_2S_2O_3$

April 30, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111450

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 26, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I-580 WB HOV Lanes, E8474-06-01
Lab Order: 111450

CASE NARRATIVE

Analytical Comments for Method 6010

Matrix Spike (MS) and /or Matrix Spike Duplicate (MSD) are/is outside recovery criteria for samples 111453-022AMS and 111453-022AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

RPD for Duplicate (DUP) and/or Matrix Spike (MS)/Matrix Spike Duplicate (MSD) is outside criteria for samples 111453-022ADUP and 111453-022AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 4/30/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111450
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/26/2010 8:05:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111450-001A	B276-0	320	mg/Kg	63731	5.0	1	4/23/2010	4/30/2010
111450-002A	B276-1	66	mg/Kg	63731	5.0	1	4/23/2010	4/30/2010
111450-003A	B276-2	6.0	mg/Kg	63731	5.0	1	4/23/2010	4/30/2010
111450-007A	B279-0	25	mg/Kg	63731	5.0	1	4/23/2010	4/30/2010
111450-008A	B279-1	29	mg/Kg	63731	5.0	1	4/23/2010	4/30/2010
111450-009A	B279-2	24	mg/Kg	63731	5.0	1	4/23/2010	4/30/2010
111450-010A	B281-0	47	mg/Kg	63731	5.0	1	4/23/2010	4/30/2010
111450-011A	B281-1	16	mg/Kg	63731	5.0	1	4/23/2010	4/30/2010
111450-012A	B281-2	19	mg/Kg	63731	5.0	1	4/23/2010	4/30/2010
111450-013A	B283-0	110	mg/Kg	63731	5.0	1	4/23/2010	4/30/2010
111450-014A	B283-1	7.2	mg/Kg	63731	5.0	1	4/23/2010	4/30/2010
111450-015A	B283-2	12	mg/Kg	63731	5.0	1	4/23/2010	4/30/2010
111450-016A	B286-0	36	mg/Kg	63731	5.0	1	4/23/2010	4/30/2010
111450-017A	B286-1	34	mg/Kg	63731	5.0	1	4/23/2010	4/30/2010
111450-018A	B286-2	23	mg/Kg	63731	5.0	1	4/23/2010	4/30/2010
111450-019A	B287-0	15	mg/Kg	63731	5.0	1	4/23/2010	4/30/2010
111450-020A	B287-1	5.0	mg/Kg	63731	5.0	1	4/23/2010	4/30/2010
111450-021A	B287-2	220	mg/Kg	63731	5.0	1	4/23/2010	4/30/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 4/30/2010

ANALYTICAL RESULTS

pH
EPA 9045C

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111450
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/26/2010 8:05:00 AM
Project No:		**Matrix:**	Soil
Analyte:	pH	**Analyst:**	CBB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111450-004A	B278-0	8.2	pH Units	R120767	0.10	1	4/23/2010	4/30/2010
111450-005A	B278-1	8.1	pH Units	R120767	0.10	1	4/23/2010	4/30/2010
111450-006A	B278-2	8.2	pH Units	R120767	0.10	1	4/23/2010	4/30/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B278-0
Lab Order:	111450	**Collection Date:**	4/23/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111450-004A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100429F	QC Batch: 63752			PrepDate:	4/28/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 06:36 PM
Arsenic	3.8	1.0		mg/Kg	1	4/29/2010 06:36 PM
Barium	150	1.0		mg/Kg	1	4/29/2010 06:36 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 06:36 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 06:36 PM
Chromium	20	1.0		mg/Kg	1	4/29/2010 06:36 PM
Cobalt	6.4	1.0		mg/Kg	1	4/29/2010 06:36 PM
Copper	16	2.0		mg/Kg	1	4/29/2010 06:36 PM
Lead	18	1.0		mg/Kg	1	4/29/2010 06:36 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 06:36 PM
Nickel	33	1.0		mg/Kg	1	4/29/2010 06:36 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 06:36 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 06:36 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 06:36 PM
Vanadium	23	1.0		mg/Kg	1	4/29/2010 06:36 PM
Zinc	35	1.0		mg/Kg	1	4/29/2010 06:36 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429F	QC Batch: 63756			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 02:35 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B278-1
Lab Order:	111450	**Collection Date:**	4/23/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111450-005A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100429F	QC Batch: 63752			PrepDate:	4/28/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 06:39 PM
Arsenic	3.2	1.0		mg/Kg	1	4/29/2010 06:39 PM
Barium	210	1.0		mg/Kg	1	4/29/2010 06:39 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 06:39 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 06:39 PM
Chromium	24	1.0		mg/Kg	1	4/29/2010 06:39 PM
Cobalt	6.6	1.0		mg/Kg	1	4/29/2010 06:39 PM
Copper	13	2.0		mg/Kg	1	4/29/2010 06:39 PM
Lead	8.5	1.0		mg/Kg	1	4/29/2010 06:39 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 06:39 PM
Nickel	28	1.0		mg/Kg	1	4/29/2010 06:39 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 06:39 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 06:39 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 06:39 PM
Vanadium	22	1.0		mg/Kg	1	4/29/2010 06:39 PM
Zinc	23	1.0		mg/Kg	1	4/29/2010 06:39 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429F	QC Batch: 63756			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 02:37 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	B278-2
Lab Order:	111450	**Collection Date:**	4/23/2010
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111450-006A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100429F	QC Batch: 63752			PrepDate:	4/28/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 06:41 PM
Arsenic	3.1	1.0		mg/Kg	1	4/29/2010 06:41 PM
Barium	150	1.0		mg/Kg	1	4/29/2010 06:41 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 06:41 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 06:41 PM
Chromium	22	1.0		mg/Kg	1	4/29/2010 06:41 PM
Cobalt	6.2	1.0		mg/Kg	1	4/29/2010 06:41 PM
Copper	15	2.0		mg/Kg	1	4/29/2010 06:41 PM
Lead	27	1.0		mg/Kg	1	4/29/2010 06:41 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 06:41 PM
Nickel	35	1.0		mg/Kg	1	4/29/2010 06:41 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 06:41 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 06:41 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 06:41 PM
Vanadium	21	1.0		mg/Kg	1	4/29/2010 06:41 PM
Zinc	38	1.0		mg/Kg	1	4/29/2010 06:41 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429F	QC Batch: 63756			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 02:39 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111450
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63752** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120733**
Client ID: **PBS** Batch ID: **63752** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926773**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	0.021	1.0									
Copper	0.422	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	0.110	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63752** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120733**
Client ID: **LCSS** Batch ID: **63752** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926774**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	45.364	2.0	50.00	0	90.7	80	120				
Arsenic	45.670	1.0	50.00	0	91.3	80	120				
Barium	48.701	1.0	50.00	0	97.4	80	120				
Beryllium	47.852	1.0	50.00	0	95.7	80	120				
Cadmium	45.698	1.0	50.00	0	91.4	80	120				
Chromium	47.416	1.0	50.00	0	94.8	80	120				
Cobalt	48.347	1.0	50.00	0.02057	96.7	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111450
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63752** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120733**
Client ID: **LCSS** Batch ID: **63752** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926774**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	48.266	2.0	50.00	0.4223	95.7	80	120				
Lead	46.935	1.0	50.00	0	93.9	80	120				
Molybdenum	48.839	1.0	50.00	0	97.7	80	120				
Nickel	46.525	1.0	50.00	0.1104	92.8	80	120				
Selenium	42.919	1.0	50.00	0	85.8	80	120				
Silver	47.227	1.0	50.00	0	94.5	80	120				
Thallium	45.243	1.0	50.00	0	90.5	80	120				
Vanadium	48.911	1.0	50.00	0	97.8	80	120				
Zinc	44.642	1.0	50.00	0	89.3	80	120				

Sample ID: **111453-022ADUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120733**
Client ID: **ZZZZZZ** Batch ID: **63752** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926780**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0						0.3042	0	20	
Arsenic	5.202	1.0						5.427	4.22	20	
Barium	305.143	1.0						417.3	31.0	20	R
Beryllium	0.225	1.0						0.2301	0	20	
Cadmium	0.115	1.0						0.1102	0	20	
Chromium	15.478	1.0						15.87	2.50	20	
Cobalt	8.227	1.0						8.514	3.43	20	
Copper	16.071	2.0						16.40	2.04	20	
Lead	5.041	1.0						4.872	3.43	20	
Molybdenum	ND	1.0						0	0	20	
Nickel	20.659	1.0						21.24	2.77	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	31.604	1.0						32.61	3.14	20	
Zinc	30.739	1.0						32.18	4.59	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111450
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111453-022AMS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120733**
Client ID: **ZZZZZZ** Batch ID: **63752** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926781**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	71.533	2.0	125.0	0.3042	57.0	32	105				
Arsenic	98.642	1.0	125.0	5.427	74.6	49	106				
Barium	615.278	1.0	125.0	417.3	158	31	133				S
Beryllium	101.921	1.0	125.0	0.2301	81.4	56	106				
Cadmium	88.047	1.0	125.0	0.1102	70.3	51	103				
Chromium	116.080	1.0	125.0	15.87	80.2	45	114				
Cobalt	101.871	1.0	125.0	8.514	74.7	52	106				
Copper	122.076	2.0	125.0	16.40	84.5	54	125				
Lead	97.465	1.0	125.0	4.872	74.1	34	126				
Molybdenum	91.104	1.0	125.0	0	72.9	54	106				
Nickel	114.668	1.0	125.0	21.24	74.7	45	111				
Selenium	89.260	1.0	125.0	0	71.4	47	104				
Silver	105.496	1.0	125.0	0	84.4	56	112				
Thallium	90.287	1.0	125.0	0	72.2	46	101				
Vanadium	136.212	1.0	125.0	32.61	82.9	54	114				
Zinc	118.337	1.0	125.0	32.18	68.9	28	125				

Sample ID: **111453-022AMSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120733**
Client ID: **ZZZZZZ** Batch ID: **63752** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926782**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	73.904	2.0	125.0	0.3042	58.9	32	105	71.53	3.26	20	
Arsenic	98.130	1.0	125.0	5.427	74.2	49	106	98.64	0.520	20	
Barium	369.418	1.0	125.0	417.3	-38.3	31	133	615.3	49.9	20	SR
Beryllium	100.405	1.0	125.0	0.2301	80.1	56	106	101.9	1.50	20	
Cadmium	85.875	1.0	125.0	0.1102	68.6	51	103	88.05	2.50	20	
Chromium	112.573	1.0	125.0	15.87	77.4	45	114	116.1	3.07	20	
Cobalt	99.214	1.0	125.0	8.514	72.6	52	106	101.9	2.64	20	
Copper	119.775	2.0	125.0	16.40	82.7	54	125	122.1	1.90	20	
Lead	95.609	1.0	125.0	4.872	72.6	34	126	97.47	1.92	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111450
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111453-022AMSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120733**
Client ID: **ZZZZZZ** Batch ID: **63752** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926782**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	90.265	1.0	125.0	0	72.2	54	106	91.10	0.926	20	
Nickel	111.145	1.0	125.0	21.24	71.9	45	111	114.7	3.12	20	
Selenium	88.083	1.0	125.0	0	70.5	47	104	89.26	1.33	20	
Silver	104.324	1.0	125.0	0	83.5	56	112	105.5	1.12	20	
Thallium	87.099	1.0	125.0	0	69.7	46	101	90.29	3.59	20	
Vanadium	131.904	1.0	125.0	32.61	79.4	54	114	136.2	3.21	20	
Zinc	113.580	1.0	125.0	32.18	65.1	28	125	118.3	4.10	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111450
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63731A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120740**
Client ID: **PBS**	Batch ID: **63731**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/30/2010**	SeqNo: **1926965**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-63731**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120740**
Client ID: **LCSS**	Batch ID: **63731**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/30/2010**	SeqNo: **1926966**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	282.550	5.0	250.0	0	113	80	120				

Sample ID: **111450-013A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120740**
Client ID: **B283-0**	Batch ID: **63731**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/30/2010**	SeqNo: **1926977**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	105.022	5.0						110.6	5.15	20	

Sample ID: **111450-013A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120740**
Client ID: **B283-0**	Batch ID: **63731**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/30/2010**	SeqNo: **1926978**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	367.353	5.0	250.0	110.6	103	34	126				

Sample ID: **MB-63731B**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120740**
Client ID: **PBS**	Batch ID: **63731**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/30/2010**	SeqNo: **1926979**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111450
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **111467-003A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120740**
Client ID: **ZZZZZZ**	Batch ID: **63731**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/30/2010**	SeqNo: **1926990**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	6.714	5.0						5.863	13.5	20	

Sample ID: **111467-003A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120740**
Client ID: **ZZZZZZ**	Batch ID: **63731**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/30/2010**	SeqNo: **1926991**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	213.217	5.0	250.0	5.863	82.9	34	126				

Sample ID: **111467-003A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120740**
Client ID: **ZZZZZZ**	Batch ID: **63731**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **4/30/2010**	SeqNo: **1926992**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	206.804	5.0	250.0	5.863	80.4	34	126	213.2	3.05	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111450
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63756**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120692**
Client ID: **PBS**	Batch ID: **63756**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1926097**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63756**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120692**
Client ID: **LCSS**	Batch ID: **63756**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1926098**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.871	0.10	0.8300	0	105	80	120				

Sample ID: **111453-022A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120692**
Client ID: **ZZZZZZ**	Batch ID: **63756**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1926099**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.961	0.10	0.8300	0.08704	105	70	130				

Sample ID: **111453-022A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120692**
Client ID: **ZZZZZZ**	Batch ID: **63756**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1926100**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.962	0.10	0.8300	0.08704	105	70	130	0.9606	0.152	20	

Sample ID: **111453-022A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120692**
Client ID: **ZZZZZZ**	Batch ID: **63756**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1926102**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.088	0.10						0.08704	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111450
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 9045_S

Sample ID: **111467-069ADUP** SampType: **DUP** TestCode: **9045_S** Units: **pH Units** Prep Date: RunNo: **120767**
Client ID: **ZZZZZZ** Batch ID: **R120767** TestNo: **EPA 9045C** Analysis Date: **4/30/2010** SeqNo: **1927607**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	8.290	0.10						8.260	0.363	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Pg 1 of 1

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #:
Logged By: [signature] Date: 4/26/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FedEx ☐ Other: GSO

16.6

Sample Condition Upon Receipt

1. CHILLED	Y ☐ N ☑	4. SEALED	Y ☐ N ☑
2. HEADSPACE (VOA)	Y ☐ N/A N ☐	5. # OF SPLS MATCH COC	Y ☑ N ☐
3. CONTAINER INTACT	Y ☑ N ☐	6. PRESERVED	Y ☐ N ☑

Client: Geocon Consultants, Inc.
Address: 6671 Brisa Street
Tel:
Attention: Lauren Vigliottti
City: Livermore State: CA Zip Code: 94550
Fax:

Project Name: I-580 WB HOV Lanes
Project #: E8474-06-01
Sampler: (Printed Name) D. WATTS (Signature) [signature]

	Date	Time		Date	Time
Relinquished by: (Signature and Printed Name) [signature]	23 APR 2010	1700	Received by: (Signature and Printed Name) GSO	23 APR 2010	1700
Relinquished by: (Signature and Printed Name)			Received by: (Signature and Printed Name) [signature]	4/26/10	805
Relinquished by: (Signature and Printed Name)			Received by: (Signature and Printed Name)		

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter: D. WATTS 4/23/10
Print Name Date
[signature]
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:
PLEASE RETURN ALL COOLERS

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested

ITEM	LAB USE ONLY: Batch # / Lab No.	Sample Description: Sample ID / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / 8020 (BTEX)	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	Total Lead (EPA 6010)	pH (EPA 9045)	CAM17 Metals	SPECIFY APPROPRIATE MATRIX: SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	111450-051, 2, 3	B276-0,1,2	4/23/10	√ATL									X				X				E	3	B P	C	
	4, 5, 6	B278-0,1,2												X	X		X				E	3	T M	C	
	7, 8, 9	B279-0,1,2											X				X				E	3	B P	C	
	10, 11, 12	B281-0,1,2											X				X				E	3	B P	C	
	13, 14, 15	B283-0,1,2											X				X				E	3	B P	C	
	16, 17, 18	B286-0,1,2											X				X				E	3	B P	C	
	19, 20, 21	B287-0,1,2											X				X				E	3	B P	C	

QA/QC: RTNE ☐ CT ☑
SWRCB Logcode ☐
OTHER

■ TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs; B = Emergency Next Workday; C = Critical 2 Workdays; D = Urgent 3 Workdays; E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl $N=HNO_3$ $S=H_2SO_4$ C=4°C $Z=Zn(AC)_2$ O=NaOH $T=Na_2S_2O_3$

May 10, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111450

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 26, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I-580 WB HOV Lanes, E8474-06-01
Lab Order: 111450

CASE NARRATIVE

Analytical Comments for Method 7420

Dilution was necessary for samples 111450-001A and 111450-021A, due to sample matrix.

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 5/10/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (STLC)
WET/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111450
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/26/2010 8:05:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111450-001A	B276-0	14	mg/L	63865	0.50	2	4/23/2010	5/6/2010
111450-002A	B276-1	1.4	mg/L	63865	0.25	1	4/23/2010	5/6/2010
111450-013A	B283-0	5.5	mg/L	63865	0.25	1	4/23/2010	5/6/2010
111450-021A	B287-2	12	mg/L	63865	0.50	2	4/23/2010	5/6/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111450
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-63865A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/4/2010**	RunNo: **120930**
Client ID: **PBS**	Batch ID: **63865**	TestNo: **WET/ EPA 74**	**WET**	Analysis Date: **5/6/2010**	SeqNo: **1930789**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63865**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/4/2010**	RunNo: **120930**
Client ID: **LCSS**	Batch ID: **63865**	TestNo: **WET/ EPA 74**	**WET**	Analysis Date: **5/6/2010**	SeqNo: **1930790**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.912	0.25	5.000	0	98.2	80	120				

Sample ID: **111450-021A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/4/2010**	RunNo: **120930**
Client ID: **B287-2**	Batch ID: **63865**	TestNo: **WET/ EPA 74**	**WET**	Analysis Date: **5/6/2010**	SeqNo: **1930795**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	11.545	0.50						11.57	0.175	20	

Sample ID: **111450-021A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/4/2010**	RunNo: **120930**
Client ID: **B287-2**	Batch ID: **63865**	TestNo: **WET/ EPA 74**	**WET**	Analysis Date: **5/6/2010**	SeqNo: **1930796**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	16.437	0.50	5.000	11.57	97.4	80	120				

Sample ID: **111450-021A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/4/2010**	RunNo: **120930**
Client ID: **B287-2**	Batch ID: **63865**	TestNo: **WET/ EPA 74**	**WET**	Analysis Date: **5/6/2010**	SeqNo: **1930797**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	16.292	0.50	5.000	11.57	94.5	80	120	16.44	0.884	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Monday, May 03, 2010 2:25 PM
To: Diane Galvan
Subject: RE: Results/EDD - I-580 WB HOV Lanes (111450)

Thanks, Diane. Please run the following samples for WET lead, standard TAT.
B276-1
B283-0
B287-2
B276-0

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

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6671 Brisa Street
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GEOCON

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San Diego Murrieta Burbank Bakersfield Sacramento Livermore Carson City Las Vegas Portland

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May 18, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111450

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 26, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

Advanced Technology Laboratories

Date: 5/18/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION
WET DI/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111450
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/26/2010 8:05:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111450-001A	B276-0	ND	mg/L	64107	0.25	1	4/23/2010	5/17/2010
111450-013A	B283-0	ND	mg/L	64107	0.25	1	4/23/2010	5/17/2010
111450-021A	B287-2	ND	mg/L	64107	0.25	1	4/23/2010	5/17/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 5/18/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (TCLP)
EPA 1311/ 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111450
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/26/2010 8:05:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111450-001A	B276-0	0.59	mg/L	64118	0.25	1	4/23/2010	5/17/2010
111450-013A	B283-0	0.27	mg/L	64118	0.25	1	4/23/2010	5/17/2010
111450-021A	B287-2	0.40	mg/L	64118	0.25	1	4/23/2010	5/17/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111450
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **MB-64107A**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/13/2010**	RunNo: **121212**
Client ID: **PBS**	Batch ID: **64107**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/17/2010**	SeqNo: **1936255**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-64107**	SampType: **LCS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/13/2010**	RunNo: **121212**
Client ID: **LCSS**	Batch ID: **64107**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/17/2010**	SeqNo: **1936256**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.953	0.25	5.000	0	99.1	80	120				

Sample ID: **111453-012A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/13/2010**	RunNo: **121212**
Client ID: **ZZZZZZ**	Batch ID: **64107**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/17/2010**	SeqNo: **1936266**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111453-012A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/13/2010**	RunNo: **121212**
Client ID: **ZZZZZZ**	Batch ID: **64107**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/17/2010**	SeqNo: **1936267**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.015	0.25	5.000	0	100	70	130				

Sample ID: **111453-012A-MSD**	SampType: **MSD**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/13/2010**	RunNo: **121212**
Client ID: **ZZZZZZ**	Batch ID: **64107**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/17/2010**	SeqNo: **1936268**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.038	0.25	5.000	0	101	70	130	5.015	0.453	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111450
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-64118**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/14/2010**	RunNo: **121213**
Client ID: **PBS**	Batch ID: **64118**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/17/2010**	SeqNo: **1936269**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-64110A TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/14/2010**	RunNo: **121213**
Client ID: **PBS**	Batch ID: **64118**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/17/2010**	SeqNo: **1936270**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-64118**	SampType: **LCS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/14/2010**	RunNo: **121213**
Client ID: **LCSS**	Batch ID: **64118**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/17/2010**	SeqNo: **1936271**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	1.029	0.25	1.000	0	103	80	120				

Sample ID: **111453-012A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/14/2010**	RunNo: **121213**
Client ID: **ZZZZZZ**	Batch ID: **64118**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/17/2010**	SeqNo: **1936280**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.414	0.25						0.3880	6.37	20	

Sample ID: **111453-012A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/14/2010**	RunNo: **121213**
Client ID: **ZZZZZZ**	Batch ID: **64118**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/17/2010**	SeqNo: **1936281**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.799	0.25	2.500	0.3880	96.5	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111450
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **111453-012A-MSD** SampType: **MSD** TestCode: **7420_TC** Units: **mg/L** Prep Date: **5/14/2010** RunNo: **121213**
Client ID: **ZZZZZZ** Batch ID: **64118** TestNo: **EPA 1311/ 74 EPA3010A** Analysis Date: **5/17/2010** SeqNo: **1936282**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.753	0.25	2.500	0.3880	94.6	70	130	2.799	1.65	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Tuesday, May 11, 2010 5:12 PM
To: Diane Galvan
Subject: WO111450

HI Diane: I don't think I've yet requested these-
TCLP and DI-WET lead on B276-0, B283-0, and B287-2, standard TAT. Thanks!

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

Geocon Consultants, Inc
6671 Brisa Street
Livermore, CA 94550
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Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Tuesday, May 11, 2010 10:06 AM
To: Diane Galvan
Subject: RE: Results/EDD - WB 580 HOV (111548)

Hi Diane:
Please run the following under standard TAT, thank you!
WET lead:
111547 RW2-4

DI-WET and TCLP lead
111450 B283-0 5.5
111450 B287-2 12

-Lauren
****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

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May 04, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550

TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111453

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 26, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

Analytical Comments for Method 6010

Matrix Spike (MS) and /or Matrix Spike Duplicate (MSD) are/is outside recovery criteria for samples 111453-022AMS, 111453-022AMSD, 111453-027CMS and 111453-027CMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

RPD for Duplicate (DUP) and/or Matrix Spike (MS)/Matrix Spike Duplicate (MSD) is outside criteria for samples 111453-010AMSD, 111453-020ADUP, 111453-022ADUP, 111453-022AMSD, 111453-023CDUP and 111453-027CMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Analytical Comments for Method 7470

Matrix Spike (MS) and /or Matrix Spike Duplicate (MSD) are/is outside recovery criteria for samples 111453-027CMS and 111453-027CMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Analytical Comments for Method 8015 (DRO/ORO)

Dilution was necessary for samples 111453-001A, 111453-004A, 111453-005A, 111453-007A, 111453-008A and 111453-011A, due to sample matrix.

Surrogate recovery was diluted out for samples 111453-001A, 111453-004A, 111453-005A, 111453-007A, 111453-008A and 111453-011A.

Surrogate recovery biased high for samples 111453-023A, 111453-024A, 111453-025A and 111453-027A, possibly due to matrix interferences.

RPD for Duplicate (DUP) is outside criteria for sample 111422-002ADUP; however, the Laboratory Control Sample (LCS) validated the analytical batch.

Analytical Comments for Method 8021

Matrix Spike (MS) and /or Matrix Spike Duplicate (MSD) are/is outside recovery criteria for samples 111453-014AMS, 111453-014AMSD, 111453-022AMS and 111453-022AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW26-0
Lab Order:	111453	**Collection Date:**	4/23/2010 8:30:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111453-001		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP10_100429D	QC Batch: 63750			PrepDate:	4/28/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 04:55 PM
Arsenic	3.3	1.0		mg/Kg	1	4/29/2010 04:55 PM
Barium	96	1.0		mg/Kg	1	4/29/2010 04:55 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 04:55 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 04:55 PM
Chromium	45	1.0		mg/Kg	1	4/29/2010 04:55 PM
Cobalt	5.7	1.0		mg/Kg	1	4/29/2010 04:55 PM
Copper	48	2.0		mg/Kg	1	4/29/2010 04:55 PM
Lead	43	1.0		mg/Kg	1	4/29/2010 04:55 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 04:55 PM
Nickel	48	1.0		mg/Kg	1	4/29/2010 04:55 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 04:55 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 04:55 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 04:55 PM
Vanadium	20	1.0		mg/Kg	1	4/29/2010 04:55 PM
Zinc	120	1.0		mg/Kg	1	4/29/2010 04:55 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
EPA 3550B				**EPA 8015B(M)**		
RunID: GC16_100428B	QC Batch: 63728			PrepDate:	4/28/2010	Analyst: **CBR**
DRO	880	120		mg/Kg	20	4/28/2010 06:01 PM
ORO	4000	120		mg/Kg	20	4/28/2010 06:01 PM
Surr: p-Terphenyl	0	30-128	SDO	%REC	20	4/28/2010 06:01 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429D	QC Batch: 63753			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 01:08 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW25-0
Lab Order:	111453	**Collection Date:**	4/23/2010 9:35:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111453-002		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100429D	QC Batch: 63750			PrepDate: 4/28/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:08 PM
Arsenic	3.6	1.0		mg/Kg	1	4/29/2010 05:08 PM
Barium	120	1.0		mg/Kg	1	4/29/2010 05:08 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:08 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:08 PM
Chromium	32	1.0		mg/Kg	1	4/29/2010 05:08 PM
Cobalt	8.7	1.0		mg/Kg	1	4/29/2010 05:08 PM
Copper	17	2.0		mg/Kg	1	4/29/2010 05:08 PM
Lead	15	1.0		mg/Kg	1	4/29/2010 05:08 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 05:08 PM
Nickel	62	1.0		mg/Kg	1	4/29/2010 05:08 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:08 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:08 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:08 PM
Vanadium	19	1.0		mg/Kg	1	4/29/2010 05:08 PM
Zinc	34	1.0		mg/Kg	1	4/29/2010 05:08 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC16_100429B	QC Batch: 63729			PrepDate: 4/28/2010		Analyst: **CBR**
DRO	9.6	1.0		mg/Kg	1	4/29/2010 12:54 PM
ORO	24	1.0		mg/Kg	1	4/29/2010 12:54 PM
Surr: p-Terphenyl	71.3	30-128		%REC	1	4/29/2010 12:54 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429D	QC Batch: 63753			PrepDate: 4/28/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 01:10 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW24-0
Lab Order:	111453	**Collection Date:**	4/23/2010 9:45:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111453-003		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100429D	QC Batch: 63750			PrepDate: 4/28/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:10 PM
Arsenic	3.9	1.0		mg/Kg	1	4/29/2010 05:10 PM
Barium	68	1.0		mg/Kg	1	4/29/2010 05:10 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:10 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:10 PM
Chromium	25	1.0		mg/Kg	1	4/29/2010 05:10 PM
Cobalt	6.3	1.0		mg/Kg	1	4/29/2010 05:10 PM
Copper	20	2.0		mg/Kg	1	4/29/2010 05:10 PM
Lead	93	1.0		mg/Kg	1	4/29/2010 05:10 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 05:10 PM
Nickel	41	1.0		mg/Kg	1	4/29/2010 05:10 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:10 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:10 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:10 PM
Vanadium	19	1.0		mg/Kg	1	4/29/2010 05:10 PM
Zinc	44	1.0		mg/Kg	1	4/29/2010 05:10 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC16_100429B	QC Batch: 63729			PrepDate: 4/28/2010		Analyst: **CBR**
DRO	6.1	1.0		mg/Kg	1	4/29/2010 12:45 PM
ORO	15	1.0		mg/Kg	1	4/29/2010 12:45 PM
Surr: p-Terphenyl	68.3	30-128		%REC	1	4/29/2010 12:45 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429D	QC Batch: 63753			PrepDate: 4/28/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 01:12 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW23-0
Lab Order:	111453	**Collection Date:**	4/23/2010 10:25:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111453-004		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP10_100429D	QC Batch: 63750			PrepDate:	4/28/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:12 PM
Arsenic	3.4	1.0		mg/Kg	1	4/29/2010 05:12 PM
Barium	110	1.0		mg/Kg	1	4/29/2010 05:12 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:12 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:12 PM
Chromium	24	1.0		mg/Kg	1	4/29/2010 05:12 PM
Cobalt	5.8	1.0		mg/Kg	1	4/29/2010 05:12 PM
Copper	23	2.0		mg/Kg	1	4/29/2010 05:12 PM
Lead	110	1.0		mg/Kg	1	4/29/2010 05:12 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 05:12 PM
Nickel	36	1.0		mg/Kg	1	4/29/2010 05:12 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:12 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:12 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:12 PM
Vanadium	24	1.0		mg/Kg	1	4/29/2010 05:12 PM
Zinc	71	1.0		mg/Kg	1	4/29/2010 05:12 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
EPA 3550B				**EPA 8015B(M)**		
RunID: GC16_100429B	QC Batch: 63729			PrepDate:	4/28/2010	Analyst: **CBR**
DRO	430	20		mg/Kg	10	4/29/2010 01:57 PM
ORO	1400	20		mg/Kg	10	4/29/2010 01:57 PM
Surr: p-Terphenyl	0	30-128	SDO	%REC	10	4/29/2010 01:57 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429D	QC Batch: 63753			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 01:18 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW22-0
Lab Order:	111453	**Collection Date:**	4/23/2010 10:45:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111453-005		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100429D	QC Batch: 63750			PrepDate:	4/28/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:18 PM
Arsenic	3.1	1.0		mg/Kg	1	4/29/2010 05:18 PM
Barium	71	1.0		mg/Kg	1	4/29/2010 05:18 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:18 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:18 PM
Chromium	24	1.0		mg/Kg	1	4/29/2010 05:18 PM
Cobalt	6.2	1.0		mg/Kg	1	4/29/2010 05:18 PM
Copper	17	2.0		mg/Kg	1	4/29/2010 05:18 PM
Lead	5.0	1.0		mg/Kg	1	4/29/2010 05:18 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 05:18 PM
Nickel	40	1.0		mg/Kg	1	4/29/2010 05:18 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:18 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:18 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:18 PM
Vanadium	17	1.0		mg/Kg	1	4/29/2010 05:18 PM
Zinc	29	1.0		mg/Kg	1	4/29/2010 05:18 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC16_100429B	QC Batch: 63729			PrepDate:	4/28/2010	Analyst: **CBR**
DRO	260	20		mg/Kg	10	4/29/2010 02:07 PM
ORO	920	20		mg/Kg	10	4/29/2010 02:07 PM
Surr: p-Terphenyl	0	30-128	SDO	%REC	10	4/29/2010 02:07 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429D	QC Batch: 63753			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 01:20 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW21-0
Lab Order:	111453	**Collection Date:**	4/23/2010 10:50:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111453-006		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP10_100429D	QC Batch: 63750			PrepDate: 4/28/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:20 PM
Arsenic	2.8	1.0		mg/Kg	1	4/29/2010 05:20 PM
Barium	62	1.0		mg/Kg	1	4/29/2010 05:20 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:20 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:20 PM
Chromium	23	1.0		mg/Kg	1	4/29/2010 05:20 PM
Cobalt	4.9	1.0		mg/Kg	1	4/29/2010 05:20 PM
Copper	18	2.0		mg/Kg	1	4/29/2010 05:20 PM
Lead	5.3	1.0		mg/Kg	1	4/29/2010 05:20 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 05:20 PM
Nickel	37	1.0		mg/Kg	1	4/29/2010 05:20 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:20 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:20 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:20 PM
Vanadium	14	1.0		mg/Kg	1	4/29/2010 05:20 PM
Zinc	24	1.0		mg/Kg	1	4/29/2010 05:20 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
EPA 3550B				**EPA 8015B(M)**		
RunID: GC16_100429B	QC Batch: 63729			PrepDate: 4/28/2010		Analyst: **CBR**
DRO	8.3	1.0		mg/Kg	1	4/29/2010 01:03 PM
ORO	18	1.0		mg/Kg	1	4/29/2010 01:03 PM
Surr: p-Terphenyl	72.3	30-128		%REC	1	4/29/2010 01:03 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429D	QC Batch: 63753			PrepDate: 4/28/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 01:22 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW20-0
Lab Order:	111453	**Collection Date:**	4/23/2010 12:00:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111453-007		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP10_100429D	QC Batch: 63750			PrepDate:	4/28/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:22 PM
Arsenic	3.2	1.0		mg/Kg	1	4/29/2010 05:22 PM
Barium	99	1.0		mg/Kg	1	4/29/2010 05:22 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:22 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:22 PM
Chromium	22	1.0		mg/Kg	1	4/29/2010 05:22 PM
Cobalt	6.1	1.0		mg/Kg	1	4/29/2010 05:22 PM
Copper	38	2.0		mg/Kg	1	4/29/2010 05:22 PM
Lead	130	1.0		mg/Kg	1	4/29/2010 05:22 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 05:22 PM
Nickel	34	1.0		mg/Kg	1	4/29/2010 05:22 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:22 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:22 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:22 PM
Vanadium	24	1.0		mg/Kg	1	4/29/2010 05:22 PM
Zinc	99	1.0		mg/Kg	1	4/29/2010 05:22 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
EPA 3550B				**EPA 8015B(M)**		
RunID: GC16_100429B	QC Batch: 63729			PrepDate:	4/28/2010	Analyst: **CBR**
DRO	320	20		mg/Kg	10	4/29/2010 02:18 PM
ORO	1200	20		mg/Kg	10	4/29/2010 02:18 PM
Surr: p-Terphenyl	0	30-128	SDO	%REC	10	4/29/2010 02:18 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429D	QC Batch: 63753			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 01:24 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW19-0
Lab Order:	111453	**Collection Date:**	4/23/2010 1:00:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111453-008		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP10_100429D	QC Batch: 63750			PrepDate:	4/28/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:25 PM
Arsenic	4.3	1.0		mg/Kg	1	4/29/2010 05:25 PM
Barium	180	1.0		mg/Kg	1	4/29/2010 05:25 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:25 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:25 PM
Chromium	32	1.0		mg/Kg	1	4/29/2010 05:25 PM
Cobalt	6.1	1.0		mg/Kg	1	4/29/2010 05:25 PM
Copper	89	2.0		mg/Kg	1	4/29/2010 05:25 PM
Lead	31	1.0		mg/Kg	1	4/29/2010 05:25 PM
Molybdenum	1.2	1.0		mg/Kg	1	4/29/2010 05:25 PM
Nickel	34	1.0		mg/Kg	1	4/29/2010 05:25 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:25 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:25 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:25 PM
Vanadium	23	1.0		mg/Kg	1	4/29/2010 05:25 PM
Zinc	200	1.0		mg/Kg	1	4/29/2010 05:25 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
EPA 3550B				**EPA 8015B(M)**		
RunID: GC16_100429B	QC Batch: 63729			PrepDate:	4/28/2010	Analyst: **CBR**
DRO	220	20		mg/Kg	10	4/29/2010 02:27 PM
ORO	800	20		mg/Kg	10	4/29/2010 02:27 PM
Surr: p-Terphenyl	0	30-128	SDO	%REC	10	4/29/2010 02:27 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429D	QC Batch: 63753			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	0.15	0.10		mg/Kg	1	4/29/2010 01:26 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Lab Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111453-009

Client Sample ID: RW18-0
Collection Date: 4/23/2010 2:05:00 PM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100429D	QC Batch: 63750			PrepDate:	4/28/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:27 PM
Arsenic	3.8	1.0		mg/Kg	1	4/29/2010 05:27 PM
Barium	140	1.0		mg/Kg	1	4/29/2010 05:27 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:27 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:27 PM
Chromium	42	1.0		mg/Kg	1	4/29/2010 05:27 PM
Cobalt	6.6	1.0		mg/Kg	1	4/29/2010 05:27 PM
Copper	73	2.0		mg/Kg	1	4/29/2010 05:27 PM
Lead	29	1.0		mg/Kg	1	4/29/2010 05:27 PM
Molybdenum	1.2	1.0		mg/Kg	1	4/29/2010 05:27 PM
Nickel	44	1.0		mg/Kg	1	4/29/2010 05:27 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:27 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:27 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:27 PM
Vanadium	22	1.0		mg/Kg	1	4/29/2010 05:27 PM
Zinc	210	1.0		mg/Kg	1	4/29/2010 05:27 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC16_100429B	QC Batch: 63729			PrepDate:	4/28/2010	Analyst: **CBR**
DRO	35	1.0		mg/Kg	1	4/29/2010 01:48 PM
ORO	73	1.0		mg/Kg	1	4/29/2010 01:48 PM
Surr: p-Terphenyl	78.0	30-128		%REC	1	4/29/2010 01:48 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429D	QC Batch: 63753			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 01:29 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW17-0
Lab Order:	111453	**Collection Date:**	4/23/2010 2:15:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111453-010		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100429D	QC Batch: 63750			PrepDate:	4/28/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:30 PM
Arsenic	2.8	1.0		mg/Kg	1	4/29/2010 05:30 PM
Barium	72	1.0		mg/Kg	1	4/29/2010 05:30 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:30 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:30 PM
Chromium	26	1.0		mg/Kg	1	4/29/2010 05:30 PM
Cobalt	6.5	1.0		mg/Kg	1	4/29/2010 05:30 PM
Copper	19	2.0		mg/Kg	1	4/29/2010 05:30 PM
Lead	36	1.0		mg/Kg	1	4/29/2010 05:30 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 05:30 PM
Nickel	64	1.0		mg/Kg	1	4/29/2010 05:30 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:30 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:30 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:30 PM
Vanadium	14	1.0		mg/Kg	1	4/29/2010 05:30 PM
Zinc	32	1.0		mg/Kg	1	4/29/2010 05:30 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC16_100429B	QC Batch: 63729			PrepDate:	4/28/2010	Analyst: **CBR**
DRO	14	1.0		mg/Kg	1	4/29/2010 01:12 PM
ORO	18	1.0		mg/Kg	1	4/29/2010 01:12 PM
Surr: p-Terphenyl	127	30-128		%REC	1	4/29/2010 01:12 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429D	QC Batch: 63753			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 01:04 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Lab Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111453-011

Client Sample ID: RW16-0
Collection Date: 4/23/2010 3:20:00 PM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100429E	QC Batch: 63751			PrepDate: 4/28/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:50 PM
Arsenic	4.7	1.0		mg/Kg	1	4/29/2010 05:50 PM
Barium	120	1.0		mg/Kg	1	4/29/2010 05:50 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:50 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:50 PM
Chromium	19	1.0		mg/Kg	1	4/29/2010 05:50 PM
Cobalt	6.6	1.0		mg/Kg	1	4/29/2010 05:50 PM
Copper	190	2.0		mg/Kg	1	4/29/2010 05:50 PM
Lead	110	1.0		mg/Kg	1	4/29/2010 05:50 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 05:50 PM
Nickel	22	1.0		mg/Kg	1	4/29/2010 05:50 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:50 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:50 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:50 PM
Vanadium	30	1.0		mg/Kg	1	4/29/2010 05:50 PM
Zinc	660	1.0		mg/Kg	1	4/29/2010 05:50 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC16_100429B	QC Batch: 63729			PrepDate: 4/28/2010		Analyst: **CBR**
DRO	68	20		mg/Kg	10	4/29/2010 02:36 PM
ORO	400	20		mg/Kg	10	4/29/2010 02:36 PM
Surr: p-Terphenyl	0	30-128	SDO	%REC	10	4/29/2010 02:36 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429E	QC Batch: 63754			PrepDate: 4/28/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 01:51 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111453-012

Client Sample ID: RW26-4
Collection Date: 4/23/2010 8:30:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100429E	QC Batch: 63751			PrepDate: 4/28/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:52 PM
Arsenic	3.3	1.0		mg/Kg	1	4/29/2010 05:52 PM
Barium	230	1.0		mg/Kg	1	4/29/2010 05:52 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:52 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:52 PM
Chromium	24	1.0		mg/Kg	1	4/29/2010 05:52 PM
Cobalt	8.4	1.0		mg/Kg	1	4/29/2010 05:52 PM
Copper	28	2.0		mg/Kg	1	4/29/2010 05:52 PM
Lead	320	1.0		mg/Kg	1	4/29/2010 05:52 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 05:52 PM
Nickel	67	1.0		mg/Kg	1	4/29/2010 05:52 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:52 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:52 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:52 PM
Vanadium	20	1.0		mg/Kg	1	4/29/2010 05:52 PM
Zinc	91	1.0		mg/Kg	1	4/29/2010 05:52 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100430A	QC Batch: E10VS110			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 01:17 PM
Surr: Bromofluorobenzene (FID)	108	56-137		%REC	1	4/30/2010 01:17 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100430A	QC Batch: E10VS110			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 01:17 PM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 01:17 PM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 01:17 PM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 01:17 PM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 01:17 PM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 01:17 PM
Surr: Bromofluorobenzene (PID)	94.7	64-116		%REC	1	4/30/2010 01:17 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429E	QC Batch: 63754			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW26-4
Lab Order:	111453	**Collection Date:**	4/23/2010 8:30:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111453-012		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
	EPA 7471A					
RunID: AA1_100429E	QC Batch: 63754			PrepDate: 4/28/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 01:54 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Lab Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111453-013

Client Sample ID: RW25-4
Collection Date: 4/23/2010 9:35:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100429E	QC Batch: 63751			PrepDate: 4/28/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:54 PM
Arsenic	2.8	1.0		mg/Kg	1	4/29/2010 05:54 PM
Barium	160	1.0		mg/Kg	1	4/29/2010 05:54 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:54 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:54 PM
Chromium	34	1.0		mg/Kg	1	4/29/2010 05:54 PM
Cobalt	6.8	1.0		mg/Kg	1	4/29/2010 05:54 PM
Copper	14	2.0		mg/Kg	1	4/29/2010 05:54 PM
Lead	4.6	1.0		mg/Kg	1	4/29/2010 05:54 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 05:54 PM
Nickel	47	1.0		mg/Kg	1	4/29/2010 05:54 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:54 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:54 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:54 PM
Vanadium	20	1.0		mg/Kg	1	4/29/2010 05:54 PM
Zinc	31	1.0		mg/Kg	1	4/29/2010 05:54 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100430A	QC Batch: E10VS110			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 01:31 PM
Surr: Bromofluorobenzene (FID)	118	56-137		%REC	1	4/30/2010 01:31 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100430A	QC Batch: E10VS110			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 01:31 PM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 01:31 PM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 01:31 PM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 01:31 PM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 01:31 PM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 01:31 PM
Surr: Bromofluorobenzene (PID)	103	64-116		%REC	1	4/30/2010 01:31 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429E	QC Batch: 63754			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference
DO Surrogate Diluted Out
E Value above quantitation range
ND Not Detected at the Reporting Limit
Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW25-4
Lab Order:	111453	**Collection Date:**	4/23/2010 9:35:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111453-013		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
	EPA 7471A					
RunID: AA1_100429E	QC Batch: 63754			PrepDate: 4/28/2010		Analyst: **IL**
Mercury	0.43	0.10		mg/Kg	1	4/29/2010 01:56 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Lab Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111453-014

Client Sample ID: RW24-4
Collection Date: 4/23/2010 9:45:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100429E	QC Batch: 63751			PrepDate: 4/28/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 05:57 PM
Arsenic	3.8	1.0		mg/Kg	1	4/29/2010 05:57 PM
Barium	390	1.0		mg/Kg	1	4/29/2010 05:57 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 05:57 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 05:57 PM
Chromium	15	1.0		mg/Kg	1	4/29/2010 05:57 PM
Cobalt	11	1.0		mg/Kg	1	4/29/2010 05:57 PM
Copper	16	2.0		mg/Kg	1	4/29/2010 05:57 PM
Lead	6.5	1.0		mg/Kg	1	4/29/2010 05:57 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 05:57 PM
Nickel	25	1.0		mg/Kg	1	4/29/2010 05:57 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 05:57 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 05:57 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 05:57 PM
Vanadium	29	1.0		mg/Kg	1	4/29/2010 05:57 PM
Zinc	28	1.0		mg/Kg	1	4/29/2010 05:57 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100430A	QC Batch: E10VS110			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 01:46 PM
Surr: Bromofluorobenzene (FID)	117	56-137		%REC	1	4/30/2010 01:46 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100430A	QC Batch: E10VS110			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 01:46 PM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 01:46 PM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 01:46 PM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 01:46 PM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 01:46 PM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 01:46 PM
Surr: Bromofluorobenzene (PID)	102	64-116		%REC	1	4/30/2010 01:46 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429E	QC Batch: 63754			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference
DO Surrogate Diluted Out
E Value above quantitation range
ND Not Detected at the Reporting Limit
Results are wet unless otherwise specified

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW24-4
Lab Order:	111453	**Collection Date:**	4/23/2010 9:45:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111453-014		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
	EPA 7471A					
RunID: AA1_100429E	QC Batch: 63754			PrepDate: 4/28/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 01:58 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Lab Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111453-015

Client Sample ID: RW23-4
Collection Date: 4/23/2010 10:25:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100429E	QC Batch: 63751			PrepDate: 4/28/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 06:04 PM
Arsenic	3.6	1.0		mg/Kg	1	4/29/2010 06:04 PM
Barium	98	1.0		mg/Kg	1	4/29/2010 06:04 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 06:04 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 06:04 PM
Chromium	6.2	1.0		mg/Kg	1	4/29/2010 06:04 PM
Cobalt	5.2	1.0		mg/Kg	1	4/29/2010 06:04 PM
Copper	6.8	2.0		mg/Kg	1	4/29/2010 06:04 PM
Lead	4.6	1.0		mg/Kg	1	4/29/2010 06:04 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 06:04 PM
Nickel	9.4	1.0		mg/Kg	1	4/29/2010 06:04 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 06:04 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 06:04 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 06:04 PM
Vanadium	19	1.0		mg/Kg	1	4/29/2010 06:04 PM
Zinc	12	1.0		mg/Kg	1	4/29/2010 06:04 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100430A	QC Batch: E10VS110			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 02:00 PM
Surr: Bromofluorobenzene (FID)	118	56-137		%REC	1	4/30/2010 02:00 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100430A	QC Batch: E10VS110			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 02:00 PM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 02:00 PM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 02:00 PM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 02:00 PM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 02:00 PM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 02:00 PM
Surr: Bromofluorobenzene (PID)	104	64-116		%REC	1	4/30/2010 02:00 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429E	QC Batch: 63754			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW23-4
Lab Order:	111453	**Collection Date:**	4/23/2010 10:25:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111453-015		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
	EPA 7471A					
RunID: AA1_100429E	QC Batch: 63754			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 02:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111453-016

Client Sample ID: RW22-4
Collection Date: 4/23/2010 10:45:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP10_100429E	QC Batch: 63751			PrepDate: 4/28/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 06:06 PM
Arsenic	4.0	1.0		mg/Kg	1	4/29/2010 06:06 PM
Barium	180	1.0		mg/Kg	1	4/29/2010 06:06 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 06:06 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 06:06 PM
Chromium	16	1.0		mg/Kg	1	4/29/2010 06:06 PM
Cobalt	6.7	1.0		mg/Kg	1	4/29/2010 06:06 PM
Copper	16	2.0		mg/Kg	1	4/29/2010 06:06 PM
Lead	4.3	1.0		mg/Kg	1	4/29/2010 06:06 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 06:06 PM
Nickel	22	1.0		mg/Kg	1	4/29/2010 06:06 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 06:06 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 06:06 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 06:06 PM
Vanadium	24	1.0		mg/Kg	1	4/29/2010 06:06 PM
Zinc	29	1.0		mg/Kg	1	4/29/2010 06:06 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100430A	QC Batch: E10VS110			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 02:15 PM
Surr: Bromofluorobenzene (FID)	118	56-137		%REC	1	4/30/2010 02:15 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100430A	QC Batch: E10VS110			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 02:15 PM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 02:15 PM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 02:15 PM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 02:15 PM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 02:15 PM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 02:15 PM
Surr: Bromofluorobenzene (PID)	104	64-116		%REC	1	4/30/2010 02:15 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429E	QC Batch: 63754			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW22-4
Lab Order:	111453	**Collection Date:**	4/23/2010 10:45:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111453-016		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
	EPA 7471A					
RunID: AA1_100429E	QC Batch: 63754			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 02:02 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111453-017

Client Sample ID: RW21-4
Collection Date: 4/23/2010 10:50:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100429E	QC Batch: 63751			PrepDate: 4/28/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 06:09 PM
Arsenic	3.1	1.0		mg/Kg	1	4/29/2010 06:09 PM
Barium	260	1.0		mg/Kg	1	4/29/2010 06:09 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 06:09 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 06:09 PM
Chromium	17	1.0		mg/Kg	1	4/29/2010 06:09 PM
Cobalt	7.3	1.0		mg/Kg	1	4/29/2010 06:09 PM
Copper	15	2.0		mg/Kg	1	4/29/2010 06:09 PM
Lead	5.2	1.0		mg/Kg	1	4/29/2010 06:09 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 06:09 PM
Nickel	26	1.0		mg/Kg	1	4/29/2010 06:09 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 06:09 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 06:09 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 06:09 PM
Vanadium	23	1.0		mg/Kg	1	4/29/2010 06:09 PM
Zinc	26	1.0		mg/Kg	1	4/29/2010 06:09 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100430A	QC Batch: E10VS110			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 02:29 PM
Surr: Bromofluorobenzene (FID)	116	56-137		%REC	1	4/30/2010 02:29 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100430A	QC Batch: E10VS110			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 02:29 PM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 02:29 PM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 02:29 PM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 02:29 PM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 02:29 PM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 02:29 PM
Surr: Bromofluorobenzene (PID)	102	64-116		%REC	1	4/30/2010 02:29 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429E	QC Batch: 63754			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference
DO Surrogate Diluted Out
E Value above quantitation range
ND Not Detected at the Reporting Limit
Results are wet unless otherwise specified

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW21-4
Lab Order:	111453	**Collection Date:**	4/23/2010 10:50:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111453-017		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
	EPA 7471A					
RunID: AA1_100429E	QC Batch: 63754			PrepDate: 4/28/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/29/2010 02:08 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111453-018

Client Sample ID: RW20-4
Collection Date: 4/23/2010 12:00:00 PM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100429E	QC Batch: 63751			PrepDate: 4/28/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 06:11 PM
Arsenic	4.0	1.0		mg/Kg	1	4/29/2010 06:11 PM
Barium	130	1.0		mg/Kg	1	4/29/2010 06:11 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 06:11 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 06:11 PM
Chromium	34	1.0		mg/Kg	1	4/29/2010 06:11 PM
Cobalt	10	1.0		mg/Kg	1	4/29/2010 06:11 PM
Copper	19	2.0		mg/Kg	1	4/29/2010 06:11 PM
Lead	5.1	1.0		mg/Kg	1	4/29/2010 06:11 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 06:11 PM
Nickel	85	1.0		mg/Kg	1	4/29/2010 06:11 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 06:11 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 06:11 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 06:11 PM
Vanadium	27	1.0		mg/Kg	1	4/29/2010 06:11 PM
Zinc	30	1.0		mg/Kg	1	4/29/2010 06:11 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100430A	QC Batch: E10VS110			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 02:44 PM
Surr: Bromofluorobenzene (FID)	118	56-137		%REC	1	4/30/2010 02:44 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100430A	QC Batch: E10VS110			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 02:44 PM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 02:44 PM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 02:44 PM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 02:44 PM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 02:44 PM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 02:44 PM
Surr: Bromofluorobenzene (PID)	102	64-116		%REC	1	4/30/2010 02:44 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429E	QC Batch: 63754			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW20-4
Lab Order:	111453	**Collection Date:**	4/23/2010 12:00:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111453-018		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
		EPA 7471A				
RunID: AA1_100429E	QC Batch: 63754			PrepDate: 4/28/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 02:10 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111453-019

Client Sample ID: RW19-4
Collection Date: 4/23/2010 1:00:00 PM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100429E	QC Batch: 63751			PrepDate: 4/28/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 06:13 PM
Arsenic	2.4	1.0		mg/Kg	1	4/29/2010 06:13 PM
Barium	110	1.0		mg/Kg	1	4/29/2010 06:13 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 06:13 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 06:13 PM
Chromium	17	1.0		mg/Kg	1	4/29/2010 06:13 PM
Cobalt	3.5	1.0		mg/Kg	1	4/29/2010 06:13 PM
Copper	9.9	2.0		mg/Kg	1	4/29/2010 06:13 PM
Lead	3.4	1.0		mg/Kg	1	4/29/2010 06:13 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 06:13 PM
Nickel	20	1.0		mg/Kg	1	4/29/2010 06:13 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 06:13 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 06:13 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 06:13 PM
Vanadium	21	1.0		mg/Kg	1	4/29/2010 06:13 PM
Zinc	21	1.0		mg/Kg	1	4/29/2010 06:13 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100430A	QC Batch: E10VS110			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 02:59 PM
Surr: Bromofluorobenzene (FID)	118	56-137		%REC	1	4/30/2010 02:59 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100430A	QC Batch: E10VS110			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 02:59 PM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 02:59 PM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 02:59 PM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 02:59 PM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 02:59 PM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 02:59 PM
Surr: Bromofluorobenzene (PID)	103	64-116		%REC	1	4/30/2010 02:59 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429E	QC Batch: 63754			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference
DO Surrogate Diluted Out
E Value above quantitation range
ND Not Detected at the Reporting Limit
Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW19-4
Lab Order:	111453	**Collection Date:**	4/23/2010 1:00:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111453-019		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
	EPA 7471A					
RunID: AA1_100429E	QC Batch: 63754			PrepDate: 4/28/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/29/2010 02:12 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Lab Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111453-020

Client Sample ID: RW18-4
Collection Date: 4/23/2010 2:05:00 PM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100429E	QC Batch: 63751			PrepDate: 4/28/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 06:16 PM
Arsenic	4.5	1.0		mg/Kg	1	4/29/2010 06:16 PM
Barium	89	1.0		mg/Kg	1	4/29/2010 06:16 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 06:16 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 06:16 PM
Chromium	15	1.0		mg/Kg	1	4/29/2010 06:16 PM
Cobalt	5.7	1.0		mg/Kg	1	4/29/2010 06:16 PM
Copper	11	2.0		mg/Kg	1	4/29/2010 06:16 PM
Lead	5.4	1.0		mg/Kg	1	4/29/2010 06:16 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 06:16 PM
Nickel	15	1.0		mg/Kg	1	4/29/2010 06:16 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 06:16 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 06:16 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 06:16 PM
Vanadium	37	1.0		mg/Kg	1	4/29/2010 06:16 PM
Zinc	28	1.0		mg/Kg	1	4/29/2010 06:16 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100430A	QC Batch: E10VS110			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 03:13 PM
Surr: Bromofluorobenzene (FID)	113	56-137		%REC	1	4/30/2010 03:13 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100430A	QC Batch: E10VS110			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 03:13 PM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 03:13 PM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 03:13 PM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 03:13 PM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 03:13 PM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 03:13 PM
Surr: Bromofluorobenzene (PID)	99.3	64-116		%REC	1	4/30/2010 03:13 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429E	QC Batch: 63754			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike/Surrogate outside of limits due to matrix interference
- Results are wet unless otherwise specified
- DO Surrogate Diluted Out

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW18-4
Lab Order:	111453	**Collection Date:**	4/23/2010 2:05:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111453-020		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
	EPA 7471A					
RunID: AA1_100429E	QC Batch: 63754			PrepDate: 4/28/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/29/2010 01:47 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Lab Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111453-021

Client Sample ID: RW17-4
Collection Date: 4/23/2010 2:15:00 PM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100429F	QC Batch: 63752			PrepDate: 4/28/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 06:44 PM
Arsenic	2.4	1.0		mg/Kg	1	4/29/2010 06:44 PM
Barium	150	1.0		mg/Kg	1	4/29/2010 06:44 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 06:44 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 06:44 PM
Chromium	21	1.0		mg/Kg	1	4/29/2010 06:44 PM
Cobalt	6.4	1.0		mg/Kg	1	4/29/2010 06:44 PM
Copper	14	2.0		mg/Kg	1	4/29/2010 06:44 PM
Lead	24	1.0		mg/Kg	1	4/29/2010 06:44 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 06:44 PM
Nickel	29	1.0		mg/Kg	1	4/29/2010 06:44 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 06:44 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 06:44 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 06:44 PM
Vanadium	26	1.0		mg/Kg	1	4/29/2010 06:44 PM
Zinc	28	1.0		mg/Kg	1	4/29/2010 06:44 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100430A	QC Batch: E10VS110			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 03:28 PM
Surr: Bromofluorobenzene (FID)	114	56-137		%REC	1	4/30/2010 03:28 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100430A	QC Batch: E10VS110			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 03:28 PM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 03:28 PM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 03:28 PM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 03:28 PM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 03:28 PM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 03:28 PM
Surr: Bromofluorobenzene (PID)	100	64-116		%REC	1	4/30/2010 03:28 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429F	QC Batch: 63756			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike/Surrogate outside of limits due to matrix interference
- Results are wet unless otherwise specified
- DO Surrogate Diluted Out

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW17-4
Lab Order:	111453	**Collection Date:**	4/23/2010 2:15:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111453-021		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
	EPA 7471A					
RunID: AA1_100429F	QC Batch: 63756			PrepDate: 4/28/2010	Analyst: **IL**	
Mercury	ND	0.10		mg/Kg	1	4/29/2010 02:41 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111453-022

Client Sample ID: RW16-4
Collection Date: 4/23/2010 3:20:00 PM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100429F	QC Batch: 63752			PrepDate: 4/28/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	4/29/2010 06:46 PM
Arsenic	5.4	1.0		mg/Kg	1	4/29/2010 06:46 PM
Barium	420	1.0		mg/Kg	1	4/29/2010 06:46 PM
Beryllium	ND	1.0		mg/Kg	1	4/29/2010 06:46 PM
Cadmium	ND	1.0		mg/Kg	1	4/29/2010 06:46 PM
Chromium	16	1.0		mg/Kg	1	4/29/2010 06:46 PM
Cobalt	8.5	1.0		mg/Kg	1	4/29/2010 06:46 PM
Copper	16	2.0		mg/Kg	1	4/29/2010 06:46 PM
Lead	4.9	1.0		mg/Kg	1	4/29/2010 06:46 PM
Molybdenum	ND	1.0		mg/Kg	1	4/29/2010 06:46 PM
Nickel	21	1.0		mg/Kg	1	4/29/2010 06:46 PM
Selenium	ND	1.0		mg/Kg	1	4/29/2010 06:46 PM
Silver	ND	1.0		mg/Kg	1	4/29/2010 06:46 PM
Thallium	ND	1.0		mg/Kg	1	4/29/2010 06:46 PM
Vanadium	33	1.0		mg/Kg	1	4/29/2010 06:46 PM
Zinc	32	1.0		mg/Kg	1	4/29/2010 06:46 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100430B	QC Batch: E10VS111			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	4/30/2010 07:07 PM
Surr: Bromofluorobenzene (FID)	120	56-137		%REC	1	4/30/2010 07:07 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100430B	QC Batch: E10VS111			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	4/30/2010 07:07 PM
Ethylbenzene	ND	5.0		µg/Kg	1	4/30/2010 07:07 PM
m,p-Xylene	ND	10		µg/Kg	1	4/30/2010 07:07 PM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	4/30/2010 07:07 PM
o-Xylene	ND	5.0		µg/Kg	1	4/30/2010 07:07 PM
Toluene	ND	5.0		µg/Kg	1	4/30/2010 07:07 PM
Surr: Bromofluorobenzene (PID)	106	64-116		%REC	1	4/30/2010 07:07 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100429F	QC Batch: 63756			PrepDate: 4/28/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW16-4
Lab Order:	111453	**Collection Date:**	4/23/2010 3:20:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111453-022		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
		EPA 7471A				
RunID: AA1_100429F	QC Batch: 63756			PrepDate: 4/28/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	4/29/2010 02:26 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111453-023

Client Sample ID: RW26-GW
Collection Date: 4/23/2010 9:00:00 AM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3010A			**EPA 6010B**		
RunID: ICP8_100430B	QC Batch: 63716			PrepDate: 4/28/2010		Analyst: **SRB**
Antimony	0.082	0.0050		mg/L	1	4/30/2010 12:12 PM
Arsenic	0.21	0.010		mg/L	1	4/30/2010 12:12 PM
Barium	25	0.0030		mg/L	1	4/30/2010 12:12 PM
Beryllium	ND	0.0030		mg/L	1	4/30/2010 12:12 PM
Cadmium	0.036	0.0030		mg/L	1	4/30/2010 12:12 PM
Chromium	6.4	0.0030		mg/L	1	4/30/2010 12:12 PM
Cobalt	1.6	0.0030		mg/L	1	4/30/2010 12:12 PM
Copper	2.6	0.0050		mg/L	1	4/30/2010 12:12 PM
Lead	1.2	0.0050		mg/L	1	4/30/2010 12:12 PM
Molybdenum	0.15	0.0050		mg/L	1	4/30/2010 12:12 PM
Nickel	18	0.0050		mg/L	1	4/30/2010 12:12 PM
Selenium	0.033	0.010		mg/L	1	4/30/2010 12:12 PM
Silver	ND	0.0030		mg/L	1	4/30/2010 12:12 PM
Thallium	0.023	0.015		mg/L	1	4/30/2010 12:12 PM
Vanadium	2.9	0.0030		mg/L	1	4/30/2010 12:12 PM
Zinc	3.9	0.010		mg/L	1	4/30/2010 12:12 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3510C			**EPA 8015B(M)**		
RunID: GC16_100430A	QC Batch: 63805			PrepDate: 4/29/2010		Analyst: **CBR**
DRO	0.071	0.062		mg/L	1	4/30/2010 02:22 PM
ORO	0.066	0.062		mg/L	1	4/30/2010 02:22 PM
Surr: p-Terphenyl	149	36-126	S	%REC	1	4/30/2010 02:22 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
GRO	ND	0.050		mg/L	1	5/1/2010 05:31 PM
Surr: Bromofluorobenzene (FID)	104	70-130		%REC	1	5/1/2010 05:31 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
Benzene	ND	0.50		µg/L	1	5/1/2010 05:31 PM
Ethylbenzene	ND	0.50		µg/L	1	5/1/2010 05:31 PM
m,p-Xylene	ND	1.0		µg/L	1	5/1/2010 05:31 PM
Methyl tert-butyl ether	ND	0.50		µg/L	1	5/1/2010 05:31 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW26-GW
Lab Order:	111453	**Collection Date:**	4/23/2010 9:00:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	GROUNDWATER
Lab ID:	111453-023		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/PID				**EPA 8021B**		
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
o-Xylene	ND	0.50		µg/L	1	5/1/2010 05:31 PM
Toluene	ND	0.50		µg/L	1	5/1/2010 05:31 PM
Surr: Bromofluorobenzene (PID)	94.8	70-130		%REC	1	5/1/2010 05:31 PM
MERCURY BY COLD VAPOR TECHNIQUE				**EPA 7470A**		
RunID: AA1_100428E	QC Batch: 63717			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	5.2	0.20		µg/L	1	4/28/2010 01:28 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Lab Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111453-024

Client Sample ID: RW24-GW
Collection Date: 4/23/2010 10:00:00 AM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3010A			**EPA 6010B**		
RunID: ICP8_100430B	QC Batch: 63716			PrepDate: 4/28/2010		Analyst: **SRB**
Antimony	0.018	0.0050		mg/L	1	4/30/2010 12:29 PM
Arsenic	0.076	0.010		mg/L	1	4/30/2010 12:29 PM
Barium	8.3	0.0030		mg/L	1	4/30/2010 12:29 PM
Beryllium	0.0077	0.0030		mg/L	1	4/30/2010 12:29 PM
Cadmium	0.013	0.0030		mg/L	1	4/30/2010 12:29 PM
Chromium	1.2	0.0030		mg/L	1	4/30/2010 12:29 PM
Cobalt	0.39	0.0030		mg/L	1	4/30/2010 12:29 PM
Copper	0.70	0.0050		mg/L	1	4/30/2010 12:29 PM
Lead	0.47	0.0050		mg/L	1	4/30/2010 12:29 PM
Molybdenum	0.049	0.0050		mg/L	1	4/30/2010 12:29 PM
Nickel	2.5	0.0050		mg/L	1	4/30/2010 12:29 PM
Selenium	0.013	0.010		mg/L	1	4/30/2010 12:29 PM
Silver	ND	0.0030		mg/L	1	4/30/2010 12:29 PM
Thallium	ND	0.015		mg/L	1	4/30/2010 12:29 PM
Vanadium	0.89	0.0030		mg/L	1	4/30/2010 12:29 PM
Zinc	1.8	0.010		mg/L	1	4/30/2010 12:29 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3510C			**EPA 8015B(M)**		
RunID: GC16_100430A	QC Batch: 63805			PrepDate: 4/29/2010		Analyst: **CBR**
DRO	ND	0.062		mg/L	1	4/30/2010 02:31 PM
ORO	ND	0.062		mg/L	1	4/30/2010 02:31 PM
Surr: p-Terphenyl	133	36-126	S	%REC	1	4/30/2010 02:31 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
GRO	ND	0.050		mg/L	1	5/1/2010 05:50 PM
Surr: Bromofluorobenzene (FID)	106	70-130		%REC	1	5/1/2010 05:50 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
Benzene	ND	0.50		µg/L	1	5/1/2010 05:50 PM
Ethylbenzene	ND	0.50		µg/L	1	5/1/2010 05:50 PM
m,p-Xylene	ND	1.0		µg/L	1	5/1/2010 05:50 PM
Methyl tert-butyl ether	ND	0.50		µg/L	1	5/1/2010 05:50 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike/Surrogate outside of limits due to matrix interference
- Results are wet unless otherwise specified
- DO Surrogate Diluted Out

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW24-GW
Lab Order:	111453	**Collection Date:**	4/23/2010 10:00:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	GROUNDWATER
Lab ID:	111453-024		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
			EPA 8021B			
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
o-Xylene	ND	0.50		µg/L	1	5/1/2010 05:50 PM
Toluene	ND	0.50		µg/L	1	5/1/2010 05:50 PM
Surr: Bromofluorobenzene (PID)	96.2	70-130		%REC	1	5/1/2010 05:50 PM
MERCURY BY COLD VAPOR TECHNIQUE						
			EPA 7470A			
RunID: AA1_100428E	QC Batch: 63717			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	ND	0.20		µg/L	1	4/28/2010 01:33 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Lab Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111453-025

Client Sample ID: RW21-GW
Collection Date: 4/23/2010 11:15:00 AM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3010A			**EPA 6010B**		
RunID: ICP8_100430B	QC Batch: 63716			PrepDate: 4/28/2010		Analyst: **SRB**
Antimony	0.043	0.025		mg/L	1	4/30/2010 12:33 PM
Arsenic	1.8	0.050		mg/L	1	4/30/2010 12:33 PM
Barium	16	0.015		mg/L	1	4/30/2010 12:33 PM
Beryllium	ND	0.015		mg/L	1	4/30/2010 12:33 PM
Cadmium	0.043	0.015		mg/L	1	4/30/2010 12:33 PM
Chromium	4.7	0.015		mg/L	1	4/30/2010 12:33 PM
Cobalt	2.4	0.015		mg/L	1	4/30/2010 12:33 PM
Copper	2.3	0.025		mg/L	1	4/30/2010 12:33 PM
Lead	0.59	0.025		mg/L	1	4/30/2010 12:33 PM
Molybdenum	0.14	0.025		mg/L	1	4/30/2010 12:33 PM
Nickel	28	0.025		mg/L	1	4/30/2010 12:33 PM
Selenium	0.24	0.050		mg/L	1	4/30/2010 12:33 PM
Silver	ND	0.015		mg/L	1	4/30/2010 12:33 PM
Thallium	ND	0.075		mg/L	1	4/30/2010 12:33 PM
Vanadium	4.8	0.015		mg/L	1	4/30/2010 12:33 PM
Zinc	3.4	0.050		mg/L	1	4/30/2010 12:33 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3510C			**EPA 8015B(M)**		
RunID: GC16_100430A	QC Batch: 63805			PrepDate: 4/29/2010		Analyst: **CBR**
DRO	ND	0.067		mg/L	1	4/30/2010 02:40 PM
ORO	ND	0.067		mg/L	1	4/30/2010 02:40 PM
Surr: p-Terphenyl	129	36-126	S	%REC	1	4/30/2010 02:40 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
GRO	ND	0.050		mg/L	1	5/1/2010 06:09 PM
Surr: Bromofluorobenzene (FID)	105	70-130		%REC	1	5/1/2010 06:09 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
Benzene	ND	0.50		µg/L	1	5/1/2010 06:09 PM
Ethylbenzene	ND	0.50		µg/L	1	5/1/2010 06:09 PM
m,p-Xylene	ND	1.0		µg/L	1	5/1/2010 06:09 PM
Methyl tert-butyl ether	ND	0.50		µg/L	1	5/1/2010 06:09 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW21-GW
Lab Order:	111453	**Collection Date:**	4/23/2010 11:15:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	GROUNDWATER
Lab ID:	111453-025		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/PID				**EPA 8021B**		
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
o-Xylene	ND	0.50		µg/L	1	5/1/2010 06:09 PM
Toluene	ND	0.50		µg/L	1	5/1/2010 06:09 PM
Surr: Bromofluorobenzene (PID)	95.4	70-130		%REC	1	5/1/2010 06:09 PM
MERCURY BY COLD VAPOR TECHNIQUE				**EPA 7470A**		
RunID: AA1_100428E	QC Batch: 63717			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	4.7	0.20		µg/L	1	4/28/2010 01:35 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Lab Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111453-026

Client Sample ID: RW19-GW
Collection Date: 4/23/2010 1:30:00 PM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3010A			**EPA 6010B**		
RunID: ICP8_100430B	QC Batch: 63716			PrepDate: 4/28/2010		Analyst: **SRB**
Antimony	0.015	0.0050		mg/L	1	4/30/2010 12:37 PM
Arsenic	0.13	0.010		mg/L	1	4/30/2010 12:37 PM
Barium	3.1	0.0030		mg/L	1	4/30/2010 12:37 PM
Beryllium	0.0058	0.0030		mg/L	1	4/30/2010 12:37 PM
Cadmium	0.010	0.0030		mg/L	1	4/30/2010 12:37 PM
Chromium	1.1	0.0030		mg/L	1	4/30/2010 12:37 PM
Cobalt	0.40	0.0030		mg/L	1	4/30/2010 12:37 PM
Copper	0.70	0.0050		mg/L	1	4/30/2010 12:37 PM
Lead	0.34	0.0050		mg/L	1	4/30/2010 12:37 PM
Molybdenum	0.049	0.0050		mg/L	1	4/30/2010 12:37 PM
Nickel	1.1	0.0050		mg/L	1	4/30/2010 12:37 PM
Selenium	ND	0.010		mg/L	1	4/30/2010 12:37 PM
Silver	ND	0.0030		mg/L	1	4/30/2010 12:37 PM
Thallium	ND	0.015		mg/L	1	4/30/2010 12:37 PM
Vanadium	1.3	0.0030		mg/L	1	4/30/2010 12:37 PM
Zinc	1.8	0.010		mg/L	1	4/30/2010 12:37 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3510C			**EPA 8015B(M)**		
RunID: GC16_100430A	QC Batch: 63805			PrepDate: 4/29/2010		Analyst: **CBR**
DRO	0.080	0.056		mg/L	1	4/30/2010 04:22 PM
ORO	0.10	0.056		mg/L	1	4/30/2010 04:22 PM
Surr: p-Terphenyl	119	36-126		%REC	1	4/30/2010 04:22 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
GRO	ND	0.050		mg/L	1	5/1/2010 06:29 PM
Surr: Bromofluorobenzene (FID)	104	70-130		%REC	1	5/1/2010 06:29 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
Benzene	ND	0.50		µg/L	1	5/1/2010 06:29 PM
Ethylbenzene	ND	0.50		µg/L	1	5/1/2010 06:29 PM
m,p-Xylene	ND	1.0		µg/L	1	5/1/2010 06:29 PM
Methyl tert-butyl ether	ND	0.50		µg/L	1	5/1/2010 06:29 PM

Qualifiers:
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike/Surrogate outside of limits due to matrix interference
- Results are wet unless otherwise specified
- DO Surrogate Diluted Out

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW19-GW
Lab Order:	111453	**Collection Date:**	4/23/2010 1:30:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	GROUNDWATER
Lab ID:	111453-026		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
			EPA 8021B			
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
o-Xylene	ND	0.50		µg/L	1	5/1/2010 06:29 PM
Toluene	ND	0.50		µg/L	1	5/1/2010 06:29 PM
Surr: Bromofluorobenzene (PID)	94.2	70-130		%REC	1	5/1/2010 06:29 PM
MERCURY BY COLD VAPOR TECHNIQUE						
			EPA 7470A			
RunID: AA1_100428E	QC Batch: 63717			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	0.80	0.20		µg/L	1	4/28/2010 01:37 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Lab Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111453-027

Client Sample ID: RW17-GW
Collection Date: 4/23/2010 3:00:00 PM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3010A			**EPA 6010B**		
RunID: ICP8_100430B	QC Batch: 63716			PrepDate: 4/28/2010		Analyst: **SRB**
Antimony	0.0088	0.0050		mg/L	1	4/30/2010 12:41 PM
Arsenic	0.032	0.010		mg/L	1	4/30/2010 12:41 PM
Barium	1.6	0.0030		mg/L	1	4/30/2010 12:41 PM
Beryllium	ND	0.0030		mg/L	1	4/30/2010 12:41 PM
Cadmium	0.0064	0.0030		mg/L	1	4/30/2010 12:41 PM
Chromium	0.89	0.0030		mg/L	1	4/30/2010 12:41 PM
Cobalt	0.27	0.0030		mg/L	1	4/30/2010 12:41 PM
Copper	0.40	0.0050		mg/L	1	4/30/2010 12:41 PM
Lead	0.24	0.0050		mg/L	1	4/30/2010 12:41 PM
Molybdenum	0.057	0.0050		mg/L	1	4/30/2010 12:41 PM
Nickel	1.6	0.0050		mg/L	1	4/30/2010 12:41 PM
Selenium	0.040	0.010		mg/L	1	4/30/2010 12:41 PM
Silver	ND	0.0030		mg/L	1	4/30/2010 12:41 PM
Thallium	ND	0.015		mg/L	1	4/30/2010 12:41 PM
Vanadium	1.8	0.0030		mg/L	1	4/30/2010 12:41 PM
Zinc	0.67	0.010		mg/L	1	4/30/2010 12:41 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3510C			**EPA 8015B(M)**		
RunID: GC16_100430A	QC Batch: 63805			PrepDate: 4/29/2010		Analyst: **CBR**
DRO	ND	0.056		mg/L	1	4/30/2010 02:49 PM
ORO	ND	0.056		mg/L	1	4/30/2010 02:49 PM
Surr: p-Terphenyl	132	36-126	S	%REC	1	4/30/2010 02:49 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
GRO	ND	0.050		mg/L	1	5/1/2010 06:47 PM
Surr: Bromofluorobenzene (FID)	103	70-130		%REC	1	5/1/2010 06:47 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
Benzene	ND	0.50		µg/L	1	5/1/2010 06:47 PM
Ethylbenzene	ND	0.50		µg/L	1	5/1/2010 06:47 PM
m,p-Xylene	ND	1.0		µg/L	1	5/1/2010 06:47 PM
Methyl tert-butyl ether	ND	0.50		µg/L	1	5/1/2010 06:47 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike/Surrogate outside of limits due to matrix interference
- Results are wet unless otherwise specified
- DO Surrogate Diluted Out

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW17-GW
Lab Order:	111453	**Collection Date:**	4/23/2010 3:00:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	GROUNDWATER
Lab ID:	111453-027		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/PID				**EPA 8021B**		
RunID: GC2_100501A	QC Batch: E10VW019			PrepDate:		Analyst: **CL**
o-Xylene	ND	0.50		µg/L	1	5/1/2010 06:47 PM
Toluene	ND	0.50		µg/L	1	5/1/2010 06:47 PM
Surr: Bromofluorobenzene (PID)	92.7	70-130		%REC	1	5/1/2010 06:47 PM
MERCURY BY COLD VAPOR TECHNIQUE				**EPA 7470A**		
RunID: AA1_100428E	QC Batch: 63717			PrepDate:	4/28/2010	Analyst: **IL**
Mercury	1.6	0.20		µg/L	1	4/28/2010 01:26 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63750** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120731**
Client ID: **PBS** Batch ID: **63750** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926740**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	0.299	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	0.122	1.0									
Cobalt	0.015	1.0									
Copper	0.799	2.0									
Lead	ND	1.0									
Molybdenum	0.086	1.0									
Nickel	0.072	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	0.330	1.0									
Vanadium	0.024	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63750** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120731**
Client ID: **LCSS** Batch ID: **63750** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926741**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	46.958	2.0	50.00	0	93.9	80	120				
Arsenic	47.304	1.0	50.00	0.2985	94.0	80	120				
Barium	49.934	1.0	50.00	0	99.9	80	120				
Beryllium	48.840	1.0	50.00	0	97.7	80	120				
Cadmium	47.327	1.0	50.00	0	94.7	80	120				
Chromium	49.107	1.0	50.00	0.1223	98.0	80	120				
Cobalt	49.863	1.0	50.00	0.01461	99.7	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63750**	SampType: **LCS**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120731**
Client ID: **LCSS**	Batch ID: **63750**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/29/2010**	SeqNo: **1926741**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	50.153	2.0	50.00	0.7990	98.7	80	120				
Lead	48.836	1.0	50.00	0	97.7	80	120				
Molybdenum	50.946	1.0	50.00	0.08567	102	80	120				
Nickel	48.586	1.0	50.00	0.07198	97.0	80	120				
Selenium	44.948	1.0	50.00	0	89.9	80	120				
Silver	49.111	1.0	50.00	0	98.2	80	120				
Thallium	47.161	1.0	50.00	0.3301	93.7	80	120				
Vanadium	50.044	1.0	50.00	0.02403	100	80	120				
Zinc	46.386	1.0	50.00	0	92.8	80	120				

Sample ID: **111453-010AMS**	SampType: **MS**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120731**
Client ID: **RW17-0**	Batch ID: **63750**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/29/2010**	SeqNo: **1926753**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	93.689	2.0	125.0	0.5276	74.5	32	105				
Arsenic	111.269	1.0	125.0	2.797	86.8	49	106				
Barium	189.626	1.0	125.0	72.47	93.7	31	133				
Beryllium	115.880	1.0	125.0	0	92.7	56	106				
Cadmium	104.029	1.0	125.0	0.1117	83.1	51	103				
Chromium	141.395	1.0	125.0	26.05	92.3	45	114				
Cobalt	114.698	1.0	125.0	6.527	86.5	52	106				
Copper	134.789	2.0	125.0	18.62	92.9	54	125				
Lead	171.988	1.0	125.0	35.97	109	34	126				
Molybdenum	109.765	1.0	125.0	0	87.8	54	106				
Nickel	175.789	1.0	125.0	63.65	89.7	45	111				
Selenium	106.055	1.0	125.0	0	84.8	47	104				
Silver	116.633	1.0	125.0	0	93.3	56	112				
Thallium	104.558	1.0	125.0	0	83.6	46	101				
Vanadium	130.801	1.0	125.0	13.83	93.6	54	114				
Zinc	144.677	1.0	125.0	32.13	90.0	28	125				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111453-010AMSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120731**
Client ID: **RW17-0** Batch ID: **63750** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926754**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	87.743	2.0	125.0	0.5276	69.8	32	105	93.69	6.55	20	
Arsenic	109.359	1.0	125.0	2.797	85.2	49	106	111.3	1.73	20	
Barium	197.842	1.0	125.0	72.47	100	31	133	189.6	4.24	20	
Beryllium	115.578	1.0	125.0	0	92.5	56	106	115.9	0.261	20	
Cadmium	101.512	1.0	125.0	0.1117	81.1	51	103	104.0	2.45	20	
Chromium	145.877	1.0	125.0	26.05	95.9	45	114	141.4	3.12	20	
Cobalt	113.848	1.0	125.0	6.527	85.9	52	106	114.7	0.744	20	
Copper	137.489	2.0	125.0	18.62	95.1	54	125	134.8	1.98	20	
Lead	138.993	1.0	125.0	35.97	82.4	34	126	172.0	21.2	20	R
Molybdenum	106.165	1.0	125.0	0	84.9	54	106	109.8	3.33	20	
Nickel	198.917	1.0	125.0	63.65	108	45	111	175.8	12.3	20	
Selenium	103.359	1.0	125.0	0	82.7	47	104	106.1	2.57	20	
Silver	116.391	1.0	125.0	0	93.1	56	112	116.6	0.208	20	
Thallium	101.481	1.0	125.0	0	81.2	46	101	104.6	2.99	20	
Vanadium	132.819	1.0	125.0	13.83	95.2	54	114	130.8	1.53	20	
Zinc	142.383	1.0	125.0	32.13	88.2	28	125	144.7	1.60	20	

Sample ID: **111453-010ADUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120731**
Client ID: **RW17-0** Batch ID: **63750** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/30/2010** SeqNo: **1927031**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.767	2.0						0.5276	0	20	
Arsenic	2.972	1.0						2.797	6.05	20	
Barium	74.192	1.0						72.47	2.35	20	
Beryllium	ND	1.0						0	0	20	
Cadmium	0.157	1.0						0.1117	0	20	
Chromium	26.472	1.0						26.05	1.59	20	
Cobalt	6.760	1.0						6.527	3.51	20	
Copper	18.547	2.0						18.62	0.387	20	
Lead	36.464	1.0						35.97	1.37	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111453-010ADUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120731**
Client ID: **RW17-0** Batch ID: **63750** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/30/2010** SeqNo: **1927031**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	ND	1.0						0	0	20	
Nickel	64.322	1.0						63.65	1.06	20	
Selenium	0.743	1.0						0	0	20	
Silver	0.102	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	14.270	1.0						13.83	3.16	20	
Zinc	33.703	1.0						32.13	4.78	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63751** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120732**
Client ID: **PBS** Batch ID: **63751** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926758**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	0.103	1.0									
Cobalt	0.019	1.0									
Copper	0.777	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	0.097	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	0.025	1.0									
Zinc	0.221	1.0									

Sample ID: **LCS-63751** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120732**
Client ID: **LCSS** Batch ID: **63751** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926759**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	48.325	2.0	50.00	0	96.7	80	120				
Arsenic	48.074	1.0	50.00	0	96.1	80	120				
Barium	51.623	1.0	50.00	0	103	80	120				
Beryllium	50.847	1.0	50.00	0	102	80	120				
Cadmium	48.098	1.0	50.00	0	96.2	80	120				
Chromium	50.592	1.0	50.00	0.1028	101	80	120				
Cobalt	51.145	1.0	50.00	0.01907	102	80	120				
Copper	52.117	2.0	50.00	0.7769	103	80	120				
Lead	49.864	1.0	50.00	0	99.7	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63751**	SampType: **LCS**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120732**
Client ID: **LCSS**	Batch ID: **63751**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/29/2010**	SeqNo: **1926759**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	52.398	1.0	50.00	0	105	80	120				
Nickel	49.504	1.0	50.00	0.09699	98.8	80	120				
Selenium	45.309	1.0	50.00	0	90.6	80	120				
Silver	50.963	1.0	50.00	0	102	80	120				
Thallium	48.550	1.0	50.00	0	97.1	80	120				
Vanadium	52.209	1.0	50.00	0.02527	104	80	120				
Zinc	46.805	1.0	50.00	0.2208	93.2	80	120				

Sample ID: **111453-020ADUP**	SampType: **DUP**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120732**
Client ID: **RW18-4**	Batch ID: **63751**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/29/2010**	SeqNo: **1926770**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0						0.3594	0	20	
Arsenic	3.329	1.0						4.458	29.0	20	R
Barium	78.855	1.0						88.85	11.9	20	
Beryllium	0.125	1.0						0.1324	0	20	
Cadmium	0.064	1.0						0.06836	0	20	
Chromium	13.363	1.0						14.59	8.81	20	
Cobalt	5.145	1.0						5.727	10.7	20	
Copper	9.400	2.0						11.26	18.0	20	
Lead	4.045	1.0						5.374	28.2	20	R
Molybdenum	ND	1.0						0	0	20	
Nickel	12.659	1.0						14.56	14.0	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	29.664	1.0						36.52	20.7	20	R
Zinc	24.349	1.0						27.53	12.2	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111453-020AMS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120732**
Client ID: **RW18-4** Batch ID: **63751** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926771**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	76.121	2.0	125.0	0.3594	60.6	32	105				
Arsenic	96.171	1.0	125.0	4.458	73.4	49	106				
Barium	172.054	1.0	125.0	88.85	66.6	31	133				
Beryllium	100.445	1.0	125.0	0.1324	80.3	56	106				
Cadmium	90.050	1.0	125.0	0.06836	72.0	51	103				
Chromium	117.012	1.0	125.0	14.59	81.9	45	114				
Cobalt	98.851	1.0	125.0	5.727	74.5	52	106				
Copper	112.335	2.0	125.0	11.26	80.9	54	125				
Lead	96.895	1.0	125.0	5.374	73.2	34	126				
Molybdenum	91.727	1.0	125.0	0	73.4	54	106				
Nickel	106.696	1.0	125.0	14.56	73.7	45	111				
Selenium	91.061	1.0	125.0	0	72.8	47	104				
Silver	102.507	1.0	125.0	0	82.0	56	112				
Thallium	87.759	1.0	125.0	0	70.2	46	101				
Vanadium	130.435	1.0	125.0	36.52	75.1	54	114				
Zinc	113.815	1.0	125.0	27.53	69.0	28	125				

Sample ID: **111453-020AMSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120732**
Client ID: **RW18-4** Batch ID: **63751** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926772**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	81.478	2.0	125.0	0.3594	64.9	32	105	76.12	6.80	20	
Arsenic	99.334	1.0	125.0	4.458	75.9	49	106	96.17	3.24	20	
Barium	158.803	1.0	125.0	88.85	56.0	31	133	172.1	8.01	20	
Beryllium	105.658	1.0	125.0	0.1324	84.4	56	106	100.4	5.06	20	
Cadmium	93.443	1.0	125.0	0.06836	74.7	51	103	90.05	3.70	20	
Chromium	114.957	1.0	125.0	14.59	80.3	45	114	117.0	1.77	20	
Cobalt	102.541	1.0	125.0	5.727	77.5	52	106	98.85	3.66	20	
Copper	114.294	2.0	125.0	11.26	82.4	54	125	112.3	1.73	20	
Lead	101.029	1.0	125.0	5.374	76.5	34	126	96.89	4.18	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111453-020AMSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120732**
Client ID: **RW18-4** Batch ID: **63751** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926772**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	97.391	1.0	125.0	0	77.9	54	106	91.73	5.99	20	
Nickel	109.247	1.0	125.0	14.56	75.7	45	111	106.7	2.36	20	
Selenium	93.746	1.0	125.0	0	75.0	47	104	91.06	2.91	20	
Silver	106.248	1.0	125.0	0	85.0	56	112	102.5	3.58	20	
Thallium	93.626	1.0	125.0	0	74.9	46	101	87.76	6.47	20	
Vanadium	136.509	1.0	125.0	36.52	80.0	54	114	130.4	4.55	20	
Zinc	113.135	1.0	125.0	27.53	68.5	28	125	113.8	0.599	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63752** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120733**
Client ID: **PBS** Batch ID: **63752** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926773**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	0.021	1.0									
Copper	0.422	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	0.110	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63752** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120733**
Client ID: **LCSS** Batch ID: **63752** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926774**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	45.364	2.0	50.00	0	90.7	80	120				
Arsenic	45.670	1.0	50.00	0	91.3	80	120				
Barium	48.701	1.0	50.00	0	97.4	80	120				
Beryllium	47.852	1.0	50.00	0	95.7	80	120				
Cadmium	45.698	1.0	50.00	0	91.4	80	120				
Chromium	47.416	1.0	50.00	0	94.8	80	120				
Cobalt	48.347	1.0	50.00	0.02057	96.7	80	120				
Copper	48.266	2.0	50.00	0.4223	95.7	80	120				
Lead	46.935	1.0	50.00	0	93.9	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63752**	SampType: **LCS**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120733**
Client ID: **LCSS**	Batch ID: **63752**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/29/2010**	SeqNo: **1926774**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	48.839	1.0	50.00	0	97.7	80	120				
Nickel	46.525	1.0	50.00	0.1104	92.8	80	120				
Selenium	42.919	1.0	50.00	0	85.8	80	120				
Silver	47.227	1.0	50.00	0	94.5	80	120				
Thallium	45.243	1.0	50.00	0	90.5	80	120				
Vanadium	48.911	1.0	50.00	0	97.8	80	120				
Zinc	44.642	1.0	50.00	0	89.3	80	120				

Sample ID: **111453-022ADUP**	SampType: **DUP**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120733**
Client ID: **RW16-4**	Batch ID: **63752**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/29/2010**	SeqNo: **1926780**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0						0.3042	0	20	
Arsenic	5.202	1.0						5.427	4.22	20	
Barium	305.143	1.0						417.3	31.0	20	R
Beryllium	0.225	1.0						0.2301	0	20	
Cadmium	0.115	1.0						0.1102	0	20	
Chromium	15.478	1.0						15.87	2.50	20	
Cobalt	8.227	1.0						8.514	3.43	20	
Copper	16.071	2.0						16.40	2.04	20	
Lead	5.041	1.0						4.872	3.43	20	
Molybdenum	ND	1.0						0	0	20	
Nickel	20.659	1.0						21.24	2.77	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	31.604	1.0						32.61	3.14	20	
Zinc	30.739	1.0						32.18	4.59	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111453-022AMS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120733**
Client ID: **RW16-4** Batch ID: **63752** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926781**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	71.533	2.0	125.0	0.3042	57.0	32	105				
Arsenic	98.642	1.0	125.0	5.427	74.6	49	106				
Barium	615.278	1.0	125.0	417.3	158	31	133				S
Beryllium	101.921	1.0	125.0	0.2301	81.4	56	106				
Cadmium	88.047	1.0	125.0	0.1102	70.3	51	103				
Chromium	116.080	1.0	125.0	15.87	80.2	45	114				
Cobalt	101.871	1.0	125.0	8.514	74.7	52	106				
Copper	122.076	2.0	125.0	16.40	84.5	54	125				
Lead	97.465	1.0	125.0	4.872	74.1	34	126				
Molybdenum	91.104	1.0	125.0	0	72.9	54	106				
Nickel	114.668	1.0	125.0	21.24	74.7	45	111				
Selenium	89.260	1.0	125.0	0	71.4	47	104				
Silver	105.496	1.0	125.0	0	84.4	56	112				
Thallium	90.287	1.0	125.0	0	72.2	46	101				
Vanadium	136.212	1.0	125.0	32.61	82.9	54	114				
Zinc	118.337	1.0	125.0	32.18	68.9	28	125				

Sample ID: **111453-022AMSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120733**
Client ID: **RW16-4** Batch ID: **63752** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926782**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	73.904	2.0	125.0	0.3042	58.9	32	105	71.53	3.26	20	
Arsenic	98.130	1.0	125.0	5.427	74.2	49	106	98.64	0.520	20	
Barium	369.418	1.0	125.0	417.3	-38.3	31	133	615.3	49.9	20	SR
Beryllium	100.405	1.0	125.0	0.2301	80.1	56	106	101.9	1.50	20	
Cadmium	85.875	1.0	125.0	0.1102	68.6	51	103	88.05	2.50	20	
Chromium	112.573	1.0	125.0	15.87	77.4	45	114	116.1	3.07	20	
Cobalt	99.214	1.0	125.0	8.514	72.6	52	106	101.9	2.64	20	
Copper	119.775	2.0	125.0	16.40	82.7	54	125	122.1	1.90	20	
Lead	95.609	1.0	125.0	4.872	72.6	34	126	97.47	1.92	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111453-022AMSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120733**
Client ID: **RW16-4** Batch ID: **63752** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **4/29/2010** SeqNo: **1926782**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	90.265	1.0	125.0	0	72.2	54	106	91.10	0.926	20	
Nickel	111.145	1.0	125.0	21.24	71.9	45	111	114.7	3.12	20	
Selenium	88.083	1.0	125.0	0	70.5	47	104	89.26	1.33	20	
Silver	104.324	1.0	125.0	0	83.5	56	112	105.5	1.12	20	
Thallium	87.099	1.0	125.0	0	69.7	46	101	90.29	3.59	20	
Vanadium	131.904	1.0	125.0	32.61	79.4	54	114	136.2	3.21	20	
Zinc	113.580	1.0	125.0	32.18	65.1	28	125	118.3	4.10	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_W

Sample ID: **MB-63716** SampType: **MBLK** TestCode: **6010_W** Units: **mg/L** Prep Date: **4/28/2010** RunNo: **120756**
Client ID: **PBW** Batch ID: **63716** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **4/30/2010** SeqNo: **1927346**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	0.0050									
Arsenic	ND	0.010									
Barium	ND	0.0030									
Beryllium	ND	0.0030									
Cadmium	ND	0.0030									
Chromium	ND	0.0030									
Cobalt	ND	0.0030									
Copper	ND	0.0050									
Lead	ND	0.0050									
Molybdenum	ND	0.0050									
Nickel	ND	0.0050									
Selenium	ND	0.010									
Silver	ND	0.0030									
Thallium	ND	0.015									
Vanadium	ND	0.0030									
Zinc	0.003	0.010									

Sample ID: **LCS-63716** SampType: **LCS** TestCode: **6010_W** Units: **mg/L** Prep Date: **4/28/2010** RunNo: **120756**
Client ID: **LCSW** Batch ID: **63716** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **4/30/2010** SeqNo: **1927347**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	1.083	0.0050	1.000	0	108	85	115				
Arsenic	1.099	0.010	1.000	0	110	85	115				
Barium	1.104	0.0030	1.000	0	110	85	115				
Beryllium	1.070	0.0030	1.000	0	107	85	115				
Cadmium	1.094	0.0030	1.000	0	109	85	115				
Chromium	1.073	0.0030	1.000	0	107	85	115				
Cobalt	1.111	0.0030	1.000	0	111	85	115				
Copper	1.091	0.0050	1.000	0	109	85	115				
Lead	1.105	0.0050	1.000	0	111	85	115				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_W

Sample ID: **LCS-63716**	SampType: **LCS**	TestCode: **6010_W**	Units: **mg/L**	Prep Date: **4/28/2010**	RunNo: **120756**
Client ID: **LCSW**	Batch ID: **63716**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **4/30/2010**	SeqNo: **1927347**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	1.100	0.0050	1.000	0	110	85	115				
Nickel	1.089	0.0050	1.000	0	109	85	115				
Selenium	1.036	0.010	1.000	0	104	85	115				
Silver	1.085	0.0030	1.000	0	108	85	115				
Thallium	1.122	0.015	1.000	0	112	85	115				
Vanadium	1.096	0.0030	1.000	0	110	85	115				
Zinc	1.098	0.010	1.000	0.003199	110	85	115				

Sample ID: **111453-023C-DUP**	SampType: **DUP**	TestCode: **6010_W**	Units: **mg/L**	Prep Date: **4/28/2010**	RunNo: **120756**
Client ID: **RW26-GW**	Batch ID: **63716**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **4/30/2010**	SeqNo: **1927349**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.061	0.0050						0.08188	29.2	20	R
Arsenic	0.202	0.010						0.2144	6.01	20	
Barium	21.481	0.0030						24.91	14.8	20	
Beryllium	0.003	0.0030						0	200	20	R
Cadmium	0.030	0.0030						0.03570	16.9	20	
Chromium	5.420	0.0030						6.359	16.0	20	
Cobalt	1.344	0.0030						1.573	15.6	20	
Copper	2.220	0.0050						2.579	15.0	20	
Lead	1.053	0.0050						1.202	13.2	20	
Molybdenum	0.120	0.0050						0.1538	24.5	20	R
Nickel	16.088	0.0050						18.50	13.9	20	
Selenium	ND	0.010						0.03325	0	20	
Silver	ND	0.0030						0	0	20	
Thallium	0.024	0.015						0.02285	6.42	20	
Vanadium	2.388	0.0030						2.861	18.0	20	
Zinc	3.336	0.010						3.851	14.3	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_W

Sample ID: **111453-027C-MS** SampType: **MS** TestCode: **6010_W** Units: **mg/L** Prep Date: **4/28/2010** RunNo: **120756**
Client ID: **RW17-GW** Batch ID: **63716** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **4/30/2010** SeqNo: **1927354**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	1.187	0.0050	2.500	0.008818	47.1	73	128				S
Arsenic	2.683	0.010	2.500	0.03220	106	79	121				
Barium	4.313	0.0030	2.500	1.569	110	82	118				
Beryllium	2.578	0.0030	2.500	0	103	84	119				
Cadmium	2.498	0.0030	2.500	0.006412	99.7	79	117				
Chromium	3.559	0.0030	2.500	0.8941	107	78	115				
Cobalt	2.765	0.0030	2.500	0.2660	99.9	80	118				
Copper	3.227	0.0050	2.500	0.3980	113	81	127				
Lead	2.773	0.0050	2.500	0.2383	101	80	118				
Molybdenum	2.499	0.0050	2.500	0.05691	97.7	81	118				
Nickel	4.335	0.0050	2.500	1.631	108	78	120				
Selenium	2.587	0.010	2.500	0.04048	102	78	120				
Silver	2.681	0.0030	2.500	0	107	79	125				
Thallium	2.435	0.015	2.500	0	97.4	74	115				
Vanadium	4.631	0.0030	2.500	1.773	114	84	119				
Zinc	3.246	0.010	2.500	0.6687	103	75	122				

Sample ID: **111453-027C-MSD** SampType: **MSD** TestCode: **6010_W** Units: **mg/L** Prep Date: **4/28/2010** RunNo: **120756**
Client ID: **RW17-GW** Batch ID: **63716** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **4/30/2010** SeqNo: **1927355**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.876	0.0050	2.500	0.008818	34.7	73	128	1.187	30.1	20	SR
Arsenic	2.224	0.010	2.500	0.03220	87.7	79	121	2.683	18.7	20	
Barium	3.592	0.0030	2.500	1.569	80.9	82	118	4.313	18.3	20	S
Beryllium	2.173	0.0030	2.500	0	86.9	84	119	2.578	17.0	20	
Cadmium	2.092	0.0030	2.500	0.006412	83.4	79	117	2.498	17.7	20	
Chromium	2.978	0.0030	2.500	0.8941	83.4	78	115	3.559	17.8	20	
Cobalt	2.316	0.0030	2.500	0.2660	82.0	80	118	2.765	17.7	20	
Copper	2.706	0.0050	2.500	0.3980	92.3	81	127	3.227	17.6	20	
Lead	2.330	0.0050	2.500	0.2383	83.7	80	118	2.773	17.4	20	

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_W

Sample ID: **111453-027C-MSD** SampType: **MSD** TestCode: **6010_W** Units: **mg/L** Prep Date: **4/28/2010** RunNo: **120756**
Client ID: **RW17-GW** Batch ID: **63716** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **4/30/2010** SeqNo: **1927355**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	2.083	0.0050	2.500	0.05691	81.1	81	118	2.499	18.1	20	
Nickel	3.633	0.0050	2.500	1.631	80.1	78	120	4.335	17.6	20	
Selenium	2.177	0.010	2.500	0.04048	85.5	78	120	2.587	17.2	20	
Silver	2.256	0.0030	2.500	0	90.2	79	125	2.681	17.2	20	
Thallium	2.032	0.015	2.500	0	81.3	74	115	2.435	18.1	20	
Vanadium	3.887	0.0030	2.500	1.773	84.6	84	119	4.631	17.5	20	
Zinc	2.710	0.010	2.500	0.6687	81.6	75	122	3.246	18.0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7470_W

Sample ID: **MB-63717**	SampType: **MBLK**	TestCode: **7470_W**	Units: **µg/L**	Prep Date: **4/28/2010**	RunNo: **120637**
Client ID: **PBW**	Batch ID: **63717**	TestNo: **EPA 7470A**		Analysis Date: **4/28/2010**	SeqNo: **1925110**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.20									

Sample ID: **LCS-63717**	SampType: **LCS**	TestCode: **7470_W**	Units: **µg/L**	Prep Date: **4/28/2010**	RunNo: **120637**
Client ID: **LCSW**	Batch ID: **63717**	TestNo: **EPA 7470A**		Analysis Date: **4/28/2010**	SeqNo: **1925111**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	11.234	0.20	10.00	0	112	85	115				

Sample ID: **111453-027C-MS**	SampType: **MS**	TestCode: **7470_W**	Units: **µg/L**	Prep Date: **4/28/2010**	RunNo: **120637**
Client ID: **RW17-GW**	Batch ID: **63717**	TestNo: **EPA 7470A**		Analysis Date: **4/28/2010**	SeqNo: **1925112**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	7.042	0.20	10.00	1.589	54.5	70	130				S

Sample ID: **111453-027C-MSD**	SampType: **MSD**	TestCode: **7470_W**	Units: **µg/L**	Prep Date: **4/28/2010**	RunNo: **120637**
Client ID: **RW17-GW**	Batch ID: **63717**	TestNo: **EPA 7470A**		Analysis Date: **4/28/2010**	SeqNo: **1925113**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	6.333	0.20	10.00	1.589	47.4	70	130	7.042	10.6	20	S

Sample ID: **111453-023C-DUP**	SampType: **DUP**	TestCode: **7470_W**	Units: **µg/L**	Prep Date: **4/28/2010**	RunNo: **120637**
Client ID: **RW26-GW**	Batch ID: **63717**	TestNo: **EPA 7470A**		Analysis Date: **4/28/2010**	SeqNo: **1925116**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	5.115	0.20						5.213	1.90	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63753**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120686**
Client ID: **PBS**	Batch ID: **63753**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1925983**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63753**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120686**
Client ID: **LCSS**	Batch ID: **63753**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1925984**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.842	0.10	0.8300	0	101	80	120				

Sample ID: **111453-010A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120686**
Client ID: **RW17-0**	Batch ID: **63753**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1925985**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.971	0.10	0.8300	0.04080	112	70	130				

Sample ID: **111453-010A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120686**
Client ID: **RW17-0**	Batch ID: **63753**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1925986**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	1.009	0.10	0.8300	0.04080	117	70	130	0.9711	3.87	20	

Sample ID: **111453-010A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120686**
Client ID: **RW17-0**	Batch ID: **63753**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1925988**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.039	0.10						0.04080	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63754**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120691**
Client ID: **PBS**	Batch ID: **63754**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1926082**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63754**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120691**
Client ID: **LCSS**	Batch ID: **63754**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1926083**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.861	0.10	0.8300	0	104	80	120				

Sample ID: **111453-020A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120691**
Client ID: **RW18-4**	Batch ID: **63754**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1926084**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.899	0.10	0.8300	0.03861	104	70	130				

Sample ID: **111453-020A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120691**
Client ID: **RW18-4**	Batch ID: **63754**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1926085**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.894	0.10	0.8300	0.03861	103	70	130	0.8990	0.565	20	

Sample ID: **111453-020A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120691**
Client ID: **RW18-4**	Batch ID: **63754**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1926087**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.039	0.10						0.03861	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63756**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120692**
Client ID: **PBS**	Batch ID: **63756**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1926097**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63756**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120692**
Client ID: **LCSS**	Batch ID: **63756**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1926098**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.871	0.10	0.8300	0	105	80	120				

Sample ID: **111453-022A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120692**
Client ID: **RW16-4**	Batch ID: **63756**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1926099**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.961	0.10	0.8300	0.08704	105	70	130				

Sample ID: **111453-022A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120692**
Client ID: **RW16-4**	Batch ID: **63756**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1926100**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.962	0.10	0.8300	0.08704	105	70	130	0.9606	0.152	20	

Sample ID: **111453-022A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120692**
Client ID: **RW16-4**	Batch ID: **63756**	TestNo: **EPA 7471A**		Analysis Date: **4/29/2010**	SeqNo: **1926102**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.088	0.10						0.08704	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_DM LL

Sample ID: **MB-63728**	SampType: **MBLK**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120675**
Client ID: **PBS**	Batch ID: **63728**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **4/28/2010**	SeqNo: **1926065**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	ND	1.0									
ORO	ND	1.0									
Surr: p-Terphenyl	2.771		2.670		104	30	128				

Sample ID: **LCS-63728**	SampType: **LCS**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120675**
Client ID: **LCSS**	Batch ID: **63728**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **4/28/2010**	SeqNo: **1926066**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	28.905	1.0	33.00	0	87.6	35	118				
Surr: p-Terphenyl	2.788		2.670		104	30	128				

Sample ID: **111422-002AMS**	SampType: **MS**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120675**
Client ID: **ZZZZZZ**	Batch ID: **63728**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **4/28/2010**	SeqNo: **1926068**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	29.509	1.0	33.00	5.862	71.7	25	129				
Surr: p-Terphenyl	3.192		2.670		120	30	128				

Sample ID: **111422-002AMSD**	SampType: **MSD**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120675**
Client ID: **ZZZZZZ**	Batch ID: **63728**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **4/28/2010**	SeqNo: **1926069**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	28.371	1.0	66.00	5.862	34.1	25	129	29.51	3.93	20	
Surr: p-Terphenyl	3.558		5.340		66.6	30	128		0	0	

Sample ID: **111422-002ADUP**	SampType: **DUP**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120675**
Client ID: **ZZZZZZ**	Batch ID: **63728**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **4/28/2010**	SeqNo: **1926070**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_DM LL

Sample ID: **111422-002ADUP** SampType: **DUP** TestCode: **8015_S_DM L** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120675**
Client ID: **ZZZZZZ** Batch ID: **63728** TestNo: **EPA 8015B(M EPA 3550B** Analysis Date: **4/28/2010** SeqNo: **1926070**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	2.878	1.0						5.862	68.3	20	R
ORO	1.227	1.0						3.354	92.9	20	R
Surr: p-Terphenyl	3.371		2.670		126	30	128		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_DM LL

Sample ID: **MB-63729**	SampType: **MBLK**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120710**
Client ID: **PBS**	Batch ID: **63729**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **4/29/2010**	SeqNo: **1926456**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	ND	1.0									
ORO	ND	1.0									
Surr: p-Terphenyl	3.053		2.670		114	30	128				

Sample ID: **LCS-63729**	SampType: **LCS**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120710**
Client ID: **LCSS**	Batch ID: **63729**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **4/29/2010**	SeqNo: **1926457**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	32.363	1.0	33.00	0	98.1	35	118				
Surr: p-Terphenyl	3.210		2.670		120	30	128				

Sample ID: **111453-002ADUP**	SampType: **DUP**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120710**
Client ID: **RW25-0**	Batch ID: **63729**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **4/29/2010**	SeqNo: **1926462**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	11.449	1.0						9.558	18.0	20	
ORO	26.780	1.0						23.84	11.6	20	
Surr: p-Terphenyl	3.752		5.340		70.3	30	128		0	0	

Sample ID: **111453-002AMS**	SampType: **MS**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **4/28/2010**	RunNo: **120710**
Client ID: **RW25-0**	Batch ID: **63729**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **4/29/2010**	SeqNo: **1926463**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	45.475	1.0	66.00	9.558	54.4	25	129				
Surr: p-Terphenyl	3.589		5.340		67.2	30	128				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_DM LL

Sample ID: **111453-002AMSD** SampType: **MSD** TestCode: **8015_S_DM L** Units: **mg/Kg** Prep Date: **4/28/2010** RunNo: **120710**
Client ID: **RW25-0** Batch ID: **63729** TestNo: **EPA 8015B(M EPA 3550B** Analysis Date: **4/29/2010** SeqNo: **1926464**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	51.081	1.0	66.00	9.558	62.9	25	129	45.48	11.6	20	
Surr: p-Terphenyl	3.996		5.340		74.8	30	128		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_GAS

Sample ID: **E100430LCS2**	SampType: **LCS**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120804**
Client ID: **LCSS**	Batch ID: **E10VS110**	TestNo: **EPA 8015B(M**		Analysis Date: **4/30/2010**	SeqNo: **1928355**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.978	1.0	5.000	0	99.6	70	130				
Surr: Bromofluorobenzene (FID)	116.363		100.0		116	56	137				

Sample ID: **E100430MB1**	SampType: **MBLK**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120804**
Client ID: **PBS**	Batch ID: **E10VS110**	TestNo: **EPA 8015B(M**		Analysis Date: **4/30/2010**	SeqNo: **1928356**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	1.0									
Surr: Bromofluorobenzene (FID)	114.405		100.0		114	56	137				

Sample ID: **111453-013ADUP**	SampType: **DUP**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120804**
Client ID: **RW25-4**	Batch ID: **E10VS110**	TestNo: **EPA 8015B(M**		Analysis Date: **4/30/2010**	SeqNo: **1928367**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	1.0						0	0	20	
Surr: Bromofluorobenzene (FID)	109.383		100.0		109	56	137		0	0	

Sample ID: **111453-014AMS**	SampType: **MS**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120804**
Client ID: **RW24-4**	Batch ID: **E10VS110**	TestNo: **EPA 8015B(M**		Analysis Date: **4/30/2010**	SeqNo: **1928368**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.681	1.0	5.000	0	93.6	40	121				
Surr: Bromofluorobenzene (FID)	118.577		100.0		119	56	137				

Sample ID: **111453-014AMSD**	SampType: **MSD**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120804**
Client ID: **RW24-4**	Batch ID: **E10VS110**	TestNo: **EPA 8015B(M**		Analysis Date: **4/30/2010**	SeqNo: **1928369**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.539	1.0	5.000	0	90.8	40	121	4.681	3.08	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_GAS

Sample ID: **111453-014AMSD** SampType: **MSD** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120804**
Client ID: **RW24-4** Batch ID: **E10VS110** TestNo: **EPA 8015B(M** Analysis Date: **4/30/2010** SeqNo: **1928369**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (FID)	122.083		100.0		122	56	137		0	0	

Sample ID: **E100429LCS2D** SampType: **LCSD** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120804**
Client ID: **LCSS02** Batch ID: **E10VS110** TestNo: **EPA 8015B(M** Analysis Date: **4/30/2010** SeqNo: **1928370**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.881	1.0	5.000	0	97.6	70	130	4.978	1.97	20	
Surr: Bromofluorobenzene (FID)	115.598		100.0		116	56	137		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_GAS

Sample ID: **E100430MB2**	SampType: **MBLK**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120807**
Client ID: **PBS**	Batch ID: **E10VS111**	TestNo: **EPA 8015B(M**		Analysis Date: **4/30/2010**	SeqNo: **1928488**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	1.0									
Surr: Bromofluorobenzene (FID)	114.307		100.0		114	56	137				

Sample ID: **111453-022ADUP**	SampType: **DUP**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120807**
Client ID: **RW16-4**	Batch ID: **E10VS111**	TestNo: **EPA 8015B(M**		Analysis Date: **4/30/2010**	SeqNo: **1928490**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	1.0						0	0	20	
Surr: Bromofluorobenzene (FID)	115.259		100.0		115	56	137		0	0	

Sample ID: **111453-022AMS**	SampType: **MS**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120807**
Client ID: **RW16-4**	Batch ID: **E10VS111**	TestNo: **EPA 8015B(M**		Analysis Date: **4/30/2010**	SeqNo: **1928503**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.177	1.0	5.000	0	83.5	40	121				
Surr: Bromofluorobenzene (FID)	124.668		100.0		125	56	137				

Sample ID: **111453-022AMSD**	SampType: **MSD**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120807**
Client ID: **RW16-4**	Batch ID: **E10VS111**	TestNo: **EPA 8015B(M**		Analysis Date: **4/30/2010**	SeqNo: **1928504**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.150	1.0	5.000	0	83.0	40	121	4.177	0.648	20	
Surr: Bromofluorobenzene (FID)	120.234		100.0		120	56	137		0	0	

Sample ID: **E100430LCS4**	SampType: **LCS**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120807**
Client ID: **LCSS**	Batch ID: **E10VS111**	TestNo: **EPA 8015B(M**		Analysis Date: **4/30/2010**	SeqNo: **1928506**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.676	1.0	5.000	0	93.5	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_GAS

Sample ID: **E100430LCS4**	SampType: **LCS**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120807**
Client ID: **LCSS**	Batch ID: **E10VS111**	TestNo: **EPA 8015B(M**		Analysis Date: **4/30/2010**	SeqNo: **1928506**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (FID)	119.279		100.0		119	56	137				

Sample ID: **E100430LCS4D**	SampType: **LCSD**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120807**
Client ID: **LCSS02**	Batch ID: **E10VS111**	TestNo: **EPA 8015B(M**		Analysis Date: **5/1/2010**	SeqNo: **1928508**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.668	1.0	5.000	0	93.4	70	130	0	0	20	
Surr: Bromofluorobenzene (FID)	109.987		100.0		110	56	137		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_DM_LL

Sample ID: **MB-63805**	SampType: **MBLK**	TestCode: **8015_W_DM_**	Units: **mg/L**	Prep Date: **4/29/2010**	RunNo: **120768**
Client ID: **PBW**	Batch ID: **63805**	TestNo: **EPA 8015B(M**	**EPA 3510C**	Analysis Date: **4/30/2010**	SeqNo: **1927643**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	ND	0.050									
ORO	ND	0.050									
Surr: p-Terphenyl	0.096		0.08000		120	36	126				

Sample ID: **MB-63805MS**	SampType: **MS**	TestCode: **8015_W_DM_**	Units: **mg/L**	Prep Date: **4/29/2010**	RunNo: **120768**
Client ID: **ZZZZZZ**	Batch ID: **63805**	TestNo: **EPA 8015B(M**	**EPA 3510C**	Analysis Date: **4/30/2010**	SeqNo: **1927645**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	0.957	0.050	1.000	0	95.7	52	128				
Surr: p-Terphenyl	0.093		0.08000		116	36	126				

Sample ID: **MB-63805MSD**	SampType: **MSD**	TestCode: **8015_W_DM_**	Units: **mg/L**	Prep Date: **4/29/2010**	RunNo: **120768**
Client ID: **ZZZZZZ**	Batch ID: **63805**	TestNo: **EPA 8015B(M**	**EPA 3510C**	Analysis Date: **4/30/2010**	SeqNo: **1927646**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	0.972	0.050	1.000	0	97.2	52	128	0.9570	1.55	20	
Surr: p-Terphenyl	0.098		0.08000		122	36	126		0	0	

Sample ID: **LCS-63805**	SampType: **LCS**	TestCode: **8015_W_DM_**	Units: **mg/L**	Prep Date: **4/29/2010**	RunNo: **120768**
Client ID: **LCSW**	Batch ID: **63805**	TestNo: **EPA 8015B(M**	**EPA 3510C**	Analysis Date: **4/30/2010**	SeqNo: **1927651**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	0.982	0.050	1.000	0	98.2	52	128				
Surr: p-Terphenyl	0.089		0.08000		112	36	126				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_GP LL

Sample ID: **E100501LCS2** SampType: **LCS** TestCode: **8015_W_GP** Units: **mg/L** Prep Date: RunNo: **120774**
Client ID: **LCSW** Batch ID: **E10VW019** TestNo: **EPA 8015B(M** Analysis Date: **5/1/2010** SeqNo: **1928426**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	0.919	0.050	1.000	0	91.9	70	130				
Surr: Bromofluorobenzene (FID)	107.589		100.0		108	70	130				

Sample ID: **E100501MB1MS1** SampType: **MS** TestCode: **8015_W_GP** Units: **mg/L** Prep Date: RunNo: **120774**
Client ID: **ZZZZZZ** Batch ID: **E10VW019** TestNo: **EPA 8015B(M** Analysis Date: **5/1/2010** SeqNo: **1928428**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	1.162	0.050	1.000	0	116	70	130				
Surr: Bromofluorobenzene (FID)	105.450		100.0		105	70	130				

Sample ID: **E100501MB1MS1D** SampType: **MSD** TestCode: **8015_W_GP** Units: **mg/L** Prep Date: RunNo: **120774**
Client ID: **ZZZZZZ** Batch ID: **E10VW019** TestNo: **EPA 8015B(M** Analysis Date: **5/1/2010** SeqNo: **1928429**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	0.956	0.050	1.000	0	95.6	70	130	1.162	19.5	20	
Surr: Bromofluorobenzene (FID)	104.437		100.0		104	70	130		0	0	

Sample ID: **E100501MB1** SampType: **MBLK** TestCode: **8015_W_GP** Units: **mg/L** Prep Date: RunNo: **120774**
Client ID: **PBW** Batch ID: **E10VW019** TestNo: **EPA 8015B(M** Analysis Date: **5/1/2010** SeqNo: **1928430**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	0.050									
Surr: Bromofluorobenzene (FID)	100.955		100.0		101	70	130				

Sample ID: **111422-020ADUP** SampType: **DUP** TestCode: **8015_W_GP** Units: **mg/L** Prep Date: RunNo: **120774**
Client ID: **ZZZZZZ** Batch ID: **E10VW019** TestNo: **EPA 8015B(M** Analysis Date: **5/1/2010** SeqNo: **1928432**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	0.050						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_GP LL

Sample ID: **111422-020ADUP** SampType: **DUP** TestCode: **8015_W_GP** Units: **mg/L** Prep Date: RunNo: **120774**
Client ID: **ZZZZZZ** Batch ID: **E10VW019** TestNo: **EPA 8015B(M** Analysis Date: **5/1/2010** SeqNo: **1928432**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (FID)	104.136		100.0		104	70	130		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_S_BTEX

Sample ID: **E100430LCS1** SampType: **LCS** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120804**
Client ID: **LCSS** Batch ID: **E10VS110** TestNo: **EPA 8021B** Analysis Date: **4/30/2010** SeqNo: **1928372**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	94.150	5.0	100.0	0	94.2	70	130				
Ethylbenzene	95.017	5.0	100.0	0	95.0	70	130				
m,p-Xylene	192.276	10	200.0	0	96.1	70	130				
Methyl tert-butyl ether	88.275	5.0	100.0	0	88.3	70	130				
o-Xylene	95.897	5.0	100.0	0	95.9	70	130				
Toluene	95.946	5.0	100.0	0	95.9	70	130				
Surr: Bromofluorobenzene (PID)	98.986		100.0		99.0	64	116				

Sample ID: **E100430MB1** SampType: **MBLK** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120804**
Client ID: **PBS** Batch ID: **E10VS110** TestNo: **EPA 8021B** Analysis Date: **4/30/2010** SeqNo: **1928374**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	5.0									
Ethylbenzene	ND	5.0									
m,p-Xylene	ND	10									
Methyl tert-butyl ether	ND	5.0									
o-Xylene	ND	5.0									
Toluene	ND	5.0									
Surr: Bromofluorobenzene (PID)	99.967		100.0		100	64	116				

Sample ID: **111453-013ADUP** SampType: **DUP** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120804**
Client ID: **RW25-4** Batch ID: **E10VS110** TestNo: **EPA 8021B** Analysis Date: **4/30/2010** SeqNo: **1928385**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	5.0						0	0	20	
Ethylbenzene	ND	5.0						0	0	20	
m,p-Xylene	ND	10						0	0	20	
Methyl tert-butyl ether	ND	5.0						0	0	20	
o-Xylene	ND	5.0						0	0	20	
Toluene	ND	5.0						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_S_BTEX

Sample ID: **111453-013ADUP** SampType: **DUP** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120804**
Client ID: **RW25-4** Batch ID: **E10VS110** TestNo: **EPA 8021B** Analysis Date: **4/30/2010** SeqNo: **1928385**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (PID)	95.939		100.0		95.9	64	116		0	0	

Sample ID: **111453-014AMS** SampType: **MS** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120804**
Client ID: **RW24-4** Batch ID: **E10VS110** TestNo: **EPA 8021B** Analysis Date: **4/30/2010** SeqNo: **1928386**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	40.967	5.0	22.15	0	185	41	112				S
Ethylbenzene	39.790	5.0	42.30	0	94.1	26	100				
m,p-Xylene	160.367	10	180.2	0	89.0	32	106				
Methyl tert-butyl ether	395.130	5.0	578.9	0	68.3	44	124				
o-Xylene	62.812	5.0	64.80	0	96.9	30	100				
Toluene	163.903	5.0	172.6	0	94.9	38	112				
Surr: Bromofluorobenzene (PID)	104.517		100.0		105	64	116				

Sample ID: **111453-014AMSD** SampType: **MSD** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120804**
Client ID: **RW24-4** Batch ID: **E10VS110** TestNo: **EPA 8021B** Analysis Date: **4/30/2010** SeqNo: **1928387**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	39.912	5.0	22.15	0	180	41	112	40.97	2.61	20	S
Ethylbenzene	43.618	5.0	42.30	0	103	26	100	39.79	9.18	20	S
m,p-Xylene	163.466	10	180.2	0	90.7	32	106	160.4	1.91	20	
Methyl tert-butyl ether	389.077	5.0	578.9	0	67.2	44	124	395.1	1.54	20	
o-Xylene	60.361	5.0	64.80	0	93.1	30	100	62.81	3.98	20	
Toluene	158.652	5.0	172.6	0	91.9	38	112	163.9	3.26	20	
Surr: Bromofluorobenzene (PID)	103.467		100.0		103	64	116		0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_S_BTEX

Sample ID: **E100429LCS1D** SampType: **LCSD** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120804**
Client ID: **LCSS02** Batch ID: **E10VS110** TestNo: **EPA 8021B** Analysis Date: **4/30/2010** SeqNo: **1928389**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	95.908	5.0	100.0	0	95.9	70	130	94.15	1.85	20	
Ethylbenzene	96.706	5.0	100.0	0	96.7	70	130	95.02	1.76	20	
m,p-Xylene	195.631	10	200.0	0	97.8	70	130	192.3	1.73	20	
Methyl tert-butyl ether	89.612	5.0	100.0	0	89.6	70	130	88.28	1.50	20	
o-Xylene	97.195	5.0	100.0	0	97.2	70	130	95.90	1.34	20	
Toluene	97.862	5.0	100.0	0	97.9	70	130	95.95	1.98	20	
Surr: Bromofluorobenzene (PID)	100.383		100.0		100	64	116		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_S_BTEX

Sample ID: **E100430MB2** SampType: **MBLK** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120807**
Client ID: **PBS** Batch ID: **E10VS111** TestNo: **EPA 8021B** Analysis Date: **4/30/2010** SeqNo: **1928509**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	5.0									
Ethylbenzene	ND	5.0									
m,p-Xylene	ND	10									
Methyl tert-butyl ether	ND	5.0									
o-Xylene	ND	5.0									
Toluene	ND	5.0									
Surr: Bromofluorobenzene (PID)	100.577		100.0		101	64	116				

Sample ID: **111453-022ADUP** SampType: **DUP** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120807**
Client ID: **RW16-4** Batch ID: **E10VS111** TestNo: **EPA 8021B** Analysis Date: **4/30/2010** SeqNo: **1928511**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	5.0						0	0	20	
Ethylbenzene	ND	5.0						0	0	20	
m,p-Xylene	ND	10						0	0	20	
Methyl tert-butyl ether	ND	5.0						0	0	20	
o-Xylene	ND	5.0						0	0	20	
Toluene	ND	5.0						0	0	20	
Surr: Bromofluorobenzene (PID)	101.112		100.0		101	64	116		0	0	

Sample ID: **111453-022AMS** SampType: **MS** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120807**
Client ID: **RW16-4** Batch ID: **E10VS111** TestNo: **EPA 8021B** Analysis Date: **4/30/2010** SeqNo: **1928524**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	37.342	5.0	22.15	0	169	41	112				S
Ethylbenzene	36.131	5.0	42.30	0	85.4	26	100				
m,p-Xylene	145.445	10	180.2	0	80.7	32	106				
Methyl tert-butyl ether	354.991	5.0	578.9	0	61.3	44	124				
o-Xylene	57.095	5.0	64.80	0	88.1	30	100				
Toluene	149.398	5.0	172.6	0	86.5	38	112				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_S_BTEX

Sample ID: **111453-022AMS** SampType: **MS** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120807**
Client ID: **RW16-4** Batch ID: **E10VS111** TestNo: **EPA 8021B** Analysis Date: **4/30/2010** SeqNo: **1928524**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (PID)	105.634		100.0		106	64	116				

Sample ID: **111453-022AMSD** SampType: **MSD** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120807**
Client ID: **RW16-4** Batch ID: **E10VS111** TestNo: **EPA 8021B** Analysis Date: **4/30/2010** SeqNo: **1928525**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	36.618	5.0	22.15	0	165	41	112	37.34	1.96	20	S
Ethylbenzene	35.640	5.0	42.30	0	84.3	26	100	36.13	1.37	20	
m,p-Xylene	143.211	10	180.2	0	79.5	32	106	145.4	1.55	20	
Methyl tert-butyl ether	333.404	5.0	578.9	0	57.6	44	124	355.0	6.27	20	
o-Xylene	56.241	5.0	64.80	0	86.8	30	100	57.10	1.51	20	
Toluene	146.890	5.0	172.6	0	85.1	38	112	149.4	1.69	20	
Surr: Bromofluorobenzene (PID)	102.553		100.0		103	64	116		0	20	

Sample ID: **E100430LCS3** SampType: **LCS** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120807**
Client ID: **LCSS** Batch ID: **E10VS111** TestNo: **EPA 8021B** Analysis Date: **4/30/2010** SeqNo: **1928526**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	94.245	5.0	100.0	0	94.2	70	130				
Ethylbenzene	93.818	5.0	100.0	0	93.8	70	130				
m,p-Xylene	189.707	10	200.0	0	94.9	70	130				
Methyl tert-butyl ether	88.603	5.0	100.0	0	88.6	70	130				
o-Xylene	96.135	5.0	100.0	0	96.1	70	130				
Toluene	95.646	5.0	100.0	0	95.6	70	130				
Surr: Bromofluorobenzene (PID)	97.502		100.0		97.5	64	116				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_S_BTEX

Sample ID: **E100430LCS3D** SampType: **LCSD** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120807**
Client ID: **LCSS02** Batch ID: **E10VS111** TestNo: **EPA 8021B** Analysis Date: **5/1/2010** SeqNo: **1928528**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	92.970	5.0	100.0	0	93.0	70	130	94.24	1.36	20	
Ethylbenzene	94.302	5.0	100.0	0	94.3	70	130	93.82	0.515	20	
m,p-Xylene	191.005	10	200.0	0	95.5	70	130	189.7	0.682	20	
Methyl tert-butyl ether	89.308	5.0	100.0	0	89.3	70	130	88.60	0.793	20	
o-Xylene	97.044	5.0	100.0	0	97.0	70	130	96.14	0.941	20	
Toluene	95.400	5.0	100.0	0	95.4	70	130	95.65	0.258	20	
Surr: Bromofluorobenzene (PID)	101.646		100.0		102	64	116		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_WP_BTEX

Sample ID: **E100501LCS1** SampType: **LCS** TestCode: **8021_WP_BT** Units: **µg/L** Prep Date: RunNo: **120774**
Client ID: **LCSW** Batch ID: **E10VW019** TestNo: **EPA 8021B** Analysis Date: **5/1/2010** SeqNo: **1928446**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	94.041	0.50	100.0	0	94.0	70	130				
Toluene	92.798	0.50	100.0	0	92.8	70	130				
Ethylbenzene	92.375	0.50	100.0	0	92.4	70	130				
m,p-Xylene	188.423	1.0	200.0	0	94.2	70	130				
o-Xylene	94.041	0.50	100.0	0	94.0	70	130				
Methyl tert-butyl ether	95.708	0.50	100.0	0	95.7	70	130				
Surr: Bromofluorobenzene (PID)	94.344		100.0		94.3	70	130				

Sample ID: **E100501LCS1D** SampType: **LCSD** TestCode: **8021_WP_BT** Units: **µg/L** Prep Date: RunNo: **120774**
Client ID: **LCSS02** Batch ID: **E10VW019** TestNo: **EPA 8021B** Analysis Date: **5/1/2010** SeqNo: **1928448**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	93.762	0.50	100.0	0	93.8	70	130	94.04	0.297	20	
Toluene	92.228	0.50	100.0	0	92.2	70	130	92.80	0.616	20	
Ethylbenzene	91.633	0.50	100.0	0	91.6	70	130	92.38	0.806	20	
m,p-Xylene	186.904	1.0	200.0	0	93.5	70	130	188.4	0.809	20	
o-Xylene	93.708	0.50	100.0	0	93.7	70	130	94.04	0.355	20	
Methyl tert-butyl ether	99.584	0.50	100.0	0	99.6	70	130	95.71	3.97	20	
Surr: Bromofluorobenzene (PID)	92.945		100.0		92.9	70	130		0	0	

Sample ID: **E100501MB1** SampType: **MBLK** TestCode: **8021_WP_BT** Units: **µg/L** Prep Date: RunNo: **120774**
Client ID: **PBW** Batch ID: **E10VW019** TestNo: **EPA 8021B** Analysis Date: **5/1/2010** SeqNo: **1928451**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Toluene	ND	0.50									
Ethylbenzene	ND	0.50									
m,p-Xylene	ND	1.0									
o-Xylene	ND	0.50									
Methyl tert-butyl ether	ND	0.50									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_WP_BTEX

Sample ID: **E100501MB1**	SampType: **MBLK**	TestCode: **8021_WP_BT**	Units: **µg/L**	Prep Date:	RunNo: **120774**
Client ID: **PBW**	Batch ID: **E10VW019**	TestNo: **EPA 8021B**		Analysis Date: **5/1/2010**	SeqNo: **1928451**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (PID)	91.574		100.0		91.6	70	130				

Sample ID: **111422-020ADUP**	SampType: **DUP**	TestCode: **8021_WP_BT**	Units: **µg/L**	Prep Date:	RunNo: **120774**
Client ID: **ZZZZZZ**	Batch ID: **E10VW019**	TestNo: **EPA 8021B**		Analysis Date: **5/1/2010**	SeqNo: **1928453**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50						0	0	20	
Toluene	ND	0.50						0	0	20	
Ethylbenzene	ND	0.50						0	0	20	
m,p-Xylene	ND	1.0						0	0	20	
o-Xylene	ND	0.50						0	0	20	
Methyl tert-butyl ether	ND	0.50						0	0	20	
Surr: Bromofluorobenzene (PID)	94.628		100.0		94.6	70	130		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CHAIN OF CUSTODY RECORD

Pg 1 of 3

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel. (562) 989-4045 • Fax. (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: 4/26/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☑ FedEx ☐ Other: GSO

Sample Condition Upon Receipt: 1. CHILLED 16.6 15.4 Y ☐ N ☐ 4. SEALED Y ☐ N ☑ 2. HEADSPACE (VOA) Y ☑ N ☐ 5. # OF SPLS MATCH COC Y ☑ N ☐ 3. CONTAINER INTACT Y ☑ N ☐ 6. PRESERVED Y ☑ N ☐

Client: Geocon Consultants, Inc. | Address: 6671 Brisa Street | Tel: 925-371-5900
Attention: Lauren Vigliottti | City: Livermore | State: CA | Zip Code: 94550 | Fax: 925-371-5915

Project Name: I-580 WB HOV Lanes | Project #: E8474-06-01 | Sampler: (Printed Name) Lauren Vigliotti (Signature)

Relinquished by: (Signature and Printed Name) Lauren Vigliotti Date: 4/23/10 Time: 1645 | Received by: (Signature and Printed Name) Date: 4/26/10 Time: 805
Relinquished by: (Signature and Printed Name) Date: Time: | Received by: (Signature and Printed Name) Date: Time:
Relinquished by: (Signature and Printed Name) Date: Time: | Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below
Project Mgr /Submitter
Lauren Vigliotti 4/23/10
Print Name Date
Lauren Vigliotti
Signature

Send Report To: Attn: Same as above | Co: | Addr: | City: State: Zip:

Bill To: Attn: Same as above | Co: | Addr: | City: State: Zip:

Special Instructions/Comments:

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample: $2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode_____ OTHER _____

ITEM	LAB USE ONLY: Batch # / Lab No.	Sample Description: Sample ID / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / 8020 (BTEX)	8015B (DRO) +ORO	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	Total Lead (EPA 6010)	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	111453-01	RW26-0	4/23/2010	0830						X		X			X				E	1	T	P	C
	-2	RW25-0	4/ /2010	0935															E	1		P	C
	-3	RW24-0	4/ /2010	0945															E	1		P	C
	-4	RW23-0	4/ /2010	1025															E	1		P	C
	-5	RW22-0	4/ /2010	1045															E	1		P	C
	-6	RW21-0	4/ /2010	1050															E	1		P	C
	-7	RW20-0	4/ /2010	1200															E	1		P	C
	-8	RW19-0	4/ /2010	1300															E	1		P	C
	-9	RW18-0	4/ /2010	1405															E	1		P	C
	-10	RW17-0	4/ /2010	1415															E	1	V	P	C

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs | B = Emergency Next Workday | C = Critical 2 Workdays | D = Urgent 3 Workdays | E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel. (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. # _____
Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☒ FedEx ☐ Other: _____

Sample Condition Upon Receipt
1. CHILLED Y ☐ N ☐ 4. SEALED Y ☐ N ☐
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☐ N ☐
3. CONTAINER INTACT Y ☐ N ☐ 6. PRESERVED Y ☐ N ☐

Client: Geocon Consultants, Inc. | Address: 6671 Brisa Street | Tel: 925-371-5900
Attention: Lauren Vigliottti | City: Livermore | State: CA | Zip Code: 94550 | Fax: 925-371-5915

Project Name: I-580 WB HOV Lanes | Project #: E8474-06-01 | Sampler: (Printed Name) Lauren Vigliotti (Signature)

Relinquished by (Signature and Printed Name)	Date	Time	Received by: (Signature and Printed Name)	Date	Time
Lauren Vigliotti	4/23/10	1645	Mark	4/24/10	805

I hereby authorize ATL to perform the work indicated below
Project Mgr /Submitter: Lauren Vigliotti 4/23/10 (Print Name, Date)
Lauren Vigliotti (Signature)

Send Report To: Attn: Same as above | Co: | Addr: | City: State: Zip:

Bill To: Attn: Same as above | Co: | Addr: | City: State: Zip:

Special Instructions/Comments:

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample ID / Location	Date	Time	Circle or Add Analysis(es) Requested: 8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / 8020 (BTEX) +MTBE	8015B (DRO) +ORO	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	Total Lead (EPA 6010)	SPECIFY APPROPRIATE MATRIX: SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	QA/QC	REMARKS
	111453-11	RW16-0	4/23/2010	1520					X		X				X				E	1	T	P	C	
	-12	RW26-4	4/ /2010	0830					X										E	1		P	C	
	-13	RW25-4	4/ /2010	0935															E	1		P	C	
	-14	RW24-4	4/ /2010	0945															E	1		P	C	
	-15	RW23-4	4/ /2010	1025															E	1		P	C	
	-16	RW22-4	4/ /2010	1045															E	1		P	C	
	-17	RW21-4	4/ /2010	1050															E	1		P	C	
	-18	RW20-4	4/ /2010	1200															E	1		P	C	
	-19	RW19-4	4/ /2010	1300															E	1		P	C	
	-20	RW18-4	4/ /2010	1405															E	1		P	C	

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode____ OTHER _____

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs | B = Emergency Next Workday | C = Critical 2 Workdays | D = Urgent 3 Workdays | E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel. (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☒ FedEx ☐ Other: _____

Sample Condition Upon Receipt: 1. CHILLED Y ☐ N ☐ 2. HEADSPACE (VOA) Y ☐ N ☐ 3. CONTAINER INTACT Y ☐ N ☐ 4. SEALED Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☐ N ☐ 6. PRESERVED Y ☐ N ☐

Client: Geocon Consultants, Inc. | Address: 6671 Brisa Street | Tel: 925-371-5900
Attention: Lauren Vigliottti | City: Livermore | State: CA | Zip Code: 94550 | Fax: 925-371-5915

Project Name: I-580 WB HOV Lanes | Project #: E8474-06-01 | Sampler: (Printed Name) Lauren Vigliotti (Signature) Lauren Vigliotti

Relinquished by (Signature and Printed Name): Lauren Vigliotti | Date: 4/23/10 | Time: 1645 | Received by: (Signature and Printed Name) MARK | Date: 4/26/10 | Time: 805

Relinquished by: (Signature and Printed Name) | Date: | Time: | Received by: (Signature and Printed Name) | Date: | Time:

Relinquished by: (Signature and Printed Name) | Date: | Time: | Received by: (Signature and Printed Name) | Date: | Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter: Lauren Vigliotti 4/23/10
Print Name Date
Signature

Send Report To: Attn: Same as above | Co: | Addr: | City: State: Zip:

Bill To: Attn: Same as above | Co: | Addr: | City: State: Zip:

Special Instructions/Comments:

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides); 8082 (PCB); 8260B (Volatiles); 8270C (BNA); 6010B (Total Metal); 8015B (GRO) / 8020 (BTEX) + MTBE; 8015B (DRO); 8021 (BTEX); TITLE 22 / CAM 17 (6010 / 7000); Total Lead (EPA 6010)

SPECIFY APPROPRIATE MATRIX: SOIL; WATER; GROUND WATER; WASTEWATER

PRESERVATION

QA/QC: RTNE ☐ CT ☑ SWRCB Logcode_____ OTHER _____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample ID / Location	Date	Time	TAT	Container(s): #	Type	PRESERVATION	REMARKS
	111453-21	RW17-4	4/23/2010	1415	E	1	T	P	C	
	-22	RW110-4	4/23/2010	1520	E	1	VL	P	C	
	-23	RW26-GW	4/23/2010	0900	E	5	VL	P	C	
	-24	RW24-GW	4/23/2010	1000	E	5		P	C	
	-25	RW21-GW	4/23/2010	1115	E	5		P	C	
	-26	RW19-GW	4/23/2010	1330	E	5		P	C	
	-27	RW17-GW	4/23/2010	1500	E	5	V	P	C	
			4/23/2010		E	1		P	C	
			4/23/2010		E	1		P	C	
			4/23/2010		E	1		P	C	

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs; B = Emergency Next Workday; C = Critical 2 Workdays; D = Urgent 3 Workdays; E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

Fernando Diwa

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Tuesday, April 27, 2010 8:25 AM
To: Fernando Diwa
Cc: Carmen Aguila; Diane Galvan
Subject: RE: I-580 WB HOV Lanes, E8474-06-01

Hi Fernando:
Sorry for the confusion. The sample pictured on the left will be RW25-0, the one on the right should be labeled RW25-4. All samples indicated on the COC for DRO analysis, should also be analyzed for ORO. Lastly, please proceed with the requested analyses for sample RW26-GW. Thanks for your help!
-Lauren

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

Geocon Consultants, Inc
6671 Brisa Street
Livermore, CA 94550
Tel (925) 371-5900
Cell (925) 768-9874

GEOTECHNICAL ENVIRONMENTAL MATERIALS

San Diego Murrieta Burbank Bakersfield Sacramento Livermore Carson City Las Vegas Portland

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From: Fernando Diwa [mailto:fernando@atlglobal.com]
Sent: Monday, April 26, 2010 2:01 PM
To: vigliotti@geoconinc.com
Cc: Carmen Aguila; Diane Galvan
Subject: I-580 WB HOV Lanes, E8474-06-01

Hi Lauren,

This is to inform you on the following issues:

1. We received two soil samples labeled as RW25-0, but no sample received for RW25-4. Both samples were collected @ 0935 as indicated (see attached picture).

2. The soil samples @ depth "0" were requested for 8015 DRO + ORO, but the water samples were requested for 8015 DRO only, ORO not marked (see attached COC).

3. All 3 voa vials for RW26-GW were noted to have headspace >5-6mm. Do you still want to proceed with the analysis?

Please advise.

Regards,

Fernando Diwa
Sample Control

Advanced Technology Laboratories
www.atlglobal.com
Tel: (562) 989-4045 ext. 236
Fax: (562) 989-4040

Advanced Technology Laboratories is a full-service environmental lab providing organic and inorganic analyses of soil, water, wastewater, storm water and hazardous waste samples. ATL is accredited by the State of California, NELAP and State of Nevada and holds various SBE, DBE and MBE certificates and a USDA soil permit. ATL takes pride in providing our customers with quick turnaround time, excellent customer service and defensible data while offering very competitive rates. *Advanced Technology Labs - Your Partner for Quality Environmental Testing*

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May 11, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111453

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 26, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I-580 WB HOV Lanes, E8474-06-01
Lab Order: 111453

CASE NARRATIVE

Analytical Comments for Method 7420

Dilution was necessary for samples 111453-003A, 111453-007A, 111453-011A and 111453-012A, due to sample matrix.

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 5/11/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (STLC)
WET/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111453
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/26/2010 8:05:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111453-003A	RW24-0	21	mg/L	63919	2.5	10	4/23/2010	5/10/2010
111453-004A	RW23-0	7.3	mg/L	63919	0.25	1	4/23/2010	5/10/2010
111453-007A	RW20-0	32	mg/L	63919	2.5	10	4/23/2010	5/10/2010
111453-011A	RW16-0	28	mg/L	63919	2.5	10	4/23/2010	5/10/2010
111453-012A	RW26-4	22	mg/L	63919	1.2	5	4/23/2010	5/10/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-63919A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/6/2010**	RunNo: **121001**
Client ID: **PBS**	Batch ID: **63919**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/10/2010**	SeqNo: **1932519**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63919**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/6/2010**	RunNo: **121001**
Client ID: **LCSS**	Batch ID: **63919**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/10/2010**	SeqNo: **1932520**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.899	0.25	5.000	0	98.0	80	120				

Sample ID: **111453-012A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/6/2010**	RunNo: **121001**
Client ID: **RW26-4**	Batch ID: **63919**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/10/2010**	SeqNo: **1932526**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	22.202	1.2						21.83	1.70	20	

Sample ID: **111453-012A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/6/2010**	RunNo: **121001**
Client ID: **RW26-4**	Batch ID: **63919**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/10/2010**	SeqNo: **1932527**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	27.087	1.2	5.000	21.83	105	80	120				

Sample ID: **111453-012A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/6/2010**	RunNo: **121001**
Client ID: **RW26-4**	Batch ID: **63919**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/10/2010**	SeqNo: **1932528**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	27.124	1.2	5.000	21.83	106	80	120	27.09	0.138	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Tuesday, May 04, 2010 1:33 PM
To: Diane Galvan
Subject: RE: Results/EDD - I-580 WB HOV Lanes (111453)

Hi Diane:
Please run the following samples for WET lead, standard TAT. Thank you.
RW24-0, RW23-0, RW16-0, RW20-0, RW26-4
-Lauren
****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

Geocon Consultants, Inc
6671 Brisa Street
Livermore, CA 94550
Tel (925) 371-5900
Cell (925) 768-9874

GEOCON

GEOTECHNICAL ENVIRONMENTAL MATERIALS

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May 18, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
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TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111453

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on April 26, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

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Advanced Technology Laboratories

Date: 5/18/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION
WET DI/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111453
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/26/2010 8:05:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111453-003A	RW24-0	ND	mg/L	64107	0.25	1	4/23/2010	5/17/2010
111453-004A	RW23-0	ND	mg/L	64107	0.25	1	4/23/2010	5/17/2010
111453-007A	RW20-0	ND	mg/L	64107	0.25	1	4/23/2010	5/17/2010
111453-011A	RW16-0	ND	mg/L	64107	0.25	1	4/23/2010	5/17/2010
111453-012A	RW26-4	ND	mg/L	64107	0.25	1	4/23/2010	5/17/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 5/18/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (TCLP)
EPA 1311/ 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111453
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	4/26/2010 8:05:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111453-003A	RW24-0	2.1	mg/L	64118	0.25	1	4/23/2010	5/17/2010
111453-004A	RW23-0	0.35	mg/L	64118	0.25	1	4/23/2010	5/17/2010
111453-007A	RW20-0	0.98	mg/L	64118	0.25	1	4/23/2010	5/17/2010
111453-011A	RW16-0	0.30	mg/L	64118	0.25	1	4/23/2010	5/17/2010
111453-012A	RW26-4	0.39	mg/L	64118	0.25	1	4/23/2010	5/17/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **MB-64107A**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/13/2010**	RunNo: **121212**
Client ID: **PBS**	Batch ID: **64107**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/17/2010**	SeqNo: **1936255**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-64107**	SampType: **LCS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/13/2010**	RunNo: **121212**
Client ID: **LCSS**	Batch ID: **64107**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/17/2010**	SeqNo: **1936256**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.953	0.25	5.000	0	99.1	80	120				

Sample ID: **111453-012A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/13/2010**	RunNo: **121212**
Client ID: **RW26-4**	Batch ID: **64107**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/17/2010**	SeqNo: **1936266**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111453-012A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/13/2010**	RunNo: **121212**
Client ID: **RW26-4**	Batch ID: **64107**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/17/2010**	SeqNo: **1936267**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.015	0.25	5.000	0	100	70	130				

Sample ID: **111453-012A-MSD**	SampType: **MSD**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/13/2010**	RunNo: **121212**
Client ID: **RW26-4**	Batch ID: **64107**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/17/2010**	SeqNo: **1936268**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.038	0.25	5.000	0	101	70	130	5.015	0.453	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-64118**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/14/2010**	RunNo: **121213**
Client ID: **PBS**	Batch ID: **64118**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/17/2010**	SeqNo: **1936269**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-64110A TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/14/2010**	RunNo: **121213**
Client ID: **PBS**	Batch ID: **64118**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/17/2010**	SeqNo: **1936270**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-64118**	SampType: **LCS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/14/2010**	RunNo: **121213**
Client ID: **LCSS**	Batch ID: **64118**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/17/2010**	SeqNo: **1936271**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	1.029	0.25	1.000	0	103	80	120				

Sample ID: **111453-012A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/14/2010**	RunNo: **121213**
Client ID: **RW26-4**	Batch ID: **64118**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/17/2010**	SeqNo: **1936280**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.414	0.25						0.3880	6.37	20	

Sample ID: **111453-012A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **5/14/2010**	RunNo: **121213**
Client ID: **RW26-4**	Batch ID: **64118**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/17/2010**	SeqNo: **1936281**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.799	0.25	2.500	0.3880	96.5	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111453
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **111453-012A-MSD** SampType: **MSD** TestCode: **7420_TC** Units: **mg/L** Prep Date: **5/14/2010** RunNo: **121213**
Client ID: **RW26-4** Batch ID: **64118** TestNo: **EPA 1311/ 74 EPA3010A** Analysis Date: **5/17/2010** SeqNo: **1936282**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.753	0.25	2.500	0.3880	94.6	70	130	2.799	1.65	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Tuesday, May 11, 2010 5:26 PM
To: Diane Galvan
Subject: WO111453

Hi Diane:
Please run TCLP and DI-WET lead on the following samples, standard TAT. Thank you.
RW24-0
RW23-0
RW20-0
RW16-0
RW26-4

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

Geocon Consultants, Inc
6671 Brisa Street
Livermore, CA 94550
Tel (925) 371-5900
Cell (925) 768-9874

GEOCON

GEOTECHNICAL ENVIRONMENTAL MATERIALS

San Diego Murrieta Burbank Bakersfield Sacramento Livermore Carson City Las Vegas Portland

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May 10, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111547

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on May 01, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I-580 WB HOV Lanes, E8474-06-01
Lab Order: 111547

CASE NARRATIVE

Analytical Comments for Method 6010

Dilution was necessary for sample 111547-027C, due to sample matrix.

Matrix Spike (MS) and /or Matrix Spike Duplicate (MSD) are/is outside recovery criteria for samples 111547-027CMS and 111547-027CMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

RPD for Duplicate (DUP) and/or Matrix Spike (MS)/Matrix Spike Duplicate (MSD) is outside criteria for samples 111547-014ADUP, 111547-027CDUP, 111547-030ADUP and 111547-030AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Analytical Comments for Method 7470

Matrix Spike (MS) and /or Matrix Spike Duplicate (MSD) are/is outside recovery criteria for samples 111547-027CMS and 111547-027CMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Analytical Comments for Method 8015 (DRO/ORO)

Dilution was necessary for samples 111547-001A, 111547-003A, 111547-004A, 111547-005A, 111547-008A, 111547-009A, 111547-010A, 111547-029A and 111547-035A, due to sample matrix.

Surrogate recovery was diluted out for samples 111547-004A, 111547-005A, 111547-008A, 111547-009A, 111547-010A, 111547-029A and 111547-035A.

RPD for Matrix Spike (MS)/Matrix Spike Duplicate (MSD) is outside criteria for sample 111547-002AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Analytical Comments for Method 8015 (GRO)

Surrogate recovery biased low for sample 111547-036AMS, possibly due to matrix interferences.

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CLIENT:	Geocon Consultants, Inc.
Project:	I-580 WB HOV Lanes, E8474-06-01
Lab Order:	111547

CASE NARRATIVE

Analytical Comments for Method 8021

Matrix Spike (MS) and /or Matrix Spike Duplicate (MSD) are/is outside recovery criteria for samples 111543-007AMS, 111543-007AMSD, 111547-036AMS, 111547-036AMSD, 111573-007AMS and 111573-007AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

RPD for Matrix Spike (MS)/Matrix Spike Duplicate (MSD) is outside criteria for sample 111547-036AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Advanced Technology Laboratories

3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW7-0
Lab Order:	111547	**Collection Date:**	4/29/2010 9:00:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-001		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100506C	QC Batch: 63921			PrepDate:	5/6/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 12:35 PM
Arsenic	1.4	1.0		mg/Kg	1	5/6/2010 12:35 PM
Barium	170	1.0		mg/Kg	1	5/6/2010 12:35 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 12:35 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 12:35 PM
Chromium	21	1.0		mg/Kg	1	5/6/2010 12:35 PM
Cobalt	8.0	1.0		mg/Kg	1	5/6/2010 12:35 PM
Copper	11	2.0		mg/Kg	1	5/6/2010 12:35 PM
Lead	11	1.0		mg/Kg	1	5/6/2010 12:35 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 12:35 PM
Nickel	27	1.0		mg/Kg	1	5/6/2010 12:35 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 12:35 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 12:35 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 12:35 PM
Vanadium	29	1.0		mg/Kg	1	5/6/2010 12:35 PM
Zinc	53	1.0		mg/Kg	1	5/6/2010 12:35 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC8_100504A	QC Batch: 63864			PrepDate:	5/3/2010	Analyst: **CBR**
DRO	21	5.0		mg/Kg	5	5/4/2010 05:29 PM
ORO	100	5.0		mg/Kg	5	5/4/2010 05:29 PM
Surr: p-Terphenyl	78.0	30-128		%REC	5	5/4/2010 05:29 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506C	QC Batch: 63924			PrepDate:	5/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 12:40 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW6-0
Lab Order:	111547	**Collection Date:**	4/29/2010 9:15:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-002		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP8_100506C	QC Batch: 63921			PrepDate:	5/6/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 12:38 PM
Arsenic	1.6	1.0		mg/Kg	1	5/6/2010 12:38 PM
Barium	210	1.0		mg/Kg	1	5/6/2010 12:38 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 12:38 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 12:38 PM
Chromium	20	1.0		mg/Kg	1	5/6/2010 12:38 PM
Cobalt	7.2	1.0		mg/Kg	1	5/6/2010 12:38 PM
Copper	17	2.0		mg/Kg	1	5/6/2010 12:38 PM
Lead	10	1.0		mg/Kg	1	5/6/2010 12:38 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 12:38 PM
Nickel	25	1.0		mg/Kg	1	5/6/2010 12:38 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 12:38 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 12:38 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 12:38 PM
Vanadium	25	1.0		mg/Kg	1	5/6/2010 12:38 PM
Zinc	100	1.0		mg/Kg	1	5/6/2010 12:38 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
EPA 3550B				**EPA 8015B(M)**		
RunID: GC8_100504A	QC Batch: 63864			PrepDate:	5/3/2010	Analyst: **CBR**
DRO	7.7	1.0		mg/Kg	1	5/4/2010 01:22 PM
ORO	31	1.0		mg/Kg	1	5/4/2010 01:22 PM
Surr: p-Terphenyl	77.3	30-128		%REC	1	5/4/2010 01:22 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506C	QC Batch: 63924			PrepDate:	5/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 12:43 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	ST3-0
Lab Order:	111547	**Collection Date:**	4/29/2010 11:40:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-003		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP8_100506C	QC Batch: 63921			PrepDate:	5/6/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 12:43 PM
Arsenic	2.3	1.0		mg/Kg	1	5/6/2010 12:43 PM
Barium	130	1.0		mg/Kg	1	5/6/2010 12:43 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 12:43 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 12:43 PM
Chromium	22	1.0		mg/Kg	1	5/6/2010 12:43 PM
Cobalt	7.7	1.0		mg/Kg	1	5/6/2010 12:43 PM
Copper	20	2.0		mg/Kg	1	5/6/2010 12:43 PM
Lead	15	1.0		mg/Kg	1	5/6/2010 12:43 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 12:43 PM
Nickel	29	1.0		mg/Kg	1	5/6/2010 12:43 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 12:43 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 12:43 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 12:43 PM
Vanadium	27	1.0		mg/Kg	1	5/6/2010 12:43 PM
Zinc	92	1.0		mg/Kg	1	5/6/2010 12:43 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
EPA 3550B				**EPA 8015B(M)**		
RunID: GC8_100504A	QC Batch: 63864			PrepDate:	5/3/2010	Analyst: **CBR**
DRO	12	5.0		mg/Kg	5	5/4/2010 05:01 PM
ORO	64	5.0		mg/Kg	5	5/4/2010 05:01 PM
Surr: p-Terphenyl	75.0	30-128		%REC	5	5/4/2010 05:01 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506C	QC Batch: 63924			PrepDate:	5/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 12:45 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Wednesday, May 12, 2010 9:33 AM
To: Diane Galvan
Subject: WO111547

Hi Diane: I have a favor to ask. For the referenced work order, could you please reissue pages 6, 16, and 17 for sample IDs ST7-0 and ST7-4, with them renamed as ST3-0 and ST3-4? Page 6 – ST7-0, change to ST3-0, pages 16 and 17 – ST7-4 change toST3-4? I only need pdfs of these pages, I can modify the excel data myself. Thanks so much for your assistance!

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

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CLIENT: Geocon Consultants, Inc.
Lab Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111547-004

Client Sample ID: ST2-0
Collection Date: 4/29/2010 1:30:00 PM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP8_100506C	QC Batch: 63921			PrepDate:	5/6/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 12:46 PM
Arsenic	ND	1.0		mg/Kg	1	5/6/2010 12:46 PM
Barium	140	1.0		mg/Kg	1	5/6/2010 12:46 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 12:46 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 12:46 PM
Chromium	32	1.0		mg/Kg	1	5/6/2010 12:46 PM
Cobalt	7.1	1.0		mg/Kg	1	5/6/2010 12:46 PM
Copper	36	2.0		mg/Kg	1	5/6/2010 12:46 PM
Lead	22	1.0		mg/Kg	1	5/6/2010 12:46 PM
Molybdenum	2.1	1.0		mg/Kg	1	5/6/2010 12:46 PM
Nickel	40	1.0		mg/Kg	1	5/6/2010 12:46 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 12:46 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 12:46 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 12:46 PM
Vanadium	24	1.0		mg/Kg	1	5/6/2010 12:46 PM
Zinc	170	1.0		mg/Kg	1	5/6/2010 12:46 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
EPA 3550B				**EPA 8015B(M)**		
RunID: GC16_100506C	QC Batch: 63905			PrepDate:	5/4/2010	Analyst: **CBR**
DRO	96	20		mg/Kg	10	5/7/2010 12:07 PM
ORO	680	20		mg/Kg	10	5/7/2010 12:07 PM
Surr: p-Terphenyl	0	30-128	SDO	%REC	10	5/7/2010 12:07 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506C	QC Batch: 63924			PrepDate:	5/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 12:51 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111547-005

Client Sample ID: ST1-0
Collection Date: 4/29/2010 2:40:00 PM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100506C	QC Batch: 63921			PrepDate:	5/6/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 12:49 PM
Arsenic	2.3	1.0		mg/Kg	1	5/6/2010 12:49 PM
Barium	110	1.0		mg/Kg	1	5/6/2010 12:49 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 12:49 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 12:49 PM
Chromium	29	1.0		mg/Kg	1	5/6/2010 12:49 PM
Cobalt	8.0	1.0		mg/Kg	1	5/6/2010 12:49 PM
Copper	21	2.0		mg/Kg	1	5/6/2010 12:49 PM
Lead	37	1.0		mg/Kg	1	5/6/2010 12:49 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 12:49 PM
Nickel	41	1.0		mg/Kg	1	5/6/2010 12:49 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 12:49 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 12:49 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 12:49 PM
Vanadium	25	1.0		mg/Kg	1	5/6/2010 12:49 PM
Zinc	530	1.0		mg/Kg	1	5/6/2010 12:49 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC16_100506C	QC Batch: 63905			PrepDate:	5/4/2010	Analyst: **CBR**
DRO	26	20		mg/Kg	10	5/7/2010 12:16 PM
ORO	580	20		mg/Kg	10	5/7/2010 12:16 PM
Surr: p-Terphenyl	0	30-128	SDO	%REC	10	5/7/2010 12:16 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506C	QC Batch: 63924			PrepDate:	5/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 12:53 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW8-0
Lab Order:	111547	**Collection Date:**	4/30/2010 8:25:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-008		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100506C	QC Batch: 63921			PrepDate:	5/6/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 12:52 PM
Arsenic	2.2	1.0		mg/Kg	1	5/6/2010 12:52 PM
Barium	180	1.0		mg/Kg	1	5/6/2010 12:52 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 12:52 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 12:52 PM
Chromium	24	1.0		mg/Kg	1	5/6/2010 12:52 PM
Cobalt	7.6	1.0		mg/Kg	1	5/6/2010 12:52 PM
Copper	19	2.0		mg/Kg	1	5/6/2010 12:52 PM
Lead	22	1.0		mg/Kg	1	5/6/2010 12:52 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 12:52 PM
Nickel	31	1.0		mg/Kg	1	5/6/2010 12:52 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 12:52 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 12:52 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 12:52 PM
Vanadium	29	1.0		mg/Kg	1	5/6/2010 12:52 PM
Zinc	57	1.0		mg/Kg	1	5/6/2010 12:52 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC16_100506C	QC Batch: 63905			PrepDate:	5/4/2010	Analyst: **CBR**
DRO	130	20		mg/Kg	10	5/7/2010 12:26 PM
ORO	750	20		mg/Kg	10	5/7/2010 12:26 PM
Surr: p-Terphenyl	0	30-128	SDO	%REC	10	5/7/2010 12:26 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506C	QC Batch: 63924			PrepDate:	5/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 12:55 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111547-009

Client Sample ID: RW2-0
Collection Date: 4/30/2010 10:45:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100506C	QC Batch: 63921			PrepDate:	5/6/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 12:55 PM
Arsenic	2.5	1.0		mg/Kg	1	5/6/2010 12:55 PM
Barium	100	1.0		mg/Kg	1	5/6/2010 12:55 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 12:55 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 12:55 PM
Chromium	27	1.0		mg/Kg	1	5/6/2010 12:55 PM
Cobalt	7.5	1.0		mg/Kg	1	5/6/2010 12:55 PM
Copper	18	2.0		mg/Kg	1	5/6/2010 12:55 PM
Lead	19	1.0		mg/Kg	1	5/6/2010 12:55 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 12:55 PM
Nickel	37	1.0		mg/Kg	1	5/6/2010 12:55 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 12:55 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 12:55 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 12:55 PM
Vanadium	26	1.0		mg/Kg	1	5/6/2010 12:55 PM
Zinc	50	1.0		mg/Kg	1	5/6/2010 12:55 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC16_100506C	QC Batch: 63905			PrepDate:	5/4/2010	Analyst: **CBR**
DRO	140	20		mg/Kg	10	5/7/2010 12:35 PM
ORO	800	20		mg/Kg	10	5/7/2010 12:35 PM
Surr: p-Terphenyl	0	30-128	SDO	%REC	10	5/7/2010 12:35 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506C	QC Batch: 63924			PrepDate:	5/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 12:57 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111547-010

Client Sample ID: RW1-0
Collection Date: 4/30/2010 11:00:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100506C	QC Batch: 63921			PrepDate:	5/6/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 12:59 PM
Arsenic	1.6	1.0		mg/Kg	1	5/6/2010 12:59 PM
Barium	95	1.0		mg/Kg	1	5/6/2010 12:59 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 12:59 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 12:59 PM
Chromium	25	1.0		mg/Kg	1	5/6/2010 12:59 PM
Cobalt	6.6	1.0		mg/Kg	1	5/6/2010 12:59 PM
Copper	15	2.0		mg/Kg	1	5/6/2010 12:59 PM
Lead	23	1.0		mg/Kg	1	5/6/2010 12:59 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 12:59 PM
Nickel	37	1.0		mg/Kg	1	5/6/2010 12:59 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 12:59 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 12:59 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 12:59 PM
Vanadium	22	1.0		mg/Kg	1	5/6/2010 12:59 PM
Zinc	50	1.0		mg/Kg	1	5/6/2010 12:59 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC16_100506C	QC Batch: 63905			PrepDate:	5/4/2010	Analyst: **CBR**
DRO	34	20		mg/Kg	10	5/7/2010 12:44 PM
ORO	390	20		mg/Kg	10	5/7/2010 12:44 PM
Surr: p-Terphenyl	0	30-128	SDO	%REC	10	5/7/2010 12:44 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506C	QC Batch: 63924			PrepDate:	5/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 12:59 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111547-013

Client Sample ID: RW7-4
Collection Date: 4/29/2010 9:00:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP8_100506C	QC Batch: 63921			PrepDate: 5/6/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 01:02 PM
Arsenic	ND	1.0		mg/Kg	1	5/6/2010 01:02 PM
Barium	96	1.0		mg/Kg	1	5/6/2010 01:02 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 01:02 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 01:02 PM
Chromium	24	1.0		mg/Kg	1	5/6/2010 01:02 PM
Cobalt	7.2	1.0		mg/Kg	1	5/6/2010 01:02 PM
Copper	6.1	2.0		mg/Kg	1	5/6/2010 01:02 PM
Lead	4.0	1.0		mg/Kg	1	5/6/2010 01:02 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 01:02 PM
Nickel	23	1.0		mg/Kg	1	5/6/2010 01:02 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 01:02 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 01:02 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 01:02 PM
Vanadium	44	1.0		mg/Kg	1	5/6/2010 01:02 PM
Zinc	27	1.0		mg/Kg	1	5/6/2010 01:02 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100505B	QC Batch: E10VS114			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	5/5/2010 07:22 PM
Surr: Bromofluorobenzene (FID)	97.4	56-137		%REC	1	5/5/2010 07:22 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100505B	QC Batch: E10VS114			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	5/5/2010 07:22 PM
Ethylbenzene	ND	5.0		µg/Kg	1	5/5/2010 07:22 PM
m,p-Xylene	ND	10		µg/Kg	1	5/5/2010 07:22 PM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	5/5/2010 07:22 PM
o-Xylene	ND	5.0		µg/Kg	1	5/5/2010 07:22 PM
Toluene	ND	5.0		µg/Kg	1	5/5/2010 07:22 PM
Surr: Bromofluorobenzene (PID)	82.9	64-116		%REC	1	5/5/2010 07:22 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506C	QC Batch: 63924			PrepDate: 5/6/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW7-4
Lab Order:	111547	**Collection Date:**	4/29/2010 9:00:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-013		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
		EPA 7471A				
RunID: AA1_100506C	QC Batch: 63924			PrepDate:	5/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 01:01 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Lab Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111547-014

Client Sample ID: RW6-4
Collection Date: 4/29/2010 9:15:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100506C	QC Batch: 63921			PrepDate: 5/6/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 01:05 PM
Arsenic	3.6	1.0		mg/Kg	1	5/6/2010 01:05 PM
Barium	130	1.0		mg/Kg	1	5/6/2010 01:05 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 01:05 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 01:05 PM
Chromium	19	1.0		mg/Kg	1	5/6/2010 01:05 PM
Cobalt	7.0	1.0		mg/Kg	1	5/6/2010 01:05 PM
Copper	6.4	2.0		mg/Kg	1	5/6/2010 01:05 PM
Lead	4.1	1.0		mg/Kg	1	5/6/2010 01:05 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 01:05 PM
Nickel	22	1.0		mg/Kg	1	5/6/2010 01:05 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 01:05 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 01:05 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 01:05 PM
Vanadium	27	1.0		mg/Kg	1	5/6/2010 01:05 PM
Zinc	19	1.0		mg/Kg	1	5/6/2010 01:05 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100505B	QC Batch: E10VS114			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	5/5/2010 07:37 PM
Surr: Bromofluorobenzene (FID)	103	56-137		%REC	1	5/5/2010 07:37 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100505B	QC Batch: E10VS114			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	5/5/2010 07:37 PM
Ethylbenzene	ND	5.0		µg/Kg	1	5/5/2010 07:37 PM
m,p-Xylene	ND	10		µg/Kg	1	5/5/2010 07:37 PM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	5/5/2010 07:37 PM
o-Xylene	ND	5.0		µg/Kg	1	5/5/2010 07:37 PM
Toluene	ND	5.0		µg/Kg	1	5/5/2010 07:37 PM
Surr: Bromofluorobenzene (PID)	88.6	64-116		%REC	1	5/5/2010 07:37 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506C	QC Batch: 63924			PrepDate: 5/6/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW6-4
Lab Order:	111547	**Collection Date:**	4/29/2010 9:15:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-014		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
		EPA 7471A				
RunID: AA1_100506C	QC Batch: 63924			PrepDate: 5/6/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 12:36 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111547-015

Client Sample ID: ST3-4
Collection Date: 4/29/2010 11:40:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100506D	QC Batch: 63922			PrepDate: 5/6/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 01:44 PM
Arsenic	2.6	1.0		mg/Kg	1	5/6/2010 01:44 PM
Barium	130	1.0		mg/Kg	1	5/6/2010 01:44 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 01:44 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 01:44 PM
Chromium	23	1.0		mg/Kg	1	5/6/2010 01:44 PM
Cobalt	8.4	1.0		mg/Kg	1	5/6/2010 01:44 PM
Copper	15	2.0		mg/Kg	1	5/6/2010 01:44 PM
Lead	19	1.0		mg/Kg	1	5/6/2010 01:44 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 01:44 PM
Nickel	30	1.0		mg/Kg	1	5/6/2010 01:44 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 01:44 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 01:44 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 01:44 PM
Vanadium	30	1.0		mg/Kg	1	5/6/2010 01:44 PM
Zinc	65	1.0		mg/Kg	1	5/6/2010 01:44 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100505B	QC Batch: E10VS114			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	5/5/2010 07:51 PM
Surr: Bromofluorobenzene (FID)	106	56-137		%REC	1	5/5/2010 07:51 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100505B	QC Batch: E10VS114			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	5/5/2010 07:51 PM
Ethylbenzene	ND	5.0		µg/Kg	1	5/5/2010 07:51 PM
m,p-Xylene	ND	10		µg/Kg	1	5/5/2010 07:51 PM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	5/5/2010 07:51 PM
o-Xylene	ND	5.0		µg/Kg	1	5/5/2010 07:51 PM
Toluene	ND	5.0		µg/Kg	1	5/5/2010 07:51 PM
Surr: Bromofluorobenzene (PID)	90.7	64-116		%REC	1	5/5/2010 07:51 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506D	QC Batch: 63925			PrepDate: 5/6/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	ST3-4
Lab Order:	111547	**Collection Date:**	4/29/2010 11:40:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-015		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
		EPA 7471A				
RunID: AA1_100506D	QC Batch: 63925			PrepDate:	5/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 01:24 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111547-016

Client Sample ID: ST2-4
Collection Date: 4/29/2010 1:30:00 PM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100506D	QC Batch: 63922			PrepDate: 5/6/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 01:47 PM
Arsenic	ND	1.0		mg/Kg	1	5/6/2010 01:47 PM
Barium	17	1.0		mg/Kg	1	5/6/2010 01:47 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 01:47 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 01:47 PM
Chromium	6.3	1.0		mg/Kg	1	5/6/2010 01:47 PM
Cobalt	1.5	1.0		mg/Kg	1	5/6/2010 01:47 PM
Copper	ND	2.0		mg/Kg	1	5/6/2010 01:47 PM
Lead	1.3	1.0		mg/Kg	1	5/6/2010 01:47 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 01:47 PM
Nickel	5.6	1.0		mg/Kg	1	5/6/2010 01:47 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 01:47 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 01:47 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 01:47 PM
Vanadium	4.0	1.0		mg/Kg	1	5/6/2010 01:47 PM
Zinc	11	1.0		mg/Kg	1	5/6/2010 01:47 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100505B	QC Batch: E10VS114			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	5/5/2010 08:21 PM
Surr: Bromofluorobenzene (FID)	105	56-137		%REC	1	5/5/2010 08:21 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100505B	QC Batch: E10VS114			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	5/5/2010 08:21 PM
Ethylbenzene	ND	5.0		µg/Kg	1	5/5/2010 08:21 PM
m,p-Xylene	ND	10		µg/Kg	1	5/5/2010 08:21 PM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	5/5/2010 08:21 PM
o-Xylene	ND	5.0		µg/Kg	1	5/5/2010 08:21 PM
Toluene	ND	5.0		µg/Kg	1	5/5/2010 08:21 PM
Surr: Bromofluorobenzene (PID)	90.1	64-116		%REC	1	5/5/2010 08:21 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506D	QC Batch: 63925			PrepDate: 5/6/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	ST2-4
Lab Order:	111547	**Collection Date:**	4/29/2010 1:30:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-016		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
		EPA 7471A				
RunID: AA1_100506D	QC Batch: 63925			PrepDate: 5/6/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 01:26 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	ST1-4
Lab Order:	111547	**Collection Date:**	4/29/2010 2:40:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-017		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100506D	QC Batch: 63922			PrepDate: 5/6/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 01:51 PM
Arsenic	1.0	1.0		mg/Kg	1	5/6/2010 01:51 PM
Barium	74	1.0		mg/Kg	1	5/6/2010 01:51 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 01:51 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 01:51 PM
Chromium	29	1.0		mg/Kg	1	5/6/2010 01:51 PM
Cobalt	7.7	1.0		mg/Kg	1	5/6/2010 01:51 PM
Copper	13	2.0		mg/Kg	1	5/6/2010 01:51 PM
Lead	5.4	1.0		mg/Kg	1	5/6/2010 01:51 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 01:51 PM
Nickel	42	1.0		mg/Kg	1	5/6/2010 01:51 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 01:51 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 01:51 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 01:51 PM
Vanadium	19	1.0		mg/Kg	1	5/6/2010 01:51 PM
Zinc	29	1.0		mg/Kg	1	5/6/2010 01:51 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100505B	QC Batch: E10VS114			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	5/5/2010 08:35 PM
Surr: Bromofluorobenzene (FID)	65.2	56-137		%REC	1	5/5/2010 08:35 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100506A	QC Batch: E10VS115			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	5/6/2010 11:43 AM
Ethylbenzene	ND	5.0		µg/Kg	1	5/6/2010 11:43 AM
m,p-Xylene	ND	10		µg/Kg	1	5/6/2010 11:43 AM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	5/6/2010 11:43 AM
o-Xylene	ND	5.0		µg/Kg	1	5/6/2010 11:43 AM
Toluene	ND	5.0		µg/Kg	1	5/6/2010 11:43 AM
Surr: Bromofluorobenzene (PID)	90.0	64-116		%REC	1	5/6/2010 11:43 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506D	QC Batch: 63925			PrepDate: 5/6/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	ST1-4
Lab Order:	111547	**Collection Date:**	4/29/2010 2:40:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-017		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
		EPA 7471A				
RunID: AA1_100506D	QC Batch: 63925			PrepDate: 5/6/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 01:28 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111547-020

Client Sample ID: RW8-4
Collection Date: 4/30/2010 8:25:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B / **EPA 6010B**						
RunID: ICP8_100506D	QC Batch: 63922			PrepDate: 5/6/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 01:55 PM
Arsenic	1.0	1.0		mg/Kg	1	5/6/2010 01:55 PM
Barium	130	1.0		mg/Kg	1	5/6/2010 01:55 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 01:55 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 01:55 PM
Chromium	33	1.0		mg/Kg	1	5/6/2010 01:55 PM
Cobalt	9.4	1.0		mg/Kg	1	5/6/2010 01:55 PM
Copper	15	2.0		mg/Kg	1	5/6/2010 01:55 PM
Lead	10	1.0		mg/Kg	1	5/6/2010 01:55 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 01:55 PM
Nickel	76	1.0		mg/Kg	1	5/6/2010 01:55 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 01:55 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 01:55 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 01:55 PM
Vanadium	20	1.0		mg/Kg	1	5/6/2010 01:55 PM
Zinc	36	1.0		mg/Kg	1	5/6/2010 01:55 PM
GASOLINE RANGE ORGANICS BY GC/FID						
EPA 8015B(M)						
RunID: GC2_100505B	QC Batch: E10VS114			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	5/5/2010 08:50 PM
Surr: Bromofluorobenzene (FID)	98.2	56-137		%REC	1	5/5/2010 08:50 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
EPA 8021B						
RunID: GC2_100505B	QC Batch: E10VS114			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	5/5/2010 08:50 PM
Ethylbenzene	ND	5.0		µg/Kg	1	5/5/2010 08:50 PM
m,p-Xylene	ND	10		µg/Kg	1	5/5/2010 08:50 PM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	5/5/2010 08:50 PM
o-Xylene	ND	5.0		µg/Kg	1	5/5/2010 08:50 PM
Toluene	ND	5.0		µg/Kg	1	5/5/2010 08:50 PM
Surr: Bromofluorobenzene (PID)	84.0	64-116		%REC	1	5/5/2010 08:50 PM
MERCURY BY COLD VAPOR TECHNIQUE						
EPA 7471A						
RunID: AA1_100506D	QC Batch: 63925			PrepDate: 5/6/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW8-4
Lab Order:	111547	**Collection Date:**	4/30/2010 8:25:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-020		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
		EPA 7471A				
RunID: AA1_100506D	QC Batch: 63925			PrepDate:	5/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 01:30 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111547-021

Client Sample ID: RW2-4
Collection Date: 4/30/2010 10:45:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100506D	QC Batch: 63922			PrepDate: 5/6/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 02:06 PM
Arsenic	1.5	1.0		mg/Kg	1	5/6/2010 02:06 PM
Barium	85	1.0		mg/Kg	1	5/6/2010 02:06 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 02:06 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 02:06 PM
Chromium	26	1.0		mg/Kg	1	5/6/2010 02:06 PM
Cobalt	6.7	1.0		mg/Kg	1	5/6/2010 02:06 PM
Copper	18	2.0		mg/Kg	1	5/6/2010 02:06 PM
Lead	60	1.0		mg/Kg	1	5/6/2010 02:06 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 02:06 PM
Nickel	37	1.0		mg/Kg	1	5/6/2010 02:06 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 02:06 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 02:06 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 02:06 PM
Vanadium	20	1.0		mg/Kg	1	5/6/2010 02:06 PM
Zinc	45	1.0		mg/Kg	1	5/6/2010 02:06 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100505B	QC Batch: E10VS114			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	5/5/2010 09:04 PM
Surr: Bromofluorobenzene (FID)	101	56-137		%REC	1	5/5/2010 09:04 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100505B	QC Batch: E10VS114			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	5/5/2010 09:04 PM
Ethylbenzene	ND	5.0		µg/Kg	1	5/5/2010 09:04 PM
m,p-Xylene	ND	10		µg/Kg	1	5/5/2010 09:04 PM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	5/5/2010 09:04 PM
o-Xylene	ND	5.0		µg/Kg	1	5/5/2010 09:04 PM
Toluene	ND	5.0		µg/Kg	1	5/5/2010 09:04 PM
Surr: Bromofluorobenzene (PID)	86.1	64-116		%REC	1	5/5/2010 09:04 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506D	QC Batch: 63925			PrepDate: 5/6/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW2-4
Lab Order:	111547	**Collection Date:**	4/30/2010 10:45:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-021		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
		EPA 7471A				
RunID: AA1_100506D	QC Batch: 63925			PrepDate: 5/6/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 01:32 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW1-4
Lab Order:	111547	**Collection Date:**	4/30/2010 11:00:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-022		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100506D	QC Batch: 63922			PrepDate: 5/6/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 02:09 PM
Arsenic	1.4	1.0		mg/Kg	1	5/6/2010 02:09 PM
Barium	51	1.0		mg/Kg	1	5/6/2010 02:09 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 02:09 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 02:09 PM
Chromium	26	1.0		mg/Kg	1	5/6/2010 02:09 PM
Cobalt	6.5	1.0		mg/Kg	1	5/6/2010 02:09 PM
Copper	12	2.0		mg/Kg	1	5/6/2010 02:09 PM
Lead	33	1.0		mg/Kg	1	5/6/2010 02:09 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 02:09 PM
Nickel	38	1.0		mg/Kg	1	5/6/2010 02:09 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 02:09 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 02:09 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 02:09 PM
Vanadium	17	1.0		mg/Kg	1	5/6/2010 02:09 PM
Zinc	35	1.0		mg/Kg	1	5/6/2010 02:09 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100505B	QC Batch: E10VS114			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	5/5/2010 09:19 PM
Surr: Bromofluorobenzene (FID)	73.2	56-137		%REC	1	5/5/2010 09:19 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100506A	QC Batch: E10VS115			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	5/6/2010 11:57 AM
Ethylbenzene	ND	5.0		µg/Kg	1	5/6/2010 11:57 AM
m,p-Xylene	ND	10		µg/Kg	1	5/6/2010 11:57 AM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	5/6/2010 11:57 AM
o-Xylene	ND	5.0		µg/Kg	1	5/6/2010 11:57 AM
Toluene	ND	5.0		µg/Kg	1	5/6/2010 11:57 AM
Surr: Bromofluorobenzene (PID)	88.4	64-116		%REC	1	5/6/2010 11:57 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506D	QC Batch: 63925			PrepDate: 5/6/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW1-4
Lab Order:	111547	**Collection Date:**	4/30/2010 11:00:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-022		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
		EPA 7471A				
RunID: AA1_100506D	QC Batch: 63925			PrepDate: 5/6/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 01:34 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111547-025

Client Sample ID: SS2-GW
Collection Date: 4/29/2010 4:00:00 PM
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3010A			**EPA 6010B**		
RunID: ICP8_100505D	QC Batch: 63842			PrepDate: 5/3/2010		Analyst: **SRB**
Antimony	0.022	0.0050		mg/L	1	5/5/2010 03:27 PM
Arsenic	0.12	0.010		mg/L	1	5/5/2010 03:27 PM
Barium	5.8	0.0030		mg/L	1	5/5/2010 03:27 PM
Beryllium	ND	0.0030		mg/L	1	5/5/2010 03:27 PM
Cadmium	0.013	0.0030		mg/L	1	5/5/2010 03:27 PM
Chromium	1.7	0.0030		mg/L	1	5/5/2010 03:27 PM
Cobalt	0.43	0.0030		mg/L	1	5/5/2010 03:27 PM
Copper	0.90	0.0050		mg/L	1	5/5/2010 03:27 PM
Lead	0.27	0.0050		mg/L	1	5/5/2010 03:27 PM
Molybdenum	0.031	0.0050		mg/L	1	5/5/2010 03:27 PM
Nickel	1.6	0.0050		mg/L	1	5/5/2010 03:27 PM
Selenium	ND	0.010		mg/L	1	5/5/2010 03:27 PM
Silver	ND	0.0030		mg/L	1	5/5/2010 03:27 PM
Thallium	ND	0.015		mg/L	1	5/5/2010 03:27 PM
Vanadium	2.2	0.0030		mg/L	1	5/5/2010 03:27 PM
Zinc	2.0	0.010		mg/L	1	5/5/2010 03:27 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3510C			**EPA 8015B(M)**		
RunID: GC16_100506B	QC Batch: 63913			PrepDate: 5/4/2010		Analyst: **CBR**
DRO	ND	0.062		mg/L	1	5/7/2010 02:17 AM
ORO	ND	0.062		mg/L	1	5/7/2010 02:17 AM
Surr: p-Terphenyl	102	36-126		%REC	1	5/7/2010 02:17 AM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100505A	QC Batch: E10VW022			PrepDate:		Analyst: **CL**
GRO	ND	0.050		mg/L	1	5/5/2010 12:19 PM
Surr: Bromofluorobenzene (FID)	105	70-130		%REC	1	5/5/2010 12:19 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100505A	QC Batch: E10VW022			PrepDate:		Analyst: **CL**
Benzene	ND	0.50		µg/L	1	5/5/2010 12:19 PM
Ethylbenzene	ND	0.50		µg/L	1	5/5/2010 12:19 PM
m,p-Xylene	ND	1.0		µg/L	1	5/5/2010 12:19 PM
Methyl tert-butyl ether	ND	0.50		µg/L	1	5/5/2010 12:19 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike/Surrogate outside of limits due to matrix interference
- Results are wet unless otherwise specified
- DO Surrogate Diluted Out

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	SS2-GW
Lab Order:	111547	**Collection Date:**	4/29/2010 4:00:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	WATER
Lab ID:	111547-025		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
			EPA 8021B			
RunID: GC2_100505A	QC Batch: E10VW022			PrepDate:		Analyst: **CL**
o-Xylene	ND	0.50		µg/L	1	5/5/2010 12:19 PM
Toluene	ND	0.50		µg/L	1	5/5/2010 12:19 PM
Surr: Bromofluorobenzene (PID)	92.0	70-130		%REC	1	5/5/2010 12:19 PM
MERCURY BY COLD VAPOR TECHNIQUE						
			EPA 7470A			
RunID: AA1_100504C	QC Batch: 63840			PrepDate:	5/3/2010	Analyst: **IL**
Mercury	1.2	0.20		µg/L	1	5/4/2010 12:47 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Lab Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111547-026

Client Sample ID: SS3-GW
Collection Date: 4/30/2010 10:00:00 AM
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3010A			**EPA 6010B**		
RunID: ICP8_100505D	QC Batch: 63842			PrepDate: 5/3/2010		Analyst: **SRB**
Antimony	0.010	0.0050		mg/L	1	5/5/2010 03:31 PM
Arsenic	0.063	0.010		mg/L	1	5/5/2010 03:31 PM
Barium	2.9	0.0030		mg/L	1	5/5/2010 03:31 PM
Beryllium	ND	0.0030		mg/L	1	5/5/2010 03:31 PM
Cadmium	0.0060	0.0030		mg/L	1	5/5/2010 03:31 PM
Chromium	0.78	0.0030		mg/L	1	5/5/2010 03:31 PM
Cobalt	0.20	0.0030		mg/L	1	5/5/2010 03:31 PM
Copper	0.46	0.0050		mg/L	1	5/5/2010 03:31 PM
Lead	0.13	0.0050		mg/L	1	5/5/2010 03:31 PM
Molybdenum	0.016	0.0050		mg/L	1	5/5/2010 03:31 PM
Nickel	0.78	0.0050		mg/L	1	5/5/2010 03:31 PM
Selenium	ND	0.010		mg/L	1	5/5/2010 03:31 PM
Silver	ND	0.0030		mg/L	1	5/5/2010 03:31 PM
Thallium	ND	0.015		mg/L	1	5/5/2010 03:31 PM
Vanadium	1.1	0.0030		mg/L	1	5/5/2010 03:31 PM
Zinc	1.1	0.010		mg/L	1	5/5/2010 03:31 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3510C			**EPA 8015B(M)**		
RunID: GC16_100506B	QC Batch: 63913			PrepDate: 5/4/2010		Analyst: **CBR**
DRO	ND	0.053		mg/L	1	5/7/2010 02:26 AM
ORO	ND	0.053		mg/L	1	5/7/2010 02:26 AM
Surr: p-Terphenyl	99.5	36-126		%REC	1	5/7/2010 02:26 AM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100505A	QC Batch: E10VW022			PrepDate:		Analyst: **CL**
GRO	ND	0.050		mg/L	1	5/5/2010 12:57 PM
Surr: Bromofluorobenzene (FID)	107	70-130		%REC	1	5/5/2010 12:57 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100505A	QC Batch: E10VW022			PrepDate:		Analyst: **CL**
Benzene	ND	0.50		µg/L	1	5/5/2010 12:57 PM
Ethylbenzene	ND	0.50		µg/L	1	5/5/2010 12:57 PM
m,p-Xylene	ND	1.0		µg/L	1	5/5/2010 12:57 PM
Methyl tert-butyl ether	ND	0.50		µg/L	1	5/5/2010 12:57 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike/Surrogate outside of limits due to matrix interference
- Results are wet unless otherwise specified
- DO Surrogate Diluted Out

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	SS3-GW
Lab Order:	111547	**Collection Date:**	4/30/2010 10:00:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	WATER
Lab ID:	111547-026		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/PID				**EPA 8021B**		
RunID: GC2_100505A	QC Batch: E10VW022			PrepDate:		Analyst: **CL**
o-Xylene	ND	0.50		µg/L	1	5/5/2010 12:57 PM
Toluene	ND	0.50		µg/L	1	5/5/2010 12:57 PM
Surr: Bromofluorobenzene (PID)	93.0	70-130		%REC	1	5/5/2010 12:57 PM
MERCURY BY COLD VAPOR TECHNIQUE				**EPA 7470A**		
RunID: AA1_100504C	QC Batch: 63840			PrepDate:	5/3/2010	Analyst: **IL**
Mercury	0.90	0.20		µg/L	1	5/4/2010 12:49 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Lab Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111547-027

Client Sample ID: RW1-GW
Collection Date: 4/30/2010 12:00:00 PM
Matrix: WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3010A			**EPA 6010B**		
RunID: ICP8_100505D	QC Batch: 63842			PrepDate: 5/3/2010		Analyst: **SRB**
Antimony	0.045	0.025		mg/L	5	5/5/2010 03:40 PM
Arsenic	0.32	0.050		mg/L	5	5/5/2010 03:40 PM
Barium	14	0.015		mg/L	5	5/5/2010 03:40 PM
Beryllium	0.021	0.015		mg/L	5	5/5/2010 03:40 PM
Cadmium	0.030	0.015		mg/L	5	5/5/2010 03:40 PM
Chromium	3.9	0.015		mg/L	5	5/5/2010 03:40 PM
Cobalt	1.0	0.015		mg/L	5	5/5/2010 03:40 PM
Copper	2.1	0.025		mg/L	5	5/5/2010 03:40 PM
Lead	0.55	0.025		mg/L	5	5/5/2010 03:40 PM
Molybdenum	ND	0.025		mg/L	5	5/5/2010 03:40 PM
Nickel	4.3	0.025		mg/L	5	5/5/2010 03:40 PM
Selenium	ND	0.050		mg/L	5	5/5/2010 03:40 PM
Silver	ND	0.015		mg/L	5	5/5/2010 03:40 PM
Thallium	ND	0.075		mg/L	5	5/5/2010 03:40 PM
Vanadium	4.8	0.015		mg/L	5	5/5/2010 03:40 PM
Zinc	5.1	0.050		mg/L	5	5/5/2010 03:40 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3510C			**EPA 8015B(M)**		
RunID: GC16_100506B	QC Batch: 63913			PrepDate: 5/4/2010		Analyst: **CBR**
DRO	ND	0.056		mg/L	1	5/7/2010 02:35 AM
ORO	ND	0.056		mg/L	1	5/7/2010 02:35 AM
Surr: p-Terphenyl	104	36-126		%REC	1	5/7/2010 02:35 AM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100503B	QC Batch: E10VW021			PrepDate:		Analyst: **CL**
GRO	ND	0.050		mg/L	1	5/3/2010 10:42 PM
Surr: Bromofluorobenzene (FID)	105	70-130		%REC	1	5/3/2010 10:42 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100503B	QC Batch: E10VW021			PrepDate:		Analyst: **CL**
Benzene	ND	0.50		µg/L	1	5/3/2010 10:42 PM
Ethylbenzene	ND	0.50		µg/L	1	5/3/2010 10:42 PM
m,p-Xylene	ND	1.0		µg/L	1	5/3/2010 10:42 PM
Methyl tert-butyl ether	0.94	0.50		µg/L	1	5/3/2010 10:42 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike/Surrogate outside of limits due to matrix interference
- Results are wet unless otherwise specified
- DO Surrogate Diluted Out

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW1-GW
Lab Order:	111547	**Collection Date:**	4/30/2010 12:00:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	WATER
Lab ID:	111547-027		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100503B	QC Batch: E10VW021			PrepDate:		Analyst: **CL**
o-Xylene	ND	0.50		µg/L	1	5/3/2010 10:42 PM
Toluene	ND	0.50		µg/L	1	5/3/2010 10:42 PM
Surr: Bromofluorobenzene (PID)	94.8	70-130		%REC	1	5/3/2010 10:42 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7470A		
RunID: AA1_100504C	QC Batch: 63840			PrepDate:	5/3/2010	Analyst: **IL**
Mercury	1.8	0.20		µg/L	1	5/4/2010 12:42 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	SS4-19.5
Lab Order:	111547	**Collection Date:**	4/30/2010 1:45:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-028		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100506D	QC Batch: 63922			PrepDate: 5/6/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 02:12 PM
Arsenic	4.0	1.0		mg/Kg	1	5/6/2010 02:12 PM
Barium	89	1.0		mg/Kg	1	5/6/2010 02:12 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 02:12 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 02:12 PM
Chromium	25	1.0		mg/Kg	1	5/6/2010 02:12 PM
Cobalt	7.3	1.0		mg/Kg	1	5/6/2010 02:12 PM
Copper	18	2.0		mg/Kg	1	5/6/2010 02:12 PM
Lead	5.1	1.0		mg/Kg	1	5/6/2010 02:12 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 02:12 PM
Nickel	34	1.0		mg/Kg	1	5/6/2010 02:12 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 02:12 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 02:12 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 02:12 PM
Vanadium	23	1.0		mg/Kg	1	5/6/2010 02:12 PM
Zinc	41	1.0		mg/Kg	1	5/6/2010 02:12 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC16_100506C	QC Batch: 63905			PrepDate: 5/4/2010		Analyst: **CBR**
DRO	ND	1.0		mg/Kg	1	5/7/2010 11:11 AM
ORO	ND	1.0		mg/Kg	1	5/7/2010 11:11 AM
Surr: p-Terphenyl	93.0	30-128		%REC	1	5/7/2010 11:11 AM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100504A	QC Batch: E10VS113			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	5/5/2010 12:55 AM
Surr: Bromofluorobenzene (FID)	108	56-137		%REC	1	5/5/2010 12:55 AM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100504A	QC Batch: E10VS113			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	5/5/2010 12:55 AM
Ethylbenzene	ND	5.0		µg/Kg	1	5/5/2010 12:55 AM
m,p-Xylene	ND	10		µg/Kg	1	5/5/2010 12:55 AM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	5/5/2010 12:55 AM

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike/Surrogate outside of limits due to matrix interference
- Results are wet unless otherwise specified
- DO Surrogate Diluted Out

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	SS4-19.5
Lab Order:	111547	**Collection Date:**	4/30/2010 1:45:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-028		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/PID				**EPA 8021B**		
RunID: GC2_100504A	QC Batch: E10VS113			PrepDate:		Analyst: **DDL**
o-Xylene	ND	5.0		µg/Kg	1	5/5/2010 12:55 AM
Toluene	ND	5.0		µg/Kg	1	5/5/2010 12:55 AM
Surr: Bromofluorobenzene (PID)	93.5	64-116		%REC	1	5/5/2010 12:55 AM
MERCURY BY COLD VAPOR TECHNIQUE				**EPA 7471A**		
RunID: AA1_100506D	QC Batch: 63925			PrepDate: 5/6/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 01:40 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	ST5-0
Lab Order:	111547	**Collection Date:**	4/30/2010 2:00:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-029		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP8_100506D	QC Batch: 63922			PrepDate:	5/6/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 02:16 PM
Arsenic	2.6	1.0		mg/Kg	1	5/6/2010 02:16 PM
Barium	110	1.0		mg/Kg	1	5/6/2010 02:16 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 02:16 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 02:16 PM
Chromium	22	1.0		mg/Kg	1	5/6/2010 02:16 PM
Cobalt	8.2	1.0		mg/Kg	1	5/6/2010 02:16 PM
Copper	19	2.0		mg/Kg	1	5/6/2010 02:16 PM
Lead	30	1.0		mg/Kg	1	5/6/2010 02:16 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 02:16 PM
Nickel	28	1.0		mg/Kg	1	5/6/2010 02:16 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 02:16 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 02:16 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 02:16 PM
Vanadium	34	1.0		mg/Kg	1	5/6/2010 02:16 PM
Zinc	58	1.0		mg/Kg	1	5/6/2010 02:16 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
EPA 3550B				**EPA 8015B(M)**		
RunID: GC16_100506C	QC Batch: 63905			PrepDate:	5/4/2010	Analyst: **CBR**
DRO	100	20		mg/Kg	10	5/7/2010 12:54 PM
ORO	700	20		mg/Kg	10	5/7/2010 12:54 PM
Surr: p-Terphenyl	0	30-128	SDO	%REC	10	5/7/2010 12:54 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506D	QC Batch: 63925			PrepDate:	5/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 01:42 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	ST4-0
Lab Order:	111547	**Collection Date:**	4/30/2010 2:30:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-030		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100506D	QC Batch: 63922			PrepDate:	5/6/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 02:20 PM
Arsenic	6.9	1.0		mg/Kg	1	5/6/2010 02:20 PM
Barium	170	1.0		mg/Kg	1	5/6/2010 02:20 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 02:20 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 02:20 PM
Chromium	26	1.0		mg/Kg	1	5/6/2010 02:20 PM
Cobalt	8.7	1.0		mg/Kg	1	5/6/2010 02:20 PM
Copper	13	2.0		mg/Kg	1	5/6/2010 02:20 PM
Lead	41	1.0		mg/Kg	1	5/6/2010 02:20 PM
Molybdenum	2.9	1.0		mg/Kg	1	5/6/2010 02:20 PM
Nickel	36	1.0		mg/Kg	1	5/6/2010 02:20 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 02:20 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 02:20 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 02:20 PM
Vanadium	33	1.0		mg/Kg	1	5/6/2010 02:20 PM
Zinc	63	1.0		mg/Kg	1	5/6/2010 02:20 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC16_100506C	QC Batch: 63905			PrepDate:	5/4/2010	Analyst: **CBR**
DRO	24	1.0		mg/Kg	1	5/7/2010 11:20 AM
ORO	81	1.0		mg/Kg	1	5/7/2010 11:20 AM
Surr: p-Terphenyl	91.5	30-128		%REC	1	5/7/2010 11:20 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506D	QC Batch: 63925			PrepDate:	5/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 01:45 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Lab Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111547-031

Client Sample ID: ST5-4
Collection Date: 4/30/2010 2:00:00 PM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100506E	QC Batch: 63923			PrepDate: 5/6/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 02:55 PM
Arsenic	3.3	1.0		mg/Kg	1	5/6/2010 02:55 PM
Barium	170	1.0		mg/Kg	1	5/6/2010 02:55 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 02:55 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 02:55 PM
Chromium	23	1.0		mg/Kg	1	5/6/2010 02:55 PM
Cobalt	6.8	1.0		mg/Kg	1	5/6/2010 02:55 PM
Copper	9.8	2.0		mg/Kg	1	5/6/2010 02:55 PM
Lead	3.7	1.0		mg/Kg	1	5/6/2010 02:55 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 02:55 PM
Nickel	31	1.0		mg/Kg	1	5/6/2010 02:55 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 02:55 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 02:55 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 02:55 PM
Vanadium	26	1.0		mg/Kg	1	5/6/2010 02:55 PM
Zinc	27	1.0		mg/Kg	1	5/6/2010 02:55 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100504A	QC Batch: E10VS113			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	5/5/2010 01:09 AM
Surr: Bromofluorobenzene (FID)	106	56-137		%REC	1	5/5/2010 01:09 AM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100504A	QC Batch: E10VS113			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	5/5/2010 01:09 AM
Ethylbenzene	ND	5.0		µg/Kg	1	5/5/2010 01:09 AM
m,p-Xylene	ND	10		µg/Kg	1	5/5/2010 01:09 AM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	5/5/2010 01:09 AM
o-Xylene	ND	5.0		µg/Kg	1	5/5/2010 01:09 AM
Toluene	ND	5.0		µg/Kg	1	5/5/2010 01:09 AM
Surr: Bromofluorobenzene (PID)	91.6	64-116		%REC	1	5/5/2010 01:09 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506D	QC Batch: 63925			PrepDate: 5/6/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	ST5-4
Lab Order:	111547	**Collection Date:**	4/30/2010 2:00:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-031		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
		EPA 7471A				
RunID: AA1_100506D	QC Batch: 63925			PrepDate: 5/6/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 01:20 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	ST4-4
Lab Order:	111547	**Collection Date:**	4/30/2010 2:30:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-032		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP8_100506E	QC Batch: 63923			PrepDate: 5/6/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 02:58 PM
Arsenic	1.0	1.0		mg/Kg	1	5/6/2010 02:58 PM
Barium	100	1.0		mg/Kg	1	5/6/2010 02:58 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 02:58 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 02:58 PM
Chromium	20	1.0		mg/Kg	1	5/6/2010 02:58 PM
Cobalt	9.5	1.0		mg/Kg	1	5/6/2010 02:58 PM
Copper	5.9	2.0		mg/Kg	1	5/6/2010 02:58 PM
Lead	3.1	1.0		mg/Kg	1	5/6/2010 02:58 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 02:58 PM
Nickel	33	1.0		mg/Kg	1	5/6/2010 02:58 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 02:58 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 02:58 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 02:58 PM
Vanadium	17	1.0		mg/Kg	1	5/6/2010 02:58 PM
Zinc	21	1.0		mg/Kg	1	5/6/2010 02:58 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100504A	QC Batch: E10VS113			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	5/5/2010 01:24 AM
Surr: Bromofluorobenzene (FID)	104	56-137		%REC	1	5/5/2010 01:24 AM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100504A	QC Batch: E10VS113			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	5/5/2010 01:24 AM
Ethylbenzene	ND	5.0		µg/Kg	1	5/5/2010 01:24 AM
m,p-Xylene	ND	10		µg/Kg	1	5/5/2010 01:24 AM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	5/5/2010 01:24 AM
o-Xylene	ND	5.0		µg/Kg	1	5/5/2010 01:24 AM
Toluene	ND	5.0		µg/Kg	1	5/5/2010 01:24 AM
Surr: Bromofluorobenzene (PID)	89.6	64-116		%REC	1	5/5/2010 01:24 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506E	QC Batch: 63926			PrepDate: 5/6/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	ST4-4
Lab Order:	111547	**Collection Date:**	4/30/2010 2:30:00 PM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-032		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
		EPA 7471A				
RunID: AA1_100506E	QC Batch: 63926			PrepDate:	5/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 02:07 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111547-035

Client Sample ID: RW5-0
Collection Date: 4/29/2010 11:10:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP8_100506E	QC Batch: 63923			PrepDate:	5/6/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 03:03 PM
Arsenic	2.0	1.0		mg/Kg	1	5/6/2010 03:03 PM
Barium	140	1.0		mg/Kg	1	5/6/2010 03:03 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 03:03 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 03:03 PM
Chromium	28	1.0		mg/Kg	1	5/6/2010 03:03 PM
Cobalt	8.2	1.0		mg/Kg	1	5/6/2010 03:03 PM
Copper	14	2.0		mg/Kg	1	5/6/2010 03:03 PM
Lead	9.9	1.0		mg/Kg	1	5/6/2010 03:03 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 03:03 PM
Nickel	39	1.0		mg/Kg	1	5/6/2010 03:03 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 03:03 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 03:03 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 03:03 PM
Vanadium	29	1.0		mg/Kg	1	5/6/2010 03:03 PM
Zinc	35	1.0		mg/Kg	1	5/6/2010 03:03 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
EPA 3550B				**EPA 8015B(M)**		
RunID: GC16_100506C	QC Batch: 63905			PrepDate:	5/4/2010	Analyst: **CBR**
DRO	260	20		mg/Kg	10	5/7/2010 01:05 PM
ORO	1400	20		mg/Kg	10	5/7/2010 01:05 PM
Surr: p-Terphenyl	0	30-128	SDO	%REC	10	5/7/2010 01:05 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506E	QC Batch: 63926			PrepDate:	5/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 02:09 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Lab Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111547-036

Client Sample ID: RW5-4
Collection Date: 4/29/2010 11:10:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B / **EPA 6010B**						
RunID: ICP8_100506E	QC Batch: 63923			PrepDate: 5/6/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 03:06 PM
Arsenic	1.9	1.0		mg/Kg	1	5/6/2010 03:06 PM
Barium	130	1.0		mg/Kg	1	5/6/2010 03:06 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 03:06 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 03:06 PM
Chromium	30	1.0		mg/Kg	1	5/6/2010 03:06 PM
Cobalt	7.3	1.0		mg/Kg	1	5/6/2010 03:06 PM
Copper	13	2.0		mg/Kg	1	5/6/2010 03:06 PM
Lead	5.6	1.0		mg/Kg	1	5/6/2010 03:06 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 03:06 PM
Nickel	41	1.0		mg/Kg	1	5/6/2010 03:06 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 03:06 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 03:06 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 03:06 PM
Vanadium	30	1.0		mg/Kg	1	5/6/2010 03:06 PM
Zinc	32	1.0		mg/Kg	1	5/6/2010 03:06 PM
GASOLINE RANGE ORGANICS BY GC/FID						
EPA 8015B(M)						
RunID: GC2_100505B	QC Batch: E10VS114			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	5/5/2010 09:34 PM
Surr: Bromofluorobenzene (FID)	104	56-137		%REC	1	5/5/2010 09:34 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
EPA 8021B						
RunID: GC2_100505B	QC Batch: E10VS114			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	5/5/2010 09:34 PM
Ethylbenzene	ND	5.0		µg/Kg	1	5/5/2010 09:34 PM
m,p-Xylene	ND	10		µg/Kg	1	5/5/2010 09:34 PM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	5/5/2010 09:34 PM
o-Xylene	ND	5.0		µg/Kg	1	5/5/2010 09:34 PM
Toluene	ND	5.0		µg/Kg	1	5/5/2010 09:34 PM
Surr: Bromofluorobenzene (PID)	88.4	64-116		%REC	1	5/5/2010 09:34 PM
MERCURY BY COLD VAPOR TECHNIQUE						
EPA 7471A						
RunID: AA1_100506E	QC Batch: 63926			PrepDate: 5/6/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW5-4
Lab Order:	111547	**Collection Date:**	4/29/2010 11:10:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-036		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
	EPA 7471A					
RunID: AA1_100506E	QC Batch: 63926			PrepDate:	5/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 01:59 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63921** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120946**
Client ID: **PBS** Batch ID: **63921** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/6/2010** SeqNo: **1931191**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	0.037	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63921** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120946**
Client ID: **LCSS** Batch ID: **63921** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/6/2010** SeqNo: **1931192**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	47.397	2.0	50.00	0	94.8	80	120				
Arsenic	48.156	1.0	50.00	0	96.3	80	120				
Barium	50.373	1.0	50.00	0	101	80	120				
Beryllium	47.711	1.0	50.00	0	95.4	80	120				
Cadmium	49.062	1.0	50.00	0	98.1	80	120				
Chromium	49.279	1.0	50.00	0	98.6	80	120				
Cobalt	50.655	1.0	50.00	0	101	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63921** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120946**
Client ID: **LCSS** Batch ID: **63921** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/6/2010** SeqNo: **1931192**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	49.671	2.0	50.00	0	99.3	80	120				
Lead	49.082	1.0	50.00	0	98.2	80	120				
Molybdenum	50.096	1.0	50.00	0	100	80	120				
Nickel	48.856	1.0	50.00	0.03713	97.6	80	120				
Selenium	45.069	1.0	50.00	0	90.1	80	120				
Silver	48.095	1.0	50.00	0	96.2	80	120				
Thallium	49.479	1.0	50.00	0	99.0	80	120				
Vanadium	49.609	1.0	50.00	0	99.2	80	120				
Zinc	48.083	1.0	50.00	0	96.2	80	120				

Sample ID: **111547-014A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120946**
Client ID: **RW6-4** Batch ID: **63921** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/6/2010** SeqNo: **1931203**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.396	2.0						0.4776	0	20	
Arsenic	1.210	1.0						3.564	98.6	20	R
Barium	112.268	1.0						134.1	17.7	20	
Beryllium	0.108	1.0						0.08882	0	20	
Cadmium	0.148	1.0						0.1469	0	20	
Chromium	18.316	1.0						19.21	4.79	20	
Cobalt	7.155	1.0						6.967	2.66	20	
Copper	5.989	2.0						6.423	6.98	20	
Lead	4.220	1.0						4.100	2.89	20	
Molybdenum	0.129	1.0						0.1125	0	20	
Nickel	20.580	1.0						21.82	5.87	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	27.401	1.0						27.12	1.04	20	
Zinc	19.903	1.0						19.34	2.85	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111547-014A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120946**
Client ID: **RW6-4** Batch ID: **63921** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/6/2010** SeqNo: **1931204**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	92.312	2.0	125.0	0.4776	73.5	32	105				
Arsenic	101.840	1.0	125.0	3.564	78.6	49	106				
Barium	219.953	1.0	125.0	134.1	68.7	31	133				
Beryllium	103.275	1.0	125.0	0.08882	82.5	56	106				
Cadmium	102.152	1.0	125.0	0.1469	81.6	51	103				
Chromium	125.384	1.0	125.0	19.21	84.9	45	114				
Cobalt	109.900	1.0	125.0	6.967	82.3	52	106				
Copper	119.006	2.0	125.0	6.423	90.1	54	125				
Lead	107.166	1.0	125.0	4.100	82.5	34	126				
Molybdenum	100.511	1.0	125.0	0.1125	80.3	54	106				
Nickel	124.863	1.0	125.0	21.82	82.4	45	111				
Selenium	96.700	1.0	125.0	0	77.4	47	104				
Silver	103.258	1.0	125.0	0	82.6	56	112				
Thallium	102.018	1.0	125.0	0	81.6	46	101				
Vanadium	134.024	1.0	125.0	27.12	85.5	54	114				
Zinc	120.975	1.0	125.0	19.34	81.3	28	125				

Sample ID: **111547-014A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120946**
Client ID: **RW6-4** Batch ID: **63921** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/6/2010** SeqNo: **1931205**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	89.203	2.0	125.0	0.4776	71.0	32	105	92.31	3.42	20	
Arsenic	100.327	1.0	125.0	3.564	77.4	49	106	101.8	1.50	20	
Barium	222.227	1.0	125.0	134.1	70.5	31	133	220.0	1.03	20	
Beryllium	101.635	1.0	125.0	0.08882	81.2	56	106	103.3	1.60	20	
Cadmium	100.249	1.0	125.0	0.1469	80.1	51	103	102.2	1.88	20	
Chromium	124.220	1.0	125.0	19.21	84.0	45	114	125.4	0.933	20	
Cobalt	108.453	1.0	125.0	6.967	81.2	52	106	109.9	1.33	20	
Copper	117.652	2.0	125.0	6.423	89.0	54	125	119.0	1.14	20	
Lead	104.390	1.0	125.0	4.100	80.2	34	126	107.2	2.62	20	

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111547-014A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120946**
Client ID: **RW6-4** Batch ID: **63921** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/6/2010** SeqNo: **1931205**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	98.742	1.0	125.0	0.1125	78.9	54	106	100.5	1.78	20	
Nickel	124.513	1.0	125.0	21.82	82.2	45	111	124.9	0.281	20	
Selenium	93.899	1.0	125.0	0	75.1	47	104	96.70	2.94	20	
Silver	101.176	1.0	125.0	0	80.9	56	112	103.3	2.04	20	
Thallium	98.877	1.0	125.0	0	79.1	46	101	102.0	3.13	20	
Vanadium	136.014	1.0	125.0	27.12	87.1	54	114	134.0	1.47	20	
Zinc	120.495	1.0	125.0	19.34	80.9	28	125	121.0	0.397	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63922** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120950**
Client ID: **PBS** Batch ID: **63922** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/6/2010** SeqNo: **1931233**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	ND	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63922** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120950**
Client ID: **LCSS** Batch ID: **63922** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/6/2010** SeqNo: **1931234**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	44.978	2.0	50.00	0	90.0	80	120				
Arsenic	45.734	1.0	50.00	0	91.5	80	120				
Barium	47.364	1.0	50.00	0	94.7	80	120				
Beryllium	44.915	1.0	50.00	0	89.8	80	120				
Cadmium	45.917	1.0	50.00	0	91.8	80	120				
Chromium	46.402	1.0	50.00	0	92.8	80	120				
Cobalt	47.565	1.0	50.00	0	95.1	80	120				
Copper	46.551	2.0	50.00	0	93.1	80	120				
Lead	46.554	1.0	50.00	0	93.1	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63922** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120950**
Client ID: **LCSS** Batch ID: **63922** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/6/2010** SeqNo: **1931234**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	47.090	1.0	50.00	0	94.2	80	120				
Nickel	45.758	1.0	50.00	0	91.5	80	120				
Selenium	42.751	1.0	50.00	0	85.5	80	120				
Silver	45.310	1.0	50.00	0	90.6	80	120				
Thallium	47.233	1.0	50.00	0	94.5	80	120				
Vanadium	46.716	1.0	50.00	0	93.4	80	120				
Zinc	45.062	1.0	50.00	0	90.1	80	120				

Sample ID: **111547-030A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120950**
Client ID: **ST4-0** Batch ID: **63922** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/6/2010** SeqNo: **1931244**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.381	2.0						0.3210	0	20	
Arsenic	6.433	1.0						6.919	7.28	20	
Barium	153.818	1.0						170.4	10.2	20	
Beryllium	ND	1.0						0	0	20	
Cadmium	0.265	1.0						0.2855	0	20	
Chromium	23.094	1.0						25.51	9.93	20	
Cobalt	8.116	1.0						8.723	7.22	20	
Copper	11.422	2.0						13.15	14.1	20	
Lead	33.390	1.0						40.96	20.4	20	R
Molybdenum	3.412	1.0						2.925	15.4	20	
Nickel	35.179	1.0						35.79	1.73	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	30.692	1.0						33.33	8.25	20	
Zinc	53.216	1.0						63.20	17.2	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111547-030A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120950**
Client ID: **ST4-0** Batch ID: **63922** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/6/2010** SeqNo: **1931245**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	82.057	2.0	125.0	0.3210	65.4	32	105				
Arsenic	100.735	1.0	125.0	6.919	75.1	49	106				
Barium	265.661	1.0	125.0	170.4	76.2	31	133				
Beryllium	95.737	1.0	125.0	0	76.6	56	106				
Cadmium	94.520	1.0	125.0	0.2855	75.4	51	103				
Chromium	126.293	1.0	125.0	25.51	80.6	45	114				
Cobalt	103.148	1.0	125.0	8.723	75.5	52	106				
Copper	117.094	2.0	125.0	13.15	83.2	54	125				
Lead	166.221	1.0	125.0	40.96	100	34	126				
Molybdenum	98.296	1.0	125.0	2.925	76.3	54	106				
Nickel	129.931	1.0	125.0	35.79	75.3	45	111				
Selenium	90.176	1.0	125.0	0	72.1	47	104				
Silver	95.355	1.0	125.0	0	76.3	56	112				
Thallium	93.686	1.0	125.0	0	74.9	46	101				
Vanadium	135.389	1.0	125.0	33.33	81.6	54	114				
Zinc	154.315	1.0	125.0	63.20	72.9	28	125				

Sample ID: **111547-030A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120950**
Client ID: **ST4-0** Batch ID: **63922** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/6/2010** SeqNo: **1931246**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	86.576	2.0	125.0	0.3210	69.0	32	105	82.06	5.36	20	
Arsenic	106.881	1.0	125.0	6.919	80.0	49	106	100.7	5.92	20	
Barium	264.614	1.0	125.0	170.4	75.4	31	133	265.7	0.395	20	
Beryllium	103.641	1.0	125.0	0	82.9	56	106	95.74	7.93	20	
Cadmium	101.238	1.0	125.0	0.2855	80.8	51	103	94.52	6.86	20	
Chromium	141.250	1.0	125.0	25.51	92.6	45	114	126.3	11.2	20	
Cobalt	110.608	1.0	125.0	8.723	81.5	52	106	103.1	6.98	20	
Copper	128.099	2.0	125.0	13.15	92.0	54	125	117.1	8.98	20	
Lead	135.524	1.0	125.0	40.96	75.7	34	126	166.2	20.3	20	R

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111547-030A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120950**
Client ID: **ST4-0** Batch ID: **63922** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/6/2010** SeqNo: **1931246**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	105.527	1.0	125.0	2.925	82.1	54	106	98.30	7.10	20	
Nickel	143.918	1.0	125.0	35.79	86.5	45	111	129.9	10.2	20	
Selenium	95.946	1.0	125.0	0	76.8	47	104	90.18	6.20	20	
Silver	103.389	1.0	125.0	0	82.7	56	112	95.36	8.08	20	
Thallium	99.345	1.0	125.0	0	79.5	46	101	93.69	5.86	20	
Vanadium	146.833	1.0	125.0	33.33	90.8	54	114	135.4	8.11	20	
Zinc	163.425	1.0	125.0	63.20	80.2	28	125	154.3	5.73	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63923** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120953**
Client ID: **PBS** Batch ID: **63923** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/6/2010** SeqNo: **1931262**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	0.151	1.0									
Beryllium	ND	1.0									
Cadmium	0.006	1.0									
Chromium	0.094	1.0									
Cobalt	0.024	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	0.083	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	0.049	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63923** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120953**
Client ID: **LCSS** Batch ID: **63923** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/6/2010** SeqNo: **1931263**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	45.061	2.0	50.00	0	90.1	80	120				
Arsenic	45.948	1.0	50.00	0	91.9	80	120				
Barium	47.723	1.0	50.00	0.1514	95.1	80	120				
Beryllium	44.931	1.0	50.00	0	89.9	80	120				
Cadmium	46.821	1.0	50.00	0.006424	93.6	80	120				
Chromium	46.571	1.0	50.00	0.09370	93.0	80	120				
Cobalt	48.101	1.0	50.00	0.02352	96.2	80	120				
Copper	46.879	2.0	50.00	0	93.8	80	120				
Lead	46.799	1.0	50.00	0	93.6	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63923**	SampType: **LCS**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120953**
Client ID: **LCSS**	Batch ID: **63923**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **5/6/2010**	SeqNo: **1931263**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	47.476	1.0	50.00	0	95.0	80	120				
Nickel	46.346	1.0	50.00	0.08312	92.5	80	120				
Selenium	42.919	1.0	50.00	0	85.8	80	120				
Silver	45.468	1.0	50.00	0	90.9	80	120				
Thallium	47.323	1.0	50.00	0	94.6	80	120				
Vanadium	46.876	1.0	50.00	0.04944	93.7	80	120				
Zinc	45.950	1.0	50.00	0	91.9	80	120				

Sample ID: **111547-036A-DUP**	SampType: **DUP**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120953**
Client ID: **RW5-4**	Batch ID: **63923**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **5/6/2010**	SeqNo: **1931268**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.493	2.0						0.5072	0	20	
Arsenic	1.981	1.0						1.924	2.94	20	
Barium	131.280	1.0						131.7	0.312	20	
Beryllium	0.069	1.0						0	0	20	
Cadmium	0.303	1.0						0.2448	0	20	
Chromium	27.878	1.0						29.88	6.94	20	
Cobalt	7.726	1.0						7.331	5.24	20	
Copper	12.928	2.0						13.15	1.70	20	
Lead	5.196	1.0						5.622	7.87	20	
Molybdenum	0.335	1.0						0.5290	0	20	
Nickel	40.392	1.0						40.56	0.418	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	29.761	1.0						30.06	1.01	20	
Zinc	32.627	1.0						31.60	3.20	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111547-036A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120953**
Client ID: **RW5-4** Batch ID: **63923** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/6/2010** SeqNo: **1931269**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	83.916	2.0	125.0	0.5072	66.7	32	105				
Arsenic	99.444	1.0	125.0	1.924	78.0	49	106				
Barium	239.713	1.0	125.0	131.7	86.4	31	133				
Beryllium	97.876	1.0	125.0	0	78.3	56	106				
Cadmium	95.326	1.0	125.0	0.2448	76.1	51	103				
Chromium	131.672	1.0	125.0	29.88	81.4	45	114				
Cobalt	103.555	1.0	125.0	7.331	77.0	52	106				
Copper	123.216	2.0	125.0	13.15	88.1	54	125				
Lead	100.603	1.0	125.0	5.622	76.0	34	126				
Molybdenum	97.515	1.0	125.0	0.5290	77.6	54	106				
Nickel	138.710	1.0	125.0	40.56	78.5	45	111				
Selenium	92.917	1.0	125.0	0	74.3	47	104				
Silver	100.778	1.0	125.0	0	80.6	56	112				
Thallium	95.393	1.0	125.0	0	76.3	46	101				
Vanadium	133.675	1.0	125.0	30.06	82.9	54	114				
Zinc	125.421	1.0	125.0	31.60	75.1	28	125				

Sample ID: **111547-036A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120953**
Client ID: **RW5-4** Batch ID: **63923** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/6/2010** SeqNo: **1931270**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	85.320	2.0	125.0	0.5072	67.8	32	105	83.92	1.66	20	
Arsenic	100.400	1.0	125.0	1.924	78.8	49	106	99.44	0.956	20	
Barium	245.093	1.0	125.0	131.7	90.7	31	133	239.7	2.22	20	
Beryllium	100.593	1.0	125.0	0	80.5	56	106	97.88	2.74	20	
Cadmium	97.672	1.0	125.0	0.2448	77.9	51	103	95.33	2.43	20	
Chromium	134.808	1.0	125.0	29.88	83.9	45	114	131.7	2.35	20	
Cobalt	106.316	1.0	125.0	7.331	79.2	52	106	103.6	2.63	20	
Copper	124.968	2.0	125.0	13.15	89.5	54	125	123.2	1.41	20	
Lead	102.349	1.0	125.0	5.622	77.4	34	126	100.6	1.72	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111547-036A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120953**
Client ID: **RW5-4** Batch ID: **63923** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/6/2010** SeqNo: **1931270**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	97.541	1.0	125.0	0.5290	77.6	54	106	97.52	0.0262	20	
Nickel	143.159	1.0	125.0	40.56	82.1	45	111	138.7	3.16	20	
Selenium	93.368	1.0	125.0	0	74.7	47	104	92.92	0.484	20	
Silver	102.230	1.0	125.0	0	81.8	56	112	100.8	1.43	20	
Thallium	97.272	1.0	125.0	0	77.8	46	101	95.39	1.95	20	
Vanadium	135.466	1.0	125.0	30.06	84.3	54	114	133.7	1.33	20	
Zinc	127.966	1.0	125.0	31.60	77.1	28	125	125.4	2.01	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_W

Sample ID: **MB-63842**	SampType: **MBLK**	TestCode: **6010_W**	Units: **mg/L**	Prep Date: **5/3/2010**	RunNo: **120909**
Client ID: **PBW**	Batch ID: **63842**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **5/5/2010**	SeqNo: **1930344**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	0.0050									
Arsenic	ND	0.010									
Barium	ND	0.0030									
Beryllium	ND	0.0030									
Cadmium	ND	0.0030									
Chromium	ND	0.0030									
Cobalt	ND	0.0030									
Copper	ND	0.0050									
Lead	ND	0.0050									
Molybdenum	ND	0.0050									
Nickel	ND	0.0050									
Selenium	ND	0.010									
Silver	ND	0.0030									
Thallium	ND	0.015									
Vanadium	ND	0.0030									
Zinc	ND	0.010									

Sample ID: **LCS-63842**	SampType: **LCS**	TestCode: **6010_W**	Units: **mg/L**	Prep Date: **5/3/2010**	RunNo: **120909**
Client ID: **LCSW**	Batch ID: **63842**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **5/5/2010**	SeqNo: **1930345**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	1.013	0.0050	1.000	0	101	85	115				
Arsenic	1.028	0.010	1.000	0	103	85	115				
Barium	1.038	0.0030	1.000	0	104	85	115				
Beryllium	1.007	0.0030	1.000	0	101	85	115				
Cadmium	1.044	0.0030	1.000	0	104	85	115				
Chromium	1.012	0.0030	1.000	0	101	85	115				
Cobalt	1.054	0.0030	1.000	0	105	85	115				
Copper	1.016	0.0050	1.000	0	102	85	115				
Lead	1.047	0.0050	1.000	0	105	85	115				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_W

Sample ID: **LCS-63842**	SampType: **LCS**	TestCode: **6010_W**	Units: **mg/L**	Prep Date: **5/3/2010**	RunNo: **120909**
Client ID: **LCSW**	Batch ID: **63842**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **5/5/2010**	SeqNo: **1930345**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	1.036	0.0050	1.000	0	104	85	115				
Nickel	1.029	0.0050	1.000	0	103	85	115				
Selenium	0.987	0.010	1.000	0	98.7	85	115				
Silver	0.994	0.0030	1.000	0	99.4	85	115				
Thallium	1.052	0.015	1.000	0	105	85	115				
Vanadium	1.024	0.0030	1.000	0	102	85	115				
Zinc	1.033	0.010	1.000	0	103	85	115				

Sample ID: **111547-027C-DUP**	SampType: **DUP**	TestCode: **6010_W**	Units: **mg/L**	Prep Date: **5/3/2010**	RunNo: **120909**
Client ID: **RW1-GW**	Batch ID: **63842**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **5/5/2010**	SeqNo: **1930349**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.041	0.025						0.04462	8.73	20	
Arsenic	0.223	0.050						0.3236	36.9	20	R
Barium	11.402	0.015						14.36	22.9	20	R
Beryllium	0.011	0.015						0.02116	0	20	
Cadmium	0.026	0.015						0.02997	14.1	20	
Chromium	3.497	0.015						3.947	12.1	20	
Cobalt	0.922	0.015						1.046	12.5	20	
Copper	1.796	0.025						2.103	15.7	20	
Lead	0.467	0.025						0.5536	16.9	20	
Manganese	36.020	2.5						39.45	9.09	20	
Molybdenum	0.023	0.025						0.02136	0	20	
Nickel	3.780	0.025						4.274	12.3	20	
Selenium	ND	0.050						0	0	20	
Silver	ND	0.015						0	0	20	
Thallium	ND	0.075						0	0	20	
Vanadium	4.230	0.015						4.768	12.0	20	
Zinc	4.389	0.050						5.123	15.4	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_W

Sample ID: **111547-027C-MS** SampType: **MS** TestCode: **6010_W** Units: **mg/L** Prep Date: **5/3/2010** RunNo: **120909**
Client ID: **RW1-GW** Batch ID: **63842** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **5/5/2010** SeqNo: **1930350**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.382	0.025	2.500	0.04462	13.5	73	128				S
Arsenic	2.324	0.050	2.500	0.3236	80.0	79	121				
Barium	12.917	0.015	2.500	14.36	-57.6	82	118				S
Beryllium	2.225	0.015	2.500	0.02116	88.1	84	119				
Cadmium	2.239	0.015	2.500	0.02997	88.4	79	117				
Chromium	5.555	0.015	2.500	3.947	64.3	78	115				S
Cobalt	3.088	0.015	2.500	1.046	81.7	80	118				
Copper	4.101	0.025	2.500	2.103	79.9	81	127				S
Lead	2.678	0.025	2.500	0.5536	85.0	80	118				
Manganese	51.270	2.5	20.00	39.45	59.1	74	121				S
Molybdenum	1.678	0.025	2.500	0.02136	66.3	81	118				S
Nickel	5.648	0.025	2.500	4.274	55.0	78	120				S
Selenium	1.862	0.050	2.500	0	74.5	78	120				S
Silver	2.100	0.015	2.500	0	84.0	79	125				
Thallium	2.229	0.075	2.500	0	89.2	74	115				
Vanadium	6.342	0.015	2.500	4.768	62.9	84	119				S
Zinc	6.308	0.050	2.500	5.123	47.4	75	122				S

Sample ID: **111547-027C-MSD** SampType: **MSD** TestCode: **6010_W** Units: **mg/L** Prep Date: **5/3/2010** RunNo: **120909**
Client ID: **RW1-GW** Batch ID: **63842** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **5/5/2010** SeqNo: **1930351**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.325	0.025	2.500	0.04462	11.2	73	128	0.3824	16.4	20	S
Arsenic	2.281	0.050	2.500	0.3236	78.3	79	121	2.324	1.86	20	S
Barium	11.036	0.015	2.500	14.36	-133	82	118	12.92	15.7	20	S
Beryllium	2.146	0.015	2.500	0.02116	85.0	84	119	2.225	3.60	20	
Cadmium	2.139	0.015	2.500	0.02997	84.4	79	117	2.239	4.59	20	
Chromium	5.023	0.015	2.500	3.947	43.0	78	115	5.555	10.1	20	S
Cobalt	2.944	0.015	2.500	1.046	75.9	80	118	3.088	4.79	20	S
Copper	3.771	0.025	2.500	2.103	66.7	81	127	4.101	8.38	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_W

Sample ID: **111547-027C-MSD** SampType: **MSD** TestCode: **6010_W** Units: **mg/L** Prep Date: **5/3/2010** RunNo: **120909**
Client ID: **RW1-GW** Batch ID: **63842** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **5/5/2010** SeqNo: **1930351**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.557	0.025	2.500	0.5536	80.1	80	118	2.678	4.63	20	
Manganese	47.986	2.5	20.00	39.45	42.7	74	121	51.27	6.62	20	S
Molybdenum	1.639	0.025	2.500	0.02136	64.7	81	118	1.678	2.40	20	S
Nickel	5.102	0.025	2.500	4.274	33.1	78	120	5.648	10.2	20	S
Selenium	1.900	0.050	2.500	0	76.0	78	120	1.862	2.02	20	S
Silver	1.998	0.015	2.500	0	79.9	79	125	2.100	4.99	20	
Thallium	2.149	0.075	2.500	0	86.0	74	115	2.229	3.67	20	
Vanadium	5.650	0.015	2.500	4.768	35.2	84	119	6.342	11.5	20	S
Zinc	5.658	0.050	2.500	5.123	21.4	75	122	6.308	10.9	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7470_W

Sample ID: **MB-63840**	SampType: **MBLK**	TestCode: **7470_W**	Units: **µg/L**	Prep Date: **5/3/2010**	RunNo: **120847**
Client ID: **PBW**	Batch ID: **63840**	TestNo: **EPA 7470A**		Analysis Date: **5/4/2010**	SeqNo: **1929137**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.20									

Sample ID: **LCS-63840**	SampType: **LCS**	TestCode: **7470_W**	Units: **µg/L**	Prep Date: **5/3/2010**	RunNo: **120847**
Client ID: **LCSW**	Batch ID: **63840**	TestNo: **EPA 7470A**		Analysis Date: **5/4/2010**	SeqNo: **1929138**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	10.824	0.20	10.00	0	108	85	115				

Sample ID: **111547-027C-MS**	SampType: **MS**	TestCode: **7470_W**	Units: **µg/L**	Prep Date: **5/3/2010**	RunNo: **120847**
Client ID: **RW1-GW**	Batch ID: **63840**	TestNo: **EPA 7470A**		Analysis Date: **5/4/2010**	SeqNo: **1929139**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	6.058	0.20	10.00	1.803	42.6	70	130				S

Sample ID: **111547-027C-MSD**	SampType: **MSD**	TestCode: **7470_W**	Units: **µg/L**	Prep Date: **5/3/2010**	RunNo: **120847**
Client ID: **RW1-GW**	Batch ID: **63840**	TestNo: **EPA 7470A**		Analysis Date: **5/4/2010**	SeqNo: **1929140**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	6.137	0.20	10.00	1.803	43.3	70	130	6.058	1.30	20	S

Sample ID: **111547-027C-DUP**	SampType: **DUP**	TestCode: **7470_W**	Units: **µg/L**	Prep Date: **5/3/2010**	RunNo: **120847**
Client ID: **RW1-GW**	Batch ID: **63840**	TestNo: **EPA 7470A**		Analysis Date: **5/4/2010**	SeqNo: **1929142**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	1.914	0.20						1.803	6.00	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63924**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120940**
Client ID: **PBS**	Batch ID: **63924**	TestNo: **EPA 7471A**		Analysis Date: **5/6/2010**	SeqNo: **1930980**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63924**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120940**
Client ID: **LCSS**	Batch ID: **63924**	TestNo: **EPA 7471A**		Analysis Date: **5/6/2010**	SeqNo: **1930981**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.752	0.10	0.8300	0	90.6	80	120				

Sample ID: **111547-014A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120940**
Client ID: **RW6-4**	Batch ID: **63924**	TestNo: **EPA 7471A**		Analysis Date: **5/6/2010**	SeqNo: **1930982**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.773	0.10	0.8300	0	93.1	70	130				

Sample ID: **111547-014A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120940**
Client ID: **RW6-4**	Batch ID: **63924**	TestNo: **EPA 7471A**		Analysis Date: **5/6/2010**	SeqNo: **1930983**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.773	0.10	0.8300	0	93.2	70	130	0.7726	0.120	20	

Sample ID: **111547-014A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120940**
Client ID: **RW6-4**	Batch ID: **63924**	TestNo: **EPA 7471A**		Analysis Date: **5/6/2010**	SeqNo: **1930985**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63925**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120943**
Client ID: **PBS**	Batch ID: **63925**	TestNo: **EPA 7471A**		Analysis Date: **5/6/2010**	SeqNo: **1931124**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63925**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120943**
Client ID: **LCSS**	Batch ID: **63925**	TestNo: **EPA 7471A**		Analysis Date: **5/6/2010**	SeqNo: **1931125**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.755	0.10	0.8300	0	91.0	80	120				

Sample ID: **111547-031A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120943**
Client ID: **ST5-4**	Batch ID: **63925**	TestNo: **EPA 7471A**		Analysis Date: **5/6/2010**	SeqNo: **1931126**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.869	0.10	0.8300	0.03494	101	70	130				

Sample ID: **111547-031A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120943**
Client ID: **ST5-4**	Batch ID: **63925**	TestNo: **EPA 7471A**		Analysis Date: **5/6/2010**	SeqNo: **1931127**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.874	0.10	0.8300	0.03494	101	70	130	0.8694	0.549	20	

Sample ID: **111547-031A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120943**
Client ID: **ST5-4**	Batch ID: **63925**	TestNo: **EPA 7471A**		Analysis Date: **5/6/2010**	SeqNo: **1931129**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.035	0.10						0.03494	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63926**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120944**
Client ID: **PBS**	Batch ID: **63926**	TestNo: **EPA 7471A**		Analysis Date: **5/6/2010**	SeqNo: **1931161**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63926**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120944**
Client ID: **LCSS**	Batch ID: **63926**	TestNo: **EPA 7471A**		Analysis Date: **5/6/2010**	SeqNo: **1931162**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.807	0.10	0.8300	0	97.2	80	120				

Sample ID: **111547-036A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120944**
Client ID: **RW5-4**	Batch ID: **63926**	TestNo: **EPA 7471A**		Analysis Date: **5/6/2010**	SeqNo: **1931163**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.825	0.10	0.8300	0.02153	96.8	70	130				

Sample ID: **111547-036A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120944**
Client ID: **RW5-4**	Batch ID: **63926**	TestNo: **EPA 7471A**		Analysis Date: **5/6/2010**	SeqNo: **1931164**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.816	0.10	0.8300	0.02153	95.7	70	130	0.8248	1.10	20	

Sample ID: **111547-036A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120944**
Client ID: **RW5-4**	Batch ID: **63926**	TestNo: **EPA 7471A**		Analysis Date: **5/6/2010**	SeqNo: **1931166**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.021	0.10						0.02153	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_DM LL

Sample ID: **MB-63864**	SampType: **MBLK**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **5/3/2010**	RunNo: **120868**
Client ID: **PBS**	Batch ID: **63864**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **5/4/2010**	SeqNo: **1929451**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	ND	1.0									
ORO	ND	1.0									
Surr: p-Terphenyl	2.397		2.670		89.8	30	128				

Sample ID: **LCS-63864**	SampType: **LCS**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **5/3/2010**	RunNo: **120868**
Client ID: **LCSS**	Batch ID: **63864**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **5/4/2010**	SeqNo: **1929452**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	22.839	1.0	33.00	0	69.2	35	118				
Surr: p-Terphenyl	2.470		2.670		92.5	30	128				

Sample ID: **111547-002AMS**	SampType: **MS**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **5/3/2010**	RunNo: **120868**
Client ID: **RW6-0**	Batch ID: **63864**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **5/4/2010**	SeqNo: **1929456**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	20.567	1.0	33.00	7.729	38.9	25	129				
Surr: p-Terphenyl	2.307		2.670		86.4	30	128				

Sample ID: **111547-002AMSD**	SampType: **MSD**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **5/3/2010**	RunNo: **120868**
Client ID: **RW6-0**	Batch ID: **63864**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **5/4/2010**	SeqNo: **1929457**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	25.680	1.0	33.00	7.729	54.4	25	129	20.57	22.1	20	R
Surr: p-Terphenyl	2.329		2.670		87.2	30	128		0	0	

Sample ID: **111547-002ADUP**	SampType: **DUP**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **5/3/2010**	RunNo: **120868**
Client ID: **RW6-0**	Batch ID: **63864**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **5/4/2010**	SeqNo: **1929458**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_DM LL

Sample ID: **111547-002ADUP** SampType: **DUP** TestCode: **8015_S_DM L** Units: **mg/Kg** Prep Date: **5/3/2010** RunNo: **120868**
Client ID: **RW6-0** Batch ID: **63864** TestNo: **EPA 8015B(M EPA 3550B** Analysis Date: **5/4/2010** SeqNo: **1929458**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	8.483	1.0						7.729	9.30	20	
ORO	30.530	1.0						30.80	0.874	20	
Surr: p-Terphenyl	2.360		2.670		88.4	30	128		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_DM LL

Sample ID: **MB-63905**	SampType: **MBLK**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **5/4/2010**	RunNo: **120975**
Client ID: **PBS**	Batch ID: **63905**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **5/7/2010**	SeqNo: **1931978**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	ND	1.0									
ORO	ND	1.0									
Surr: p-Terphenyl	2.651		2.670		99.3	30	128				

Sample ID: **LCS-63905**	SampType: **LCS**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **5/4/2010**	RunNo: **120975**
Client ID: **LCSS**	Batch ID: **63905**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **5/7/2010**	SeqNo: **1931979**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	28.099	1.0	33.00	0	85.1	35	118				
Surr: p-Terphenyl	2.744		2.670		103	30	128				

Sample ID: **111547-028AMS**	SampType: **MS**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **5/4/2010**	RunNo: **120975**
Client ID: **SS4-19.5**	Batch ID: **63905**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **5/7/2010**	SeqNo: **1931980**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	23.962	1.0	33.00	0	72.6	25	129				
Surr: p-Terphenyl	3.062		2.670		115	30	128				

Sample ID: **111547-028AMSD**	SampType: **MSD**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **5/4/2010**	RunNo: **120975**
Client ID: **SS4-19.5**	Batch ID: **63905**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **5/7/2010**	SeqNo: **1931981**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	20.687	1.0	33.00	0	62.7	25	129	23.96	14.7	20	
Surr: p-Terphenyl	2.639		2.670		98.8	30	128		0	0	

Sample ID: **111547-028ADUP**	SampType: **DUP**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **5/4/2010**	RunNo: **120975**
Client ID: **SS4-19.5**	Batch ID: **63905**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **5/7/2010**	SeqNo: **1931982**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_DM LL

Sample ID: **111547-028ADUP** SampType: **DUP** TestCode: **8015_S_DM L** Units: **mg/Kg** Prep Date: **5/4/2010** RunNo: **120975**
Client ID: **SS4-19.5** Batch ID: **63905** TestNo: **EPA 8015B(M EPA 3550B** Analysis Date: **5/7/2010** SeqNo: **1931982**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	ND	1.0						0	0	20	
ORO	ND	1.0						0	0	20	
Surr: p-Terphenyl	2.355		2.670		88.2	30	128		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_GAS

Sample ID: **E100504LCS2** SampType: **LCS** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120883**
Client ID: **LCSS** Batch ID: **E10VS113** TestNo: **EPA 8015B(M** Analysis Date: **5/4/2010** SeqNo: **1929670**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.813	1.0	5.000	0	96.3	70	130				
Surr: Bromofluorobenzene (FID)	121.914		100.0		122	56	137				

Sample ID: **E100504MB1** SampType: **MBLK** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120883**
Client ID: **PBS** Batch ID: **E10VS113** TestNo: **EPA 8015B(M** Analysis Date: **5/4/2010** SeqNo: **1929671**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	1.0									
Surr: Bromofluorobenzene (FID)	100.640		100.0		101	56	137				

Sample ID: **111573-001ADUP** SampType: **DUP** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120883**
Client ID: **ZZZZZZ** Batch ID: **E10VS113** TestNo: **EPA 8015B(M** Analysis Date: **5/4/2010** SeqNo: **1929673**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	1.0						0	0	20	
Surr: Bromofluorobenzene (FID)	104.179		100.0		104	56	137		0	0	

Sample ID: **111573-007AMS** SampType: **MS** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120883**
Client ID: **ZZZZZZ** Batch ID: **E10VS113** TestNo: **EPA 8015B(M** Analysis Date: **5/4/2010** SeqNo: **1929680**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	3.336	1.0	5.000	0	66.7	40	121				
Surr: Bromofluorobenzene (FID)	91.914		100.0		91.9	56	137				

Sample ID: **111573-007AMSD** SampType: **MSD** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120883**
Client ID: **ZZZZZZ** Batch ID: **E10VS113** TestNo: **EPA 8015B(M** Analysis Date: **5/4/2010** SeqNo: **1929681**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	3.506	1.0	5.000	0	70.1	40	121	3.336	4.97	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_GAS

Sample ID: **111573-007AMSD** SampType: **MSD** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120883**
Client ID: **ZZZZZZ** Batch ID: **E10VS113** TestNo: **EPA 8015B(M** Analysis Date: **5/4/2010** SeqNo: **1929681**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (FID)	97.963		100.0		98.0	56	137		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_GAS

Sample ID: **E100505MB2**	SampType: **MBLK**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120928**
Client ID: **PBS**	Batch ID: **E10VS114**	TestNo: **EPA 8015B(M**		Analysis Date: **5/5/2010**	SeqNo: **1930742**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	1.0									
Surr: Bromofluorobenzene (FID)	104.363		100.0		104	56	137				

Sample ID: **111547-036ADUP**	SampType: **DUP**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120928**
Client ID: **RW5-4**	Batch ID: **E10VS114**	TestNo: **EPA 8015B(M**		Analysis Date: **5/5/2010**	SeqNo: **1930752**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	1.0						0	0	20	
Surr: Bromofluorobenzene (FID)	108.396		100.0		108	56	137		0	0	

Sample ID: **111547-036AMS**	SampType: **MS**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120928**
Client ID: **RW5-4**	Batch ID: **E10VS114**	TestNo: **EPA 8015B(M**		Analysis Date: **5/5/2010**	SeqNo: **1930753**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	3.042	1.0	5.000	0	60.8	40	121				
Surr: Bromofluorobenzene (FID)	53.838		100.0		53.8	56	137				S

Sample ID: **111547-036AMSD**	SampType: **MSD**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120928**
Client ID: **RW5-4**	Batch ID: **E10VS114**	TestNo: **EPA 8015B(M**		Analysis Date: **5/5/2010**	SeqNo: **1930754**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	3.673	1.0	5.000	0	73.5	40	121	3.042	18.8	20	
Surr: Bromofluorobenzene (FID)	107.658		100.0		108	56	137		0	0	

Sample ID: **E100505LCS4**	SampType: **LCS**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120928**
Client ID: **LCSS**	Batch ID: **E10VS114**	TestNo: **EPA 8015B(M**		Analysis Date: **5/5/2010**	SeqNo: **1930757**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.694	1.0	5.000	0	93.9	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_GAS

Sample ID: **E100505LCS4**	SampType: **LCS**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120928**
Client ID: **LCSS**	Batch ID: **E10VS114**	TestNo: **EPA 8015B(M**		Analysis Date: **5/5/2010**	SeqNo: **1930757**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (FID)	106.472		100.0		106	56	137				

Sample ID: **E100505LCS4D**	SampType: **LCSD**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120928**
Client ID: **LCSS02**	Batch ID: **E10VS114**	TestNo: **EPA 8015B(M**		Analysis Date: **5/6/2010**	SeqNo: **1930759**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.655	1.0	5.000	0	93.1	70	130	4.694	0.834	20	
Surr: Bromofluorobenzene (FID)	101.316		100.0		101	56	137		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_GAS

Sample ID: **E100506LCS2**	SampType: **LCS**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120964**
Client ID: **LCSS**	Batch ID: **E10VS115**	TestNo: **EPA 8015B(M**		Analysis Date: **5/6/2010**	SeqNo: **1932063**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.911	1.0	5.000	0	98.2	70	130				
Surr: Bromofluorobenzene (FID)	101.021		100.0		101	56	137				

Sample ID: **E100506MB1**	SampType: **MBLK**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120964**
Client ID: **PBS**	Batch ID: **E10VS115**	TestNo: **EPA 8015B(M**		Analysis Date: **5/6/2010**	SeqNo: **1932064**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	1.0									
Surr: Bromofluorobenzene (FID)	103.397		100.0		103	56	137				

Sample ID: **111591-003ADUP**	SampType: **DUP**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120964**
Client ID: **ZZZZZZ**	Batch ID: **E10VS115**	TestNo: **EPA 8015B(M**		Analysis Date: **5/6/2010**	SeqNo: **1932068**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	1.0						0	0	20	
Surr: Bromofluorobenzene (FID)	101.203		100.0		101	56	137		0	0	

Sample ID: **111543-007AMS**	SampType: **MS**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120964**
Client ID: **ZZZZZZ**	Batch ID: **E10VS115**	TestNo: **EPA 8015B(M**		Analysis Date: **5/6/2010**	SeqNo: **1932070**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.422	1.0	5.000	0	88.4	40	121				
Surr: Bromofluorobenzene (FID)	117.393		100.0		117	56	137				

Sample ID: **111543-007AMSD**	SampType: **MSD**	TestCode: **8015_S_GAS**	Units: **mg/Kg**	Prep Date:	RunNo: **120964**
Client ID: **ZZZZZZ**	Batch ID: **E10VS115**	TestNo: **EPA 8015B(M**		Analysis Date: **5/6/2010**	SeqNo: **1932071**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.374	1.0	5.000	0	87.5	40	121	4.422	1.09	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_GAS

Sample ID: **111543-007AMSD** SampType: **MSD** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120964**
Client ID: **ZZZZZZ** Batch ID: **E10VS115** TestNo: **EPA 8015B(M** Analysis Date: **5/6/2010** SeqNo: **1932071**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (FID)	113.716		100.0		114	56	137		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_DM_LL

Sample ID: **MB-63913**	SampType: **MBLK**	TestCode: **8015_W_DM_**	Units: **mg/L**	Prep Date: **5/4/2010**	RunNo: **120959**
Client ID: **PBW**	Batch ID: **63913**	TestNo: **EPA 8015B(M**	**EPA 3510C**	Analysis Date: **5/7/2010**	SeqNo: **1931538**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	ND	0.050									
ORO	ND	0.050									
Surr: p-Terphenyl	0.068		0.08000		85.3	36	126				

Sample ID: **LCS-63913**	SampType: **LCS**	TestCode: **8015_W_DM_**	Units: **mg/L**	Prep Date: **5/4/2010**	RunNo: **120959**
Client ID: **LCSW**	Batch ID: **63913**	TestNo: **EPA 8015B(M**	**EPA 3510C**	Analysis Date: **5/7/2010**	SeqNo: **1931539**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	0.838	0.050	1.000	0	83.8	52	128				
Surr: p-Terphenyl	0.081		0.08000		101	36	126				

Sample ID: **MB-63913MS**	SampType: **MS**	TestCode: **8015_W_DM_**	Units: **mg/L**	Prep Date: **5/4/2010**	RunNo: **120959**
Client ID: **ZZZZZZ**	Batch ID: **63913**	TestNo: **EPA 8015B(M**	**EPA 3510C**	Analysis Date: **5/7/2010**	SeqNo: **1931540**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	0.837	0.050	1.000	0	83.7	52	128				
Surr: p-Terphenyl	0.081		0.08000		101	36	126				

Sample ID: **MB-63913MSD**	SampType: **MSD**	TestCode: **8015_W_DM_**	Units: **mg/L**	Prep Date: **5/4/2010**	RunNo: **120959**
Client ID: **ZZZZZZ**	Batch ID: **63913**	TestNo: **EPA 8015B(M**	**EPA 3510C**	Analysis Date: **5/7/2010**	SeqNo: **1931541**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	0.906	0.050	1.000	0	90.6	52	128	0.8374	7.89	20	
Surr: p-Terphenyl	0.086		0.08000		108	36	126		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_GP LL

Sample ID: **E100503LCS4** SampType: **LCS** TestCode: **8015_W_GP** Units: **mg/L** Prep Date: RunNo: **120840**
Client ID: **LCSW** Batch ID: **E10VW021** TestNo: **EPA 8015B(M** Analysis Date: **5/3/2010** SeqNo: **1929014**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	0.910	0.050	1.000	0	91.0	70	130				
Surr: Bromofluorobenzene (FID)	107.056		100.0		107	70	130				

Sample ID: **E100503LMB2MS** SampType: **MS** TestCode: **8015_W_GP** Units: **mg/L** Prep Date: RunNo: **120840**
Client ID: **ZZZZZZ** Batch ID: **E10VW021** TestNo: **EPA 8015B(M** Analysis Date: **5/3/2010** SeqNo: **1929016**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	0.900	0.050	1.000	0	90.0	70	130				
Surr: Bromofluorobenzene (FID)	107.062		100.0		107	70	130				

Sample ID: **E100503LMB2MSD** SampType: **MSD** TestCode: **8015_W_GP** Units: **mg/L** Prep Date: RunNo: **120840**
Client ID: **ZZZZZZ** Batch ID: **E10VW021** TestNo: **EPA 8015B(M** Analysis Date: **5/3/2010** SeqNo: **1929017**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	0.959	0.050	1.000	0	95.9	70	130	0.9000	6.35	20	
Surr: Bromofluorobenzene (FID)	108.199		100.0		108	70	130		0	0	

Sample ID: **E100503MB2** SampType: **MBLK** TestCode: **8015_W_GP** Units: **mg/L** Prep Date: RunNo: **120840**
Client ID: **PBW** Batch ID: **E10VW021** TestNo: **EPA 8015B(M** Analysis Date: **5/3/2010** SeqNo: **1929018**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	0.050									
Surr: Bromofluorobenzene (FID)	106.007		100.0		106	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_GP LL

Sample ID: **E100505LCS2**	SampType: **LCS**	TestCode: **8015_W_GP**	Units: **mg/L**	Prep Date:	RunNo: **120907**
Client ID: **LCSW**	Batch ID: **E10VW022**	TestNo: **EPA 8015B(M**		Analysis Date: **5/5/2010**	SeqNo: **1930314**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	0.975	0.050	1.000	0	97.5	70	130				
Surr: Bromofluorobenzene (FID)	106.556		100.0		107	70	130				

Sample ID: **E100505MB1MS**	SampType: **MS**	TestCode: **8015_W_GP**	Units: **mg/L**	Prep Date:	RunNo: **120907**
Client ID: **ZZZZZZ**	Batch ID: **E10VW022**	TestNo: **EPA 8015B(M**		Analysis Date: **5/5/2010**	SeqNo: **1930316**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	0.971	0.050	1.000	0	97.1	70	130				
Surr: Bromofluorobenzene (FID)	106.936		100.0		107	70	130				

Sample ID: **E100505MB1MSD**	SampType: **MSD**	TestCode: **8015_W_GP**	Units: **mg/L**	Prep Date:	RunNo: **120907**
Client ID: **ZZZZZZ**	Batch ID: **E10VW022**	TestNo: **EPA 8015B(M**		Analysis Date: **5/5/2010**	SeqNo: **1930317**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	0.950	0.050	1.000	0	95.0	70	130	0.9710	2.19	20	
Surr: Bromofluorobenzene (FID)	107.978		100.0		108	70	130		0	0	

Sample ID: **E100505MB1**	SampType: **MBLK**	TestCode: **8015_W_GP**	Units: **mg/L**	Prep Date:	RunNo: **120907**
Client ID: **PBW**	Batch ID: **E10VW022**	TestNo: **EPA 8015B(M**		Analysis Date: **5/5/2010**	SeqNo: **1930318**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	0.050									
Surr: Bromofluorobenzene (FID)	105.495		100.0		105	70	130				

Sample ID: **111547-025ADUP**	SampType: **DUP**	TestCode: **8015_W_GP**	Units: **mg/L**	Prep Date:	RunNo: **120907**
Client ID: **SS2-GW**	Batch ID: **E10VW022**	TestNo: **EPA 8015B(M**		Analysis Date: **5/5/2010**	SeqNo: **1930402**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	0.050						0.1570	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_GP LL

Sample ID: **111547-025ADUP** SampType: **DUP** TestCode: **8015_W_GP** Units: **mg/L** Prep Date: RunNo: **120907**
Client ID: **SS2-GW** Batch ID: **E10VW022** TestNo: **EPA 8015B(M** Analysis Date: **5/5/2010** SeqNo: **1930402**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (FID)	104.551		100.0		105	70	130		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_S_BTEX

Sample ID: **E100504LCS1** SampType: **LCS** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120883**
Client ID: **LCSS** Batch ID: **E10VS113** TestNo: **EPA 8021B** Analysis Date: **5/4/2010** SeqNo: **1929689**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	91.738	5.0	100.0	0	91.7	70	130				
Ethylbenzene	91.668	5.0	100.0	0	91.7	70	130				
m,p-Xylene	185.458	10	200.0	0	92.7	70	130				
Methyl tert-butyl ether	90.073	5.0	100.0	0	90.1	70	130				
o-Xylene	93.047	5.0	100.0	0	93.0	70	130				
Toluene	93.285	5.0	100.0	0	93.3	70	130				
Surr: Bromofluorobenzene (PID)	110.454		100.0		110	64	116				

Sample ID: **E100504MB1** SampType: **MBLK** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120883**
Client ID: **PBS** Batch ID: **E10VS113** TestNo: **EPA 8021B** Analysis Date: **5/4/2010** SeqNo: **1929691**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	5.0									
Ethylbenzene	ND	5.0									
m,p-Xylene	ND	10									
Methyl tert-butyl ether	ND	5.0									
o-Xylene	ND	5.0									
Toluene	ND	5.0									
Surr: Bromofluorobenzene (PID)	86.883		100.0		86.9	64	116				

Sample ID: **111573-001ADUP** SampType: **DUP** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120883**
Client ID: **ZZZZZZ** Batch ID: **E10VS113** TestNo: **EPA 8021B** Analysis Date: **5/4/2010** SeqNo: **1929693**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	5.0						0	0	20	
Ethylbenzene	ND	5.0						0	0	20	
m,p-Xylene	ND	10						0	0	20	
Methyl tert-butyl ether	ND	5.0						0	0	20	
o-Xylene	ND	5.0						0	0	20	
Toluene	ND	5.0						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_S_BTEX

Sample ID: **111573-001ADUP** SampType: **DUP** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120883**
Client ID: **ZZZZZZ** Batch ID: **E10VS113** TestNo: **EPA 8021B** Analysis Date: **5/4/2010** SeqNo: **1929693**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (PID)	87.352		100.0		87.4	64	116		0	0	

Sample ID: **111573-007AMS** SampType: **MS** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120883**
Client ID: **ZZZZZZ** Batch ID: **E10VS113** TestNo: **EPA 8021B** Analysis Date: **5/4/2010** SeqNo: **1929700**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	31.897	5.0	22.15	0	144	41	112				S
Ethylbenzene	32.087	5.0	42.30	0	75.9	26	100				
m,p-Xylene	118.365	10	180.2	0	65.7	32	106				
Methyl tert-butyl ether	327.823	5.0	578.9	0	56.6	44	124				
o-Xylene	43.453	5.0	64.80	0	67.1	30	100				
Toluene	124.862	5.0	172.6	0	72.3	38	112				
Surr: Bromofluorobenzene (PID)	81.007		100.0		81.0	64	116				

Sample ID: **111573-007AMSD** SampType: **MSD** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120883**
Client ID: **ZZZZZZ** Batch ID: **E10VS113** TestNo: **EPA 8021B** Analysis Date: **5/4/2010** SeqNo: **1929701**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	34.612	5.0	22.15	0	156	41	112	31.90	8.16	20	S
Ethylbenzene	35.202	5.0	42.30	0	83.2	26	100	32.09	9.26	20	
m,p-Xylene	129.506	10	180.2	0	71.9	32	106	118.4	8.99	20	
Methyl tert-butyl ether	385.068	5.0	578.9	0	66.5	44	124	327.8	16.1	20	
o-Xylene	47.967	5.0	64.80	0	74.0	30	100	43.45	9.88	20	
Toluene	137.785	5.0	172.6	0	79.8	38	112	124.9	9.84	20	
Surr: Bromofluorobenzene (PID)	86.164		100.0		86.2	64	116		0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_S_BTEX

Sample ID: **E100505MB2** SampType: **MBLK** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120928**
Client ID: **PBS** Batch ID: **E10VS114** TestNo: **EPA 8021B** Analysis Date: **5/5/2010** SeqNo: **1930798**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	5.0									
Ethylbenzene	ND	5.0									
m,p-Xylene	ND	10									
Methyl tert-butyl ether	ND	5.0									
o-Xylene	ND	5.0									
Toluene	ND	5.0									
Surr: Bromofluorobenzene (PID)	89.116		100.0		89.1	64	116				

Sample ID: **111547-036ADUP** SampType: **DUP** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120928**
Client ID: **RW5-4** Batch ID: **E10VS114** TestNo: **EPA 8021B** Analysis Date: **5/5/2010** SeqNo: **1930808**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	5.0						0	0	20	
Ethylbenzene	ND	5.0						0	0	20	
m,p-Xylene	ND	10						0	0	20	
Methyl tert-butyl ether	ND	5.0						0	0	20	
o-Xylene	ND	5.0						0	0	20	
Toluene	ND	5.0						0	0	20	
Surr: Bromofluorobenzene (PID)	92.802		100.0		92.8	64	116		0	0	

Sample ID: **111547-036AMS** SampType: **MS** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120928**
Client ID: **RW5-4** Batch ID: **E10VS114** TestNo: **EPA 8021B** Analysis Date: **5/5/2010** SeqNo: **1930809**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	25.265	5.0	22.15	0	114	41	112				S
Ethylbenzene	22.573	5.0	42.30	0	53.4	26	100				
m,p-Xylene	90.197	10	180.2	0	50.1	32	106				
Methyl tert-butyl ether	206.517	5.0	578.9	0	35.7	44	124				S
o-Xylene	33.767	5.0	64.80	0	52.1	30	100				
Toluene	96.580	5.0	172.6	0	55.9	38	112				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_S_BTEX

Sample ID: **111547-036AMS** SampType: **MS** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120928**
Client ID: **RW5-4** Batch ID: **E10VS114** TestNo: **EPA 8021B** Analysis Date: **5/5/2010** SeqNo: **1930809**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Xylenes, Total	123.964	15	245.0	0	50.6	30	100				
Surr: Bromofluorobenzene (PID)	42.444		100.0		42.4	64	116				S

Sample ID: **111547-036AMSD** SampType: **MSD** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120928**
Client ID: **RW5-4** Batch ID: **E10VS114** TestNo: **EPA 8021B** Analysis Date: **5/5/2010** SeqNo: **1930810**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	35.584	5.0	22.15	0	161	41	112	25.26	33.9	20	SR
Ethylbenzene	37.167	5.0	42.30	0	87.9	26	100	22.57	48.9	20	R
m,p-Xylene	137.761	10	180.2	0	76.4	32	106	90.20	41.7	20	R
Methyl tert-butyl ether	371.153	5.0	578.9	0	64.1	44	124	206.5	57.0	20	R
o-Xylene	51.135	5.0	64.80	0	78.9	30	100	33.77	40.9	20	R
Toluene	141.816	5.0	172.6	0	82.1	38	112	96.58	38.0	20	R
Xylenes, Total	188.896	15	245.0	0	77.1	30	100	124.0	41.5	20	R
Surr: Bromofluorobenzene (PID)	94.155		100.0		94.2	64	116		0	20	

Sample ID: **E100505LCS3** SampType: **LCS** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120928**
Client ID: **LCSS** Batch ID: **E10VS114** TestNo: **EPA 8021B** Analysis Date: **5/5/2010** SeqNo: **1930812**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	91.677	5.0	100.0	0	91.7	70	130				
Ethylbenzene	90.791	5.0	100.0	0	90.8	70	130				
m,p-Xylene	183.615	10	200.0	0	91.8	70	130				
Methyl tert-butyl ether	85.723	5.0	100.0	0	85.7	70	130				
o-Xylene	93.015	5.0	100.0	0	93.0	70	130				
Toluene	92.492	5.0	100.0	0	92.5	70	130				
Surr: Bromofluorobenzene (PID)	85.694		100.0		85.7	64	116				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_S_BTEX

Sample ID: **E100505LCS3D** SampType: **LCSD** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120928**
Client ID: **LCSS02** Batch ID: **E10VS114** TestNo: **EPA 8021B** Analysis Date: **5/5/2010** SeqNo: **1930814**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	90.963	5.0	100.0	0	91.0	70	130	91.68	0.782	20	
Ethylbenzene	90.312	5.0	100.0	0	90.3	70	130	90.79	0.529	20	
m,p-Xylene	182.656	10	200.0	0	91.3	70	130	183.6	0.524	20	
Methyl tert-butyl ether	85.493	5.0	100.0	0	85.5	70	130	85.72	0.269	20	
o-Xylene	91.683	5.0	100.0	0	91.7	70	130	93.02	1.44	20	
Toluene	92.323	5.0	100.0	0	92.3	70	130	92.49	0.183	20	
Surr: Bromofluorobenzene (PID)	84.704		100.0		84.7	64	116		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_S_BTEX

Sample ID: **E100506LCS1** SampType: **LCS** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120964**
Client ID: **LCSS** Batch ID: **E10VS115** TestNo: **EPA 8021B** Analysis Date: **5/6/2010** SeqNo: **1932074**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	93.461	5.0	100.0	0	93.5	70	130				
Ethylbenzene	94.096	5.0	100.0	0	94.1	70	130				
m,p-Xylene	190.348	10	200.0	0	95.2	70	130				
Methyl tert-butyl ether	94.587	5.0	100.0	0	94.6	70	130				
o-Xylene	94.931	5.0	100.0	0	94.9	70	130				
Toluene	95.313	5.0	100.0	0	95.3	70	130				
Surr: Bromofluorobenzene (PID)	89.837		100.0		89.8	64	116				

Sample ID: **E100506MB1** SampType: **MBLK** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120964**
Client ID: **PBS** Batch ID: **E10VS115** TestNo: **EPA 8021B** Analysis Date: **5/6/2010** SeqNo: **1932076**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	5.0									
Ethylbenzene	ND	5.0									
m,p-Xylene	ND	10									
Methyl tert-butyl ether	ND	5.0									
o-Xylene	ND	5.0									
Toluene	ND	5.0									
Surr: Bromofluorobenzene (PID)	89.695		100.0		89.7	64	116				

Sample ID: **111591-003ADUP** SampType: **DUP** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120964**
Client ID: **ZZZZZZ** Batch ID: **E10VS115** TestNo: **EPA 8021B** Analysis Date: **5/6/2010** SeqNo: **1932080**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	5.0						0	0	20	
Ethylbenzene	ND	5.0						0	0	20	
m,p-Xylene	ND	10						0	0	20	
Methyl tert-butyl ether	ND	5.0						0	0	20	
o-Xylene	ND	5.0						0	0	20	
Toluene	ND	5.0						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_S_BTEX

Sample ID: **111591-003ADUP** SampType: **DUP** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120964**
Client ID: **ZZZZZZ** Batch ID: **E10VS115** TestNo: **EPA 8021B** Analysis Date: **5/6/2010** SeqNo: **1932080**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (PID)	89.136		100.0		89.1	64	116		0	0	

Sample ID: **111543-007AMS** SampType: **MS** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120964**
Client ID: **ZZZZZZ** Batch ID: **E10VS115** TestNo: **EPA 8021B** Analysis Date: **5/6/2010** SeqNo: **1932082**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	39.730	5.0	22.15	0	179	41	112				S
Ethylbenzene	43.552	5.0	42.30	0	103	26	100				S
m,p-Xylene	163.820	10	180.2	0	90.9	32	106				
Methyl tert-butyl ether	437.470	5.0	578.9	0	75.6	44	124				
o-Xylene	61.381	5.0	64.80	0	94.7	30	100				
Toluene	159.877	5.0	172.6	0	92.6	38	112				
Surr: Bromofluorobenzene (PID)	98.051		100.0		98.1	64	116				

Sample ID: **111543-007AMSD** SampType: **MSD** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120964**
Client ID: **ZZZZZZ** Batch ID: **E10VS115** TestNo: **EPA 8021B** Analysis Date: **5/6/2010** SeqNo: **1932083**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	39.900	5.0	22.15	0	180	41	112	39.73	0.427	20	S
Ethylbenzene	43.840	5.0	42.30	0	104	26	100	43.55	0.659	20	S
m,p-Xylene	164.059	10	180.2	0	91.0	32	106	163.8	0.146	20	
Methyl tert-butyl ether	411.550	5.0	578.9	0	71.1	44	124	437.5	6.11	20	
o-Xylene	60.850	5.0	64.80	0	93.9	30	100	61.38	0.869	20	
Toluene	160.537	5.0	172.6	0	93.0	38	112	159.9	0.412	20	
Surr: Bromofluorobenzene (PID)	101.876		100.0		102	64	116		0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_WP_BTEX

Sample ID: **E100503LCS3** SampType: **LCS** TestCode: **8021_WP_BT** Units: **µg/L** Prep Date: RunNo: **120840**
Client ID: **LCSW** Batch ID: **E10VW021** TestNo: **EPA 8021B** Analysis Date: **5/3/2010** SeqNo: **1929054**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	90.248	0.50	100.0	0	90.2	70	130				
Toluene	89.072	0.50	100.0	0	89.1	70	130				
Ethylbenzene	88.534	0.50	100.0	0	88.5	70	130				
m,p-Xylene	181.016	1.0	200.0	0	90.5	70	130				
o-Xylene	90.564	0.50	100.0	0	90.6	70	130				
Methyl tert-butyl ether	94.850	0.50	100.0	0	94.8	70	130				
Surr: Bromofluorobenzene (PID)	94.449		100.0		94.4	70	130				

Sample ID: **E100503LCS3D** SampType: **LCSD** TestCode: **8021_WP_BT** Units: **µg/L** Prep Date: RunNo: **120840**
Client ID: **LCSS02** Batch ID: **E10VW021** TestNo: **EPA 8021B** Analysis Date: **5/3/2010** SeqNo: **1929056**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	89.517	0.50	100.0	0	89.5	70	130	90.25	0.813	20	
Toluene	88.319	0.50	100.0	0	88.3	70	130	89.07	0.849	20	
Ethylbenzene	87.528	0.50	100.0	0	87.5	70	130	88.53	1.14	20	
m,p-Xylene	179.010	1.0	200.0	0	89.5	70	130	181.0	1.11	20	
o-Xylene	90.140	0.50	100.0	0	90.1	70	130	90.56	0.469	20	
Methyl tert-butyl ether	96.504	0.50	100.0	0	96.5	70	130	94.85	1.73	20	
Surr: Bromofluorobenzene (PID)	94.775		100.0		94.8	70	130		0	0	

Sample ID: **E100503MB2** SampType: **MBLK** TestCode: **8021_WP_BT** Units: **µg/L** Prep Date: RunNo: **120840**
Client ID: **PBW** Batch ID: **E10VW021** TestNo: **EPA 8021B** Analysis Date: **5/3/2010** SeqNo: **1929059**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Toluene	ND	0.50									
Ethylbenzene	ND	0.50									
m,p-Xylene	ND	1.0									
o-Xylene	ND	0.50									
Methyl tert-butyl ether	ND	0.50									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_WP_BTEX

Sample ID: **E100503MB2** SampType: **MBLK** TestCode: **8021_WP_BT** Units: **µg/L** Prep Date: RunNo: **120840**
Client ID: **PBW** Batch ID: **E10VW021** TestNo: **EPA 8021B** Analysis Date: **5/3/2010** SeqNo: **1929059**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (PID)	95.475		100.0		95.5	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_WP_BTEX

Sample ID: **E100505LCS1** SampType: **LCS** TestCode: **8021_WP_BT** Units: **µg/L** Prep Date: RunNo: **120907**
Client ID: **LCSW** Batch ID: **E10VW022** TestNo: **EPA 8021B** Analysis Date: **5/5/2010** SeqNo: **1930405**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	90.629	0.50	100.0	0	90.6	70	130				
Toluene	89.675	0.50	100.0	0	89.7	70	130				
Ethylbenzene	88.793	0.50	100.0	0	88.8	70	130				
m,p-Xylene	181.433	1.0	200.0	0	90.7	70	130				
o-Xylene	90.943	0.50	100.0	0	90.9	70	130				
Methyl tert-butyl ether	93.379	0.50	100.0	0	93.4	70	130				
Surr: Bromofluorobenzene (PID)	94.313		100.0		94.3	70	130				

Sample ID: **E100505LCS1D** SampType: **LCSD** TestCode: **8021_WP_BT** Units: **µg/L** Prep Date: RunNo: **120907**
Client ID: **LCSS02** Batch ID: **E10VW022** TestNo: **EPA 8021B** Analysis Date: **5/5/2010** SeqNo: **1930407**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	90.403	0.50	100.0	0	90.4	70	130	90.63	0.250	20	
Toluene	89.872	0.50	100.0	0	89.9	70	130	89.68	0.219	20	
Ethylbenzene	89.710	0.50	100.0	0	89.7	70	130	88.79	1.03	20	
m,p-Xylene	182.557	1.0	200.0	0	91.3	70	130	181.4	0.618	20	
o-Xylene	90.843	0.50	100.0	0	90.8	70	130	90.94	0.110	20	
Methyl tert-butyl ether	91.568	0.50	100.0	0	91.6	70	130	93.38	1.96	20	
Surr: Bromofluorobenzene (PID)	92.725		100.0		92.7	70	130		0	0	

Sample ID: **E100505MB1** SampType: **MBLK** TestCode: **8021_WP_BT** Units: **µg/L** Prep Date: RunNo: **120907**
Client ID: **PBW** Batch ID: **E10VW022** TestNo: **EPA 8021B** Analysis Date: **5/5/2010** SeqNo: **1930410**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Toluene	ND	0.50									
Ethylbenzene	ND	0.50									
m,p-Xylene	ND	1.0									
o-Xylene	ND	0.50									
Methyl tert-butyl ether	ND	0.50									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_WP_BTEX

Sample ID: **E100505MB1**	SampType: **MBLK**	TestCode: **8021_WP_BT**	Units: **µg/L**	Prep Date:	RunNo: **120907**
Client ID: **PBW**	Batch ID: **E10VW022**	TestNo: **EPA 8021B**		Analysis Date: **5/5/2010**	SeqNo: **1930410**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (PID)	92.055		100.0		92.1	70	130				

Sample ID: **111547-025ADUP**	SampType: **DUP**	TestCode: **8021_WP_BT**	Units: **µg/L**	Prep Date:	RunNo: **120907**
Client ID: **SS2-GW**	Batch ID: **E10VW022**	TestNo: **EPA 8021B**		Analysis Date: **5/5/2010**	SeqNo: **1930412**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50						0	0	20	
Toluene	ND	0.50						0	0	20	
Ethylbenzene	ND	0.50						0	0	20	
m,p-Xylene	ND	1.0						0	0	20	
o-Xylene	ND	0.50						0	0	20	
Methyl tert-butyl ether	ND	0.50						0.4380	0	20	
Surr: Bromofluorobenzene (PID)	91.585		100.0		91.6	70	130		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: 5/1/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☒ FedEx ☐ Other: GSO

Sample Condition Upon Receipt: 4.2 5.7
1. CHILLED Y ☑ N ☐ 4. SEALED Y ☐ N ☑
2. HEADSPACE (VOA) Y ☐ N ☑ 5. # OF SPLS MATCH COC Y ☑ N ☐
3. CONTAINER INTACT Y ☑ N ☐ 6. PRESERVED Y ☑ N ☐

Client: Geocon Consultants, Inc.
Attention: Lauren Vigliottti
Address: 6671 Brisa Street
City: Livermore State: CA Zip Code: 94550
Tel: 925-371-5900
Fax: 925-371-5915

Project Name: I-580 WB HOV Lanes
Project #: E8474-06-01
Sampler: (Printed Name) Lauren Vigliotti (Signature) Lauren Vigliotti

Relinquished by: (Signature and Printed Name) Lauren Vigliotti Date: 4/30/10 Time: 1645
Received by: (Signature and Printed Name) Mark Date: 5/1/10 Time: 8:11
Relinquished by: (Signature and Printed Name) Date: Time:
Received by: (Signature and Printed Name) Date: Time:
Relinquished by: (Signature and Printed Name) Date: Time:
Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Lauren Vigliotti 4/30/2010
Print Name Date
Lauren Vigliotti
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides); 8082 (PCB); 8260B (Volatiles); 8270C (BNA); 6010B (Total Metal); 8015B (GRO) / 8020 (BTEX) +TAME +OXO; 8015B (DRO); 8021 (BTEX); TITLE 22 / CAM 17 (6010 / 7000); Total Lead (EPA 6010)

SPECIFY APPROPRIATE MATRIX: SOIL; WATER; GROUND WATER; WASTEWATER

PRESERVATION: QA/QC RTNE ☐ CT ☑ SWRCB ☐ Logcode _____ OTHER _____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample ID / Location	Date	Time	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	111547-001	RW7-0	4/29/2010	0900	E	1	T	P C	
	2	RW6-0	4/29/2010	0915	E			P C	
	3	ST3-0	4/29/2010	1140	E			P C	
	4	ST2-0	4/29/2010	1330	E			P C	
	5	ST1-0	4/29/2010	1440	E			P C	
	6,7	SS2-0,-4	4/29/2010	1500	E			P C	HOLD
	8	RW8-0	4/29/2010	0825	E			P C	
	9	RW2-0	4/29/2010	1045	E			P C	
	10	RW1-0	4/29/2010	1100	E			P C	
	11,12	SS4-0,-4	4/29/2010		E	V	V	P C	HOLD

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs; B = Emergency Next Workday; C = Critical 2 Workdays; D = Urgent 3 Workdays; E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☒ FedEx ☐ Other: _____

Sample Condition Upon Receipt
1. CHILLED Y ☐ N ☐ 4. SEALED Y ☐ N ☐
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☐ N ☐
3. CONTAINER INTACT Y ☐ N ☐ 6. PRESERVED Y ☐ N ☐

Client: Geocon Consultants, Inc. | Address: 6671 Brisa Street | Tel: 925-371-5900
Attention: Lauren Vigliottti | City: Livermore | State: CA | Zip Code: 94550 | Fax: 925-371-5915
Project Name: I-580 WB HOV Lanes | Project #: E8474-06-01 | Sampler: (Printed Name) Lauren Vigliotti (Signature)

Relinquished by: (Signature and Printed Name) Lauren Vigliotti Date: 4/30/10 Time: 1645 | Received by: (Signature and Printed Name) Mary [illegible] Date: 5/1/10 Time: 811
Relinquished by: (Signature and Printed Name) Date: Time: | Received by: (Signature and Printed Name) Date: Time:
Relinquished by: (Signature and Printed Name) Date: Time: | Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Lauren Vigliotti 4/30/2010
Print Name Date
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides), 8082 (PCB), 8260B (Volatiles), 8270C (BNA), 6010B (Total Metal), 8015B (GRO) / 8020 (BTEX), 8015B (DRO), 8021 (BTEX), TITLE 22 / CAM 17 (6010 / 7000), Total Lead (EPA 6010), HVOCs

SPECIFY APPROPRIATE MATRIX: SOIL, WATER, GROUND WATER, WASTEWATER

PRESERVATION: TAT, Container(s) # Type

QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode_____ OTHER _____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample ID / Location	Date	Time	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	#	Type	P	C	REMARKS
	111547-13	RW7-4	4/30/2010	0900	X				E	1	T	P	C	
	14	RW6-4	4/30/2010	0915	X				E			P	C	
	15	ST#7-4	4/30/2010	1140	X				E			P	C	
	16	ST2-4	4/30/2010	1330	X				E			P	C	
	17	ST1-4	4/30/2010	1440	X				E			P	C	
	18,19	SS2-0,-4	4/30/2010	1500	X				E			P	C	HOLD
	20	RW8-4	4/30/2010	0825	X				E			P	C	
	21	RW2-4	4/30/2010	1045	X				E			P	C	
	22	RW1-4	4/30/2010	1100	X				E			P	C	
	23,24	SS4-0,-4	4/30/2010		X				E			P	C	HOLD

■ TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs | B = Emergency Next Workday | C = Critical 2 Workdays | D = Urgent 3 Workdays | E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
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Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☒ FedEx ☐ Other: _____

Sample Condition Upon Receipt
1. CHILLED Y ☐ N ☐ 4. SEALED Y ☐ N ☐
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☐ N ☐
3. CONTAINER INTACT Y ☐ N ☐ 6. PRESERVED Y ☐ N ☐

Client: Geocon Consultants, Inc. | Address: 6671 Brisa Street | Tel: 925-371-5900
Attention: Lauren Vigliottti | City: Livermore | State: CA | Zip Code: 94550 | Fax: 925-371-5915

Project Name: I-580 WB HOV Lanes | Project #: E8474-06-01 | Sampler: (Printed Name) Lauren Vigliotti (Signature)

Relinquished by: (Signature and Printed Name) Lauren Vigliotti Date: 4/30/10 Time: 1645 Received by: (Signature and Printed Name) Date: 5/1/10 Time: 811
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Lauren Vigliotti 4/30/2010
Print Name Date
Lauren Vigliotti
Signature

Send Report To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Bill To:
Attn: Same as above
Co:
Addr:
City: State: Zip:

Special Instructions/Comments:

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample :$2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample ID / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / 8020 (BTEX)	8015B (DRO) +TOLUENE	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	Total Lead (EPA 6010)	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	QA/QC	REMARKS
	111547-25	SS2-GW	4/29/2010	1600					X	X		X				X				E	5	V/L	P	C	
	26	SS3-GW	4/30/2010	1000					X	X		X				X				E	5	V/L	P	C	
	27	RW1-GW	4/30/2010	1200					X	X		X				X				E			P	C	
	28	SS4-19.5	4/30/2010	1345					X	X		X			X					E			P	C	
	29	ST5-0	4/30/2010	1400						X		X			X					E			P	C	
	30	ST4-0	4/30/2010	1430						X		X			X					E			P	C	
	31	ST5-4	4/30/2010	1400					X			X			X					E			P	C	
	32	ST4-4	4/30/2010	1430					X			X			X					E			P	C	
			4/30/2010																	E			P	C	
	33;34	SS3-9'-4	4/30/2010	0940																E			P	C	HOLD

Circle or Add Analysis(es) Requested
SPECIFY APPROPRIATE MATRIX
PRESERVATION
QA/QC: RTNE ☐ CT ☑ SWRCB ☐ Logcode_____ OTHER _____

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs | B = Emergency Next Workday | C = Critical 2 Workdays | D = Urgent 3 Workdays | E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives:
H=HCl N=HNO_3 S=H_2SO_4 C=4°C
Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

Fernando Diwa

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Monday, May 03, 2010 9:54 AM
To: Carmen Aguila
Cc: Diane Galvan
Subject: FW: I-580 project

Hi Carmen:
I am clarifying issues on the COC that Margot and I discussed this morning.
Samples not listed on COC collected on 4/29/2010

RW5-0- analyze for Title 22 metals and DRO/ORO
RW5-4 – analyze for Title 22 metals and GRO/BTEX/MTBE
ST4-11.5 – HOLD

Please use times listed on COC and please disregard duplicate listings of SS2-0,-4 and SS4-0,-4
Thanks so much for your assistance!
-Lauren

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

Geocon Consultants, Inc
6671 Brisa Street
Livermore, CA 94550
Tel (925) 371-5900
Cell (925) 768-9874

GEOCON

GEOTECHNICAL ENVIRONMENTAL MATERIALS

San Diego Murrieta Burbank Bakersfield Sacramento Livermore Carson City Las Vegas Portland

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CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	ST3-0
Lab Order:	111547	**Collection Date:**	4/29/2010 11:40:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-003		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
EPA 3050B				**EPA 6010B**		
RunID: ICP8_100506C	QC Batch: 63921			PrepDate:	5/6/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 12:43 PM
Arsenic	2.3	1.0		mg/Kg	1	5/6/2010 12:43 PM
Barium	130	1.0		mg/Kg	1	5/6/2010 12:43 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 12:43 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 12:43 PM
Chromium	22	1.0		mg/Kg	1	5/6/2010 12:43 PM
Cobalt	7.7	1.0		mg/Kg	1	5/6/2010 12:43 PM
Copper	20	2.0		mg/Kg	1	5/6/2010 12:43 PM
Lead	15	1.0		mg/Kg	1	5/6/2010 12:43 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 12:43 PM
Nickel	29	1.0		mg/Kg	1	5/6/2010 12:43 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 12:43 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 12:43 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 12:43 PM
Vanadium	27	1.0		mg/Kg	1	5/6/2010 12:43 PM
Zinc	92	1.0		mg/Kg	1	5/6/2010 12:43 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
EPA 3550B				**EPA 8015B(M)**		
RunID: GC8_100504A	QC Batch: 63864			PrepDate:	5/3/2010	Analyst: **CBR**
DRO	12	5.0		mg/Kg	5	5/4/2010 05:01 PM
ORO	64	5.0		mg/Kg	5	5/4/2010 05:01 PM
Surr: p-Terphenyl	75.0	30-128		%REC	5	5/4/2010 05:01 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506C	QC Batch: 63924			PrepDate:	5/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 12:45 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Lab Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01
Lab ID: 111547-015

Client Sample ID: ST3-4
Collection Date: 4/29/2010 11:40:00 AM
Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100506D	QC Batch: 63922			PrepDate: 5/6/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/6/2010 01:44 PM
Arsenic	2.6	1.0		mg/Kg	1	5/6/2010 01:44 PM
Barium	130	1.0		mg/Kg	1	5/6/2010 01:44 PM
Beryllium	ND	1.0		mg/Kg	1	5/6/2010 01:44 PM
Cadmium	ND	1.0		mg/Kg	1	5/6/2010 01:44 PM
Chromium	23	1.0		mg/Kg	1	5/6/2010 01:44 PM
Cobalt	8.4	1.0		mg/Kg	1	5/6/2010 01:44 PM
Copper	15	2.0		mg/Kg	1	5/6/2010 01:44 PM
Lead	19	1.0		mg/Kg	1	5/6/2010 01:44 PM
Molybdenum	ND	1.0		mg/Kg	1	5/6/2010 01:44 PM
Nickel	30	1.0		mg/Kg	1	5/6/2010 01:44 PM
Selenium	ND	1.0		mg/Kg	1	5/6/2010 01:44 PM
Silver	ND	1.0		mg/Kg	1	5/6/2010 01:44 PM
Thallium	ND	1.0		mg/Kg	1	5/6/2010 01:44 PM
Vanadium	30	1.0		mg/Kg	1	5/6/2010 01:44 PM
Zinc	65	1.0		mg/Kg	1	5/6/2010 01:44 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100505B	QC Batch: E10VS114			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	5/5/2010 07:51 PM
Surr: Bromofluorobenzene (FID)	106	56-137		%REC	1	5/5/2010 07:51 PM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100505B	QC Batch: E10VS114			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	5/5/2010 07:51 PM
Ethylbenzene	ND	5.0		µg/Kg	1	5/5/2010 07:51 PM
m,p-Xylene	ND	10		µg/Kg	1	5/5/2010 07:51 PM
Methyl tert-butyl ether	ND	5.0		µg/Kg	1	5/5/2010 07:51 PM
o-Xylene	ND	5.0		µg/Kg	1	5/5/2010 07:51 PM
Toluene	ND	5.0		µg/Kg	1	5/5/2010 07:51 PM
Surr: Bromofluorobenzene (PID)	90.7	64-116		%REC	1	5/5/2010 07:51 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506D	QC Batch: 63925			PrepDate: 5/6/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

Advanced Technology Laboratories

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	ST3-4
Lab Order:	111547	**Collection Date:**	4/29/2010 11:40:00 AM
Project:	I-580 WB HOV Lanes, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111547-015		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
		EPA 7471A				
RunID: AA1_100506D	QC Batch: 63925			PrepDate:	5/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 01:24 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Wednesday, May 12, 2010 9:33 AM
To: Diane Galvan
Subject: WO111547

Hi Diane: I have a favor to ask. For the referenced work order, could you please reissue pages 6, 16, and 17 for sample IDs ST7-0 and ST7-4, with them renamed as ST3-0 and ST3-4? Page 6 – ST7-0, change to ST3-0, pages 16 and 17 – ST7-4 change toST3-4? I only need pdfs of these pages, I can modify the excel data myself. Thanks so much for your assistance!

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

Geocon Consultants, Inc
6671 Brisa Street
Livermore, CA 94550
Tel (925) 371-5900
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GEOCON

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May 18, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
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FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111547

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on May 01, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

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Advanced Technology Laboratories

Date: 5/18/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (STLC)
WET/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111547
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	5/1/2010 8:11:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111547-021A	RW2-4	6.6	mg/L	64075	0.25	1	4/30/2010	5/17/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-64075A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/12/2010**	RunNo: **121210**
Client ID: **PBS**	Batch ID: **64075**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/17/2010**	SeqNo: **1936249**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-64075**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/12/2010**	RunNo: **121210**
Client ID: **LCSS**	Batch ID: **64075**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/17/2010**	SeqNo: **1936250**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.889	0.25	5.000	0	97.8	80	120				

Sample ID: **111547-021A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/12/2010**	RunNo: **121210**
Client ID: **RW2-4**	Batch ID: **64075**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/17/2010**	SeqNo: **1936252**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	6.601	0.25						6.586	0.235	20	

Sample ID: **111547-021A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/12/2010**	RunNo: **121210**
Client ID: **RW2-4**	Batch ID: **64075**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/17/2010**	SeqNo: **1936253**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	11.645	0.50	5.000	6.586	101	80	120				

Sample ID: **111547-021A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **5/12/2010**	RunNo: **121210**
Client ID: **RW2-4**	Batch ID: **64075**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **5/17/2010**	SeqNo: **1936254**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	11.594	0.50	5.000	6.586	100	80	120	11.65	0.438	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Tuesday, May 11, 2010 10:06 AM
To: Diane Galvan
Subject: RE: Results/EDD - WB 580 HOV (111548)

Hi Diane:
Please run the following under standard TAT, thank you!
WET lead:
111547 RW2-4

DI-WET and TCLP lead
111450 B283-0 5.5
111450 B287-2 12

-Lauren
****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

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May 26, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111547

RE: I-580 WB HOV Lanes, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on May 01, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

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Advanced Technology Laboratories

Date: 5/26/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION
WET DI/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111547
Project:	I-580 WB HOV Lanes, E8474-06-01	**Date Received**	5/1/2010 8:11:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111547-021A	RW2-4	ND	mg/L	64196	0.25	1	4/30/2010	5/24/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111547
Project: I-580 WB HOV Lanes, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_DI_GEOCON

Sample ID: **MB-64196A**	SampType: **MBLK**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/19/2010**	RunNo: **121410**
Client ID: **PBS**	Batch ID: **64196**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/24/2010**	SeqNo: **1940546**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-64196**	SampType: **LCS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/19/2010**	RunNo: **121410**
Client ID: **LCSS**	Batch ID: **64196**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/24/2010**	SeqNo: **1940547**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.942	0.25	5.000	0	98.8	80	120				

Sample ID: **111547-021A-DUP**	SampType: **DUP**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/19/2010**	RunNo: **121410**
Client ID: **RW2-4**	Batch ID: **64196**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/24/2010**	SeqNo: **1940557**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: **111547-021A-MS**	SampType: **MS**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/19/2010**	RunNo: **121410**
Client ID: **RW2-4**	Batch ID: **64196**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/24/2010**	SeqNo: **1940558**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.899	0.25	5.000	0	98.0	70	130				

Sample ID: **111547-021A-MSD**	SampType: **MSD**	TestCode: **7420_DI_GE**	Units: **mg/L**	Prep Date: **5/19/2010**	RunNo: **121410**
Client ID: **RW2-4**	Batch ID: **64196**	TestNo: **WET DI/ EPA WET**		Analysis Date: **5/24/2010**	SeqNo: **1940559**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.909	0.25	5.000	0	98.2	70	130	4.899	0.204	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Lauren Vigliotti [vigliotti@geoconinc.com]
Sent: Wednesday, May 19, 2010 9:02 AM
To: Diane Galvan
Subject: RE: Additional Results/EDD - I-580 WB HOV Lanes (111547)

Hi Diane. Thanks for the results. Please run sample RW2-4 for DI WET lead, standard TAT. Thanks!

****

Lauren Vigliotti
Senior Staff Geologist

Please visit our new website at http://www.geoconinc.com

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May 10, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
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TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111548

RE: WB 580 HOV, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on May 01, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: WB 580 HOV, E8474-06-01
Lab Order: 111548

CASE NARRATIVE

Analytical Comments for Method 6010

RPD for Duplicate (DUP) is outside criteria for sample 111546-023ADUP; however, the Laboratory Control Sample (LCS) validated the analytical batch.

Analytical Comments for Method 8015 (DRO/ORO)

Dilution was necessary for sample 111548-004A, due to sample matrix.

Surrogate recovery was diluted out for sample 111548-004A.

Analytical Comments for Method 8021

Matrix Spike (MS) and /or Matrix Spike Duplicate (MSD) are/is outside recovery criteria for samples 111573-007AMS and 111573-007AMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

Advanced Technology Laboratories

Date: 5/10/2010

ANALYTICAL RESULTS

LEAD BY ICP
EPA 6010B

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111548
Project:	WB 580 HOV, E8474-06-01	**Date Received**	5/1/2010 8:11:00 AM
Project No:		**Matrix:**	Soil
Analyte:	Lead	**Analyst:**	SRB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111548-001A	B302-0	9.8	mg/Kg	63946	5.0	1	4/30/2010	5/6/2010
111548-002A	B302-1	17	mg/Kg	63946	5.0	1	4/30/2010	5/6/2010
111548-003A	B302-2	21	mg/Kg	63946	5.0	1	4/30/2010	5/6/2010
111548-005A	RW29-1	10	mg/Kg	63946	5.0	1	4/30/2010	5/6/2010
111548-006A	RW29-2	12	mg/Kg	63946	5.0	1	4/30/2010	5/6/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

Date: 5/10/2010

ANALYTICAL RESULTS

pH
EPA 9045C

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111548
Project:	WB 580 HOV, E8474-06-01	**Date Received**	5/1/2010 8:11:00 AM
Project No:		**Matrix:**	Soil
Analyte:	pH	**Analyst:**	CBB

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111548-003A	B302-2	8.1	pH Units	R120874	0.10	1	4/30/2010	5/4/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc. **Client Sample ID:** RW29-0
Lab Order: 111548 **Collection Date:** 4/30/2010 4:01:00 PM
Project: WB 580 HOV, E8474-06-01 **Matrix:** SOIL
Lab ID: 111548-004A

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100507B	QC Batch: 63953			PrepDate:	5/6/2010	Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/7/2010 12:01 PM
Arsenic	1.5	1.0		mg/Kg	1	5/7/2010 12:01 PM
Barium	160	1.0		mg/Kg	1	5/7/2010 12:01 PM
Beryllium	ND	1.0		mg/Kg	1	5/7/2010 12:01 PM
Cadmium	ND	1.0		mg/Kg	1	5/7/2010 12:01 PM
Chromium	34	1.0		mg/Kg	1	5/7/2010 12:01 PM
Cobalt	8.3	1.0		mg/Kg	1	5/7/2010 12:01 PM
Copper	13	2.0		mg/Kg	1	5/7/2010 12:01 PM
Lead	11	1.0		mg/Kg	1	5/7/2010 12:01 PM
Molybdenum	ND	1.0		mg/Kg	1	5/7/2010 12:01 PM
Nickel	42	1.0		mg/Kg	1	5/7/2010 12:01 PM
Selenium	ND	1.0		mg/Kg	1	5/7/2010 12:01 PM
Silver	ND	1.0		mg/Kg	1	5/7/2010 12:01 PM
Thallium	ND	1.0		mg/Kg	1	5/7/2010 12:01 PM
Vanadium	28	1.0		mg/Kg	1	5/7/2010 12:01 PM
Zinc	42	1.0		mg/Kg	1	5/7/2010 12:01 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3550B			**EPA 8015B(M)**		
RunID: GC16_100506C	QC Batch: 63905			PrepDate:	5/4/2010	Analyst: **CBR**
DRO	430	20		mg/Kg	10	5/7/2010 01:15 PM
ORO	2700	20		mg/Kg	10	5/7/2010 01:15 PM
Surr: p-Terphenyl	0	30-128	SDO	%REC	10	5/7/2010 01:15 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506F	QC Batch: 63952			PrepDate:	5/6/2010	Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 04:40 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW29-4
Lab Order:	111548	**Collection Date:**	4/30/2010 4:11:00 PM
Project:	WB 580 HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111548-007A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100507B	QC Batch: 63953			PrepDate: 5/6/2010		Analyst: **SRB**
Antimony	ND	2.0		mg/Kg	1	5/7/2010 12:04 PM
Arsenic	ND	1.0		mg/Kg	1	5/7/2010 12:04 PM
Barium	120	1.0		mg/Kg	1	5/7/2010 12:04 PM
Beryllium	ND	1.0		mg/Kg	1	5/7/2010 12:04 PM
Cadmium	ND	1.0		mg/Kg	1	5/7/2010 12:04 PM
Chromium	25	1.0		mg/Kg	1	5/7/2010 12:04 PM
Cobalt	6.5	1.0		mg/Kg	1	5/7/2010 12:04 PM
Copper	8.9	2.0		mg/Kg	1	5/7/2010 12:04 PM
Lead	6.0	1.0		mg/Kg	1	5/7/2010 12:04 PM
Molybdenum	ND	1.0		mg/Kg	1	5/7/2010 12:04 PM
Nickel	33	1.0		mg/Kg	1	5/7/2010 12:04 PM
Selenium	ND	1.0		mg/Kg	1	5/7/2010 12:04 PM
Silver	ND	1.0		mg/Kg	1	5/7/2010 12:04 PM
Thallium	ND	1.0		mg/Kg	1	5/7/2010 12:04 PM
Vanadium	20	1.0		mg/Kg	1	5/7/2010 12:04 PM
Zinc	23	1.0		mg/Kg	1	5/7/2010 12:04 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC2_100504A	QC Batch: E10VS113			PrepDate:		Analyst: **DDL**
GRO	ND	1.0		mg/Kg	1	5/5/2010 12:40 AM
Surr: Bromofluorobenzene (FID)	104	56-137		%REC	1	5/5/2010 12:40 AM
VOLATILE ORGANIC COMPOUNDS BY GC/PID						
				EPA 8021B		
RunID: GC2_100504A	QC Batch: E10VS113			PrepDate:		Analyst: **DDL**
Benzene	ND	5.0		µg/Kg	1	5/5/2010 12:40 AM
Ethylbenzene	ND	5.0		µg/Kg	1	5/5/2010 12:40 AM
m,p-Xylene	ND	10		µg/Kg	1	5/5/2010 12:40 AM
o-Xylene	ND	5.0		µg/Kg	1	5/5/2010 12:40 AM
Toluene	ND	5.0		µg/Kg	1	5/5/2010 12:40 AM
Surr: Bromofluorobenzene (PID)	89.5	64-116		%REC	1	5/5/2010 12:40 AM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7471A		
RunID: AA1_100506F	QC Batch: 63952			PrepDate: 5/6/2010		Analyst: **IL**

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	RW29-4
Lab Order:	111548	**Collection Date:**	4/30/2010 4:11:00 PM
Project:	WB 580 HOV, E8474-06-01	**Matrix:**	SOIL
Lab ID:	111548-007A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
MERCURY BY COLD VAPOR TECHNIQUE						
		EPA 7471A				
RunID: AA1_100506F	QC Batch: 63952			PrepDate: 5/6/2010		Analyst: **IL**
Mercury	ND	0.10		mg/Kg	1	5/6/2010 04:36 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111548
Project: WB 580 HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63953** SampType: **MBLK** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120967**
Client ID: **PBS** Batch ID: **63953** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/7/2010** SeqNo: **1931758**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	2.0									
Arsenic	ND	1.0									
Barium	ND	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	ND	2.0									
Lead	ND	1.0									
Molybdenum	ND	1.0									
Nickel	0.052	1.0									
Selenium	ND	1.0									
Silver	ND	1.0									
Thallium	ND	1.0									
Vanadium	ND	1.0									
Zinc	ND	1.0									

Sample ID: **LCS-63953** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120967**
Client ID: **LCSS** Batch ID: **63953** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/7/2010** SeqNo: **1931759**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	45.854	2.0	50.00	0	91.7	80	120				
Arsenic	46.427	1.0	50.00	0	92.9	80	120				
Barium	48.928	1.0	50.00	0	97.9	80	120				
Beryllium	47.459	1.0	50.00	0	94.9	80	120				
Cadmium	47.275	1.0	50.00	0	94.6	80	120				
Chromium	47.755	1.0	50.00	0	95.5	80	120				
Cobalt	49.042	1.0	50.00	0	98.1	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111548
Project: WB 580 HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **LCS-63953** SampType: **LCS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120967**
Client ID: **LCSS** Batch ID: **63953** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/7/2010** SeqNo: **1931759**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	48.137	2.0	50.00	0	96.3	80	120				
Lead	47.131	1.0	50.00	0	94.3	80	120				
Molybdenum	49.106	1.0	50.00	0	98.2	80	120				
Nickel	46.417	1.0	50.00	0.05216	92.7	80	120				
Selenium	42.951	1.0	50.00	0	85.9	80	120				
Silver	46.618	1.0	50.00	0	93.2	80	120				
Thallium	47.807	1.0	50.00	0	95.6	80	120				
Vanadium	48.340	1.0	50.00	0	96.7	80	120				
Zinc	46.279	1.0	50.00	0	92.6	80	120				

Sample ID: **111548-007A-DUP** SampType: **DUP** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120967**
Client ID: **RW29-4** Batch ID: **63953** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/7/2010** SeqNo: **1931762**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.413	2.0						0.4983	0	20	
Arsenic	0.824	1.0						0.8683	0	20	
Barium	127.508	1.0						122.1	4.33	20	
Beryllium	ND	1.0						0	0	20	
Cadmium	0.194	1.0						0.2110	0	20	
Chromium	24.987	1.0						24.68	1.22	20	
Cobalt	6.839	1.0						6.508	4.96	20	
Copper	10.313	2.0						8.877	15.0	20	
Lead	6.485	1.0						6.042	7.06	20	
Molybdenum	0.246	1.0						0.2507	0	20	
Nickel	33.285	1.0						32.98	0.918	20	
Selenium	ND	1.0						0	0	20	
Silver	ND	1.0						0	0	20	
Thallium	ND	1.0						0	0	20	
Vanadium	22.747	1.0						20.27	11.5	20	
Zinc	27.407	1.0						23.16	16.8	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111548
Project: WB 580 HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111548-007A-MS** SampType: **MS** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120967**
Client ID: **RW29-4** Batch ID: **63953** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/7/2010** SeqNo: **1931763**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	83.181	2.0	125.0	0.4983	66.1	32	105				
Arsenic	95.703	1.0	125.0	0.8683	75.9	49	106				
Barium	234.985	1.0	125.0	122.1	90.3	31	133				
Beryllium	99.289	1.0	125.0	0	79.4	56	106				
Cadmium	93.638	1.0	125.0	0.2110	74.7	51	103				
Chromium	126.511	1.0	125.0	24.68	81.5	45	114				
Cobalt	101.865	1.0	125.0	6.508	76.3	52	106				
Copper	116.774	2.0	125.0	8.877	86.3	54	125				
Lead	101.640	1.0	125.0	6.042	76.5	34	126				
Molybdenum	95.102	1.0	125.0	0.2507	75.9	54	106				
Nickel	132.211	1.0	125.0	32.98	79.4	45	111				
Selenium	91.193	1.0	125.0	0	73.0	47	104				
Silver	98.263	1.0	125.0	0	78.6	56	112				
Thallium	94.602	1.0	125.0	0	75.7	46	101				
Vanadium	124.165	1.0	125.0	20.27	83.1	54	114				
Zinc	120.154	1.0	125.0	23.16	77.6	28	125				

Sample ID: **111548-007A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120967**
Client ID: **RW29-4** Batch ID: **63953** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/7/2010** SeqNo: **1931764**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	83.880	2.0	125.0	0.4983	66.7	32	105	83.18	0.837	20	
Arsenic	98.628	1.0	125.0	0.8683	78.2	49	106	95.70	3.01	20	
Barium	255.682	1.0	125.0	122.1	107	31	133	235.0	8.44	20	
Beryllium	98.685	1.0	125.0	0	78.9	56	106	99.29	0.611	20	
Cadmium	95.120	1.0	125.0	0.2110	75.9	51	103	93.64	1.57	20	
Chromium	133.912	1.0	125.0	24.68	87.4	45	114	126.5	5.68	20	
Cobalt	104.684	1.0	125.0	6.508	78.5	52	106	101.9	2.73	20	
Copper	121.050	2.0	125.0	8.877	89.7	54	125	116.8	3.60	20	
Lead	108.470	1.0	125.0	6.042	81.9	34	126	101.6	6.50	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111548
Project: WB 580 HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **111548-007A-MSD** SampType: **MSD** TestCode: **6010_S** Units: **mg/Kg** Prep Date: **5/6/2010** RunNo: **120967**
Client ID: **RW29-4** Batch ID: **63953** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **5/7/2010** SeqNo: **1931764**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	99.456	1.0	125.0	0.2507	79.4	54	106	95.10	4.48	20	
Nickel	137.321	1.0	125.0	32.98	83.5	45	111	132.2	3.79	20	
Selenium	93.042	1.0	125.0	0	74.4	47	104	91.19	2.01	20	
Silver	99.715	1.0	125.0	0	79.8	56	112	98.26	1.47	20	
Thallium	96.635	1.0	125.0	0	77.3	46	101	94.60	2.13	20	
Vanadium	128.844	1.0	125.0	20.27	86.9	54	114	124.2	3.70	20	
Zinc	124.883	1.0	125.0	23.16	81.4	28	125	120.2	3.86	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111548
Project: WB 580 HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPB

Sample ID: **MB-63946A**	SampType: **MBLK**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120948**
Client ID: **PBS**	Batch ID: **63946**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **5/6/2010**	SeqNo: **1931212**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	5.0									

Sample ID: **LCS-63946**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120948**
Client ID: **LCSS**	Batch ID: **63946**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **5/6/2010**	SeqNo: **1931213**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	271.076	5.0	250.0	0	108	80	120				

Sample ID: **111546-023A-DUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120948**
Client ID: **ZZZZZZ**	Batch ID: **63946**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **5/6/2010**	SeqNo: **1931217**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	37.830	5.0						66.38	54.8	20	R

Sample ID: **111546-023A-MS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120948**
Client ID: **ZZZZZZ**	Batch ID: **63946**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **5/6/2010**	SeqNo: **1931218**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	262.883	5.0	250.0	66.38	78.6	34	126				

Sample ID: **111546-023A-MSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120948**
Client ID: **ZZZZZZ**	Batch ID: **63946**	TestNo: **EPA 6010B**	**EPA 3050M**	Analysis Date: **5/6/2010**	SeqNo: **1931219**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	271.753	5.0	250.0	66.38	82.1	34	126	262.9	3.32	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111548
Project: WB 580 HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S

Sample ID: **MB-63952**	SampType: **MBLK**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120955**
Client ID: **PBS**	Batch ID: **63952**	TestNo: **EPA 7471A**		Analysis Date: **5/6/2010**	SeqNo: **1931305**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID: **LCS-63952**	SampType: **LCS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120955**
Client ID: **LCSS**	Batch ID: **63952**	TestNo: **EPA 7471A**		Analysis Date: **5/6/2010**	SeqNo: **1931306**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.836	0.10	0.8300	0	101	80	120				

Sample ID: **111548-007A-MS**	SampType: **MS**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120955**
Client ID: **RW29-4**	Batch ID: **63952**	TestNo: **EPA 7471A**		Analysis Date: **5/6/2010**	SeqNo: **1931307**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.858	0.10	0.8300	0.05252	97.1	70	130				

Sample ID: **111548-007A-MSD**	SampType: **MSD**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120955**
Client ID: **RW29-4**	Batch ID: **63952**	TestNo: **EPA 7471A**		Analysis Date: **5/6/2010**	SeqNo: **1931308**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.849	0.10	0.8300	0.05252	95.9	70	130	0.8581	1.11	20	

Sample ID: **111548-007A-DUP**	SampType: **DUP**	TestCode: **7471_S**	Units: **mg/Kg**	Prep Date: **5/6/2010**	RunNo: **120955**
Client ID: **RW29-4**	Batch ID: **63952**	TestNo: **EPA 7471A**		Analysis Date: **5/6/2010**	SeqNo: **1931310**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.054	0.10						0.05252	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111548
Project: WB 580 HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_DM LL

Sample ID: **MB-63905**	SampType: **MBLK**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **5/4/2010**	RunNo: **120975**
Client ID: **PBS**	Batch ID: **63905**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **5/7/2010**	SeqNo: **1931978**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	ND	1.0									
ORO	ND	1.0									
Surr: p-Terphenyl	2.651		2.670		99.3	30	128				

Sample ID: **LCS-63905**	SampType: **LCS**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **5/4/2010**	RunNo: **120975**
Client ID: **LCSS**	Batch ID: **63905**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **5/7/2010**	SeqNo: **1931979**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	28.099	1.0	33.00	0	85.1	35	118				
Surr: p-Terphenyl	2.744		2.670		103	30	128				

Sample ID: **111547-028AMS**	SampType: **MS**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **5/4/2010**	RunNo: **120975**
Client ID: **ZZZZZZ**	Batch ID: **63905**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **5/7/2010**	SeqNo: **1931980**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	23.962	1.0	33.00	0	72.6	25	129				
Surr: p-Terphenyl	3.062		2.670		115	30	128				

Sample ID: **111547-028AMSD**	SampType: **MSD**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **5/4/2010**	RunNo: **120975**
Client ID: **ZZZZZZ**	Batch ID: **63905**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **5/7/2010**	SeqNo: **1931981**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	20.687	1.0	33.00	0	62.7	25	129	23.96	14.7	20	
Surr: p-Terphenyl	2.639		2.670		98.8	30	128		0	0	

Sample ID: **111547-028ADUP**	SampType: **DUP**	TestCode: **8015_S_DM L**	Units: **mg/Kg**	Prep Date: **5/4/2010**	RunNo: **120975**
Client ID: **ZZZZZZ**	Batch ID: **63905**	TestNo: **EPA 8015B(M**	**EPA 3550B**	Analysis Date: **5/7/2010**	SeqNo: **1931982**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111548
Project: WB 580 HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_DM LL

Sample ID: **111547-028ADUP** SampType: **DUP** TestCode: **8015_S_DM L** Units: **mg/Kg** Prep Date: **5/4/2010** RunNo: **120975**
Client ID: **ZZZZZZ** Batch ID: **63905** TestNo: **EPA 8015B(M EPA 3550B** Analysis Date: **5/7/2010** SeqNo: **1931982**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	ND	1.0						0	0	20	
ORO	ND	1.0						0	0	20	
Surr: p-Terphenyl	2.355		2.670		88.2	30	128		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111548
Project: WB 580 HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_GAS

Sample ID: **E100504LCS2** SampType: **LCS** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120883**
Client ID: **LCSS** Batch ID: **E10VS113** TestNo: **EPA 8015B(M** Analysis Date: **5/4/2010** SeqNo: **1929670**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	4.813	1.0	5.000	0	96.3	70	130				
Surr: Bromofluorobenzene (FID)	121.914		100.0		122	56	137				

Sample ID: **E100504MB1** SampType: **MBLK** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120883**
Client ID: **PBS** Batch ID: **E10VS113** TestNo: **EPA 8015B(M** Analysis Date: **5/4/2010** SeqNo: **1929671**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	1.0									
Surr: Bromofluorobenzene (FID)	100.640		100.0		101	56	137				

Sample ID: **111573-001ADUP** SampType: **DUP** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120883**
Client ID: **ZZZZZZ** Batch ID: **E10VS113** TestNo: **EPA 8015B(M** Analysis Date: **5/4/2010** SeqNo: **1929673**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	1.0						0	0	20	
Surr: Bromofluorobenzene (FID)	104.179		100.0		104	56	137		0	0	

Sample ID: **111573-007AMS** SampType: **MS** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120883**
Client ID: **ZZZZZZ** Batch ID: **E10VS113** TestNo: **EPA 8015B(M** Analysis Date: **5/4/2010** SeqNo: **1929680**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	3.336	1.0	5.000	0	66.7	40	121				
Surr: Bromofluorobenzene (FID)	91.914		100.0		91.9	56	137				

Sample ID: **111573-007AMSD** SampType: **MSD** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120883**
Client ID: **ZZZZZZ** Batch ID: **E10VS113** TestNo: **EPA 8015B(M** Analysis Date: **5/4/2010** SeqNo: **1929681**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	3.506	1.0	5.000	0	70.1	40	121	3.336	4.97	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111548
Project: WB 580 HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_S_GAS

Sample ID: **111573-007AMSD** SampType: **MSD** TestCode: **8015_S_GAS** Units: **mg/Kg** Prep Date: RunNo: **120883**
Client ID: **ZZZZZZ** Batch ID: **E10VS113** TestNo: **EPA 8015B(M** Analysis Date: **5/4/2010** SeqNo: **1929681**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (FID)	97.963		100.0		98.0	56	137		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111548
Project: WB 580 HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_S_BTEX

Sample ID: **E100504LCS1** SampType: **LCS** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120883**
Client ID: **LCSS** Batch ID: **E10VS113** TestNo: **EPA 8021B** Analysis Date: **5/4/2010** SeqNo: **1929689**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	91.738	5.0	100.0	0	91.7	70	130				
Ethylbenzene	91.668	5.0	100.0	0	91.7	70	130				
m,p-Xylene	185.458	10	200.0	0	92.7	70	130				
o-Xylene	93.047	5.0	100.0	0	93.0	70	130				
Toluene	93.285	5.0	100.0	0	93.3	70	130				
Surr: Bromofluorobenzene (PID)	110.454		100.0		110	64	116				

Sample ID: **E100504MB1** SampType: **MBLK** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120883**
Client ID: **PBS** Batch ID: **E10VS113** TestNo: **EPA 8021B** Analysis Date: **5/4/2010** SeqNo: **1929691**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	5.0									
Ethylbenzene	ND	5.0									
m,p-Xylene	ND	10									
o-Xylene	ND	5.0									
Toluene	ND	5.0									
Surr: Bromofluorobenzene (PID)	86.883		100.0		86.9	64	116				

Sample ID: **111573-001ADUP** SampType: **DUP** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120883**
Client ID: **ZZZZZZ** Batch ID: **E10VS113** TestNo: **EPA 8021B** Analysis Date: **5/4/2010** SeqNo: **1929693**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	5.0						0	0	20	
Ethylbenzene	ND	5.0						0	0	20	
m,p-Xylene	ND	10						0	0	20	
o-Xylene	ND	5.0						0	0	20	
Toluene	ND	5.0						0	0	20	
Surr: Bromofluorobenzene (PID)	87.352		100.0		87.4	64	116		0	0	

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 111548
Project: WB 580 HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8021_S_BTEX

Sample ID: **111573-007AMS** SampType: **MS** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120883**
Client ID: **ZZZZZZ** Batch ID: **E10VS113** TestNo: **EPA 8021B** Analysis Date: **5/4/2010** SeqNo: **1929700**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	31.897	5.0	22.15	0	144	41	112				S
Ethylbenzene	32.087	5.0	42.30	0	75.9	26	100				
m,p-Xylene	118.365	10	180.2	0	65.7	32	106				
o-Xylene	43.453	5.0	64.80	0	67.1	30	100				
Toluene	124.862	5.0	172.6	0	72.3	38	112				
Surr: Bromofluorobenzene (PID)	81.007		100.0		81.0	64	116				

Sample ID: **111573-007AMSD** SampType: **MSD** TestCode: **8021_S_BTE** Units: **µg/Kg** Prep Date: RunNo: **120883**
Client ID: **ZZZZZZ** Batch ID: **E10VS113** TestNo: **EPA 8021B** Analysis Date: **5/4/2010** SeqNo: **1929701**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	34.612	5.0	22.15	0	156	41	112	31.90	8.16	20	S
Ethylbenzene	35.202	5.0	42.30	0	83.2	26	100	32.09	9.26	20	
m,p-Xylene	129.506	10	180.2	0	71.9	32	106	118.4	8.99	20	
o-Xylene	47.967	5.0	64.80	0	74.0	30	100	43.45	9.88	20	
Toluene	137.785	5.0	172.6	0	79.8	38	112	124.9	9.84	20	
Surr: Bromofluorobenzene (PID)	86.164		100.0		86.2	64	116		0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111548
Project: WB 580 HOV, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 9045_S

Sample ID: **111548-003ADUP** SampType: **DUP** TestCode: **9045_S** Units: **pH Units** Prep Date: RunNo: **120874**
Client ID: **B302-2** Batch ID: **R120874** TestNo: **EPA 9045C** Analysis Date: **5/4/2010** SeqNo: **1929564**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	8.140	0.10						8.070	0.864	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Pg 1 of 1

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY:

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

P.O.#

Logged By: [signature] Date 5/1/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: GSO

Sample Condition Upon Receipt: 5.9

1. CHILLED Y ☑ N ☐ 4. SEALED Y ☐ N ☑
2. HEADSPACE (VOA) Y ☐ N ☐ NA 5. # OF SPLS MATCH COC Y ☑ N ☐
3. CONTAINER INTACT Y ☑ N ☐ 6. PRESERVED Y ☐ N ☑

Client: GEOCON CONSULTANTS, INC.
Address: 6671 Brisa Street
City: Livermore State: CA Zip Code: 94550
TEL. (925) 371-5900
FAX (925) 371-5915

Attn: L. VIGLOTTI

Project Name: WB 580 HOV
Project #: E847Y-06-01
Sampler: (Printed Name) D. WATTS (Signature) [signature]

Relinquished by: (Signature and Printed Name) [signature] Date 4/30/10 Time 1700
Received by: (Signature and Printed Name) GSO Date 4/30/10 Time 1700

Relinquished by: (Signature and Printed Name) [signature] Date Time
Received by: (Signature and Printed Name) [signature] Date 5/1/10 Time 811

Relinquished by: (Signature and Printed Name) Date Time
Received by: (Signature and Printed Name) Date Time

I/We hereby authorize ATL to perform the work indicated below.
Project Mgr./Submitter: [signature] 4/30/10
Print Name Date
D. WATTS
Signature

Send Report To:
Attn:
Co: SAME AS ABOVE
Address
City State Zip

Bill To.
Attn:
Co: SAME AS ABOVE
Address
City State Zip

Special Instructions/Comments:
PLEASE RETURN ALL GEOCON COOLERS

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides), 8082 (PCB), 8260B (Volatiles), 8270C (BNA), 6010B (Total Metals) -Pb, 8015B (GRO) / BTEX, 8015B (DRO) / MO, 8021 (BTEX), TITLE 22 / CAM 17 (6010 / 7000), PH

SPECIFY APPROPRIATE MATRIX: SOIL, WATER, GROUND WATER, WASTEWATER

PRESERVATION

Q A / Q C: RTNE ☐ CT ☒ SWRCB ☐ Logcode OTHER

ITEM	LAB USE ONLY: Batch #: / Lab No	Sample Description: Sample I.D. / Location	Date	Time	TAT	Container(s) #	Container(s) Type	REMARKS
	111548-001	B302-0	4/30/10	1551	E	1	Bg	P
	2	-1		1552				
	3	-2		1555				T
	4	RW29-0		1601				m
	5	-1		1604				
	6	-2		1607				
	7	-4		1611				

- TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO3 S=H2SO4 C=4°C Z=Zn(AC)2 O=NaOH T=Na2S2O3

DISTRIBUTION: White with report Yellow to folder Pink to submitter

August 11, 2010

Lauren Vigliotti
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 768-9874
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 113052

RE: I 580 WB HOV LANES, E8474-06-01

Attention: Lauren Vigliotti

Enclosed are the results for sample(s) received on August 04, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I 580 WB HOV LANES, E8474-06-01
Lab Order: 113052

CASE NARRATIVE

Analytical Comments for Method 6010

Matrix Spike (MS) and /or Matrix Spike Duplicate (MSD) are/is outside recovery criteria for samples 113052-001DMS and 113052-001DMSD; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CLIENT: Geocon Consultants, Inc.
Lab Order: 113052
Project: I 580 WB HOV LANES, E8474-06-01
Lab ID: 113052-001

Client Sample ID: SS1-R-GW
Collection Date: 8/2/2010 6:55:00 PM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3010A			**EPA 6010B**		
RunID: ICP8_100805D	QC Batch: 66096			PrepDate: 8/5/2010		Analyst: **SRB**
Antimony	0.0095	0.0050		mg/L	1	8/5/2010 05:22 PM
Arsenic	0.090	0.010		mg/L	1	8/5/2010 05:22 PM
Barium	5.5	0.0030		mg/L	1	8/5/2010 05:22 PM
Beryllium	ND	0.0030		mg/L	1	8/5/2010 05:22 PM
Cadmium	0.012	0.0030		mg/L	1	8/5/2010 05:22 PM
Chromium	0.89	0.0030		mg/L	1	8/5/2010 05:22 PM
Cobalt	0.24	0.0030		mg/L	1	8/5/2010 05:22 PM
Copper	0.47	0.0050		mg/L	1	8/5/2010 05:22 PM
Lead	0.17	0.0050		mg/L	1	8/5/2010 05:22 PM
Molybdenum	0.022	0.0050		mg/L	1	8/5/2010 05:22 PM
Nickel	0.84	0.0050		mg/L	1	8/5/2010 05:22 PM
Selenium	0.024	0.010		mg/L	1	8/5/2010 05:22 PM
Silver	ND	0.0030		mg/L	1	8/5/2010 05:22 PM
Thallium	ND	0.015		mg/L	1	8/5/2010 05:22 PM
Vanadium	1.0	0.0030		mg/L	1	8/5/2010 05:22 PM
Zinc	1.1	0.010		mg/L	1	8/5/2010 05:22 PM
DIESEL & MOTOR OIL RANGE ORGANICS BY GC/FID						
	EPA 3510C			**EPA 8015B(M)**		
RunID: GC16_100806B	QC Batch: 66110			PrepDate: 8/6/2010		Analyst: **CBR**
DRO	0.32	0.050		mg/L	1	8/6/2010 05:28 PM
ORO	ND	0.050		mg/L	1	8/6/2010 05:28 PM
Surr: p-Terphenyl	96.9	36-126		%REC	1	8/6/2010 05:28 PM
GASOLINE RANGE ORGANICS BY GC/FID						
				EPA 8015B(M)		
RunID: GC19_100805A	QC Batch: M10VW083			PrepDate:		Analyst: **CL**
GRO	ND	0.050		mg/L	1	8/5/2010 12:27 PM
Surr: Bromofluorobenzene (FID)	104	70-130		%REC	1	8/5/2010 12:27 PM
MERCURY BY COLD VAPOR TECHNIQUE						
				EPA 7470A		
RunID: AA1_100805A	QC Batch: 66084			PrepDate: 8/5/2010		Analyst: **IL**
Mercury	0.66	0.20		µg/L	1	8/5/2010 02:49 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out
E	Value above quantitation range
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified

CLIENT: Geocon Consultants, Inc.
Lab Order: 113052
Project: I 580 WB HOV LANES, E8474-06-01
Lab ID: 113052-001

Client Sample ID: SS1-R-GW
Collection Date: 8/2/2010 6:55:00 PM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**EPA 8260B**		
RunID: MS11_100805A	QC Batch: A10VW160			PrepDate:		Analyst: **SLL**
Benzene	ND	0.50		µg/L	1	8/5/2010 12:59 PM
Di-isopropyl ether	ND	0.50		µg/L	1	8/5/2010 12:59 PM
Ethyl tert-butyl ether	ND	0.50		µg/L	1	8/5/2010 12:59 PM
Ethylbenzene	ND	0.50		µg/L	1	8/5/2010 12:59 PM
m,p-Xylene	ND	1.0		µg/L	1	8/5/2010 12:59 PM
MTBE	ND	0.50		µg/L	1	8/5/2010 12:59 PM
o-Xylene	ND	0.50		µg/L	1	8/5/2010 12:59 PM
Tert-amyl methyl ether	ND	0.50		µg/L	1	8/5/2010 12:59 PM
Tert-Butanol	ND	10		µg/L	1	8/5/2010 12:59 PM
Toluene	ND	0.50		µg/L	1	8/5/2010 12:59 PM
Surr: 1,2-Dichloroethane-d4	96.1	70-130		%REC	1	8/5/2010 12:59 PM
Surr: 4-Bromofluorobenzene	96.4	70-130		%REC	1	8/5/2010 12:59 PM
Surr: Dibromofluoromethane	92.2	70-130		%REC	1	8/5/2010 12:59 PM
Surr: Toluene-d8	102	70-130		%REC	1	8/5/2010 12:59 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference
	Results are wet unless otherwise specified
DO	Surrogate Diluted Out

CLIENT: Geocon Consultants, Inc.
Work Order: 113052
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_W

Sample ID: **MB-66096** SampType: **MBLK** TestCode: **6010_W** Units: **mg/L** Prep Date: **8/5/2010** RunNo: **123984**
Client ID: **PBW** Batch ID: **66096** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **8/5/2010** SeqNo: **1991410**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	0.0050									
Arsenic	ND	0.010									
Barium	ND	0.0030									
Beryllium	ND	0.0030									
Cadmium	ND	0.0030									
Chromium	ND	0.0030									
Cobalt	ND	0.0030									
Copper	ND	0.0050									
Lead	ND	0.0050									
Molybdenum	ND	0.0050									
Nickel	ND	0.0050									
Selenium	ND	0.010									
Silver	ND	0.0030									
Thallium	ND	0.015									
Vanadium	ND	0.0030									
Zinc	ND	0.010									

Sample ID: **LCS-66096** SampType: **LCS** TestCode: **6010_W** Units: **mg/L** Prep Date: **8/5/2010** RunNo: **123984**
Client ID: **LCSW** Batch ID: **66096** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **8/5/2010** SeqNo: **1991411**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	1.055	0.0050	1.000	0	105	85	115				
Arsenic	1.052	0.010	1.000	0	105	85	115				
Barium	1.104	0.0030	1.000	0	110	85	115				
Beryllium	1.066	0.0030	1.000	0	107	85	115				
Cadmium	1.057	0.0030	1.000	0	106	85	115				
Chromium	1.063	0.0030	1.000	0	106	85	115				
Cobalt	1.118	0.0030	1.000	0	112	85	115				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Geocon Consultants, Inc.
Work Order: 113052
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_W

Sample ID: **LCS-66096** SampType: **LCS** TestCode: **6010_W** Units: **mg/L** Prep Date: **8/5/2010** RunNo: **123984**
Client ID: **LCSW** Batch ID: **66096** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **8/5/2010** SeqNo: **1991411**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	1.080	0.0050	1.000	0	108	85	115				
Lead	1.070	0.0050	1.000	0	107	85	115				
Molybdenum	1.084	0.0050	1.000	0	108	85	115				
Nickel	1.056	0.0050	1.000	0	106	85	115				
Selenium	1.021	0.010	1.000	0	102	85	115				
Silver	1.099	0.0030	1.000	0	110	85	115				
Thallium	0.975	0.015	1.000	0	97.5	85	115				
Vanadium	1.086	0.0030	1.000	0	109	85	115				
Zinc	1.055	0.010	1.000	0	106	85	115				

Sample ID: **113052-001D-MS** SampType: **MS** TestCode: **6010_W** Units: **mg/L** Prep Date: **8/5/2010** RunNo: **123984**
Client ID: **SS1-R-GW** Batch ID: **66096** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **8/5/2010** SeqNo: **1991413**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	1.174	0.0050	2.500	0.009494	46.6	73	128				S
Arsenic	2.263	0.010	2.500	0.09039	86.9	79	121				
Barium	7.362	0.0030	2.500	5.528	73.4	82	118				S
Beryllium	2.189	0.0030	2.500	0.002334	87.5	84	119				
Cadmium	2.009	0.0030	2.500	0.01228	79.9	79	117				
Chromium	2.954	0.0030	2.500	0.8860	82.7	78	115				
Cobalt	2.303	0.0030	2.500	0.2435	82.4	80	118				
Copper	2.896	0.0050	2.500	0.4748	96.9	81	127				
Lead	2.202	0.0050	2.500	0.1660	81.4	80	118				
Molybdenum	1.996	0.0050	2.500	0.02185	79.0	81	118				S
Nickel	2.796	0.0050	2.500	0.8413	78.2	78	120				
Selenium	2.174	0.010	2.500	0.02439	86.0	78	120				
Silver	2.492	0.0030	2.500	0	99.7	79	125				
Thallium	1.842	0.015	2.500	0	73.7	74	115				S
Vanadium	3.165	0.0030	2.500	0.9984	86.7	84	119				
Zinc	3.030	0.010	2.500	1.129	76.0	75	122				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 113052
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_W

Sample ID: **113052-001D-MSD** SampType: **MSD** TestCode: **6010_W** Units: **mg/L** Prep Date: **8/5/2010** RunNo: **123984**
Client ID: **SS1-R-GW** Batch ID: **66096** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **8/5/2010** SeqNo: **1991414**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	1.219	0.0050	2.500	0.009494	48.4	73	128	1.174	3.80	20	S
Arsenic	2.251	0.010	2.500	0.09039	86.4	79	121	2.263	0.522	20	
Barium	7.283	0.0030	2.500	5.528	70.2	82	118	7.362	1.08	20	S
Beryllium	2.188	0.0030	2.500	0.002334	87.4	84	119	2.189	0.0564	20	
Cadmium	2.008	0.0030	2.500	0.01228	79.8	79	117	2.009	0.0547	20	
Chromium	2.913	0.0030	2.500	0.8860	81.1	78	115	2.954	1.39	20	
Cobalt	2.297	0.0030	2.500	0.2435	82.2	80	118	2.303	0.243	20	
Copper	2.893	0.0050	2.500	0.4748	96.7	81	127	2.896	0.104	20	
Lead	2.177	0.0050	2.500	0.1660	80.4	80	118	2.202	1.14	20	
Molybdenum	1.978	0.0050	2.500	0.02185	78.2	81	118	1.996	0.923	20	S
Nickel	2.781	0.0050	2.500	0.8413	77.6	78	120	2.796	0.555	20	S
Selenium	2.148	0.010	2.500	0.02439	84.9	78	120	2.174	1.20	20	
Silver	2.499	0.0030	2.500	0	100	79	125	2.492	0.270	20	
Thallium	1.840	0.015	2.500	0	73.6	74	115	1.842	0.102	20	S
Vanadium	3.117	0.0030	2.500	0.9984	84.8	84	119	3.165	1.53	20	
Zinc	3.008	0.010	2.500	1.129	75.2	75	122	3.030	0.735	20	

Sample ID: **113067-002B-DUP** SampType: **DUP** TestCode: **6010_W** Units: **mg/L** Prep Date: **8/5/2010** RunNo: **123984**
Client ID: **ZZZZZZ** Batch ID: **66096** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **8/5/2010** SeqNo: **1991417**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	0.0050						0	0	20	
Arsenic	ND	0.010						0	0	20	
Barium	0.019	0.0030						0.02101	9.37	20	
Beryllium	ND	0.0030						0	0	20	
Cadmium	ND	0.0030						0	0	20	
Chromium	0.164	0.0030						0.1977	18.7	20	
Cobalt	0.006	0.0030						0.006779	5.61	20	
Copper	0.068	0.0050						0.07251	6.01	20	
Lead	ND	0.0050						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 113052
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_W

Sample ID: **113067-002B-DUP** SampType: **DUP** TestCode: **6010_W** Units: **mg/L** Prep Date: **8/5/2010** RunNo: **123984**
Client ID: **ZZZZZZ** Batch ID: **66096** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **8/5/2010** SeqNo: **1991417**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	0.019	0.0050						0.02070	7.11	20	
Nickel	0.266	0.0050						0.2830	6.24	20	
Selenium	ND	0.010						0	0	20	
Silver	ND	0.0030						0	0	20	
Thallium	ND	0.015						0	0	20	
Vanadium	0.034	0.0030						0.03563	4.97	20	
Zinc	0.209	0.010						0.2294	9.15	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 113052
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7470_W

Sample ID: **MB-66084**	SampType: **MBLK**	TestCode: **7470_W**	Units: **µg/L**	Prep Date: **8/5/2010**	RunNo: **123975**
Client ID: **PBW**	Batch ID: **66084**	TestNo: **EPA 7470A**		Analysis Date: **8/5/2010**	SeqNo: **1991238**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.20									

Sample ID: **LCS-66084**	SampType: **LCS**	TestCode: **7470_W**	Units: **µg/L**	Prep Date: **8/5/2010**	RunNo: **123975**
Client ID: **LCSW**	Batch ID: **66084**	TestNo: **EPA 7470A**		Analysis Date: **8/5/2010**	SeqNo: **1991239**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	9.808	0.20	10.00	0	98.1	85	115				

Sample ID: **113052-001D-MS**	SampType: **MS**	TestCode: **7470_W**	Units: **µg/L**	Prep Date: **8/5/2010**	RunNo: **123975**
Client ID: **SS1-R-GW**	Batch ID: **66084**	TestNo: **EPA 7470A**		Analysis Date: **8/5/2010**	SeqNo: **1991240**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	10.044	0.20	10.00	0.6642	93.8	70	130				

Sample ID: **113052-001D-MSD**	SampType: **MSD**	TestCode: **7470_W**	Units: **µg/L**	Prep Date: **8/5/2010**	RunNo: **123975**
Client ID: **SS1-R-GW**	Batch ID: **66084**	TestNo: **EPA 7470A**		Analysis Date: **8/5/2010**	SeqNo: **1991241**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	10.004	0.20	10.00	0.6642	93.4	70	130	10.04	0.394	20	

Sample ID: **113052-001D-DUP**	SampType: **DUP**	TestCode: **7470_W**	Units: **µg/L**	Prep Date: **8/5/2010**	RunNo: **123975**
Client ID: **SS1-R-GW**	Batch ID: **66084**	TestNo: **EPA 7470A**		Analysis Date: **8/5/2010**	SeqNo: **1991243**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.630	0.20						0.6642	5.34	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 113052
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_DM_LL

Sample ID: **MB-66110**	SampType: **MBLK**	TestCode: **8015_W_DM_**	Units: **mg/L**	Prep Date: **8/6/2010**	RunNo: **124011**
Client ID: **PBW**	Batch ID: **66110**	TestNo: **EPA 8015B(M**	**EPA 3510C**	Analysis Date: **8/6/2010**	SeqNo: **1992397**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	ND	0.050									
ORO	ND	0.050									
Surr: p-Terphenyl	0.078		0.08000		97.9	36	126				

Sample ID: **LCS-66110**	SampType: **LCS**	TestCode: **8015_W_DM_**	Units: **mg/L**	Prep Date: **8/6/2010**	RunNo: **124011**
Client ID: **LCSW**	Batch ID: **66110**	TestNo: **EPA 8015B(M**	**EPA 3510C**	Analysis Date: **8/6/2010**	SeqNo: **1992398**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	0.951	0.050	1.000	0	95.1	52	128				
Surr: p-Terphenyl	0.082		0.08000		102	36	126				

Sample ID: **MB-66110MS**	SampType: **MS**	TestCode: **8015_W_DM_**	Units: **mg/L**	Prep Date: **8/6/2010**	RunNo: **124011**
Client ID: **ZZZZZZ**	Batch ID: **66110**	TestNo: **EPA 8015B(M**	**EPA 3510C**	Analysis Date: **8/6/2010**	SeqNo: **1992399**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	0.892	0.050	1.000	0	89.2	52	128				
Surr: p-Terphenyl	0.078		0.08000		97.3	36	126				

Sample ID: **MB-66110MSD**	SampType: **MSD**	TestCode: **8015_W_DM_**	Units: **mg/L**	Prep Date: **8/6/2010**	RunNo: **124011**
Client ID: **ZZZZZZ**	Batch ID: **66110**	TestNo: **EPA 8015B(M**	**EPA 3510C**	Analysis Date: **8/6/2010**	SeqNo: **1992400**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
DRO	0.829	0.050	1.000	0	82.9	52	128	0.8921	7.29	20	
Surr: p-Terphenyl	0.072		0.08000		89.7	36	126		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 113052
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_GP LL

Sample ID: **M100805LCS2**	SampType: **LCS**	TestCode: **8015_W_GP**	Units: **mg/L**	Prep Date:	RunNo: **123985**
Client ID: **LCSW**	Batch ID: **M10VW083**	TestNo: **EPA 8015B(M**		Analysis Date: **8/5/2010**	SeqNo: **1991428**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	1.149	0.050	1.000	0	115	70	130				
Surr: Bromofluorobenzene (FID)	109.768		100.0		110	70	130				

Sample ID: **M100805MB1MS**	SampType: **MS**	TestCode: **8015_W_GP**	Units: **mg/L**	Prep Date:	RunNo: **123985**
Client ID: **ZZZZZZ**	Batch ID: **M10VW083**	TestNo: **EPA 8015B(M**		Analysis Date: **8/5/2010**	SeqNo: **1991430**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	1.040	0.050	1.000	0	104	70	130				
Surr: Bromofluorobenzene (FID)	109.303		100.0		109	70	130				

Sample ID: **M100805MB1MSD**	SampType: **MSD**	TestCode: **8015_W_GP**	Units: **mg/L**	Prep Date:	RunNo: **123985**
Client ID: **ZZZZZZ**	Batch ID: **M10VW083**	TestNo: **EPA 8015B(M**		Analysis Date: **8/5/2010**	SeqNo: **1991431**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	0.950	0.050	1.000	0	95.0	70	130	1.040	9.05	20	
Surr: Bromofluorobenzene (FID)	108.423		100.0		108	70	130		0	0	

Sample ID: **M100805MB1**	SampType: **MBLK**	TestCode: **8015_W_GP**	Units: **mg/L**	Prep Date:	RunNo: **123985**
Client ID: **PBW**	Batch ID: **M10VW083**	TestNo: **EPA 8015B(M**		Analysis Date: **8/5/2010**	SeqNo: **1991432**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	0.050									
Surr: Bromofluorobenzene (FID)	104.923		100.0		105	70	130				

Sample ID: **113052-001BDUP**	SampType: **DUP**	TestCode: **8015_W_GP**	Units: **mg/L**	Prep Date:	RunNo: **123985**
Client ID: **SS1-R-GW**	Batch ID: **M10VW083**	TestNo: **EPA 8015B(M**		Analysis Date: **8/5/2010**	SeqNo: **1991434**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
GRO	ND	0.050						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 113052
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_GP LL

Sample ID: **113052-001BDUP** SampType: **DUP** TestCode: **8015_W_GP** Units: **mg/L** Prep Date: RunNo: **123985**
Client ID: **SS1-R-GW** Batch ID: **M10VW083** TestNo: **EPA 8015B(M** Analysis Date: **8/5/2010** SeqNo: **1991434**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Bromofluorobenzene (FID)	106.192		100.0		106	70	130		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 113052
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_LL

Sample ID: **A100805LCS1** SampType: **LCS** TestCode: **8260_WP_LL** Units: **µg/L** Prep Date: RunNo: **123974**
Client ID: **LCSW** Batch ID: **A10VW160** TestNo: **EPA 8260B** Analysis Date: **8/5/2010** SeqNo: **1991206**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	19.760	0.50	20.00	0	98.8	70	130				
Benzene	36.350	0.50	40.00	0	90.9	70	130				
Chlorobenzene	19.550	0.50	20.00	0	97.8	70	130				
MTBE	19.240	0.50	20.00	0	96.2	70	130				
Toluene	40.190	0.50	40.00	0	100	70	130				
Trichloroethene	19.790	0.50	20.00	0	99.0	70	130				
Surr: 1,2-Dichloroethane-d4	24.200		25.00		96.8	70	130				
Surr: 4-Bromofluorobenzene	24.440		25.00		97.8	70	130				
Surr: Dibromofluoromethane	22.680		25.00		90.7	70	130				
Surr: Toluene-d8	25.950		25.00		104	70	130				

Sample ID: **A100805MB3MS** SampType: **MS** TestCode: **8260_WP_LL** Units: **µg/L** Prep Date: RunNo: **123974**
Client ID: **ZZZZZZ** Batch ID: **A10VW160** TestNo: **EPA 8260B** Analysis Date: **8/5/2010** SeqNo: **1991207**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	36.550	0.50	40.00	0	91.4	70	130				
MTBE	17.790	0.50	20.00	0	89.0	70	130				
Toluene	40.630	0.50	40.00	0	102	70	130				
Surr: 1,2-Dichloroethane-d4	23.810		25.00		95.2	70	130				
Surr: 4-Bromofluorobenzene	24.690		25.00		98.8	70	130				
Surr: Dibromofluoromethane	22.410		25.00		89.6	70	130				
Surr: Toluene-d8	26.290		25.00		105	70	130				

Sample ID: **A100805MB3MSD** SampType: **MSD** TestCode: **8260_WP_LL** Units: **µg/L** Prep Date: RunNo: **123974**
Client ID: **ZZZZZZ** Batch ID: **A10VW160** TestNo: **EPA 8260B** Analysis Date: **8/5/2010** SeqNo: **1991208**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	36.330	0.50	40.00	0	90.8	70	130	36.55	0.604	20	
MTBE	18.520	0.50	20.00	0	92.6	70	130	17.79	4.02	20	
Toluene	40.330	0.50	40.00	0	101	70	130	40.63	0.741	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference
- DO Surrogate Diluted Out

Calculations are based on raw values

CLIENT: Geocon Consultants, Inc.
Work Order: 113052
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_LL

Sample ID: **A100805MB3MSD** SampType: **MSD** TestCode: **8260_WP_LL** Units: **µg/L** Prep Date: RunNo: **123974**
Client ID: **ZZZZZZ** Batch ID: **A10VW160** TestNo: **EPA 8260B** Analysis Date: **8/5/2010** SeqNo: **1991208**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	23.890		25.00		95.6	70	130		0	0	
Surr: 4-Bromofluorobenzene	24.510		25.00		98.0	70	130		0	0	
Surr: Dibromofluoromethane	22.220		25.00		88.9	70	130		0	0	
Surr: Toluene-d8	26.090		25.00		104	70	130		0	0	

Sample ID: **A100805MB3** SampType: **MBLK** TestCode: **8260_WP_LL** Units: **µg/L** Prep Date: RunNo: **123974**
Client ID: **PBW** Batch ID: **A10VW160** TestNo: **EPA 8260B** Analysis Date: **8/5/2010** SeqNo: **1991209**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Di-isopropyl ether	ND	0.50									
Ethyl tert-butyl ether	ND	0.50									
Ethylbenzene	ND	0.50									
m,p-Xylene	ND	1.0									
MTBE	ND	0.50									
o-Xylene	ND	0.50									
Tert-amyl methyl ether	ND	0.50									
Tert-Butanol	ND	10									
Toluene	ND	0.50									
Surr: 1,2-Dichloroethane-d4	23.500		25.00		94.0	70	130				
Surr: 4-Bromofluorobenzene	24.420		25.00		97.7	70	130				
Surr: Dibromofluoromethane	22.360		25.00		89.4	70	130				
Surr: Toluene-d8	25.540		25.00		102	70	130				

Sample ID: **113052-001A** SampType: **DUP** TestCode: **8260_WP_LL** Units: **µg/L** Prep Date: RunNo: **123974**
Client ID: **SS1-R-GW** Batch ID: **A10VW160** TestNo: **EPA 8260B** Analysis Date: **8/5/2010** SeqNo: **1991212**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50						0	0	20	
Di-isopropyl ether	ND	0.50						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 113052
Project: I 580 WB HOV LANES, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_LL

Sample ID: **113052-001A** SampType: **DUP** TestCode: **8260_WP_LL** Units: **µg/L** Prep Date: RunNo: **123974**
Client ID: **SS1-R-GW** Batch ID: **A10VW160** TestNo: **EPA 8260B** Analysis Date: **8/5/2010** SeqNo: **1991212**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethyl tert-butyl ether	ND	0.50						0	0	20	
Ethylbenzene	ND	0.50						0	0	20	
m,p-Xylene	ND	1.0						0	0	20	
MTBE	ND	0.50						0	0	20	
o-Xylene	ND	0.50						0	0	20	
Tert-amyl methyl ether	ND	0.50						0	0	20	
Tert-Butanol	ND	10						0	0	20	
Toluene	ND	0.50						0	0	20	
Surr: 1,2-Dichloroethane-d4	24.410		25.00		97.6	70	130		0	20	
Surr: 4-Bromofluorobenzene	24.280		25.00		97.1	70	130		0	20	
Surr: Dibromofluoromethane	23.410		25.00		93.6	70	130		0	20	
Surr: Toluene-d8	25.740		25.00		103	70	130		0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____
Logged By: _____ Date: 8/4/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: GSO

Sample Condition Upon Receipt: 4.2
1. CHILLED Y☑ N☐ 4. SEALED Y☐ N☐
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☐ N☐
3. CONTAINER INTACT Y☐ N☐ 6. PRESERVED Y☐ N☐

Client: GEOCON CONSULTANTS, INC.	Address: 6671 Brisa Street	TEL: (925) 371-5900
Attn: L. VIGLIOTTI, LIVERMORE	City Livermore State CA Zip Code 94550	FAX: (925) 371-5915

Project Name: I 580 WB HOV LANES Project #: E8474-06-01 Sampler: (Printed Name) C. MERRITT (Signature) CHRIS MERRITT

Relinquished by: (Signature and Printed Name) CHRIS MERRITT	Date: 8-3-10	Time: 1645	Received by: (Signature and Printed Name)	Date: 8/4/10	Time: 955
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
CM (Print Name) 8-3-10 (Date)
CM (Signature)

Send Report To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State _____ Zip _____

Bill To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:
→ TOTAL ONLY - ON PRESERVED, HOLD UNPRESERVED

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides), 8082 (PCB), 8260B (Volatiles), 8270C (BNA), 6010B (Total Metal), 8015B (GRO) / BTEX GAS PACKAGE, 8015B (DRO) + METOR CUL, 8021 (BTEX), TITLE 22 / CAM 17 (6010 / 7000)

SPECIFY APPROPRIATE MATRIX: SOIL, WATER, GROUND WATER, WASTEWATER

PRESERVATION

Q A / Q C: RTNE ☐ CT ☑ SWRCB ☐ Logcode ____ OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	8081A	8082	8260B	8270C	6010B	8015B (GRO) / BTEX	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	113052-01	SS1-R-GW	8-2-10	1855					X	X		X			2	X		E STD	7	Y/G/P	C/H/N	HOLD METALS NO PRES

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

GEOCON Env. Consultants	Client Project ID: E8474-06-01; 1-580 WB	Date Sampled: 06/30/10
		Date Received: 06/30/10
6671 Brisa St	Client Contact: Lauren Vigliotti	Date Reported: 07/01/10
Livermore, CA 94550	Client P.O.:	Date Completed: 07/01/10

WorkOrder: 1006878

July 01, 2010

Dear Lauren:

Enclosed within are:

1) The results of the **10** analyzed samples from your project: **E8474-06-01; 1-580 WB,**
2) A QC report for the above samples,
3) A copy of the chain of custody, and
4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing

McCampbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McCampbell Analytical, Inc.

1006878

McCAMPBELL ANALYTICAL, INC.

1534 WILLOW PASS ROAD
PITTSBURG, CA 94565-1701
Website: www.mccampbell.com Email: main@mccampbell.com
Telephone: (877) 252-9262 Fax: (925) 252-9269

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☒ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAY

GeoTracker EDF ☐ PDF ☒ Excel ☒ Write On (DW) ☐

☐ Check if sample is effluent and "J" flag is required

Report To:	Lauren Viglotti
Company:	Geocon Consultants, Inc
	6671 Brisa St. Livermore, CA
Tele:	(925) 371-5900
Project #:	E8474-06-01
Project Location:	Livermore
Sampler Signature:	
Bill To:	same
E-Mail:	viglotti@geoconinc.com
Fax:	(925) 371-5915
Project Name:	1-580 WB

SAMPLE ID	LOCATION/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED ICE	METHOD PRESERVED HCL	METHOD PRESERVED HNO_3	METHOD PRESERVED Other	Lead (200.7 / 200.8 / 6010 / 6020)
S043-0		6/30/10	1730	1	P		X							X	X
S043-1			1732												
S044-0			1735												
S044-1			1738												
S045-0			1740												
S045-1			1742												
S046-0			1745												
S046-1			1748												
S047-0			1751												
S047-1			1758												

Analysis Request: BTEX & TPH as Gas (602 / 8021 + 8015) MTBE; TPH as Diesel (8015); Total Petroleum Oil & Grease (1664 / 5520 E/B&F); Total Petroleum Hydrocarbons (418.1); EPA 502.2 / 601 / 8010 / 8021 (HVOCs); MTBE / BTEX ONLY (EPA 602 / 8021); EPA 505/ 608 / 8081 (Cl Pesticides); EPA 608 / 8082 PCB's ONLY; Aroclors / Congeners; EPA 507 / 8141 (NP Pesticides); EPA 515 / 8151 (Acidic Cl Herbicides); EPA 524.2 / 624 / 8260 (VOCs); EPA 525.2 / 625 / 8270 (SVOCs); EPA 8270 SIM / 8310 (PAHs / PNAs); CAM 17 Metals (200.7 / 200.8 / 6010 / 6020); LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020); Lead (200.7 / 200.8 / 6010 / 6020) total

Other: WET LEAD if tot Pb ≥ 50 mg/kg

Comments: Filter Samples for Metals analysis: Yes / No

Relinquished By:	Date:	Time:	Received By:
Chris Merritt	6-30-10	1940	
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

ICE/t° No
GOOD CONDITION_____
HEAD SPACE ABSENT_____
DECHLORINATED IN LAB_____
APPROPRIATE CONTAINERS_____
PRESERVED IN LAB_____

VOAS O&G METALS OTHER
PRESERVATION pH<2

COMMENTS:
ANALYZE SAMPLES WITH total Lead ≥ 50 mg/kg for WET Lead -
RUSH TAT

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1006878 **ClientCode: GECL**

☐ WaterTrax ☐ WriteOn ☐ EDF ☑ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Lauren Vigliotti
GEOCON Env. Consultants
6671 Brisa St
Livermore, CA 94550
(925) 371-5900 FAX 925-371-5915

Email: vigliotti@geoconinc.com
cc:
PO:
ProjectNo: E8474-06-01; 1-580 WB

Bill to:
Accounts Payable
GEOCON Env. Consultants
6671 Brisa St
Livermore, CA 94550

Requested TAT: 1 day

Date Received: **06/30/2010**
Date Printed: **06/30/2010**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1006878-001	S043-0	Soil	6/30/2010 17:30	☐	A											
1006878-002	S043-1	Soil	6/30/2010 17:32	☐	A											
1006878-003	S044-0	Soil	6/30/2010 17:35	☐	A											
1006878-004	S044-1	Soil	6/30/2010 17:38	☐	A											
1006878-005	S045-0	Soil	6/30/2010 17:40	☐	A											
1006878-006	S045-1	Soil	6/30/2010 17:42	☐	A											
1006878-007	S046-0	Soil	6/30/2010 17:45	☐	A											
1006878-008	S046-1	Soil	6/30/2010 17:48	☐	A											
1006878-009	S047-0	Soil	6/30/2010 17:51	☐	A											
1006878-010	S047-1	Soil	6/30/2010 17:58	☐	A											

Test Legend:

1	PBMS_S	2		3		4		5	
6		7		8		9		10	
11		12							

Prepared by: Ana Venegas

Comments: 24hr rush

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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Telephone: 877-252-9262 Fax: 925-252-9269

Sample Receipt Checklist

Client Name: **GEOCON Env. Consultants**

Date and Time Received: **6/30/2010 7:32:01 PM**

Project Name: **E8474-06-01; 1-580 WB**

Checklist completed and reviewed by: Ana Venegas

WorkOrder N°: **1006878** Matrix Soil

Carrier: Client Drop-In

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature	Cooler Temp:		NA ☑
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	No VOA vials submitted ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
Metal - pH acceptable upon receipt (pH<2)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☐	No ☑	

** NOTE: If the "No" box is checked, see comments below.*

Client contacted: Date contacted: Contacted by:

Comments:

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Telephone: 877-252-9262 Fax: 925-252-9269

GEOCON Env. Consultants	Client Project ID: E8474-06-01; 1-580 WB	Date Sampled: 06/30/10
		Date Received: 06/30/10
6671 Brisa St	Client Contact: Lauren Vigliotti	Date Extracted: 06/30/10
Livermore, CA 94550	Client P.O.:	Date Analyzed: 07/01/10

Lead by ICP-MS*

Extraction method: SW3050B Analytical methods: SW6020 Work Order: 1006878

Lab ID	Client ID	Matrix	Extraction Type	Lead	DF	% SS	Comments
1006878-001A	S043-0	S	TOTAL	35	10	110	
1006878-002A	S043-1	S	TOTAL	11	10	110	
1006878-003A	S044-0	S	TOTAL	250	10	122	
1006878-004A	S044-1	S	TOTAL	110	10	112	
1006878-005A	S045-0	S	TOTAL	120	10	113	
1006878-006A	S045-1	S	TOTAL	38	10	113	
1006878-007A	S046-0	S	TOTAL	130	10	111	
1006878-008A	S046-1	S	TOTAL	18	10	113	
1006878-009A	S047-0	S	TOTAL	47	10	108	
1006878-010A	S047-1	S	TOTAL	15	1	99	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	TOTAL	NA	µg/L
	S	TOTAL	0.5	mg/Kg

*water samples are reported in µg/L, product/oil/non-aqueous liquid samples and all TCLP / STLC / DISTLC / SPLP extracts are reported in mg/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, filter samples in µg/filter.

means surrogate diluted out of range; ND means not detected above the reporting limit/method detection limit; N/A means not applicable to this sample or instrument.

TOTAL = Hot acid digestion of a representative sample aliquot.
TRM = Total recoverable metals is the "direct analysis" of a sample aliquot taken from its acid-preserved container.
DISS = Dissolved metals by direct analysis of 0.45 µm filtered and acidified sample.

%SS = Percent Recovery of Surrogate Standard
DF = Dilution Factor

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

QC SUMMARY REPORT FOR SW6020

W.O. Sample Matrix: Soil QC Matrix: Soil WorkOrder 1006878

EPA Method SW6020	Extraction SW3050B	BatchID: 51557	Spiked Sample ID: 1006878-010A

Analyte	Sample	Spiked	MS	MSD	MS-MSD	Spiked	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	mg/Kg	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Lead	15	50	93.5	102	6.70	10	102	100	1.46	75 - 125	20	75 - 125	20
%SS:	99	250	95	98	2.15	250	110	109	0.730	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 51557 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1006878-001A	06/30/10 5:30 PM	06/30/10	07/01/10 11:52 AM	1006878-002A	06/30/10 5:32 PM	06/30/10	07/01/10 12:22 PM
1006878-003A	06/30/10 5:35 PM	06/30/10	07/01/10 12:27 PM	1006878-004A	06/30/10 5:38 PM	06/30/10	07/01/10 12:32 PM
1006878-005A	06/30/10 5:40 PM	06/30/10	07/01/10 12:37 PM	1006878-006A	06/30/10 5:42 PM	06/30/10	07/01/10 12:42 PM
1006878-007A	06/30/10 5:45 PM	06/30/10	07/01/10 12:46 PM	1006878-008A	06/30/10 5:48 PM	06/30/10	07/01/10 12:51 PM
1006878-009A	06/30/10 5:51 PM	06/30/10	07/01/10 12:56 PM	1006878-010A	06/30/10 5:58 PM	06/30/10	07/01/10 3:39 PM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not applicable to this method.

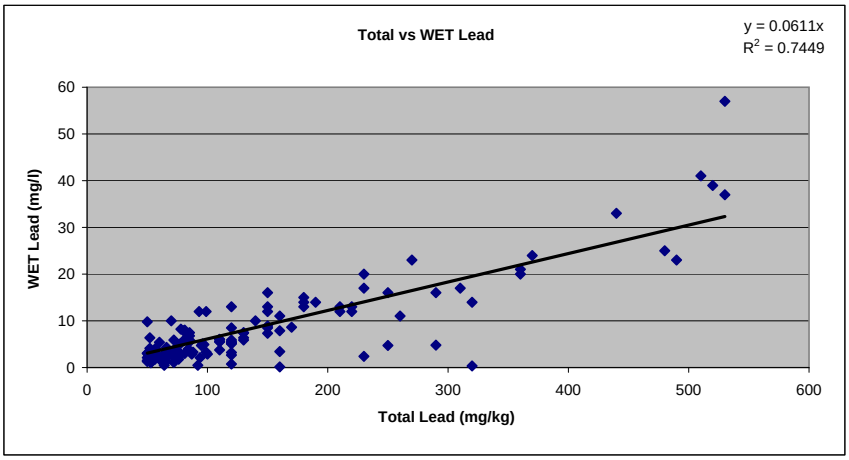
NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

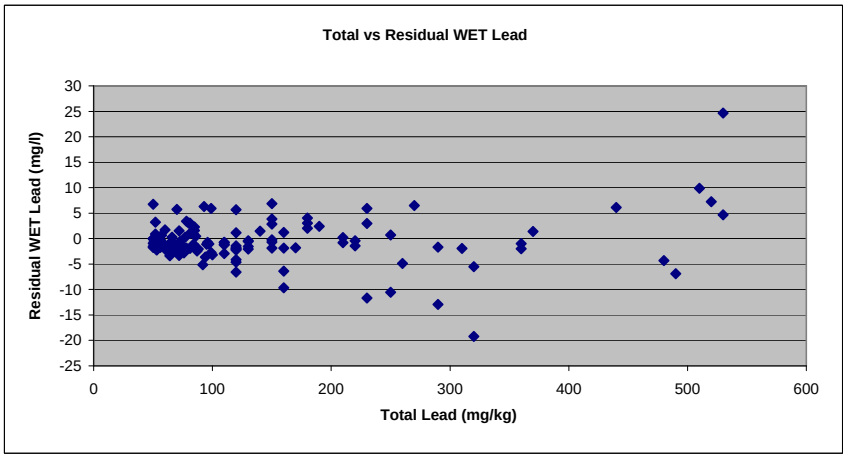
APPENDIX D

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	Residual WET Lead (mg/l)	Squared Residual WET Lead (mg/l)
B229-0	0	530	57	24.64	607.04
B96-1	1	320	0.33	-19.21	368.9927
B249-0	0	290	4.8	-12.91	166.601
B192-0	0	230	2.4	-11.64	135.58
B290-0	0	250	4.7	-10.56	111.619
B251-0	0	510	41	9.86	97.21
B156-0	0	160	0.125	-9.64	93.02
B162-0	0	520	39	7.25	52.55
B1-0	0	490	23	-6.92	47.878
B292-0	0	150	16	6.84	46.799
B227-0	0	50	9.8	6.75	45.522
B204-1	1	120	0.75	-6.58	43.259
B159-0	0	270	23	6.51	42.43
B290-1	1	160	3.4	-6.37	40.572
B172-0	0	93	12	6.32	39.960
B262-0	0	440	33	6.13	37.62
B263-0	0	230	20	5.96	35.476
B207-0	0	99	12	5.96	35.463
B217-0	0	70	10	5.73	32.785
B120-0	0	120	13	5.67	32.181
B276-0	0	320	14	-5.54	30.683
B62-2	2	92	0.47	-5.15	26.4969
B18-0	0	260	11	-4.88	23.771
B237-0	0	530	37	4.64	21.51
B13-2	2	120	2.7	-4.63	21.411
B225-1	1	480	25	-4.31	18.57
B155-1	1	120	3.2	-4.13	17.034
B2-0	0	180	15	4.01	16.074
B219-0	0	150	13	3.84	14.753
B90-2	2	94	2.1	-3.64	13.25
B159-1	1	78	8.2	3.44	11.815
B102-0	0	64	0.50	-3.41	11.6133
B282-2	2	72	1.1	-3.30	10.87
B202-0	0	52	6.4	3.22	10.400
B65-0	0	100	2.9	-3.21	10.278
B157-0	0	81	8.0	3.05	9.328
B257-0	0	80	7.9	3.02	9.091
B236-0	0	180	14	3.01	9.055
B165-0	0	230	17	2.96	8.739
B77-0	0	110	3.8	-2.92	8.507
B184-0	0	150	12	2.84	8.071
B267-0	0	76	1.8	-2.84	8.07
B203-2	2	99	3.3	-2.74	7.535
B276-1	1	66	1.4	-2.63	6.92
B73-0	0	62	1.3	-2.49	6.18
B195-0	0	87	2.9	-2.41	5.819
B210-0	0	190	14	2.40	5.753
B208-0	0	85	7.5	2.31	5.336
B25-1	1	53	1.0	-2.24	5.000
B254-0	0	120	5.1	-2.23	4.960
B207-1	1	120	5.2	-2.13	4.525
B30-1	1	88	3.3	-2.07	4.298
B147-1	1	130	5.9	-2.04	4.153
B234-0	0	180	13	2.01	4.037
B239-0	0	72	2.4	-2.00	3.99
B240-0	0	360	20	-1.98	3.927
B151-1	1	81	3.0	-1.95	3.786
B164-0	0	310	17	-1.93	3.719
B238-0	0	120	5.4	-1.93	3.714
B158-0	0	54	1.4	-1.90	3.600

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	Residual WET Lead (mg/l)	Squared Residual WET Lead (mg/l)
B28-2	2	160	7.9	-1.87	3.495
B55-0	0	78	2.9	-1.86	3.470
B209-0	0	150	7.3	-1.86	3.456
B70-0	0	120	5.5	-1.83	3.339
B218-0	0	74	2.7	-1.82	3.307
B191-1	1	170	8.6	-1.78	3.169
B12-0	0	50	1.3	-1.75	3.07
B84-2	2	76	2.9	-1.74	3.030
B76-0	0	60	5.4	1.74	3.015
B79-2	2	56	1.7	-1.72	2.96
B228-0	0	290	16	-1.71	2.915
B81-2	2	65	2.3	-1.67	2.79
B293-0	0	61	2.1	-1.62	2.64
B224-0	0	85	6.8	1.61	2.592
B86-2	2	75	3.0	-1.58	2.495
B82-2	2	50	1.5	-1.55	2.41
B10-0	0	68	2.6	-1.55	2.41
B173-0	0	130	6.4	-1.54	2.365
B51-0	0	51	1.6	-1.51	2.29
B256-0	0	72	5.9	1.50	2.261
B259-2	2	52	1.7	-1.48	2.18
B177-0	0	140	10	1.45	2.107
B287-2	2	220	12	-1.43	2.054
B151-2	2	120	5.9	-1.43	2.037
B271-2	2	370	24	1.41	1.98
B258-0	0	63	2.5	-1.35	1.81
B6-0	0	71	3.0	-1.34	1.783
B99-0	0	84	3.8	-1.33	1.766
B189-1	1	72	3.1	-1.30	1.680
B114-0	0	55	2.1	-1.26	1.58
B155-0	0	160	11	1.23	1.514
B283-0	0	110	5.5	-1.22	1.480
B137-0	0	51	1.9	-1.21	1.47
B235-0	0	120	8.5	1.17	1.375
B272-0	0	84	4.0	-1.13	1.275
B206-0	0	110	5.6	-1.12	1.247
B114-1	1	59	2.5	-1.10	1.22
B288-0	0	95	4.7	-1.10	1.212
B163-0	0	72	3.3	-1.10	1.202
B15-1	1	81	6.0	1.05	1.111
B78-0	0	97	4.9	-1.02	1.046
B291-1	1	67	3.1	-0.99	0.982
B250-0	0	360	21	-0.98	0.963
B171-0	0	50	2.1	-0.95	0.91
B64-0	0	58	2.6	-0.94	0.89
B77-1	1	53	2.3	-0.94	0.88
B289-0	0	52	4.1	0.92	0.855
B243-0	0	64	3.0	-0.91	0.824
B93-0	0	67	3.2	-0.89	0.794
B244-1	1	84	6.0	0.87	0.759
B270-0	0	210	12	-0.82	0.677
B124-2	2	56	2.6	-0.82	0.67
B256-1	1	54	2.5	-0.80	0.64
B4-0	0	96	5.1	-0.76	0.580
B204-0	0	250	16	0.74	0.540
B61-2	2	110	6.0	-0.72	0.514
B160-0	0	110	6.0	-0.72	0.514
B193-0	0	150	8.5	-0.66	0.434
B157-1	1	57	4.1	0.62	0.384
B34-1	1	56	2.8	-0.62	0.384
B85-2	2	56	2.8	-0.62	0.384
B177-1	1	57	2.9	-0.58	0.337
B274-2	2	130	7.4	-0.54	0.289

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	Residual WET Lead (mg/l)	Squared Residual WET Lead (mg/l)
B129-1	1	51	2.6	-0.51	0.26
B190-0	0	54	2.8	-0.50	0.247
B244-0	0	73	4.0	-0.46	0.209
B151-0	0	86	5.7	0.45	0.201
B242-0	0	130	7.5	-0.44	0.192
B241-0	0	220	13	-0.43	0.188
B63-0	0	52	2.8	-0.38	0.141
B200-0	0	77	5.0	0.30	0.089
B161-0	0	66	4.3	0.27	0.073
B207-2	2	150	8.9	-0.26	0.067
B100-2	2	56	3.2	-0.22	0.048
B211-0	0	210	13	0.18	0.031
B191-0	0	50	3.0	-0.05	0.003
B223-0	0	50	3.1	0.05	0.002





A0	
Number of Valid Observations	29
Number of Distinct Observations	24
Minimum	10
Maximum	490
Mean	60.9
Median	27
SD	98.14
Variance	9632
Coefficient of Variation	1.612
Skewness	3.547
Mean of log data	3.555
SD of log data	0.906
90% Standard Bootstrap UCL	83.55
95% Standard Bootstrap UCL	91.13

A1	
Number of Valid Observations	29
Number of Distinct Observations	25
Minimum	2.5
Maximum	81
Mean	22.2
Median	17
SD	17.44
Variance	304.1
Coefficient of Variation	0.786
Skewness	1.565
Mean of log data	2.792
SD of log data	0.852
90% Standard Bootstrap UCL	26.33
95% Standard Bootstrap UCL	27.46

A2	
Number of Valid Observations	26
Number of Distinct Observations	23
Minimum	2.5
Maximum	160
Mean	20.55
Median	7.7
SD	36.3
Variance	1318
Coefficient of Variation	1.766
Skewness	3.305
Mean of log data	2.391
SD of log data	0.94
90% Standard Bootstrap UCL	29.38
95% Standard Bootstrap UCL	31.72

C-0	
Number of Valid Observations	44
Number of Distinct Observations	36
Minimum	2.5
Maximum	520
Mean	69.69
Median	36.5
SD	98.45
Variance	9693
Coefficient of Variation	1.413
Skewness	2.95
Mean of log data	3.579
SD of log data	1.164
90% Standard Bootstrap UCL	88.6
95% Standard Bootstrap UCL	93.82

C-1	
Number of Valid Observations	39
Number of Distinct Observations	30
Minimum	2.5
Maximum	130
Mean	22.42
Median	11
SD	30.7
Variance	942.5
Coefficient of Variation	1.369
Skewness	2.39
Mean of log data	2.457
SD of log data	1.121
90% Standard Bootstrap UCL	28.81
95% Standard Bootstrap UCL	30.22

B-0	
Number of Valid Observations	119
Number of Distinct Observations	54
Minimum	2.5
Maximum	120
Mean	27.65
Median	21
SD	23.26
Variance	540.9
Coefficient of Variation	0.841
Skewness	2.194
Mean of log data	3.039
SD of log data	0.769
90% Standard Bootstrap UCL	30.44
95% Standard Bootstrap UCL	31.14

B-1	
Number of Valid Observations	113
Number of Distinct Observations	64
Minimum	2.5
Maximum	320
Mean	18
Median	9.3
SD	32.3
Variance	1043
Coefficient of Variation	1.795
Skewness	7.578
Mean of log data	2.369
SD of log data	0.939
90% Standard Bootstrap UCL	21.88
95% Standard Bootstrap UCL	22.87

B-2	
Number of Valid Observations	109
Number of Distinct Observations	64
Minimum	2.5
Maximum	110
Mean	17.92
Median	8.6
SD	21.34
Variance	455.4
Coefficient of Variation	1.191
Skewness	2.269
Mean of log data	2.388
SD of log data	0.952
90% Standard Bootstrap UCL	20.6
95% Standard Bootstrap UCL	21.22

B4	
Number of Valid Observations	8
Number of Distinct Observations	8
Minimum	1.3
Maximum	60
Mean	14.81
Median	5.25
SD	20.89
Variance	436.4
Coefficient of Variation	1.41
Skewness	1.897
Mean of log data	1.961
SD of log data	1.235
90% Standard Bootstrap UCL	23.79
95% Standard Bootstrap UCL	26.44

D-0	
Number of Valid Observations	55
Number of Distinct Observations	43
Minimum	5
Maximum	250
Mean	64.48
Median	42
SD	59.77
Variance	3573
Coefficient of Variation	0.927
Skewness	1.484
Mean of log data	3.739
SD of log data	0.991
90% Standard Bootstrap UCL	75.18
95% Standard Bootstrap UCL	77.95

C-2	
Number of Valid Observations	35
Number of Distinct Observations	22
Minimum	2.5
Maximum	120
Mean	12.67
Median	7.4
SD	20.1
Variance	403.9
Coefficient of Variation	1.586
Skewness	4.74
Mean of log data	2.028
SD of log data	0.932
90% Standard Bootstrap UCL	16.97
95% Standard Bootstrap UCL	18.13

C4	
Number of Valid Observations	7
Number of Distinct Observations	7
Minimum	2
Maximum	15
Mean	6.029
Median	4.3
SD	4.82
Variance	23.24
Coefficient of Variation	0.8
Skewness	1.313
Mean of log data	1.541
SD of log data	0.76
90% Standard Bootstrap UCL	8.156
95% Standard Bootstrap UCL	8.822

E-0	
Number of Valid Observations	46
Number of Distinct Observations	35
Minimum	8.9
Maximum	530
Mean	131.1
Median	68
SD	146.9
Variance	21573
Coefficient of Variation	1.121
Skewness	1.627
Mean of log data	4.312
SD of log data	1.091
90% Standard Bootstrap UCL	158.7
95% Standard Bootstrap UCL	165.5

E-1	
Number of Valid Observations	46
Number of Distinct Observations	32
Minimum	2.5
Maximum	480
Mean	28.52
Median	13
SD	70.08
Variance	4911
Coefficient of Variation	2.457
Skewness	6.211
Mean of log data	2.644
SD of log data	1.002
90% Standard Bootstrap UCL	41.63
95% Standard Bootstrap UCL	45.33

E-2	
Number of Valid Observations	45
Number of Distinct Observations	35
Minimum	2.5
Maximum	52
Mean	12.98
Median	7.7
SD	12.01
Variance	144.3
Coefficient of Variation	0.926
Skewness	2.115
Mean of log data	2.297
SD of log data	0.666
90% Standard Bootstrap UCL	15.21
95% Standard Bootstrap UCL	15.99

D-1	
Number of Valid Observations	41
Number of Distinct Observations	35
Minimum	2.5
Maximum	170
Mean	26.38
Median	8.9
SD	35.98
Variance	1295
Coefficient of Variation	1.364
Skewness	2.58
Mean of log data	2.655
SD of log data	1.07
90% Standard Bootstrap UCL	33.46
95% Standard Bootstrap UCL	35.48

D-2	
Number of Valid Observations	39
Number of Distinct Observations	25
Minimum	2.5
Maximum	150
Mean	13.93
Median	6.4
SD	27.32
Variance	746.6
Coefficient of Variation	1.961
Skewness	4.242
Mean of log data	2.008
SD of log data	0.917
90% Standard Bootstrap UCL	19.4
95% Standard Bootstrap UCL	21.13

D4	
Number of Valid Observations	15
Number of Distinct Observations	13
Minimum	3.1
Maximum	320
Mean	27.05
Median	5.1
SD	81.2
Variance	6593
Coefficient of Variation	3.002
Skewness	3.848
Mean of log data	1.931
SD of log data	1.158
90% Standard Bootstrap UCL	53.25
95% Standard Bootstrap UCL	60.81

F0	
Number of Valid Observations	6
Number of Distinct Observations	5
Minimum	15
Maximum	76
Mean	31.33
Median	20.5
SD	23.37
Variance	546.3
Coefficient of Variation	0.746
Skewness	1.874
Mean of log data	3.265
SD of log data	0.614
90% Standard Bootstrap UCL	42.25
95% Standard Bootstrap UCL	45.84

F1	
Number of Valid Observations	5
Number of Distinct Observations	5
Minimum	8.8
Maximum	15
Mean	11.96
Median	12
SD	2.609
Variance	6.808
Coefficient of Variation	0.218
Skewness	-0.0586
Mean of log data	2.462
SD of log data	0.224
90% Standard Bootstrap UCL	13.31
95% Standard Bootstrap UCL	13.72

G-0	
Number of Valid Observations	11
Number of Distinct Observations	10
Minimum	2.5
Maximum	320
Mean	68.25
Median	24
SD	102.7
Variance	10544
Coefficient of Variation	1.505
Skewness	1.989
Mean of log data	3.293
SD of log data	1.446
90% Standard Bootstrap UCL	106.3
95% Standard Bootstrap UCL	117.4

G-1	
Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	4.8
Maximum	66
Mean	15.93
Median	9.1
SD	18.49
Variance	342
Coefficient of Variation	1.161
Skewness	2.663
Mean of log data	2.408
SD of log data	0.797
90% Standard Bootstrap UCL	23.13
95% Standard Bootstrap UCL	25.42

G-2	
Number of Valid Observations	10
Number of Distinct Observations	9
Minimum	2.5
Maximum	370
Mean	58.79
Median	11
SD	115.8
Variance	13401
Coefficient of Variation	1.969
Skewness	2.648
Mean of log data	2.828
SD of log data	1.513
90% Standard Bootstrap UCL	101.4
95% Standard Bootstrap UCL	116.4

I0	
Number of Valid Observations	9
Number of Distinct Observations	9
Minimum	22
Maximum	250
Mean	82.33
Median	52
SD	74.34
Variance	5527
Coefficient of Variation	0.903
Skewness	1.746
Mean of log data	4.112
SD of log data	0.792
90% Standard Bootstrap UCL	111.9
95% Standard Bootstrap UCL	122

F2	
Number of Valid Observations	5
Number of Distinct Observations	5
Minimum	7.9
Maximum	27
Mean	16.18
Median	16
SD	7.424
Variance	55.11
Coefficient of Variation	0.459
Skewness	0.593
Mean of log data	2.696
SD of log data	0.478
90% Standard Bootstrap UCL	19.92
95% Standard Bootstrap UCL	21.08

H0	
Number of Valid Observations	9
Number of Distinct Observations	9
Minimum	2.5
Maximum	110
Mean	31.61
Median	25
SD	32.77
Variance	1074
Coefficient of Variation	1.037
Skewness	1.975
Mean of log data	2.977
SD of log data	1.115
90% Standard Bootstrap UCL	44.55
95% Standard Bootstrap UCL	48.39

H1	
Number of Valid Observations	9
Number of Distinct Observations	9
Minimum	5
Maximum	34
Mean	16.86
Median	16
SD	11.23
Variance	126.1
Coefficient of Variation	0.666
Skewness	0.408
Mean of log data	2.594
SD of log data	0.747
90% Standard Bootstrap UCL	21.4
95% Standard Bootstrap UCL	22.71

H2	
Number of Valid Observations	9
Number of Distinct Observations	9
Minimum	6
Maximum	220
Mean	43.67
Median	19
SD	69.12
Variance	4777
Coefficient of Variation	1.583
Skewness	2.581
Mean of log data	3.051
SD of log data	1.156
90% Standard Bootstrap UCL	72.53
95% Standard Bootstrap UCL	79.66

I1	
Number of Valid Observations	9
Number of Distinct Observations	8
Minimum	2.5
Maximum	160
Mean	38.4
Median	27
SD	50.15
Variance	2515
Coefficient of Variation	1.306
Skewness	2.134
Mean of log data	2.863
SD of log data	1.438
90% Standard Bootstrap UCL	58.74
95% Standard Bootstrap UCL	64.01

I2	
Number of Valid Observations	9
Number of Distinct Observations	8
Minimum	2.5
Maximum	18
Mean	7.433
Median	5.4
SD	5.092
Variance	25.93
Coefficient of Variation	0.685
Skewness	1.311
Mean of log data	1.81
SD of log data	0.665
90% Standard Bootstrap UCL	9.473
95% Standard Bootstrap UCL	10.04

J0	
Number of Valid Observations	7
Number of Distinct Observations	6
Minimum	7
Maximum	24
Mean	12.49
Median	9.8
SD	7.052
Variance	49.73
Coefficient of Variation	0.565
Skewness	1.116
Mean of log data	2.404
SD of log data	0.513
90% Standard Bootstrap UCL	15.71
95% Standard Bootstrap UCL	16.69

J1	
Number of Valid Observations	7
Number of Distinct Observations	6
Minimum	2.5
Maximum	17
Mean	8.171
Median	6
SD	4.696
Variance	22.05
Coefficient of Variation	0.575
Skewness	1.088
Mean of log data	1.954
SD of log data	0.604
90% Standard Bootstrap UCL	10.26
95% Standard Bootstrap UCL	10.84

J2	
Number of Valid Observations	7
Number of Distinct Observations	7
Minimum	5.3
Maximum	21
Mean	9.243
Median	7.5
SD	5.683
Variance	32.3
Coefficient of Variation	0.615
Skewness	1.876
Mean of log data	2.099
SD of log data	0.506
90% Standard Bootstrap UCL	11.8
95% Standard Bootstrap UCL	12.54

APPENDIX D - Lead UCLs

As

Number of Valid Observations	245
Number of Distinct Observations	62
Minimum	0.5
Maximum	31
Mean	2.784
Median	2.3
SD	2.937
Variance	8.626
Coefficient of Variation	1.055
Skewness	5.825
Mean of log data	0.69
SD of log data	0.836
95% Standard Bootstrap UCL	3.099

TPHd

Number of Valid Observations	34
Number of Distinct Observations	28
Minimum	0.5
Maximum	1900
Mean	184.3
Median	79
SD	352
Variance	123929
Coefficient of Variation	1.91
Skewness	3.939
Mean of log data	3.972
SD of log data	1.783
95% Standard Bootstrap UCL	282.5

V

Number of Valid Observations	245
Number of Distinct Observations	39
Minimum	4
Maximum	59
Mean	26.47
Median	26
SD	7.671
Variance	58.85
Coefficient of Variation	0.29
Skewness	0.82
Mean of log data	3.233
SD of log data	0.303
95% Standard Bootstrap UCL	27.26

TPHmo

Number of Valid Observations	34
Number of Distinct Observations	30
Minimum	0.5
Maximum	6100
Mean	773.3
Median	460
SD	1251
Variance	1565485
Coefficient of Variation	1.618
Skewness	3.068
Mean of log data	5.19
SD of log data	2.336
95% Standard Bootstrap UCL	1130

Zn

Number of Valid Observations	245
Number of Distinct Observations	97
Minimum	11
Maximum	660
Mean	90.43
Median	50
SD	98.73
Variance	9748
Coefficient of Variation	1.092
Skewness	2.835
Mean of log data	4.111
SD of log data	0.841
95% Standard Bootstrap UCL	101.3

APPENDIX E

FEASIBILITY STUDY/
CORRECTIVE ACTION PLAN

Dublin Toyota UST Site
6450 Dublin Court
Dublin, California

ACEH RO# 0000333

Prepared for:

Mr. Scott Anderson
Dublin Toyota
4321 Toyota Drive
Dublin, CA 94568

September 15, 2010

GRIBI ASSOCIATES

GEOLOGIC & ENVIRONMENTAL CONSULTING SERVICES

1090 Adams Street, Suite K
Benicia, California, 94510
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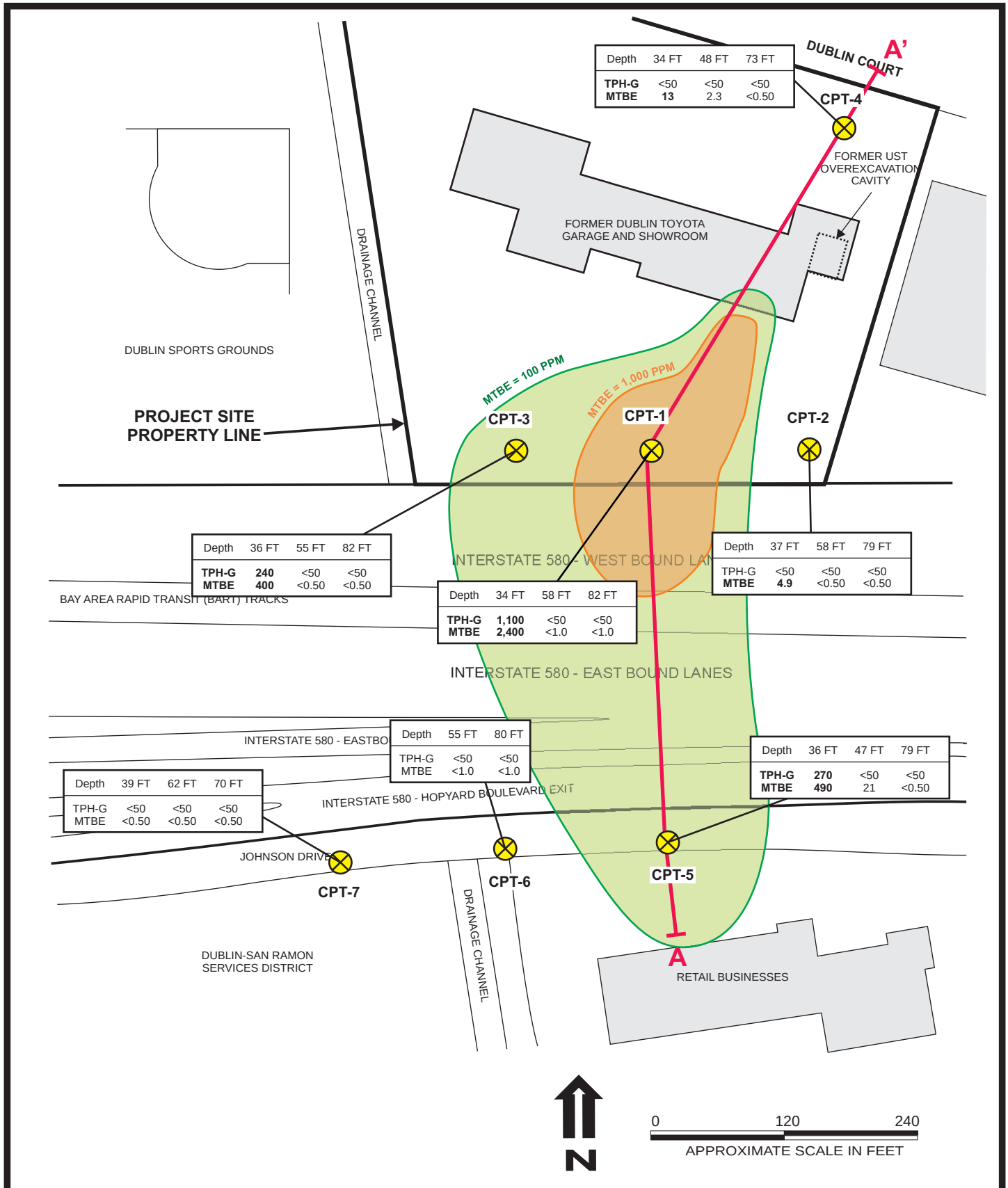
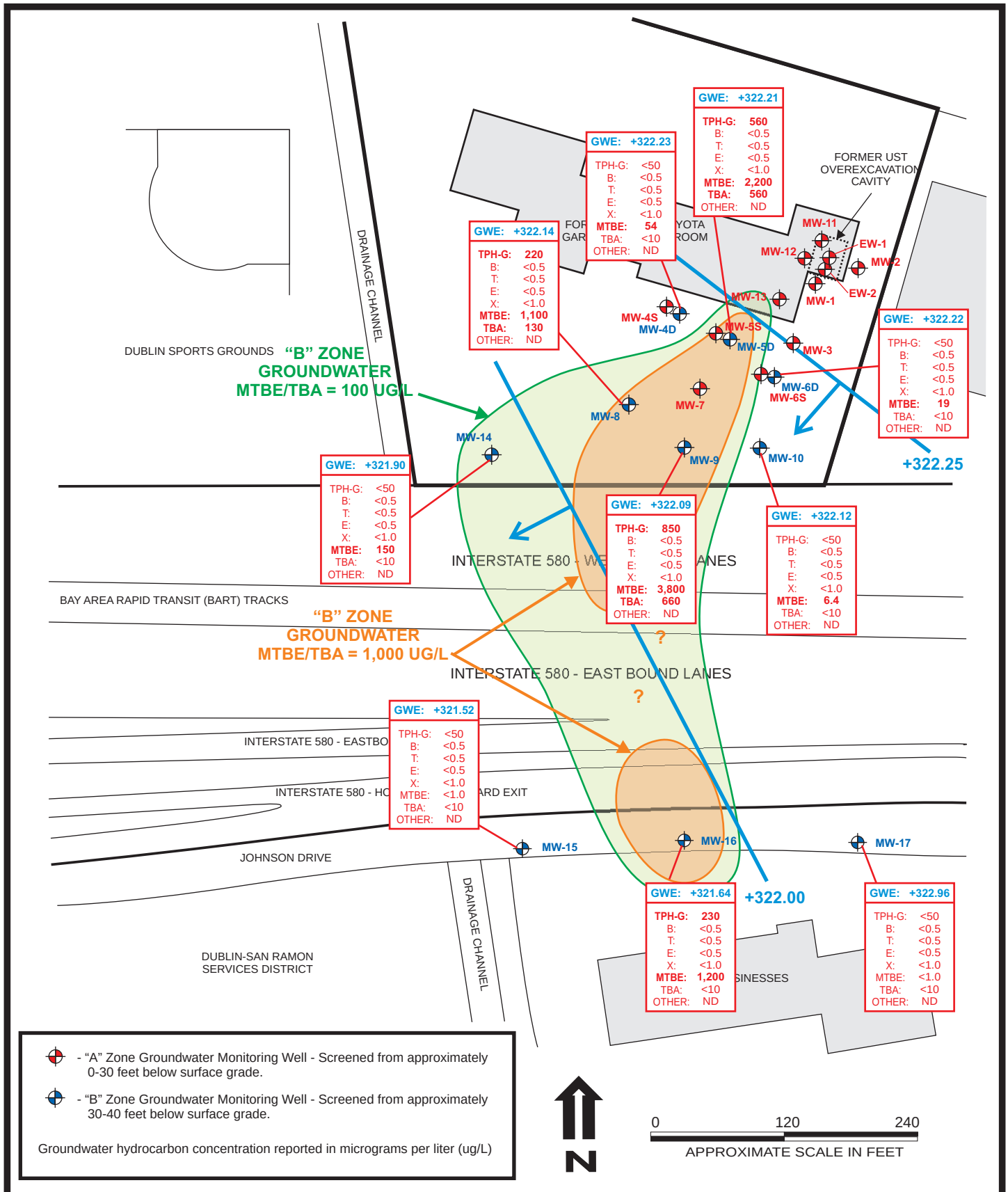
Fax: (707) 748-7763
www.gribiassociates.com



DESIGNED BY:	CHECKED BY: JEG	**CPT GROUNDWATER HYDROCARBON RESULTS, APRIL 2009** DUBLIN TOYOTA UST SITE 6450 DUBLIN COURT DUBLIN, CALIFORNIA	DATE: 09/15/2010 FIGURE: **6**
DRAWN BY: MAR	SCALE:		GRIBI
PROJECT NO:			



DESIGNED BY:	CHECKED BY: JEG	**"B" ZONE GROUNDWATER ELEVATIONS AND HYDROCARBON RESULTS, 06/2010**	DATE: 09/15/2010	FIGURE: **9**
DRAWN BY: MAR	SCALE:	DUBLIN TOYOTA UST SITE 6450 DUBLIN COURT DUBLIN, CALIFORNIA	GRIBI	
PROJECT NO:				

STATE OF CALIFORNIA EDMUND G. BROWN, JR., Governor

DEPARTMENT OF INDUSTRIAL RELATIONS
DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT
2211 Park Towne Circle, Suite 2
Sacramento, California 95825

Telephone (916) 574-2540
FAX (916) 574-2542

September 22, 2011

Alameda County Congestion Management Agency
1333 Broadway, Suite 220
Oakland, CA 94612

Attention: Natalina Bernardi (via e-mail: nbernardi@bkf.com)

Subject: Underground Classification #'s: C018-001-12T thru C030-001-12T

Interstate 580 HOV Lane Project – Dublin
(Alameda County Congestion Management Agency)

Ms. Bernardi:

The information provided to this office relative to the above project has been reviewed. On the basis of this analysis, Underground Classification of "Potentially Gassy with Special Conditions" has been assigned to the shaft(s) identified on your submittal. Please retain the original Classification for your records and deliver a true and correct copy of the Classification to the shaft contractor(s) for posting at the job site.

When the contractor who will be performing the work is selected, please advise them to notify this office to determine if a mandated Prejob Conference with the Division is required prior to commencing any activity associated with drilling of the shaft(s).

Should you have another bore under construction that is not required to have an Underground Classification (i.e.: less than 30 inches in diameter), please contact the Mining and Tunneling Unit prior to any employee entry of such a space.

If you have any questions on this subject, please contact this office at your earliest convenience.

Sincerely,

John R. Leahy
Senior Engineer

cc: Michael Poon (via e-mail: mpoon@bkf.com)
R. Brockman
File

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C018-001-12T

ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY
NAME OF TUNNEL OR MINE AND COMPANY NAME

of 1333 Broadway, Suite 220, Oakland, CA 94612
MAILING ADDRESS

at INTERSTATE 580 HOV LANE PROJECT - DUBLIN - SIGN A
LOCATION

has been classified as ***POTENTIALLY GASSY with Special Conditions***
CLASSIFICATION

as required by the California Labor Code § 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

SPECIAL CONDITIONS

1. A Certified Gas Tester shall perform pre-entry and continuous monitoring of the underground environment to measure Oxygen and detect explosive, flammable, and toxic gasses whenever an employee is working in the underground environment.
2. Mechanical ventilation shall provide for continuous exhaust of fumes and air at any time an employee is working in the underground environment. The primary ventilation fans must be located outside of the underground environment and shall be reversible by a single switch near the fan location.
3. The Division shall be notified immediately if any **Flammable Gas** or **Petroleum Vapor** exceeds 5% of the Lower Explosive Limit.
4. All utilities that may be in conflict with the project shall be identified and physically located (potholed) prior to the start of project operations.

The 60-inch diameter by 25 feet deep drilled shaft located on the outside shoulder of westbound Interstate 580, approximately 1,300 feet east of the intersection of Interstate 580 and San Ramon Road, Dublin, Alameda County.

This classification shall be conspicuously posted at the place of employment.

Date September 22, 2011

John R. Leahy, Senior Engineer

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C019-001-12T

ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY
NAME OF TUNNEL OR MINE AND COMPANY NAME

of 1333 Broadway, Suite 220, Oakland, CA 94612
MAILING ADDRESS

at INTERSTATE 580 HOV LANE PROJECT - DUBLIN - SIGN C
LOCATION

has been classified as ***POTENTIALLY GASSY with Special Conditions***
CLASSIFICATION

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2. Mechanical ventilation shall provide for continuous exhaust of fumes and air at any time an employee is working in the underground environment. The primary ventilation fans must be located outside of the underground environment and shall be reversible by a single switch near the fan location.
3. The Division shall be notified immediately if any **Flammable Gas** or **Petroleum Vapor** exceeds 5% of the Lower Explosive Limit.
4. All utilities that may be in conflict with the project shall be identified and physically located (potholed) prior to the start of project operations.

The 60-inch diameter by 25 feet deep drilled shaft located on the outside shoulder of westbound Interstate 580, approximately 1,400 feet west of the intersection of Interstate 580 and Interstate 680, Dublin, Alameda County.

This classification shall be conspicuously posted at the place of employment.

Date September 22, 2011

John R. Leahy, Senior Engineer

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C020-001-12T

ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY
NAME OF TUNNEL OR MINE AND COMPANY NAME

of 1333 Broadway, Suite 220, Oakland, CA 94612
MAILING ADDRESS

at INTERSTATE 580 HOV LANE PROJECT - DUBLIN - SIGN F
LOCATION

has been classified as ***POTENTIALLY GASSY with Special Conditions***
CLASSIFICATION

as required by the California Labor Code § 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

SPECIAL CONDITIONS

1. A Certified Gas Tester shall perform pre-entry and continuous monitoring of the underground environment to measure Oxygen and detect explosive, flammable, and toxic gasses whenever an employee is working in the underground environment.
2. Mechanical ventilation shall provide for continuous exhaust of fumes and air at any time an employee is working in the underground environment. The primary ventilation fans must be located outside of the underground environment and shall be reversible by a single switch near the fan location.
3. The Division shall be notified immediately if any **Flammable Gas** or **Petroleum Vapor** exceeds 5% of the Lower Explosive Limit.
4. All utilities that may be in conflict with the project shall be identified and physically located (potholed) prior to the start of project operations.

The 60-inch diameter by 25 feet deep drilled shaft located on the outside shoulder of westbound Interstate 580, approximately 970 feet west of the intersection of Interstate 580 and Dougherty Road, Dublin, Alameda County.

This classification shall be conspicuously posted at the place of employment.

Date September 22, 2011

John R. Leahy, Senior Engineer

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C021-001-12T

ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY
NAME OF TUNNEL OR MINE AND COMPANY NAME

of 1333 Broadway, Suite 220, Oakland, CA 94612
MAILING ADDRESS

at INTERSTATE 580 HOV LANE PROJECT - DUBLIN - SIGN H
LOCATION

has been classified as ***POTENTIALLY GASSY with Special Conditions***
CLASSIFICATION

as required by the California Labor Code § 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

SPECIAL CONDITIONS

1. A Certified Gas Tester shall perform pre-entry and continuous monitoring of the underground environment to measure Oxygen and detect explosive, flammable, and toxic gasses whenever an employee is working in the underground environment.
2. Mechanical ventilation shall provide for continuous exhaust of fumes and air at any time an employee is working in the underground environment. The primary ventilation fans must be located outside of the underground environment and shall be reversible by a single switch near the fan location.
3. The Division shall be notified immediately if any **Flammable Gas** or **Petroleum Vapor** exceeds 5% of the Lower Explosive Limit.
4. All utilities that may be in conflict with the project shall be identified and physically located (potholed) prior to the start of project operations.

The 60-inch diameter by 25 feet deep drilled shaft located on the outside shoulder of westbound Interstate 580, approximately 1,185 feet east of the intersection of Interstate 580 and Dougherty Road, Dublin, Alameda County.

This classification shall be conspicuously posted at the place of employment.

Date September 22, 2011

John R. Leahy

John R. Leahy, Senior Engineer

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C022-001-12T

ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY
NAME OF TUNNEL OR MINE AND COMPANY NAME

of 1333 Broadway, Suite 220, Oakland, CA 94612
MAILING ADDRESS

at INTERSTATE 580 HOV LANE PROJECT - DUBLIN - SIGN K
LOCATION

has been classified as ***POTENTIALLY GASSY with Special Conditions***
CLASSIFICATION

as required by the California Labor Code § 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

SPECIAL CONDITIONS

1. A Certified Gas Tester shall perform pre-entry and continuous monitoring of the underground environment to measure Oxygen and detect explosive, flammable, and toxic gasses whenever an employee is working in the underground environment.
2. Mechanical ventilation shall provide for continuous exhaust of fumes and air at any time an employee is working in the underground environment. The primary ventilation fans must be located outside of the underground environment and shall be reversible by a single switch near the fan location.
3. The Division shall be notified immediately if any **Flammable Gas** or **Petroleum Vapor** exceeds 5% of the Lower Explosive Limit.
4. All utilities that may be in conflict with the project shall be identified and physically located (potholed) prior to the start of project operations.

The 60-inch diameter by 25 feet deep drilled shaft located on the outside shoulder of westbound Interstate 580, approximately 1,220 feet west of the intersection of Interstate 580 and Hacienda Drive, Dublin, Alameda County.

This classification shall be conspicuously posted at the place of employment.

Date September 22, 2011

John R. Leahy

John R. Leahy, Senior Engineer

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C023-001-12T

ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY
NAME OF TUNNEL OR MINE AND COMPANY NAME

of 1333 Broadway, Suite 220, Oakland, CA 94612
MAILING ADDRESS

at INTERSTATE 580 HOV LANE PROJECT - DUBLIN - SIGN L
LOCATION

has been classified as ***POTENTIALLY GASSY with Special Conditions***
CLASSIFICATION

as required by the California Labor Code § 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

SPECIAL CONDITIONS

1. A Certified Gas Tester shall perform pre-entry and continuous monitoring of the underground environment to measure Oxygen and detect explosive, flammable, and toxic gasses whenever an employee is working in the underground environment.
2. Mechanical ventilation shall provide for continuous exhaust of fumes and air at any time an employee is working in the underground environment. The primary ventilation fans must be located outside of the underground environment and shall be reversible by a single switch near the fan location.
3. The Division shall be notified immediately if any **Flammable Gas** or **Petroleum Vapor** exceeds 5% of the Lower Explosive Limit.
4. All utilities that may be in conflict with the project shall be identified and physically located (potholed) prior to the start of project operations.

The 60-inch diameter by 25 feet deep drilled shaft located on the outside shoulder of westbound Interstate 580, approximately 1,280 feet east of the intersection of Interstate 580 and Hacienda Drive, Dublin, Alameda County.

This classification shall be conspicuously posted at the place of employment.

Date September 22, 2011

John R. Leahy, Senior Engineer

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C024-001-12T AMENDMENT 1

ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY
NAME OF TUNNEL OR MINE AND COMPANY NAME

of 1333 Broadway, Suite 220, Oakland, CA 94612
MAILING ADDRESS

at INTERSTATE 580 HOV LANE PROJECT - DUBLIN - SIGN N
LOCATION

has been classified as ***POTENTIALLY GASSY with Special Conditions***
CLASSIFICATION

as required by the California Labor Code § 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

SPECIAL CONDITIONS

1. A Certified Gas Tester shall perform pre-entry and continuous monitoring of the underground environment to measure Oxygen and detect explosive, flammable, and toxic gasses whenever an employee is working in the underground environment.
2. Mechanical ventilation shall provide for continuous exhaust of fumes and air at any time an employee is working in the underground environment. The primary ventilation fans must be located outside of the underground environment and shall be reversible by a single switch near the fan location.
3. The Division shall be notified immediately if any **Flammable Gas** or **Petroleum Vapor** exceeds 5% of the Lower Explosive Limit.
4. All utilities that may be in conflict with the project shall be identified and physically located (potholed) prior to the start of project operations.

The 60-inch diameter by 25 feet deep drilled shaft located on the outside shoulder of eastbound Interstate 580, approximately 1,130 feet east of the intersection of Interstate 580 and Hacienda Drive, Dublin, Alameda County.

This classification shall be conspicuously posted at the place of employment.

Date September 29, 2011

John R. Leahy, Senior Engineer

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C025-001-12T

ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY
NAME OF TUNNEL OR MINE AND COMPANY NAME

of 1333 Broadway, Suite 220, Oakland, CA 94612
MAILING ADDRESS

at INTERSTATE 580 HOV LANE PROJECT - DUBLIN - SIGN O
LOCATION

has been classified as ***POTENTIALLY GASSY with Special Conditions***
CLASSIFICATION

as required by the California Labor Code § 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

SPECIAL CONDITIONS

1. A Certified Gas Tester shall perform pre-entry and continuous monitoring of the underground environment to measure Oxygen and detect explosive, flammable, and toxic gasses whenever an employee is working in the underground environment.
2. Mechanical ventilation shall provide for continuous exhaust of fumes and air at any time an employee is working in the underground environment. The primary ventilation fans must be located outside of the underground environment and shall be reversible by a single switch near the fan location.
3. The Division shall be notified immediately if any **Flammable Gas** or **Petroleum Vapor** exceeds 5% of the Lower Explosive Limit.
4. All utilities that may be in conflict with the project shall be identified and physically located (potholed) prior to the start of project operations.

The 60-inch diameter by 22 feet deep drilled shaft located on the outside shoulder of westbound Interstate 580, approximately 1,880 feet east of the intersection of Interstate 580 and Hacienda Drive, Dublin, Alameda County.

This classification shall be conspicuously posted at the place of employment.

Date September 22, 2011

John R. Leahy, Senior Engineer

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C026-001-12T

ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY
NAME OF TUNNEL OR MINE AND COMPANY NAME

of 1333 Broadway, Suite 220, Oakland, CA 94612
MAILING ADDRESS

at INTERSTATE 580 HOV LANE PROJECT - DUBLIN - SIGN R
LOCATION

has been classified as ***POTENTIALLY GASSY with Special Conditions***
CLASSIFICATION

as required by the California Labor Code § 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

SPECIAL CONDITIONS

1. A Certified Gas Tester shall perform pre-entry and continuous monitoring of the underground environment to measure Oxygen and detect explosive, flammable, and toxic gasses whenever an employee is working in the underground environment.
2. Mechanical ventilation shall provide for continuous exhaust of fumes and air at any time an employee is working in the underground environment. The primary ventilation fans must be located outside of the underground environment and shall be reversible by a single switch near the fan location.
3. The Division shall be notified immediately if any **Flammable Gas** or **Petroleum Vapor** exceeds 5% of the Lower Explosive Limit.
4. All utilities that may be in conflict with the project shall be identified and physically located (potholed) prior to the start of project operations.

The 60-inch diameter by 25 feet deep drilled shaft located on the outside shoulder of westbound Interstate 580, approximately 1,885 feet west of the intersection of Interstate 580 and Tassajara Road, Dublin, Alameda County.

This classification shall be conspicuously posted at the place of employment.

Date September 22, 2011

John R. Leahy, Senior Engineer

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C027-001-12T

ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY
NAME OF TUNNEL OR MINE AND COMPANY NAME

of 1333 Broadway, Suite 220, Oakland, CA 94612
MAILING ADDRESS

at INTERSTATE 580 HOV LANE PROJECT - DUBLIN - SIGN T
LOCATION

has been classified as ***POTENTIALLY GASSY with Special Conditions***
CLASSIFICATION

as required by the California Labor Code § 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

SPECIAL CONDITIONS

1. A Certified Gas Tester shall perform pre-entry and continuous monitoring of the underground environment to measure Oxygen and detect explosive, flammable, and toxic gasses whenever an employee is working in the underground environment.
2. Mechanical ventilation shall provide for continuous exhaust of fumes and air at any time an employee is working in the underground environment. The primary ventilation fans must be located outside of the underground environment and shall be reversible by a single switch near the fan location.
3. The Division shall be notified immediately if any **Flammable Gas** or **Petroleum Vapor** exceeds 5% of the Lower Explosive Limit.
4. All utilities that may be in conflict with the project shall be identified and physically located (potholed) prior to the start of project operations.

The 60-inch diameter by 25 feet deep drilled shaft located on the outside shoulder of westbound Interstate 580, approximately 1,350 feet east of the intersection of Interstate 580 and Tassajara Road, Dublin, Alameda County.

This classification shall be conspicuously posted at the place of employment.

Date September 22, 2011

John R. Leahy, Senior Engineer

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C028-001-12T

ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY
NAME OF TUNNEL OR MINE AND COMPANY NAME

of 1333 Broadway, Suite 220, Oakland, CA 94612
MAILING ADDRESS

at INTERSTATE 580 HOV LANE PROJECT - DUBLIN - SIGN V
LOCATION

has been classified as ***POTENTIALLY GASSY with Special Conditions***
CLASSIFICATION

as required by the California Labor Code § 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

SPECIAL CONDITIONS

1. A Certified Gas Tester shall perform pre-entry and continuous monitoring of the underground environment to measure Oxygen and detect explosive, flammable, and toxic gasses whenever an employee is working in the underground environment.
2. Mechanical ventilation shall provide for continuous exhaust of fumes and air at any time an employee is working in the underground environment. The primary ventilation fans must be located outside of the underground environment and shall be reversible by a single switch near the fan location.
3. The Division shall be notified immediately if any **Flammable Gas** or **Petroleum Vapor** exceeds 5% of the Lower Explosive Limit.
4. All utilities that may be in conflict with the project shall be identified and physically located (potholed) prior to the start of project operations.

The 60-inch diameter by 25 feet deep drilled shaft located on the outside shoulder of westbound Interstate 580, approximately 2,200 feet west of the intersection of Interstate 580 and Fallon Road, Dublin, Alameda County.

This classification shall be conspicuously posted at the place of employment.

Date September 22, 2011

John R. Leahy, Senior Engineer

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C029-001-12T

ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY
NAME OF TUNNEL OR MINE AND COMPANY NAME

of 1333 Broadway, Suite 220, Oakland, CA 94612
MAILING ADDRESS

at INTERSTATE 580 HOV LANE PROJECT - DUBLIN - SIGN W
LOCATION

has been classified as ***POTENTIALLY GASSY with Special Conditions***
CLASSIFICATION

as required by the California Labor Code § 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

SPECIAL CONDITIONS

1. A Certified Gas Tester shall perform pre-entry and continuous monitoring of the underground environment to measure Oxygen and detect explosive, flammable, and toxic gasses whenever an employee is working in the underground environment.
2. Mechanical ventilation shall provide for continuous exhaust of fumes and air at any time an employee is working in the underground environment. The primary ventilation fans must be located outside of the underground environment and shall be reversible by a single switch near the fan location.
3. The Division shall be notified immediately if any **Flammable Gas** or **Petroleum Vapor** exceeds 5% of the Lower Explosive Limit.
4. All utilities that may be in conflict with the project shall be identified and physically located (potholed) prior to the start of project operations.

The 60-inch diameter by 25 feet deep drilled shaft located on the outside shoulder of westbound Interstate 580, approximately 3,900 feet east of the intersection of Interstate 580 and Fallon Road, Dublin, Alameda County.

This classification shall be conspicuously posted at the place of employment.

Date September 22, 2011

John R. Leahy, Senior Engineer

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C030-001-12T

ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY
NAME OF TUNNEL OR MINE AND COMPANY NAME

of 1333 Broadway, Suite 220, Oakland, CA 94612
MAILING ADDRESS

at INTERSTATE 580 HOV LANE PROJECT - DUBLIN - SIGN X
LOCATION

has been classified as ***POTENTIALLY GASSY with Special Conditions***
CLASSIFICATION

as required by the California Labor Code § 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

SPECIAL CONDITIONS

1. A Certified Gas Tester shall perform pre-entry and continuous monitoring of the underground environment to measure Oxygen and detect explosive, flammable, and toxic gasses whenever an employee is working in the underground environment.
2. Mechanical ventilation shall provide for continuous exhaust of fumes and air at any time an employee is working in the underground environment. The primary ventilation fans must be located outside of the underground environment and shall be reversible by a single switch near the fan location.
3. The Division shall be notified immediately if any **Flammable Gas** or **Petroleum Vapor** exceeds 5% of the Lower Explosive Limit.
4. All utilities that may be in conflict with the project shall be identified and physically located (potholed) prior to the start of project operations.

The 60-inch diameter by 25 feet deep drilled shaft located on the outside shoulder of westbound Interstate 580, approximately 1,420 feet east of the intersection of Interstate 580 and Airway Boulevard, Dublin, Alameda County.

This classification shall be conspicuously posted at the place of employment.

Date September 22, 2011

John R. Leahy, Senior Engineer

STORMWATER INFORMATION HANDOUT

For Construction on

STATE HIGHWAY
IN
ALAMEDA COUNTY

IN LIVERMORE
FROM 0.1 MILE WEST OF GREENVILLE ROAD UNDERCROSSING
TO 0.5 MILE WEST OF 84/580 SEPARATION

04-ALA-580 R8.4/R14.6
CONTRACT No. 04-2908C4

Table of Contents

1. Notice of Intent
2. Vicinity Map
3. Layout Plans
4. Temporary Creek Diversion Details
5. Erosion Control Plans and Details
6. Contour Grading Plans
7. Drainage Plans with Discharge Locations and Sampling Locations
8. Drainage Area Maps and Hydrology Data
9. Rainfall Data
10. Wetlands and Waters of the U.S.
11. CRWQCB 401 Certification
12. Risk Assessment

1. Notice of Intent

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

NOTICE OF INTENT (NOI) to comply with the terms of the region wide General National Pollutant Discharge Elimination System (NPDES) Permit authorizing discharges from surface water treatment facilities.

General Permit No. CAG382001
Order No. R2-2003-0062

FOR REGIONAL BOARD USE ONLY

WDID:	**Date NOI Received:**	**Date NOI Processed:**
Case handler's Initial:	**Fee Amount Received*:** **$**	**Check #:**

* Annual fee will be based on permitted discharge flow rate and fee schedule adopted available at www.swrcb.ca.gov. Fee schedule is subject to change. If your facility only has emergency discharge, the first annual fee is $1,000, and the succeeding annual fee will be based on the discharge rate in the previous year and the most current fee schedule available at www.swrcb.ca.gov.

I. OWNER/OPERATOR INFORMATION (Provide a separate form for each facility)

A. Agency Information

Agency Name California Department of Transportation		Agency Type (Check One) 1.☒ Public Agency 2.☐ Private 3.☐ Other, specify the type:	
Agency Address 111 Grand Avenue			
City Oakland	State CA	Zip Code 94612	Agency Phone No.
Contact Person's Name & Title	Contact Person's Email	Contact Person's Phone No.	

B. Facility Information

1. Facility Name Interstate 580		Operator Type (Check One) 1.☒ Public Agency 2.☐ Private 3.☐ Other, specify the type:
Facility Location Livermore		Facility Phone No.
City	State	Zip Code
Contact Person's Name & Title	Contact Person's Email	Contact Person's Phone No.

II. BILLING ADDRESS

Send to: ☒ **Owner/Operator** *(Enter information at right **only** if it is different from above)* ☐ **Other** *(Enter information at right)*	Name		
	Mailing Address		
	City	State	Zip Code

III. DISCHARGE EFFLUENT INFORMATION

1. Describe the proposed discharge(s). List any potential pollutants in the discharge. Attach additional sheets if needed.

2. List types of discharge:

☐ Backwash water/settling basin discharge	☐ Treatment unit discharge	☐ Treatment unit leakage	☐ Treatment unit drainage water
☐ Treatment unit flushing water	☐ Water storage drainage		☐ Raw water release

☐ Any other discharges? Specify:

3. Total Discharge flow rate/maximum permitted discharge flow rate: _____
   Average daily flow rate (gallons/day): _____
   Maximum daily flow rate (gallons/day): _____

4. Frequency of settling basin discharge:
   ☐ Continuous ☐ Daily ☐ Intermittent ☐ Emergency

IV. DISCHARGE WATER QUALITY PARAMETERS

1. Grab sample of the following parameters must be tested and reported. Provide laboratory data sheets in addition to completing the following tables.

Discharge point 1:

Parameter	Value or Range of Values	Units	Test Method	Method Detection Limit	# of samples
Effluent Monitoring					
Turbidity (0.1 NTU)		NTU			
Total Suspended Solids		mg/L			
pH (0.1 standard units)				Not applicable	
Chlorine Residual		mg/L			

Copper		µg/L			
Zinc		µg/L			

Discharge point 2:

Parameter	Value or Range of Values	Units	Test Method	Method Detection Limit	# of samples
Effluent Monitoring					
Turbidity (0.1 NTU)		NTU			
Total Suspended Solids		mg/L			
pH (0.1 standard units)				Not applicable	
Chlorine Residual		mg/L			
Copper		µg/L			
Zinc		µg/L			

Discharge point 3:

Parameter	Value or Range of Values	Units	Test Method	Method Detection Limit	# of samples
Effluent Monitoring					
Turbidity (0.1 NTU)		NTU			
Total Suspended Solids		mg/L			
pH (0.1 standard units)				Not applicable	
Chlorine Residual		mg/L			
Copper		µg/L			
Zinc		µg/L			

Attach separate sheets if there are more than three discharge points.

V. RECEIVING WATER INFORMATION

Name(s) of Receiving State Water:

Receiving water 1 _____
Receiving water 2 _____
Receiving water 3 _____

Discharge Point Coordinates into the Receiving State Water:

Receiving water 1
Discharge point 1: Latitude: _____ Longitude: _____ Hardness range:_____
Discharge point 2: Latitude: _____ Longitude: _____ Hardness range:_____
Discharge point 3: Latitude: _____ Longitude: _____ Hardness: _____

Receiving water 2
Discharge point 1: Latitude: _____ Longitude: _____ Hardness range:_____
Discharge point 2: Latitude: _____ Longitude: _____ Hardness range:_____
Discharge point 3: Latitude: _____ Longitude: _____ Hardness range:_____

Receiving water 3
Discharge point 1: Latitude: _____ Longitude: _____ Hardness: _____
Discharge point 2: Latitude: _____ Longitude: _____ Hardness: _____
Discharge point 3: Latitude: _____ Longitude: _____ Hardness: _____

Are there any additional receiving State water or discharge point?
☐ No ☐ Yes, if yes, provide the information on a separate sheet.

VI. LOCATION MAP

Attach a topographic map or maps of the area. The map(s) should clearly show the following:

1. The legal boundaries of the facility;

2. Locations of all water and wastewater treatment units including sludge handling process if any, such as sand filters, backwash water settling basins;

3. Locations of all the chemical storage tanks and indicate if the secondary containment is provided for each unit.

4. Indicate all the on-site chemical transportation pipelines.

5. The location and identification number of each of the facility's existing and/or proposed intake and discharge points; and

6. The receiving State water(s) and receiving storm water drainage system(s), if applicable, identified and labeled.

VII. FLOW CHART

Attach a flow chart or line drawing diagram showing the general route taken by the effluent from intake to discharge.

VIII. SITE-SPECIFIC BEST MANAGEMENT PRACTICES (BMPs) PLAN

Attach a site-specific BMPs plan on separate sheets with reference to item IX. The site-specific BMPs plan shall address all specific means of controlling the discharge of pollutants from the facility. The site-specific BMPs plan shall also include schedule and procedures for plan review, plan implementation and annual training.

☐ Site-specific BMPs plan is attached with this NOI
☐ Attached a copy of BMPs plan required by municipality for potable water discharges from this facility.
☐ Site-specific BMPs plan will be submitted 30 days before the commencement of the operation.

Attached a BMP plan for dewatering effluent discharge from water storage facilities at treatment plant.

☐ BMPs plan is attached with this NOI
☐ BMPs plan will be submitted 30 days before the dewatering operation

IX. AUTHORIZATION OF REPRESENTATIVE

1. This statement authorizes the named individual or any individual occupying the named position of the company/organization listed below to act as our representative to process the required NOI Form for coverage under the NPDES General Permit for discharge to State waters from the subject facility. The Owner hereby agrees to comply with and be responsible for all the conditions specified in the General Permit.

   Company/Organization Name: _____

   Street Address: _____

   City, State and Zip Code+4: _____

   Authorized Contact Person & Title: _____

   Phone No.: (___) _____ Fax No.: (___) _____

   E-mail address: _____

2. A separate authorization statement is attached:

   Yes _____ No _____

X. CERTIFICATION

" I certify under penalty of law that this document and all attachments were prepared under my direct supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those directly responsible for gathering the information, the information submitted is, true, accurate, and complete to the best of my knowledge and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. In addition, I certify that the provisions of the permit, including the criteria for eligibility and the development and implementation of Pollution Prevention Practices, if required, will be complied with."

Signature _____ Date: _____

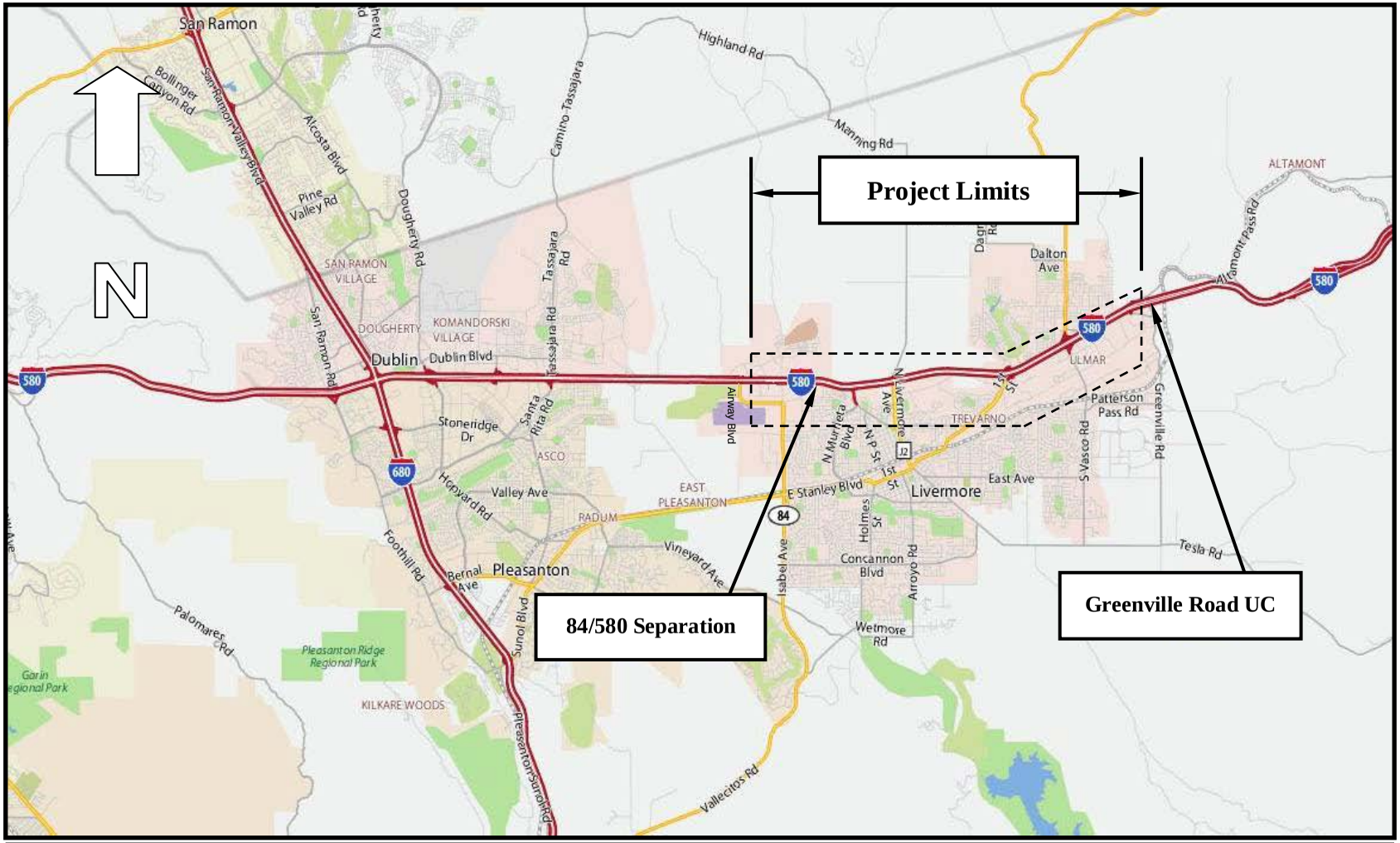
Printed Name & Title: _____

Facility/Agency Name: _____

Phone No.: _____ Fax No.: _____

E-mail address: _____

2. Vicinity Map



I-580 WESTBOUND HIGH OCCUPANCY VEHICLE LANE PROJECT

IN ALAMEDA COUNTY
IN LIVERMORE, DUBLIN, AND PLEASANTON
FROM 0.1 MILE WEST OF GREENVILLE ROAD UNDERCROSSING
TO 0.5 MILE WEST OF 84/580 SEPARATION
04-Ala-580, PM R8.4/R14.6

PROJECT VICINITY MAP

NO SCALE

3. Layout Plans

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

NOTES:

1. COORDINATES, DISTANCES AND BEARINGS SHOWN ARE BASED ON CALIFORNIA COORDINATE SYSTEM OF 1983, ZONE 3, (2007.00) EPOCH DATE. MULTIPLY DISTANCE SHOWN BY 1.00007047 TO OBTAIN GROUND LEVEL DISTANCES.
2. ELEVATIONS SHOWN ARE BASED UPON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) IN FEET.
3. FOR DIKE TRANSITIONS AT TYPES AT MBGR, SEE STANDARD PLAN A77C4 AND A77E.
4. SEE CONSTRUCTION DETAIL SHEETS FOR DETAILS OF TEMPORARY FENCE (WILDLIFE EXCLUSION) AND TEMPORARY FENCE (TYPE ESA).
5. FOR PAVEMENT STRUCTURAL SECTION TYPES, SEE PAVEMENT STRUCTURAL SECTIONS TYPICAL CROSS SECTIONS SHEET X-1.
6. FOR LIMITS AND LOCATIONS OF COLD PLANE AND AC SURFACING, SEE SUMMARY OF QUANTITIES SHEETS.
7. FOR CONTOUR GRADING, SEE CONTOUR GRADING SHEETS.
8. CONTRACTOR SHALL VERIFY EXISTING FIELD CONDITIONS PRIOR TO COMMENCEMENT OF WORK.

LEGEND:

- (No.) CURVE DATA
- [No.] STRUCTURAL SECTION NUMBER
- HMA AND/OR RHMA OVERLAY
- COLD PLANE AC PAVEMENT & HMA AND/OR RHMA OVERLAY (0.20' TO 1.20')
- MINOR CONCRETE (TEXTURED PAVING)
- REMOVE BASE AND SURFACING
- MINOR CONCRETE (12" DEPTH)
- x—TWEF—x TEMPORARY FENCE (WILDLIFE EXCLUSION)
- x—TESA—x TEMPORARY FENCE (TYPE ESA)
- VC VEGETATION CONTROL (MINOR CONCRETE)
- W IRRIGATION CROSSOVER

ABBREVIATIONS:

AFTS	ALTERNATIVE FLARED TERMINAL SYSTEM
AITS	ALTERNATIVE IN-LINE TERMINAL SYSTEM
Barr	BARRIER
CHP	CALIFORNIA HIGHWAY PATROL ENFORCEMENT AREA
IRR XOVER	Exist IRRIGATION CROSSOVER
TCE	TEMPORARY CONSTRUCTION EASEMENT
LSS	LIMIT OF STRUCTURAL SECTION
MVP	MAINTENANCE VEHICLE PULLOUT
PNT	POINT
w/	WITH
Rem	REMOVE
RSC	RAPID STRENGTH CONCRETE
C&G	CURB AND GUTTER

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 1/18/12

PLANS APPROVAL DATE

N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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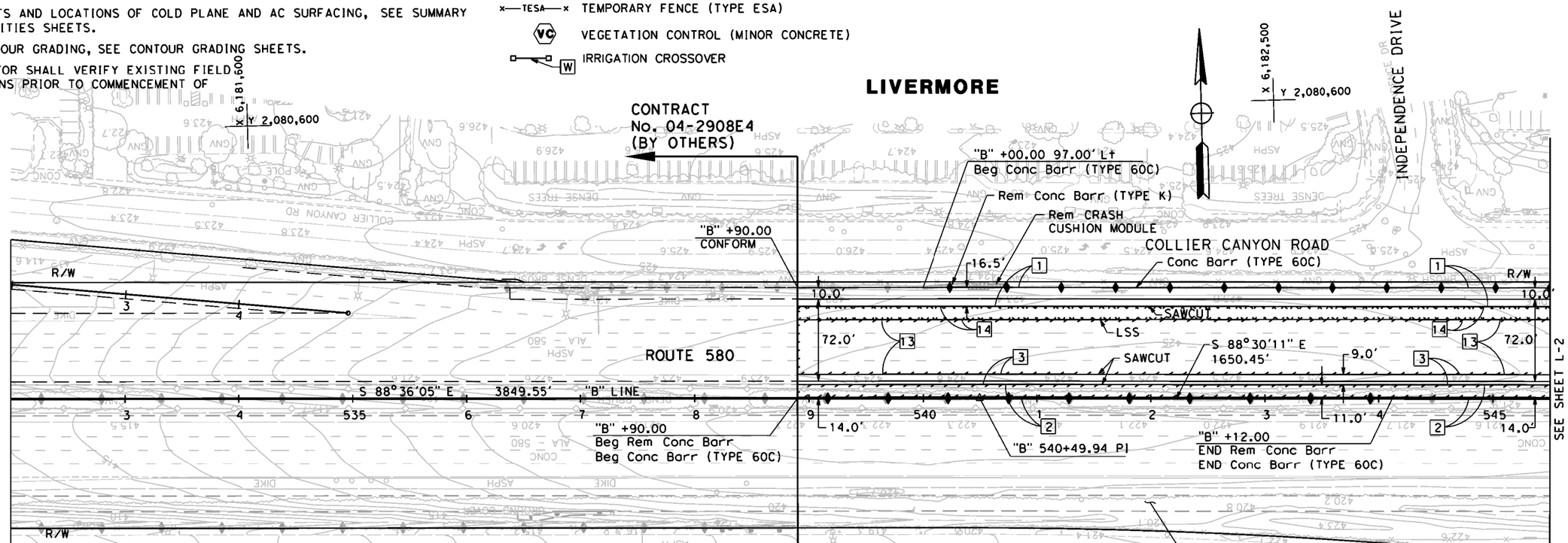
4670 WILLOW ROAD, SUITE 250
PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612



LAYOUT

SCALE: 1" = 50'

L-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

REVISED BY	DATE REVISED
TC	1/18/12

CALCULATED-DESIGNED BY: TRAVIS CHAN
CHECKED BY: LUIS GARCIA

LAST REVISION 01-18-12
DATE PLOTTED =>1/17/2012
TIME PLOTTED =>7:03:57 PM

BORDER LAST REVISED 7/2/2010

USERNAME => ASHU
DGN FILE => 0400021248ea001.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0735

PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
(350)	3000.00′	3°11′29″	83.57′	167.10′	2083390.249	6183643.050
(351)	20000.00	00°19′36″	57.00′	114.00′	2060424.433	6184902.275

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 1/18/12

N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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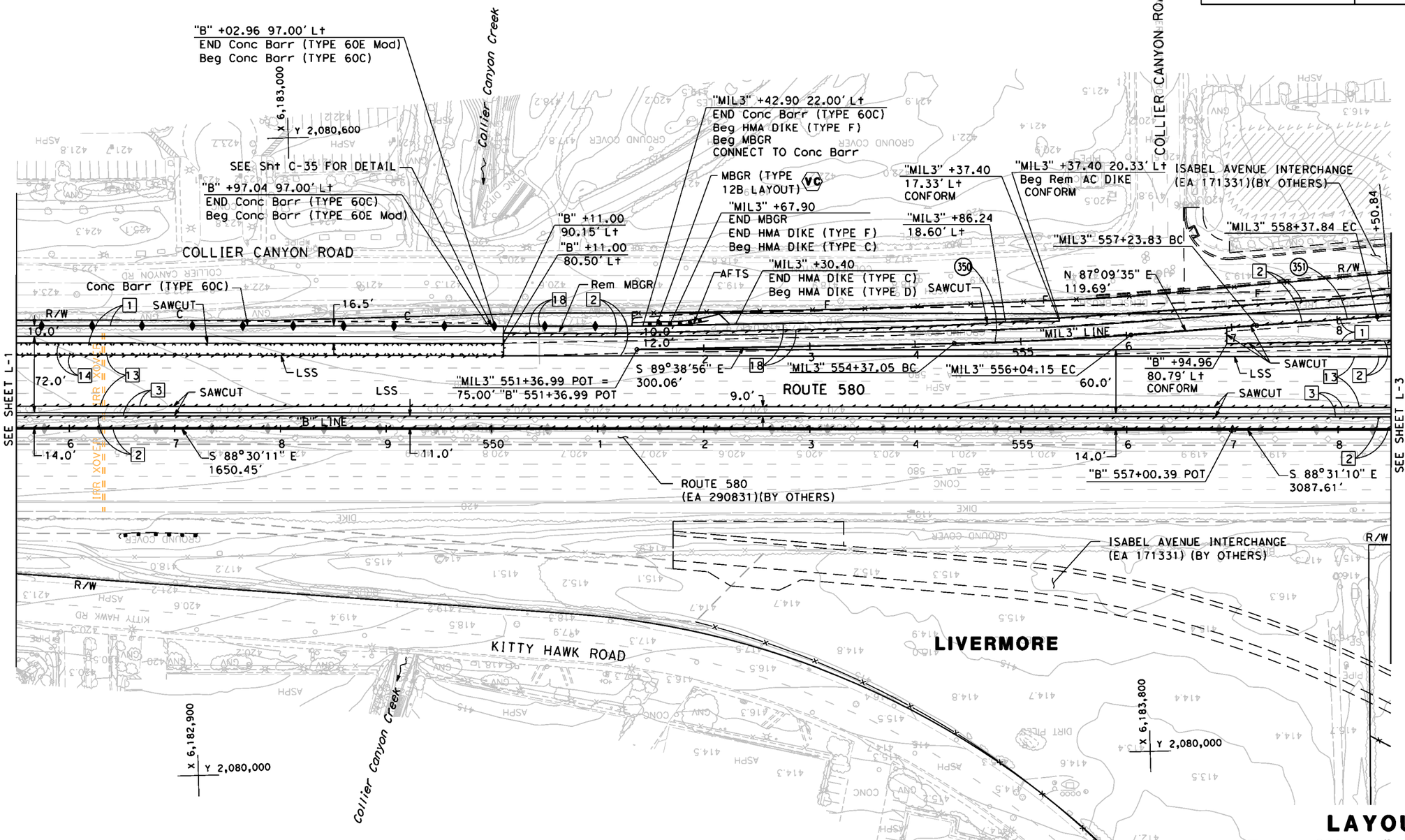
OAKLAND, CA. 94612



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

LAYOUT

SCALE: 1" = 50′

L-2

	REVISED BY	DATE REVISED
	TC	1/18/12
	TRAVIS CHAN	
CALCULATED-DESIGNED BY	LUIS GARCIA	
CHECKED BY		

CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 01-18-12 — DATE PLOTTED =>1/17/2012 TIME PLOTTED =>7:04:08 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ea002.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 1/18/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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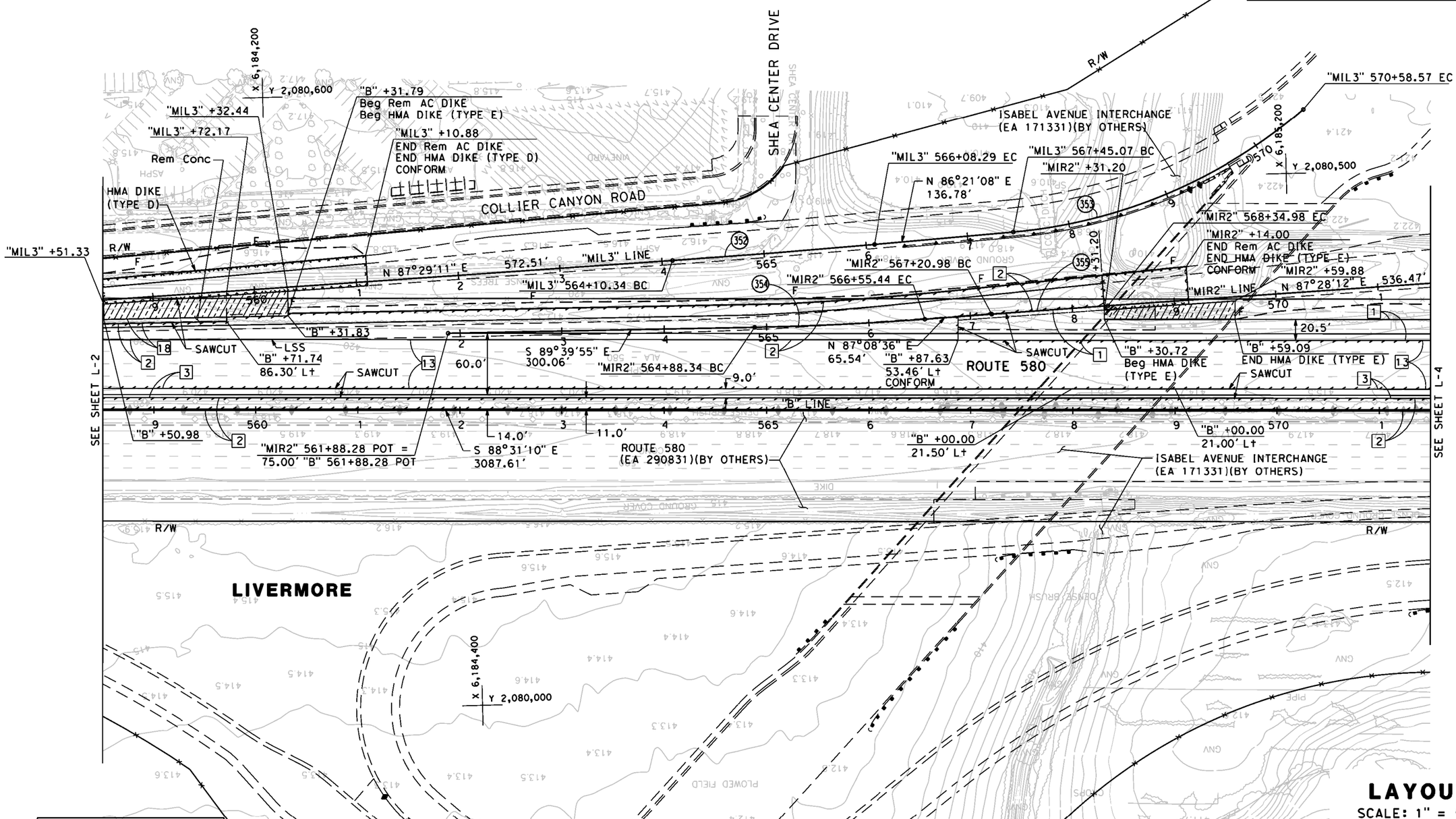
PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
352	9999.98′	1°08′03"	98.98′	197.94′	2090420.656	6184158.506
353	503.94′	35°38′37"	162.01′	313.50′	2080952.553	6184899.174
354	3000.00′	3°11′29"	83.57′	167.10′	2083363.017	6184693.104
355	20000.00′	0°19′36"	57.00′	114.00′	2060394.865	6185904.829



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

LAYOUT
SCALE: 1" = 50'

L-3

REVISED BY	DATE REVISED
TC	1/18/12

CALCULATED-DESIGNED BY: TRAVIS CHAN
CHECKED BY: LUIS GARCIA

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

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BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU DGN FILE => 0400021248ea003.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/18/12 DATE

PLANS APPROVAL DATE

N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612

FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
356	147.64′	133°55′44"	347.21	345.10	2080546.544	6185551.384
357	122.76′	64°16′12"	77.11′	137.70′	2080606.720	6185524.183
358	688.97′	37°10′54"	231.74′	447.10′	2081063.141	6186260.683
52	20074.00	0°34′23"	100.37′	200.74′		
53	19932.00	0°25′45"	74.66′	149.32′		

"MIR3" 571+87.74 POT
"MIR2" 579+15.42 EC
"MIR2" 577+77.73 BC
N 46°27′32" W 61.17′
X 6,185,500 Y 2,080,600
"MIR2" 577+16.55 EC
S 46°27′31" E 358.58′
ISABEL AVENUE INTERCHANGE (EA 171331)(BY OTHERS)
"MIR3" 575+46.32 BC
"MIR3" 579+93.42 EC
"MIR2" 573+71.45 BC
"MIR2" LINE
N 87°28′12" E 536.47
"MIR3" LINE
"B" +50.00 Beg HMA DIKE (TYPE E)
"B" +00.01 BC 89.00′ Lt
"B" +00.75 EC 88.00′ Lt
"B" +50.68 BC 79.56′ Lt
"B" +70.00 END HMA DIKE (TYPE E)
"B" +07.16 111.49′ Lt END TEMPORARY FENCE (TYPE ESA)
"B" +13.71 80.13′ Lt Beg TEMPORARY FENCE (TYPE ESA)
"B" +00.00 EC 79.00′ Lt
"B" +16.17 79.00′ Lt CONFORM
"MIR3" +34.29 CONFORM
"B" +87.46 78.84′ Lt CONFORM
"B" +49.44 21.00′ Lt CONFORM
"B" +76.08 21.00′ Lt CONFORM
S 83°38′25" E 779.67′
"MIR3" +34.29 3.94′ Rt Beg CRASH CUSHION (TYPE ADIEM)
Rem CRASH CUSHION
Rem MBGR
"B" +20 LSS
CONFORM (SEE Sht C-24, FOR DETAIL)
"B" +00.00 END Rem Conc Barr END Conc Barr (TYPE 60C)
"B" +30.00 Beg Rem Conc Barr Beg Conc Barr (TYPE 60C)
S 88°31′10" E 3087.61′
ROUTE 580 (EA 290831)(BY OTHERS)
ARROYO LAS POSITAS BRIDGE
ROUTE 580
"B" LINE
SAWCUT
SAWCUT
14.0′
20.5′
60.0′
9.0′
11.0′6
10.0′
58.0′
14.0′
+30.00 LSS
SEE SHEET L-3
SEE SHEET L-5
R/W
F/C
C/F
X 6,186,400 Y 2,080,600
X 6,186,000 Y 2,080,000
Arroyo Las Positas Creek
EAST AIRWAY BOULEVARD
LIVERMORE

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

LAYOUT

SCALE: 1" = 50′

L-4

REVISED BY	DATE REVISED
TC	1/18/12

CALCULATED-DESIGNED BY: TRAVIS CHAN
CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION DATE PLOTTED =>1/17/2012 TIME PLOTTED =>7:04:37 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ea004.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
(1)	1966.50'	14°48'26"	255.53'	508.21'	2078256.836	6186921.631
(55)	2186.00'	14°01'17"	268.82'	534.96'		

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/18/12 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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ALAMEDA CTC
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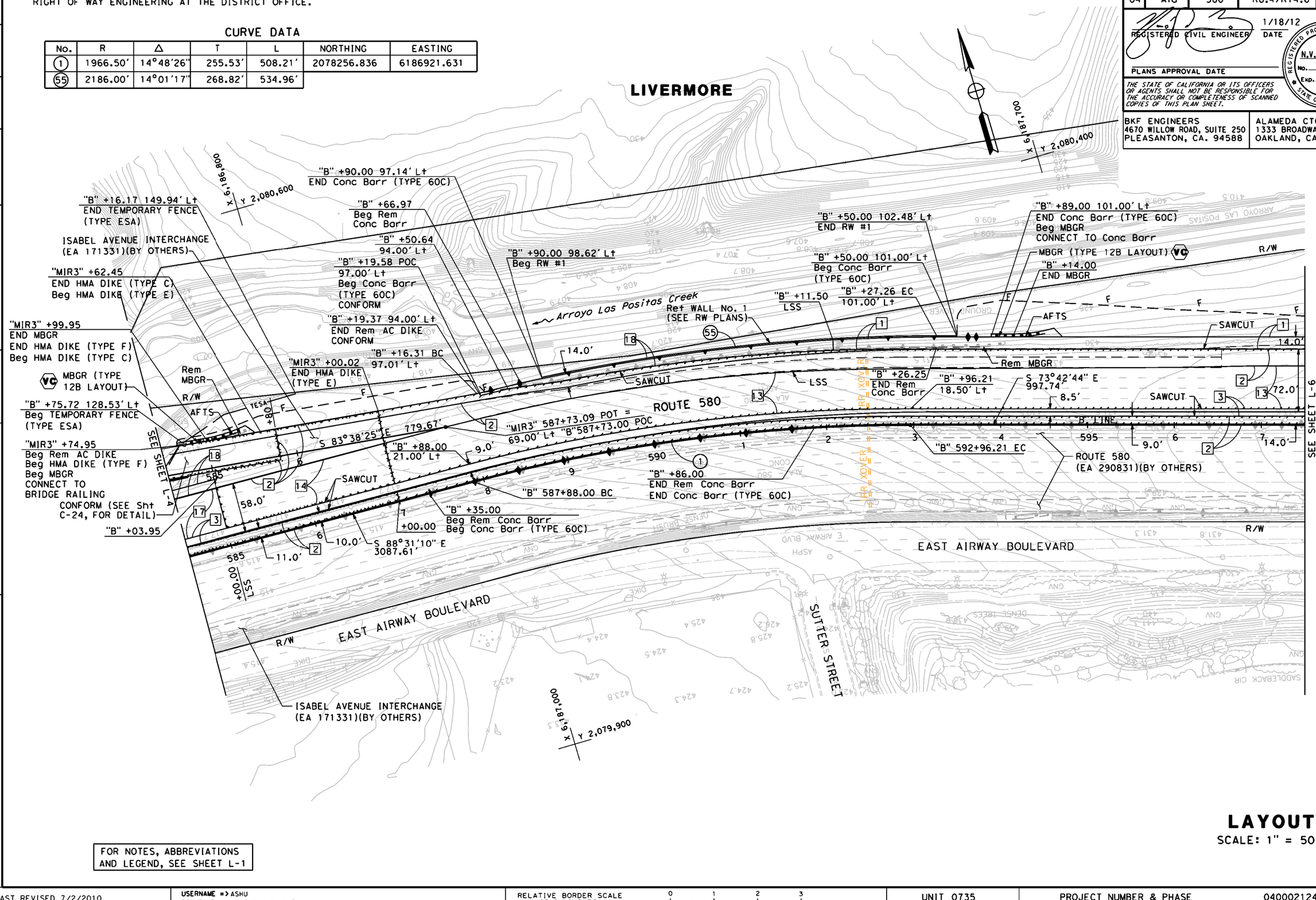
OAKLAND, CA. 94612



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

LAYOUT

SCALE: 1" = 50'

L-5

REVISED BY	DATE REVISED
TC	1/18/12

CALCULATED-DESIGNED BY: TRAVIS CHAN
CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION: DATE PLOTTED =>1/17/2012 TIME PLOTTED =>7:04:48 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ea005.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
(2)	3000.00'	21°46'29"	577.02'	1140.12'	2082744.181	6189272.234

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 1/18/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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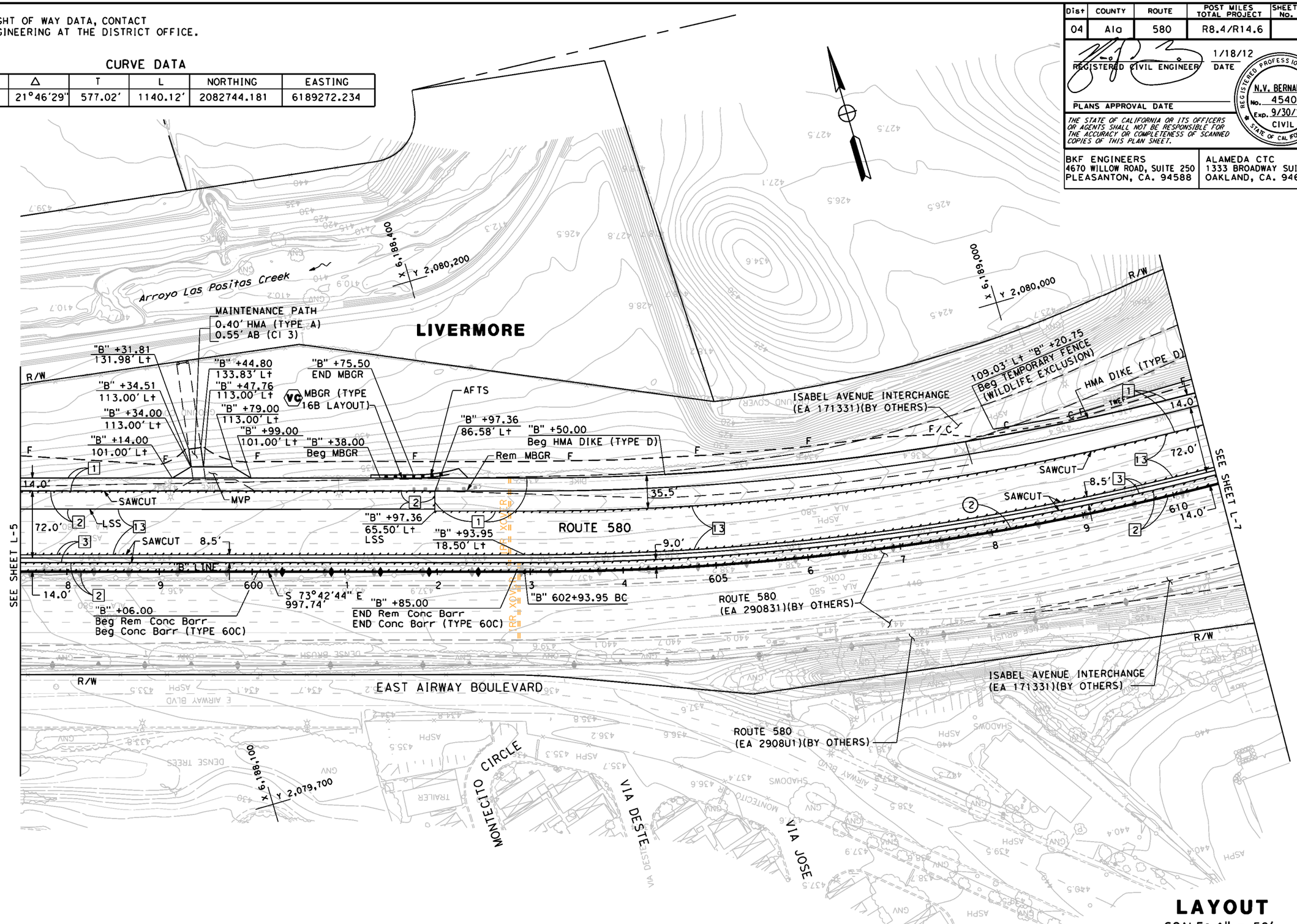

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

LAYOUT
SCALE: 1" = 50'

L-6

REVISED BY	DATE REVISED
TC	1/18/12

CALCULATED-DESIGNED BY: TRAVIS CHAN
CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 01-18-12 | DATE PLOTTED =>1/17/2012 | TIME PLOTTED =>7:04:58 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ea006.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
(2)	3000.00'	21°46'29"	577.02'	1140.12'	2082744.181	6189272.234

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 1/18/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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OAKLAND, CA. 94612

LIVERMORE

ISABEL AVENUE INTERCHANGE
(EA 171331)(BY OTHERS)

X 6,189,300
Y 2,080,100

LIVERMORE CITY LIMITS
ALAMEDA COUNTY

Arroyo Los Positas Creek

"B" +02.23 76.33' Lt
END TEMPORARY FENCE
(WILDLIFE EXCLUSION)

"B" +97.30 75.49' Lt
Beg TEMPORARY FENCE
(TYPE ESA)

APPROACH SLAB
(SEE Str PLANS)

"B" +39.45
END HMA DIKE (TYPE D)

"B" +61.24 65.50' Lt
CONFORM

"B" +50.00 101.00' Lt
Beg HMA DIKE (TYPE D)

"B" +30.00
113.00' Lt

"B" +85.00
113.00' Lt

"B" +65.00 101.00' Lt
END HMA DIKE (TYPE D)

"B" +83.49 156.52' Lt
END TEMPORARY FENCE
(TYPE ESA)

"B" +11.09 161.90' Lt
END TEMPORARY FENCE
(TYPE ESA)

"B" +07.21 76.00' Lt
Beg TEMPORARY FENCE
(WILDLIFE EXCLUSION)

X 6,190,200
Y 2,080,100

"B" +11.09 78.22' Lt
Beg TEMPORARY FENCE
(TYPE ESA)

"B" +48.41 102.48' Lt
Beg RW #2

"B" +80.00 102.48' Lt
END RW #2

"B" +80.00 101.00' Lt
Beg Conc Barr
(TYPE 60C)

SOIL NAIL
EASEMENT

Ret WALL No. 3
(SEE Str PLANS)

"B" +00.00 101.94' Lt
Beg RW #3

"B" +00.00 101.00' Lt
END Conc Barr
(TYPE 60C)

CAYETANO
COURT

TEMPORARY FENCE
(WILDLIFE EXCLUSION)

HMA DIKE (TYPE D)

ARROYO LAS
POSITAS
BRIDGE (WIDEN)
No. 33-0203
(SEE Str PLANS)

CONFORM (SEE
Sht C-35, FOR
DETAIL)

Ret WALL No. 2
(SEE RW PLANS)

R/W

14.0'

35.5'

+60.00
LSS

MVP

72.0'

SAWCUT

8.5'

"B" +69.65 18.50' Lt
CONFORM

APPROACH SLAB
(SEE Str PLANS)

ROUTE 580
N 84°30'47" E "B" LINE
2457.69'

"B" 614+34.06 EC

"B" 617+85.90± EB

"B" 619+62.40± BB

9.0'

ROUTE 580
(EA 290831)(BY OTHERS)

CONFORM (SEE Sht
C-24, FOR DETAIL)

35.5'

+95.00
LSS

Rem MBGR

"B" +63.91 65.50' Lt
CONFORM

"B" +72.51 18.50' Lt
CONFORM

SAWCUT

Conc Barr
(TYPE 60C)

ROUTE 580
(EA 290841)

CONFORM (SEE Sht
C-24, FOR DETAIL)

"B" +62.40
Beg Rem Conc Barr
Beg Conc Barr (TYPE 60C)

ROUTE 580
(EA 2908U1)(BY OTHERS)

BRIDGE REMOVAL
ISABEL AVENUE INTERCHANGE
(EA 17133)(BY OTHERS)

PORTOLA AVENUE

ISABEL AVENUE INTERCHANGE
(EA 171331)(BY OTHERS)

Arroyo Los Positas Creek

X 6,190,300
Y 2,079,600

SEE SHEET L-6

SEE SHEET L-8

FOR NOTES, ABBREVIATIONS
AND LEGEND, SEE SHEET L-1

LAYOUT

SCALE: 1" = 50'

L-7

TC	1/18/12	TRAVIS CHAN	LUIS GARCIA
REVISED BY	DATE REVISED	CALCULATED-DESIGNED BY	CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

LAST REVISION 01-18-12 — DATE PLOTTED =>1/17/2012 — TIME PLOTTED =>7:05:10 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ea007.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 1/18/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
N.V. BERNARDI
No. 45407
Exp. 9/30/12
CIVIL
STATE OF CALIFORNIA

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PLEASANTON, CA. 94588

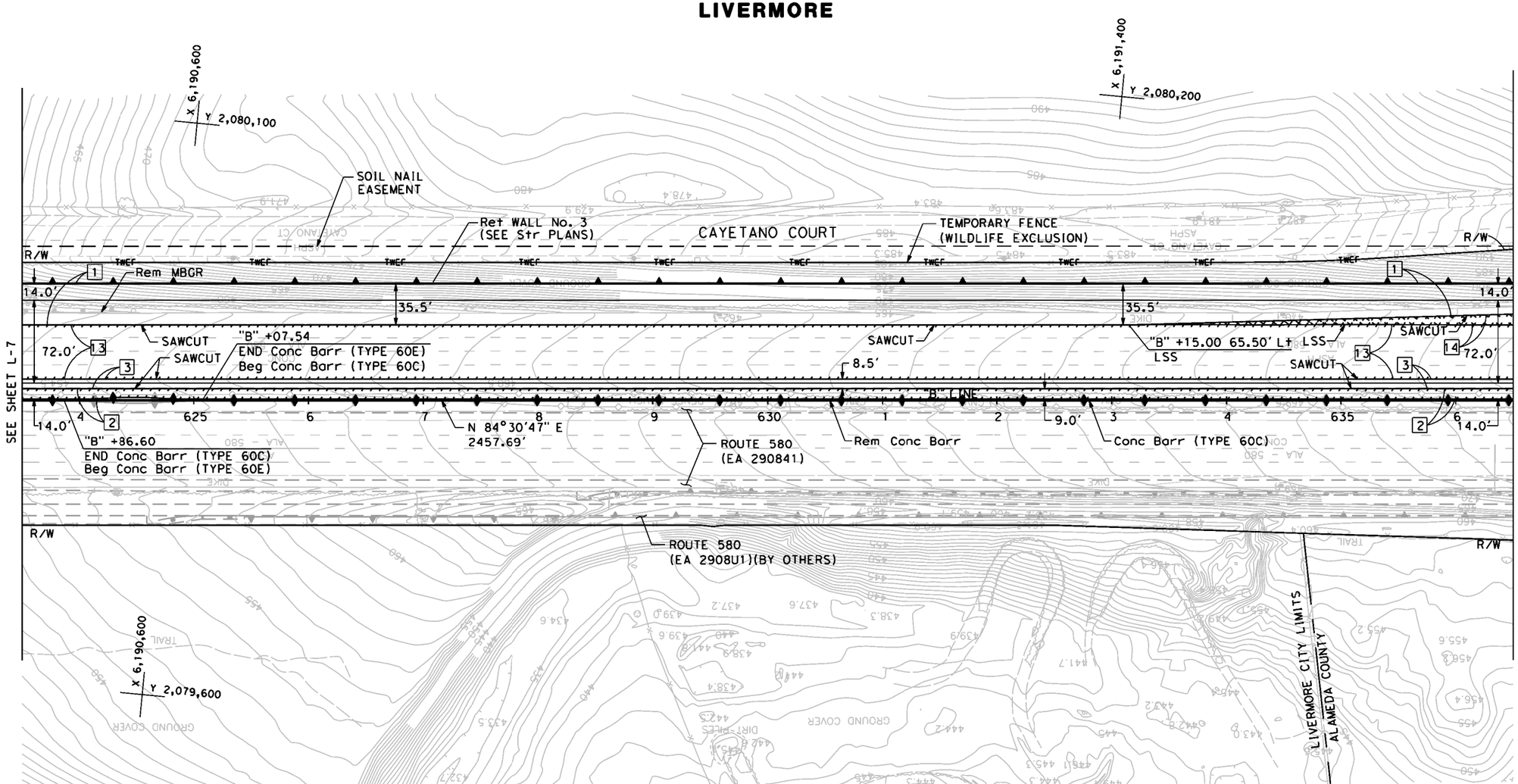
ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612

REVISED BY	DATE REVISED
TC	1/18/12

CALCULATED-DESIGNED BY: TRAVIS CHAN
CHECKED BY: LUIS GARCIA

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI
DESIGN SUPERVISOR: DI

LIVERMORE



LAYOUT

SCALE: 1" = 50'

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

L-8

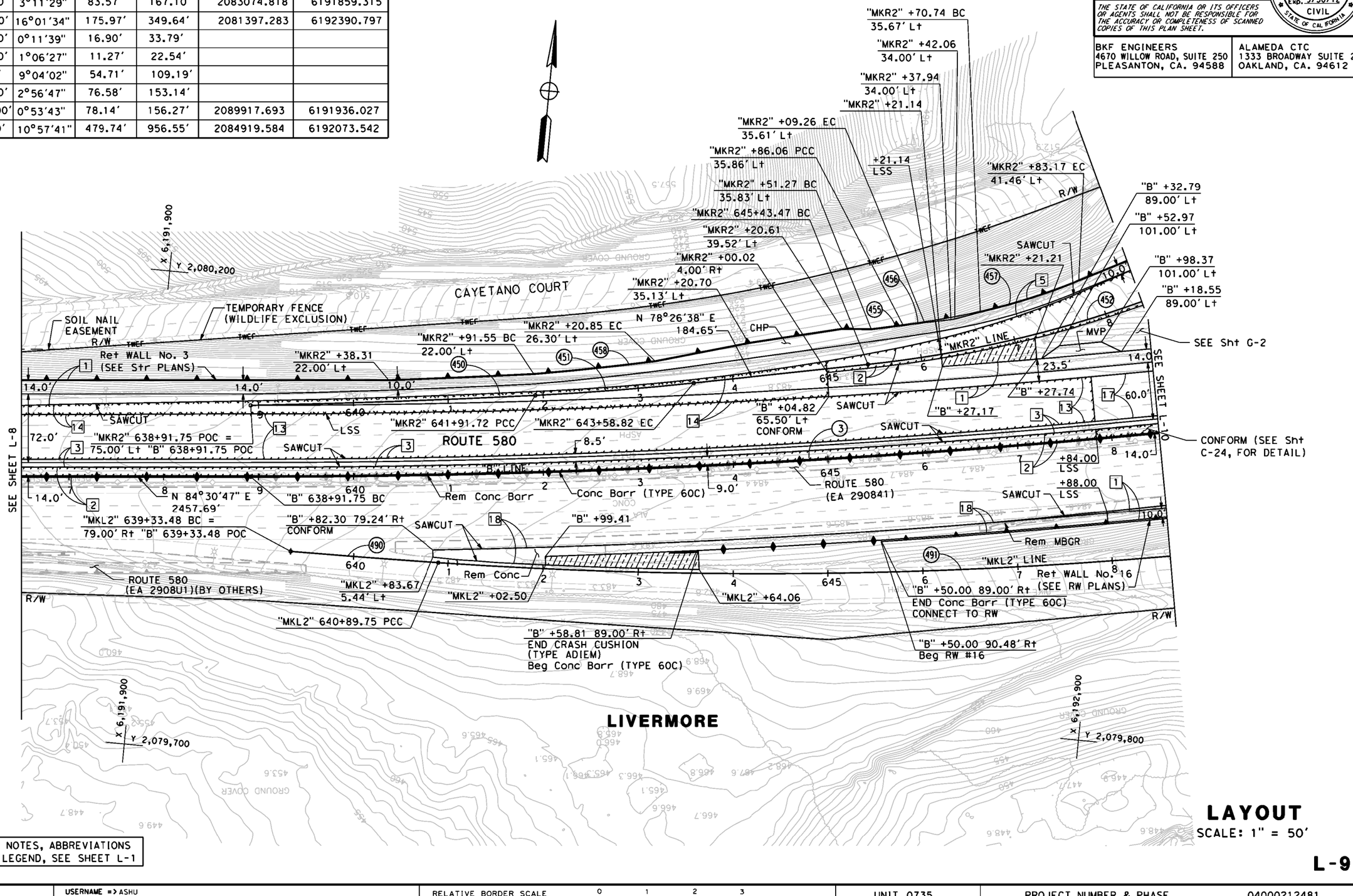
LAST REVISION 01-18-12
DATE PLOTTED =>1/17/2012
TIME PLOTTED =>7:05:21 PM

BORDER LAST REVISED 7/2/2010
USERNAME => ASHU
DGN FILE => 0400021248ea008.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0735
PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
3	10000.00′	5°32′15"	483.61′	966.46′	2089947.109	6191049.328
450	9925.00′	1°43′54"	150.00′	299.97′	2089926.150	6190851.907
451	3000.00′	3°11′29"	83.57′	167.10′	2083074.818	6191859.315
452	1250.00′	16°01′34"	175.97′	349.64′	2081397.283	6192390.797
455	9966.00′	0°11′39"	16.90′	33.79′		
456	1166.00′	1°06′27"	11.27′	22.54′		
457	690.00′	9°04′02"	54.71′	109.19′		
458	2978.00′	2°56′47"	76.58′	153.14′		
490	10000.00′	0°53′43"	78.14′	156.27′	2089917.693	6191936.027
491	5000.00′	10°57′41"	479.74′	956.55′	2084919.584	6192073.542



FOR NOTES, ABBREVIATIONS
AND LEGEND, SEE SHEET L-1

LAYOUT
SCALE: 1" = 50′

L-9

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 1/18/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

BKF ENGINEERS
4670 WILLOW ROAD, SUITE 250
PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612

REVISED BY	DATE REVISED
TC	1/18/12

CALCULATED-DESIGNED BY: TRAVIS CHAN
CHECKED BY: LUIS GARCIA

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI
Gibbons

LAST REVISION: DATE PLOTTED =>1/17/2012 TIME PLOTTED =>7:05:30 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ea009.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/18/12 DATE

PLANS APPROVAL DATE

N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612

FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
3	10000.00'	5°32'15"	483.61'	966.46'	2089947.109	6191049.328
452	1250.00'	16°01'34"	175.97'	349.64'	2081397.283	6192390.797
453	300.00'	16°43'58"	44.12'	87.61'	2080052.007	6193163.156
459	1047.00'	6°54'00"	63.12'	126.09'		
460	1033.00'	4°45'39"	42.94'	85.83'		
462	50.00'	53°11'17"	25.03'	46.42'		
470	1000.00'	25°46'22"	228.78'	449.82'	2080280.079	6194150.830
480	2000.00'	8°59'19"	157.20'	313.76'	2082371.840	6193473.943
491	5000.00'	10°57'41"	479.74'	956.55'	2084919.584	6192073.542

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
520	300.00'	13°15'27"	34.86'	69.42'	2080354.241	6193224.496
521	3000.00'	3°11'33"	83.60'	167.15'	2077305.015	6194582.337
526	2973.00'	0°07'46"	3.35'	6.71'		
527	2980.00'	2°01'15"	52.56'	105.11'		
528	2980.00'	1°02'30"	27.09'	54.17'		

LAYOUT
SCALE: 1" = 50'

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

SEE SHEET L-11

L-10

REVISED BY	DATE REVISED
TC	1/18/12

CALCULATED-DESIGNED BY	CHECKED BY
TRAVIS CHAN	LUIS GARCIA

CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION DATE PLOTTED =>1/17/2012
TIME PLOTTED =>7:05:42 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ea010.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/18/12 DATE

PLANS APPROVAL DATE

N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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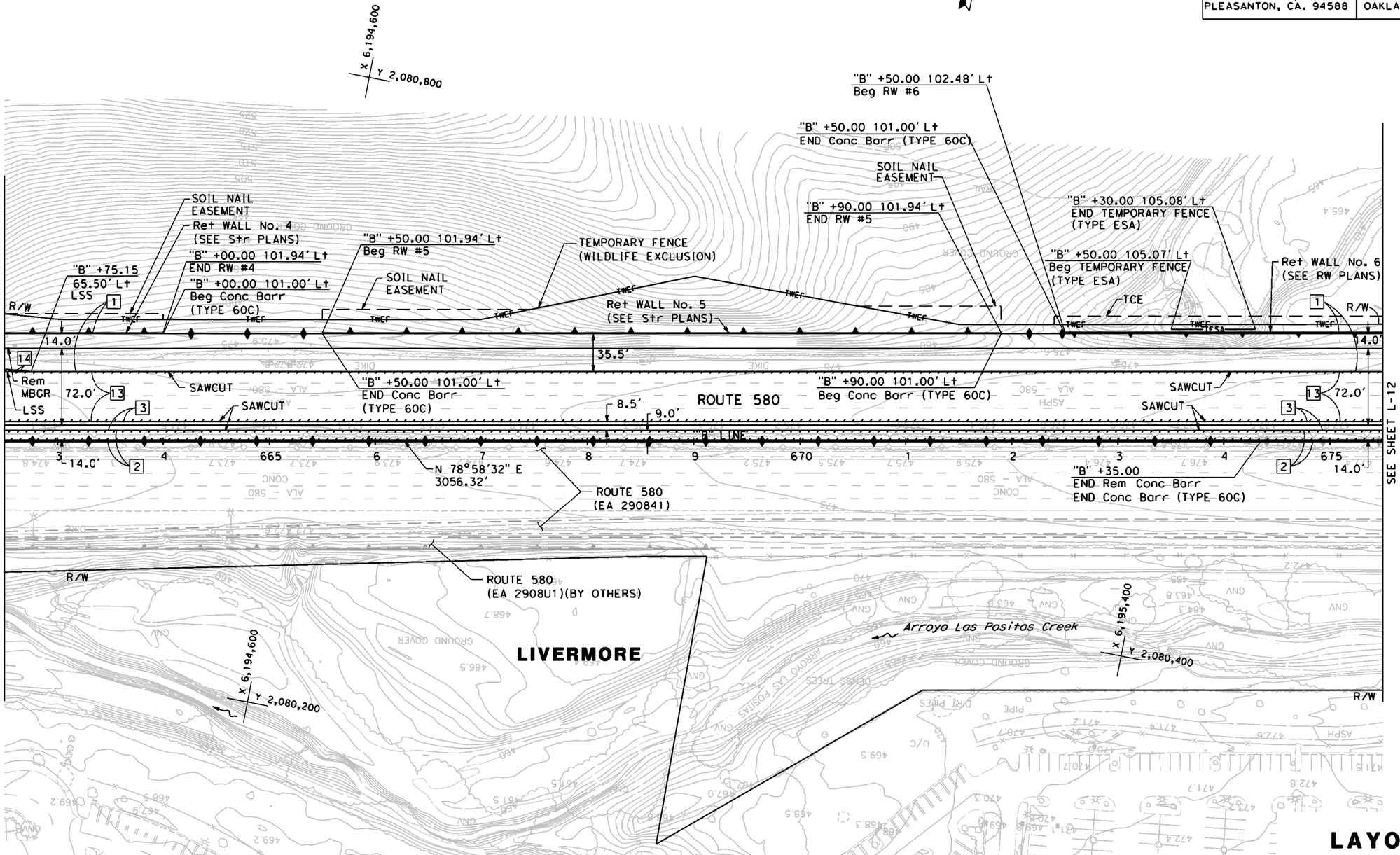
ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

LAYOUT

SCALE: 1" = 50'

L-11

	REVISED BY	DATE REVISED
CALCULATED-DESIGNED BY	TRAVIS CHAN	TC
CHECKED BY	LUIS GARCIA	1/18/12

CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 01-18-12 | DATE PLOTTED =>1/17/2012 | TIME PLOTTED =>7:05:53 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ea011.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
④	8000.00′	14°47′59"	1039.00′	2066.43′	2072863.729	6197491.319

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 1/18/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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ALAMEDA CTC
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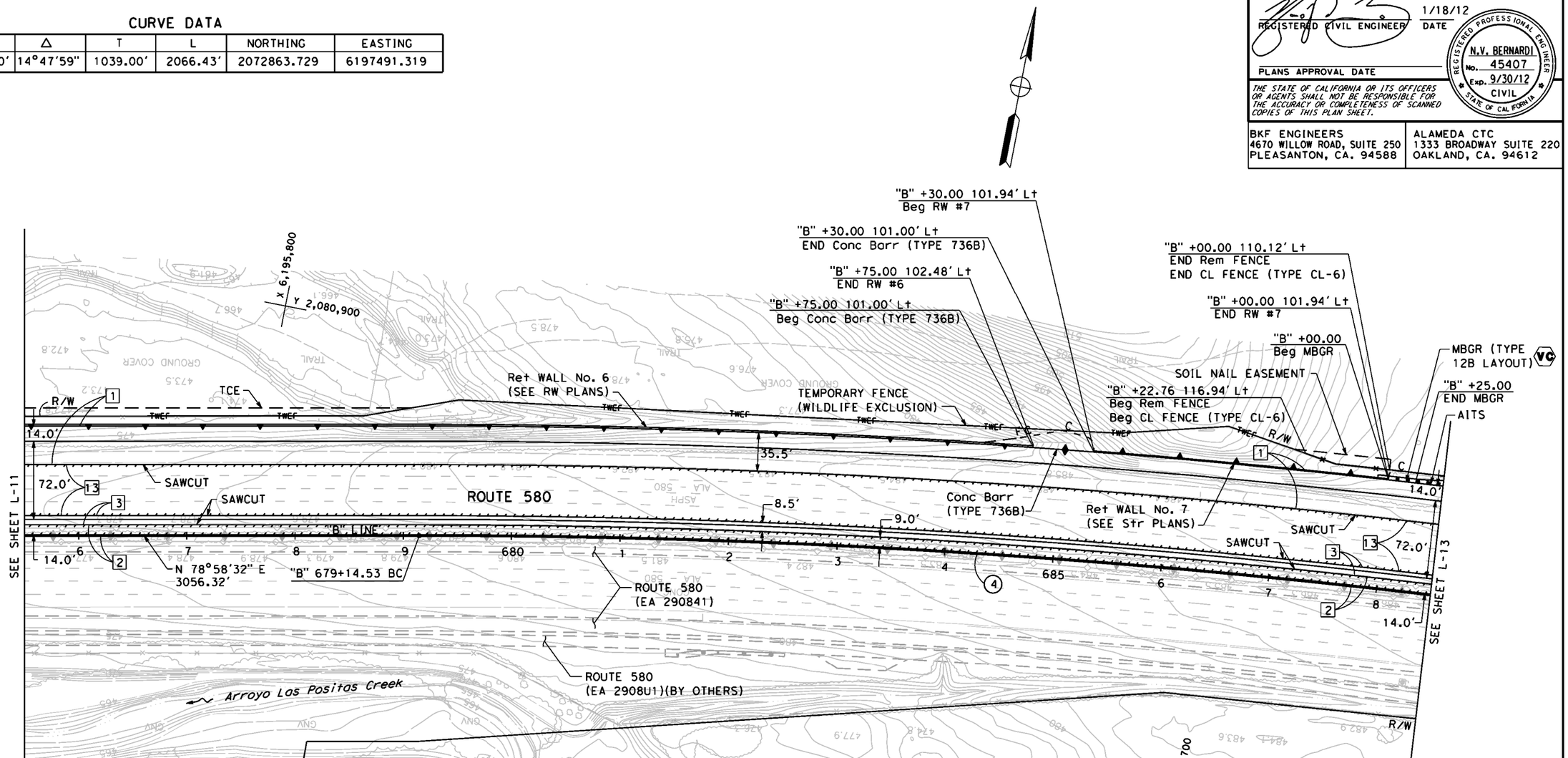
OAKLAND, CA. 94612



LAYOUT

SCALE: 1" = 50′

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

L-12

	REVISED BY	DATE REVISED
	TC	1/18/12

CALCULATED-DESIGNED BY: TRAVIS CHAN
CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION: 01-18-12
DATE PLOTTED => 1/17/2012
TIME PLOTTED => 7:06:03 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ea012.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
(4)	8000.00'	14°47'59"	1039.00'	2066.43'	2072863.729	6197491.319
(61)	8101.00'	0°37'35"	44.28'	88.55'		

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/18/12 DATE

N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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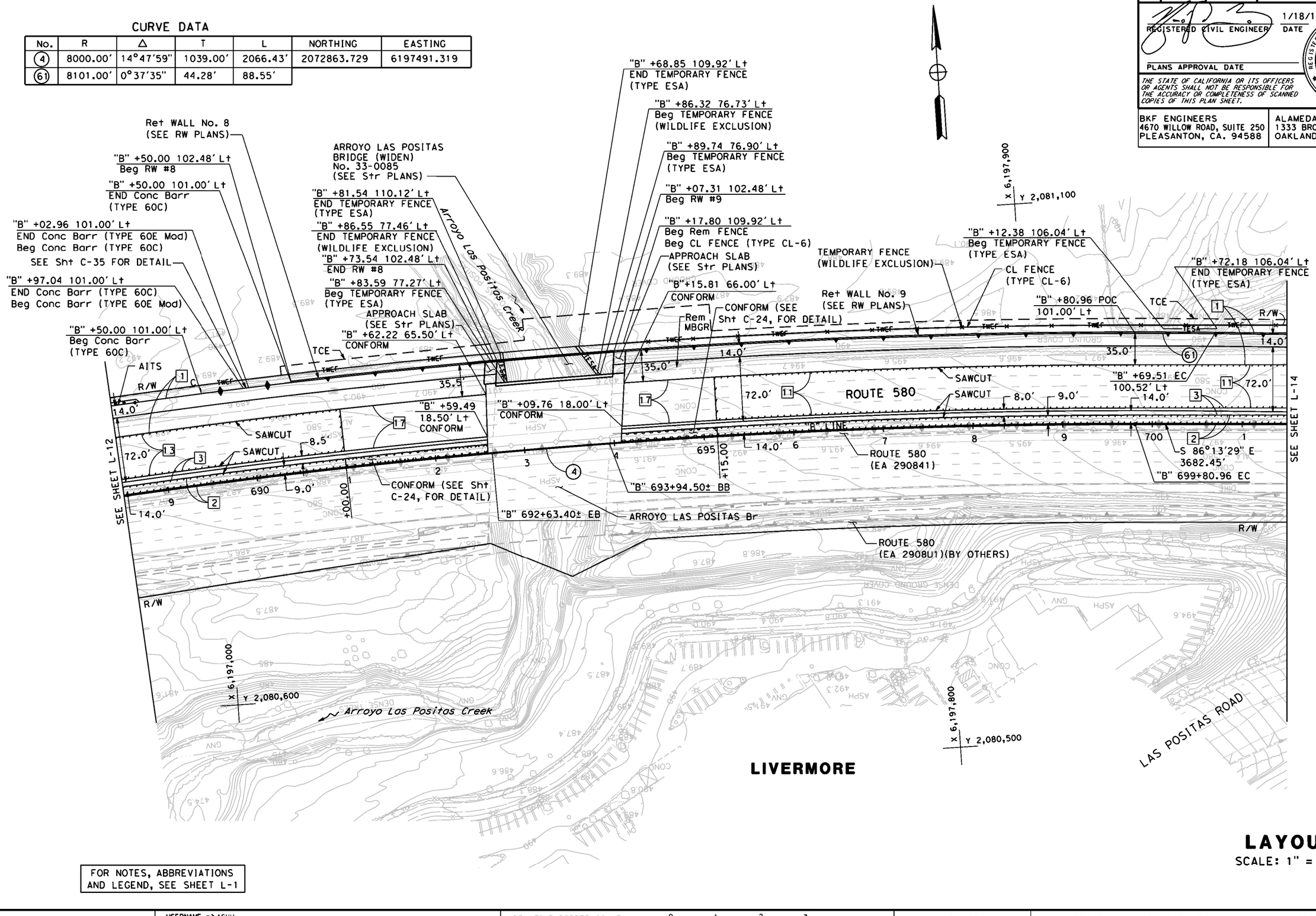
PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

LAYOUT

SCALE: 1" = 50'

L-13

REVISED BY	DATE REVISED
TRAVIS CHAN	1/18/12
LUIS GARCIA	

CALCULATED-DESIGNED BY
CHECKED BY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
CONSULTANT FUNCTIONAL SUPERVISOR
NATALINA V. BERNARDI

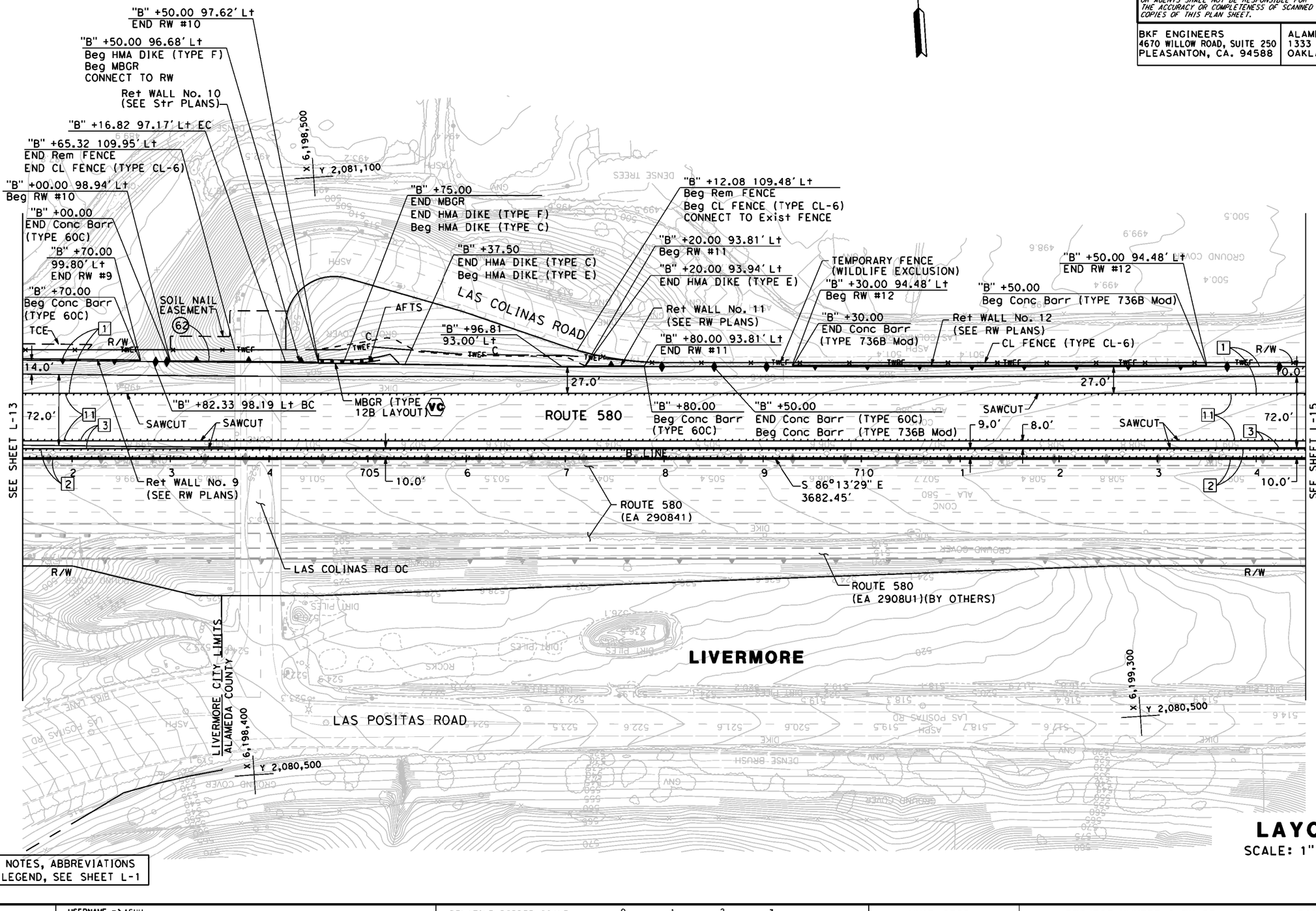
LAST REVISION 01-18-12
DATE PLOTTED =>1/17/2012
TIME PLOTTED =>7:06:13 PM

BORDER LAST REVISED 7/2/2010
USERNAME => ASHU
DGN FILE => 0400021248ea013.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0735
PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No.	R	Δ	T	L
62	19914.00	0°23'13"	67.25'	134.50'



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

LAYOUT
SCALE: 1" = 50'

L-14

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/18/12 DATE

N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612

REVISED BY	DATE REVISED
TC	1/18/12

CALCULATED-DESIGNED BY: TRAVIS CHAN
CHECKED BY: LUIS GARCIA

CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION: DATE PLOTTED =>1/17/2012 01-18-12 TIME PLOTTED =>7:06:23 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ea014.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 1/18/12

PLANS APPROVAL DATE

N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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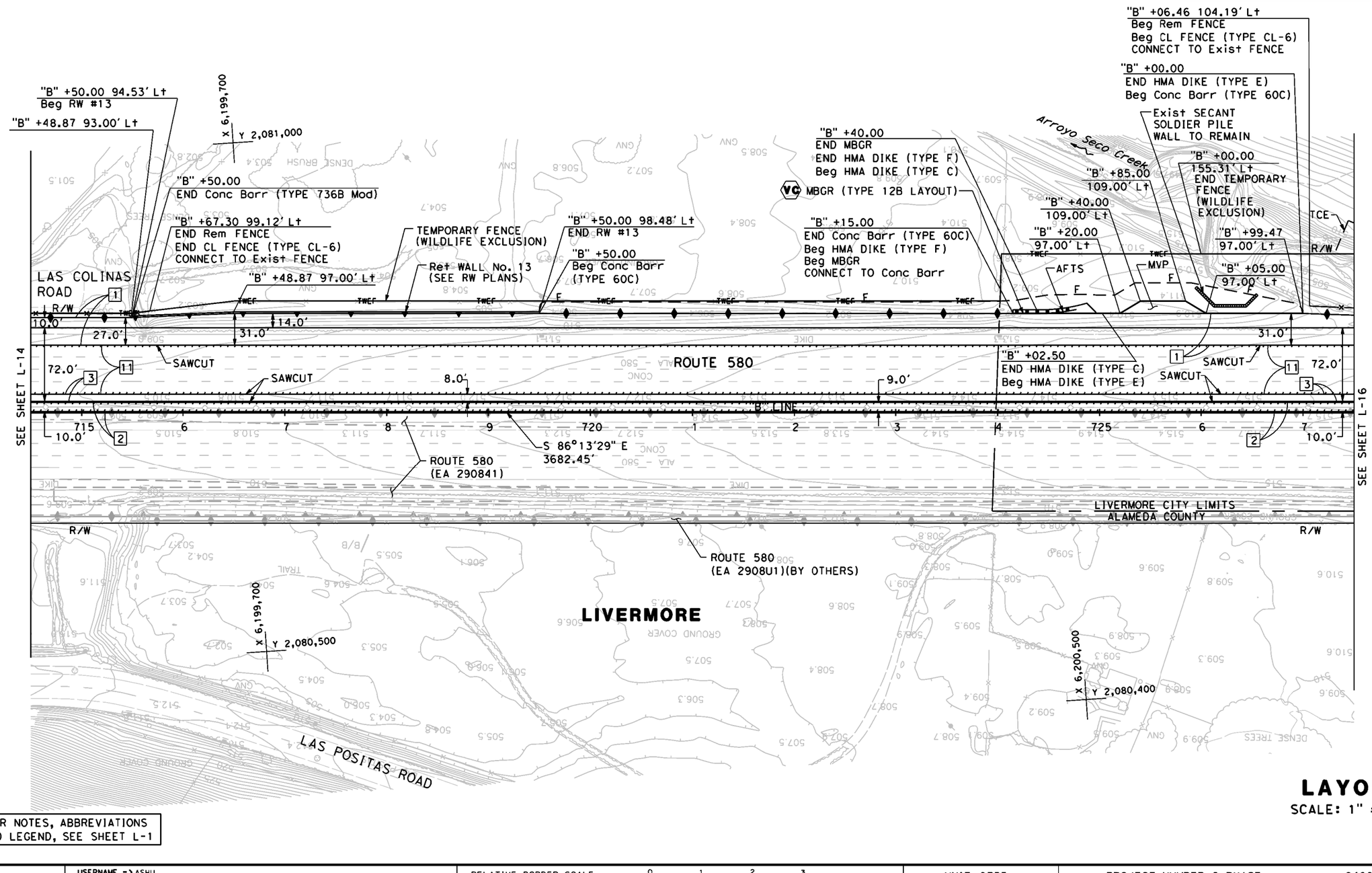
BKF ENGINEERS
4670 WILLOW ROAD, SUITE 250
PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

LAYOUT
SCALE: 1" = 50'

L-15

REVISED BY	DATE REVISED
TC	1/18/12

CALCULATED-DESIGNED BY: TRAVIS CHAN
CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 01-18-12 | DATE PLOTTED =>1/17/2012 | TIME PLOTTED =>7:06:33 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ea015.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
(5)	4500.00'	31°01'39"	1249.12'	2436.89'	2085094.132	6201988.837
(581)	3000.00'	3°11'29"	83.57'	167.10'	2083674.095	6201887.931
(582)	2100.00'	4°04'48"	74.80'	149.54'	2082774.138	6201896.756
(585)	2061.00'	2°38'07"	47.41'	94.80'		

NOTE:

EPOXY INJECT THE CRACKS ALONG THE FACE OF ABUTMENT 4. HORIZONTAL AND VERTICAL CRACKS EXTEND FROM THE BOTTOM OF ABUTMENT 4 FIELD VERIFY.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/18/12 DATE

N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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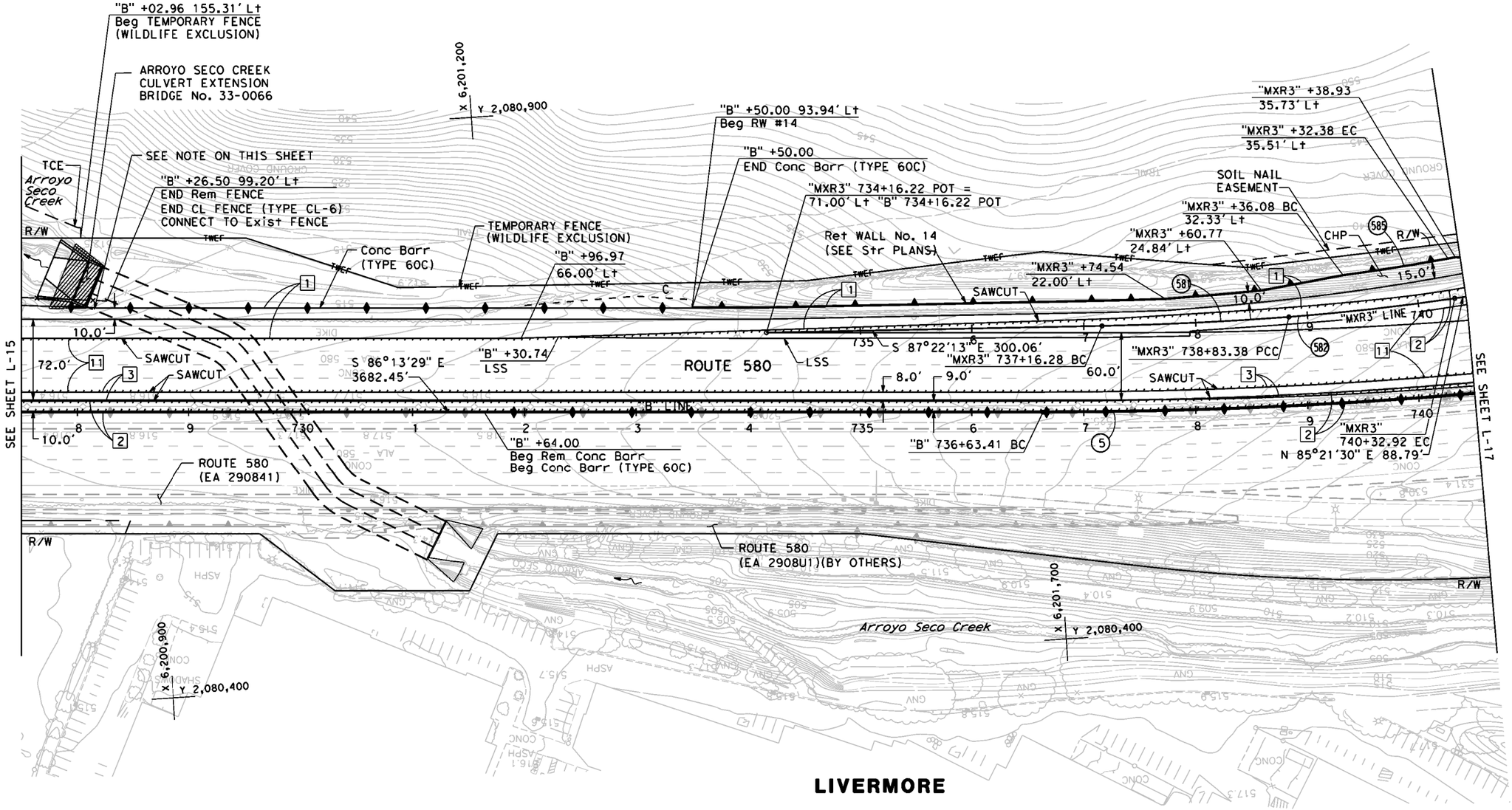
BKF ENGINEERS
4670 WILLOW ROAD, SUITE 250
PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

LAYOUT

SCALE: 1" = 50'

L-16

REVISED BY	DATE REVISED
TC	1/18/12

CALCULATED-DESIGNED BY: TRAVIS CHAN
CHECKED BY: LUIS GARCIA

CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 01-18-12
DATE PLOTTED =>1/17/2012
TIME PLOTTED =>7:06:43 PM

BORDER LAST REVISED 7/2/2010

USERNAME => ASHU
DGN FILE => 0400021248ea016.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0735

PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

SOIL NAIL EASEMENT

SEE SHEET L-16

"MXR3" +60.48
31.52' Lt

"MXR3" +75.00
34.03' Lt
END RW #14

"MXR3" +75.00
Beg HMA DIKE (TYPE F)
Beg MBGR
CONNECT TO RW
"MXR3" +08.60 PCC
32.00' Lt

"MXR3" +44.06 BC
36.00' Lt

"MXR3" +68.34
LSS
10.0'

"MXR3" +72.69
39.00' Lt

"MXR3" +62.05 EC
32.00' Lt
AFTS

"MXR3" +73.52 39.34' Lt
END HMA DIKE (TYPE E)
Beg Conc Barr
(TYPE 736B Mod)

"MXR3" +06.99 PCC
44.00' Lt

"MXR3" +99.96 82.25' Lt
END TEMPORARY FENCE
(WILDLIFE EXCLUSION)
"MXR3" +45.86 EC 44.00' Lt
"MXR3" +55.00 EC 45.68' Lt
END RW #15
"MXR3" +55.00 44.20' Lt
Beg Conc Barr
(TYPE 736B Mod)
"MXR3" +16.15 56.00' Lt
END Conc Barr
(TYPE 736B Mod)
Beg HMA DIKE (TYPE E)
"MXR3" +60.54 56.00' Lt
"MXR3" +97.18 52.93' Lt
END HMA DIKE (TYPE E)
CONFORM
"MXR3" +80.52 46.88' Lt
"MXR3" 750+69.38 POT =
30.00' Rt "MXR1" 740+77.25 POT

"MXR1" 740+76.57 POT

"MXR3" +29.70 11.28' Rt
END Rem CURB
END CURB (TYPE A2-6)
SEE Sht C-36, DETAIL C
FOR ADDITIONAL INFORMATION

"MXR3" +63.87 5.00' Rt
END Conc Barr (TYPE 60C)
Beg CRASH CUSHION (ARAY B11)

"MXR3" +43.87 4.00' Rt
Beg CURB (TYPE A2-6)

"MXR3" 749+18.88 EC

"MXR3" +62.50
END HMA DIKE (TYPE C)
END HMA DIKE (TYPE E)
Beg HMA DIKE (TYPE C)
Beg HMA DIKE (TYPE E)

"MXR3" +80
END MBGR
"MXR3" +00.00
END HMA DIKE (TYPE F)
Beg HMA DIKE (TYPE F)
MBGR (TYPE 12B LAYOUT)

"MXR3" 744+62.05 EC

"MXR3" LINE

Ret WALL No. 14
(SEE RW PLANS)

Ret WALL No. 15
(SEE RW PLANS)

"MXR3" +25.00 41.48' Lt
END Conc Barr
(TYPE 736B Mod)

"MXR3" +25.00 42.96' Lt
Beg RW #15

"MXR1" 742+68.39 BC

"MXR3" 746+50.82 BC

"MXR3" 744+56.55 PCC

"MXR3" +52.67 BC
38.39' Lt

"MXR3" +25.00
Beg Conc Barrier (TYPE 60C)

"MXR1" 747+46.80 PCC

"MXR1" LINE
8.8' +45.00
END MBGR

"MXR1" 751+38.11 EC

"B" +03.70
35.35' Lt

"MXR3" +42.19
34.85' Lt

"MXR3" +37.81
33.52' Lt

"MXR3" +12.54
"MXR3" +26.72
Beg Rem CURB
"MXR3" 741+21.71 BC

"B" +75.65

"B" +10.00
END MBGR
"B" +72.50 87.61 Rt
Beg MBGR

"B" +28.38 74.47' Lt
Beg Conc Barr (TYPE 60C)

"B" LINE

"B" +56.44
END Conc Barr (TYPE 60C)
Beg Conc Barr (TYPE 60E)

"B" +20.00 74.47' Lt
END Conc Barr (TYPE 60C)
Beg MBGR

"B" +34.21
END Conc Barr (TYPE 60C)
Beg Conc Barr (TYPE 60E)

"B" +38.63
END Conc Barr (TYPE 60E)
Beg Conc Barr (TYPE 60C)

"B" +55.16
END Conc Barr (TYPE 60E)
Beg Conc Barr (TYPE 60C)

"B" +31.89
76.97' Lt

"B" +19.90
80.38' Lt

"B" +25.56
85.00' Lt

"MXL1" 755+05.76 EC

"MXLT" 756+10.65 BC

"MXL1" 753+89.32 PCC

"MXL1" +15.75
4.00' Lt
CONFORM

"MXL1" +73.49
20.75' Rt

"MXL1" +10.79
19.81' Rt
CONFORM

"MXL1" +66.92 EC
31.83' Rt

"MXL1" +87.16 PCC
34.35' Rt

"MXL1" +51.19 BC
35.57' Rt

"MXL1" +18.55 EC
29.68' Rt

"MXL1" +50.80 PCC
32.00' Rt

"MXL1" +09.16 PCC
32.00' Rt

"MXL1" +20.98 BC
34.86' Rt

"MXL1" +49.85 37.23' Rt
CONFORM

"MXL1" +49.55
29.28' Rt

"MXL1" 751+19.46 BC

"MXL1" +85.00 4.00 Lt

"MXL1" +65.00 16.00' Lt

"MXL1" +20.00 16.00' Lt

"MXL1" +00.00 4.00' Lt

"MXL1" 749+85.62 EC

"MXL1" +53.29 13.00' Lt

"MXL1" +53.39 BC
11.47' Lt

"MXL1" +61.37 EC
4.00' Lt

"MXL1" 746+11.39 BC

"MXL1" +09.18 8.30' Rt
END Rem CURB

"MXL1" +50.00
12.70' Rt LSS

"MXL1" +51.28 13.00' Lt

"MXL1" +50.00 13.00' Lt
Beg Rem CURB
CONFORM

"MXL1" 745+10.75 POT

"MXL1" +50.00
24.14' Rt
CONFORM

"MXL1" +50.00
24.70' Rt
CONFORM

"MXL4" 744+60.61 POC

"MXL4" LINE

"MXL4" 746+01.53 EC

"MXL4" 746+98.17 POT =
24.00' Rt "MXL1" 746+98.17 POT

"MXL1" +25.85 202.35' Lt
Beg MBGR

"MXL1" +29.98 177.70' Lt
END MBGR

MBGR (TYPE 16B LAYOUT)

MBGR (TYPE 12B LAYOUT)

Rem MBGR

AFTS

FIRST STREET OC

FIRST STREET

ROUTE 580
(EA 290841)

ROUTE 580

LIVERMORE

SOUTHFRONT ROAD

CHP

SAWCUT

Rem MBGR
MBGR (TYPE 12B LAYOUT)

SEE SHEET L-18

N 81°57'32" W 191.82'
S 81°57'32" E 150.50'
N 36°36'28" E 188.77'
N 70°24'21" E 746.60'
N 67°47'10" E 104.88'
N 28°40'22" E 133.85'
N 26°46'07" E 71.08'

R=745
R=150
R=8.0'

R/W
LW
RW
EC
CF
MVP
POT
POC
BC
PCC

x 6,203,100
y 2,081,200
x 6,203,000
y 2,080,500

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
583	400.00'	48°45'02"	181.24'	340.34'	2081086.899	6202122.827
584	250.00'	61°26'01"	148.54'	268.05'	2080850.815	6202757.176
587	200.00'	16°59'53"	29.89'	59.33'		
588	368.00'	21°58'52"	71.47'	141.18'		
589	282.00'	36°34'34"	93.20'	180.02'		
590	294.00'	08°54'31"	22.90'	45.71'		
600	145.00'	74°20'58"	109.96'	188.16'	2080930.762	6202727.424
601	150.00'	110°51'55"	217.70'	290.24'	2080928.753	6202732.002

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
5	4500.00'	31°01'39"	1249.12'	2436.89'	2085094.132	6201988.837
602	1000.00'	22°25'14"	198.19'	391.31'	2081777.719	6202773.916
620	130.00'	62°06'37"	78.28'	140.92'	2080123.517	6202855.533
626	258.00'	83°06'28"	228.69'	374.23'	2080530.896	6202970.100
627	600.00'	25°46'11"	137.25'	269.86'	2080236.653	6203787.107
628	500.00'	13°20'37"	58.49'	116.44'	2080318.006	6203728.955
629	4573.48'	4°10'53"	166.96'	333.77'	2085054.580	6201907.943
630	568.00'	3°58'35"	19.72'	39.42'		
631	461.00'	9°15'56"	37.36'	74.55'		
632	556.00'	8°35'11"	41.74'	83.32'		
633	3292.00'	1°49'27"	52.41'	104.81'		
634	568.00'	6°29'15"	32.19'	64.31'		
635	561.00'	3°27'42"	16.95'	33.89'		

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 1/18/12

N.V. BERNARDI
No. 45407
Exp. 9/30/12
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

PLANS APPROVAL DATE

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BKF ENGINEERS
4670 WILLOW ROAD, SUITE 250
PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612

REVISED BY	DATE REVISED
TC	1/18/12

CALCULATED-DESIGNED BY: TRAVIS CHAN
CHECKED BY: LUIS GARCIA

CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAYOUT

SCALE: 1" = 50'

L-17

LAST REVISION 01-18-12
DATE PLOTTED => 1/17/2012
TIME PLOTTED => 7:06:55 PM

BORDER LAST REVISED 7/2/2010

USERNAME => ASHU
DGN FILE => 0400021248ea017.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0735

PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
(5)	4500.00′	31°01′39"	1249.12′	2436.89′	2085094.132	6201988.837
(603)	4429.00′	2°47′21"	107.82′	215.60′	2085258.530	6202327.351
(629)	4573.48′	4°10′53"	166.96′	333.77′	2085054.580	6201907.943
(604)	5200.00′	3°17′29"	149.41′	298.73′		

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 1/18/12

PLANS APPROVAL DATE

N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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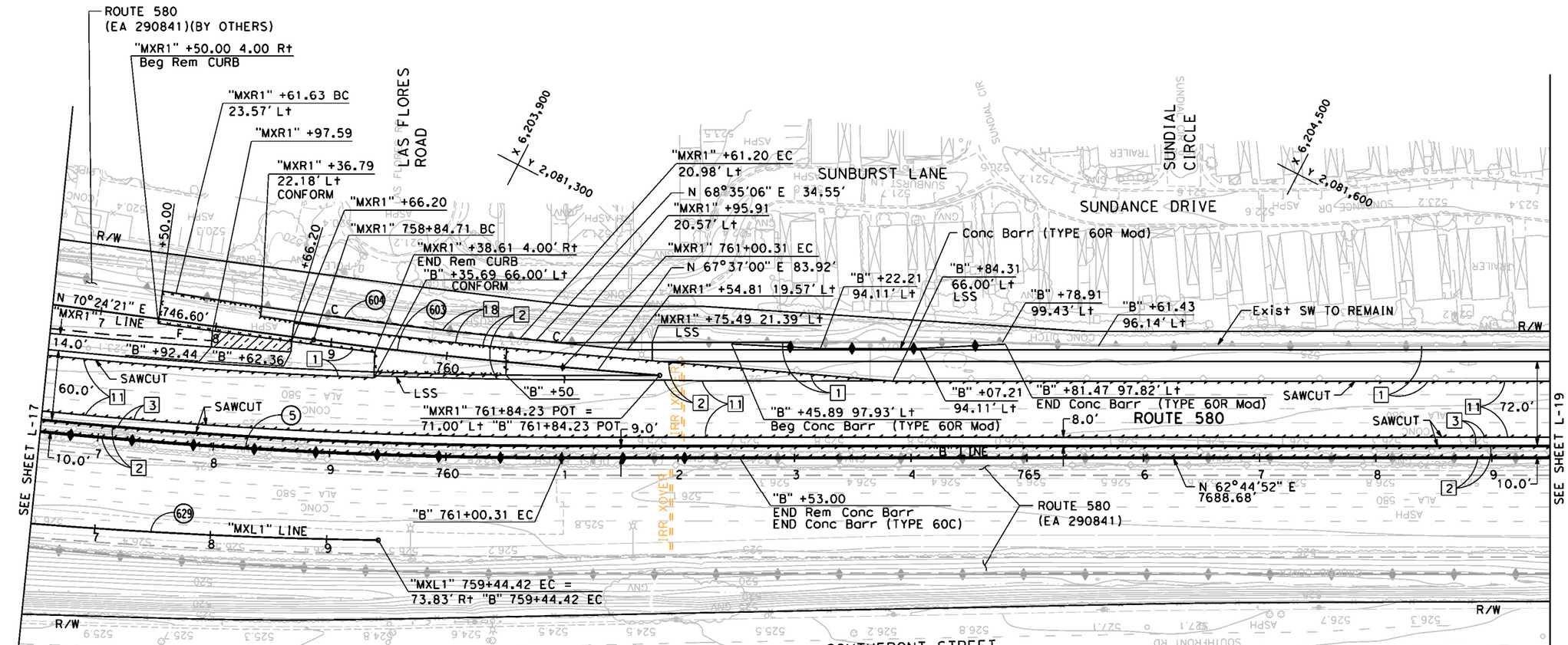
BKF ENGINEERS
4670 WILLOW ROAD, SUITE 250
PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

LAYOUT

SCALE: 1" = 50′

L-18

REVISED BY	DATE REVISED
TC	1/18/12

CALCULATED-DESIGNED BY: TRAVIS CHAN
CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION: 01-18-12
DATE PLOTTED => 1/17/2012
TIME PLOTTED => 7:07:08 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ea018.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 1/18/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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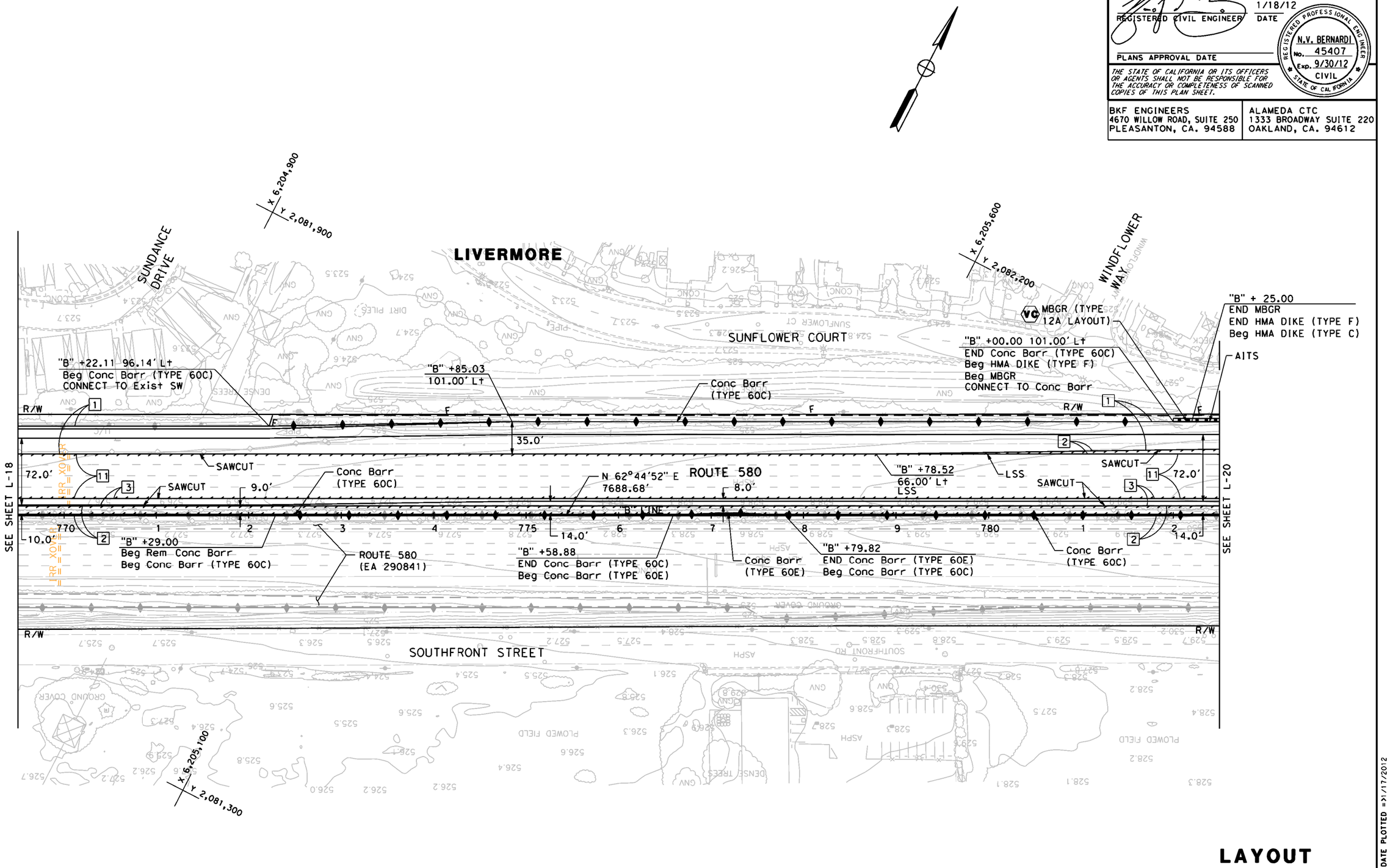
BKF ENGINEERS
4670 WILLOW ROAD, SUITE 250
PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

LAYOUT

SCALE: 1" = 50'

L-19

CALCULATED-DESIGNED BY	TRAVIS CHAN	REVISED BY	TC
CHECKED BY	LUIS GARCIA	DATE REVISED	1/18/12

CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 01-18-12 | DATE PLOTTED =>1/17/2012 | TIME PLOTTED =>7:07:18 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ea019.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
640	3000.00′	3°11′29"	83.57′	167.10′	2085163.144	6205223.011
641	3000.00′	4°20′14"	113.60′	227.09′	2080068.941	6208393.203
647	442.00′	4°50′15"	18.67′	37.32′		
648	400.00′	14°57′42"	52.53′	104.45′		
650	400.00′	35°33′48"	128.29′	248.28′	2083074.987	6206779.068

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/18/12 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — STATE OF CALIFORNIA

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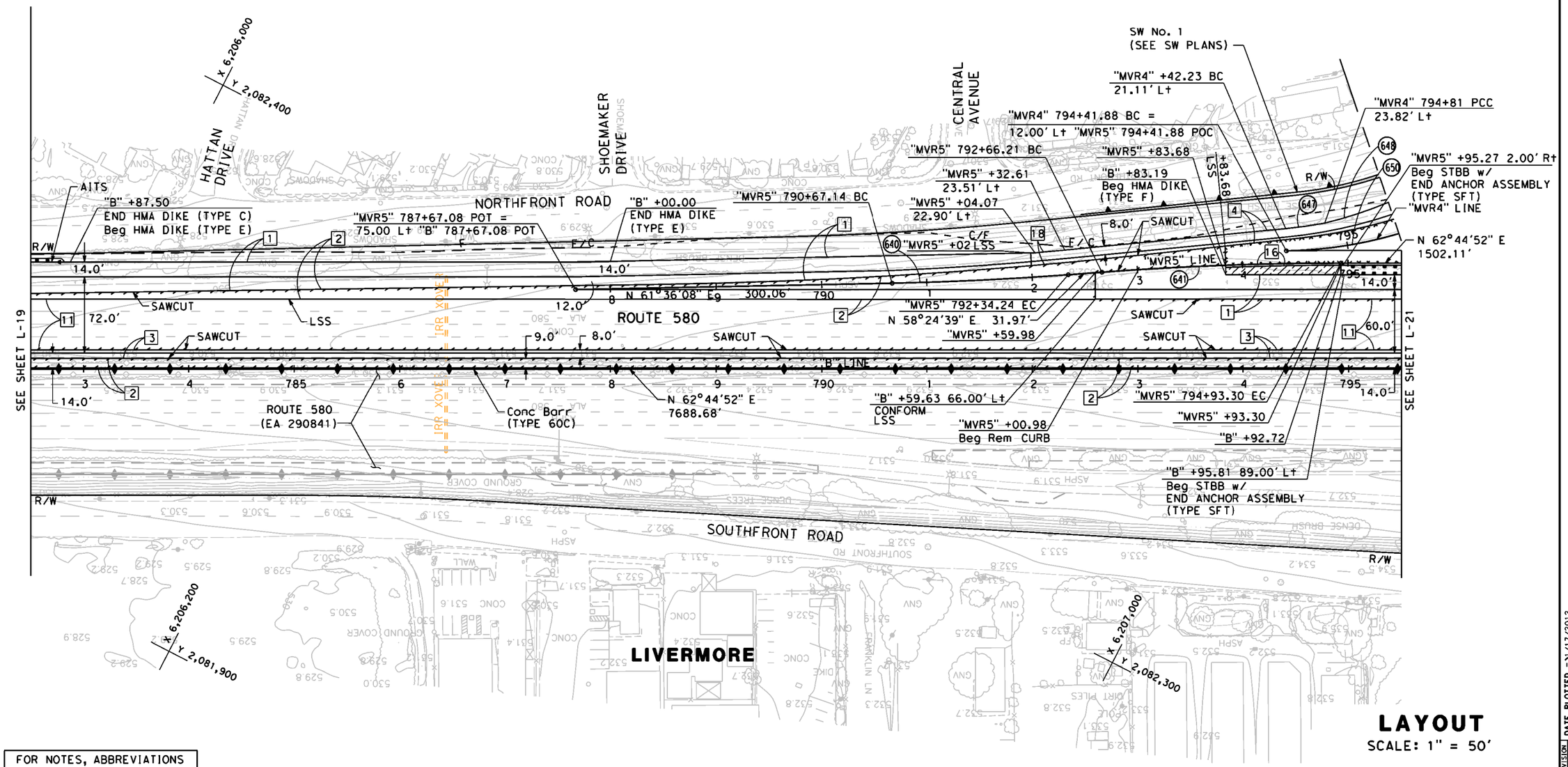
BKF ENGINEERS
4670 WILLOW ROAD, SUITE 250
PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612



LAYOUT
SCALE: 1" = 50′

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

L-20

REVISED BY	DATE REVISED
TC	1/18/12

CALCULATED-DESIGNED BY: TRAVIS CHAN
CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

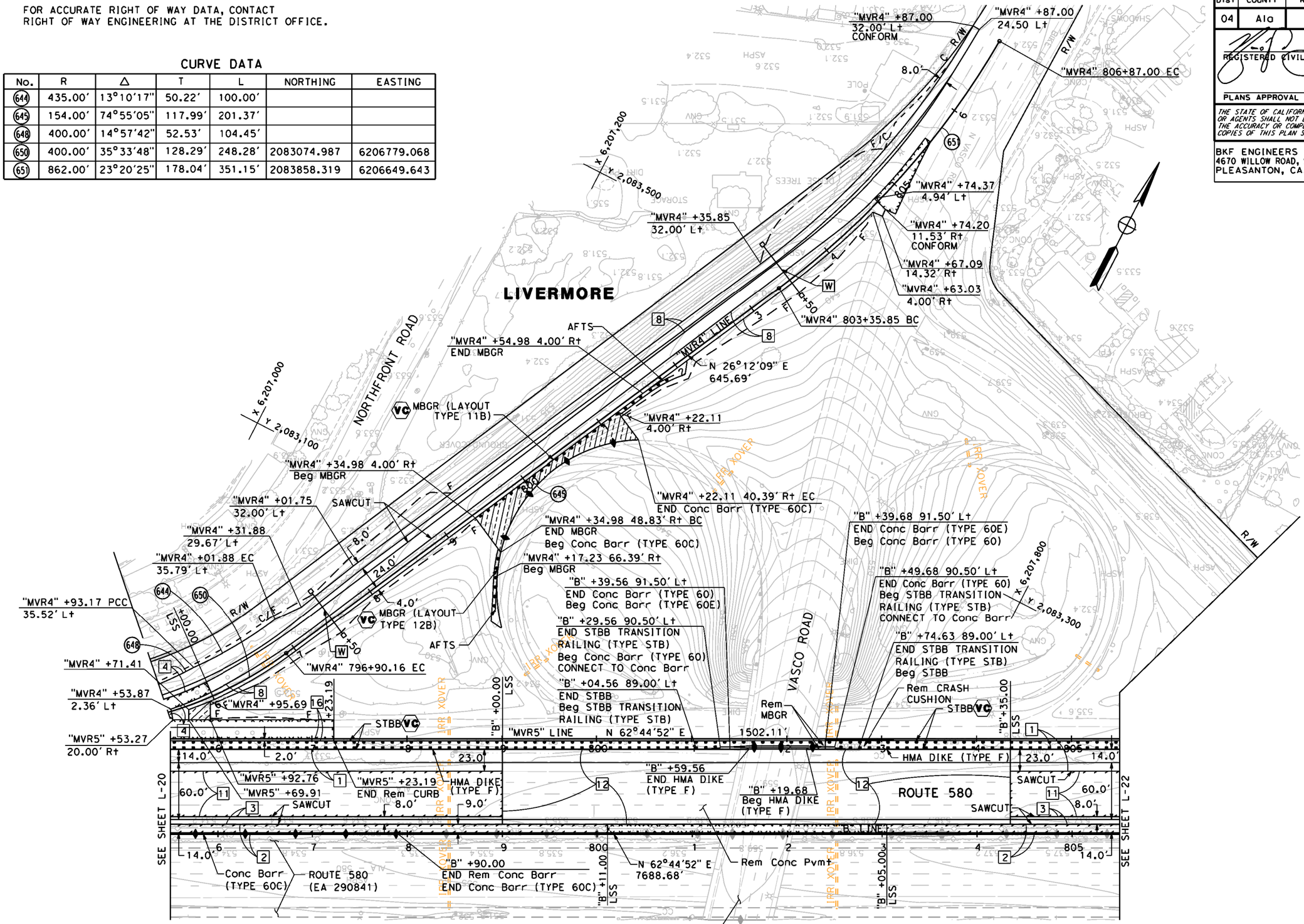
LAST REVISION 01-18-12 | DATE PLOTTED =>1/17/2012 | TIME PLOTTED =>17:07:28 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ea020.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
(644)	435.00′	13°10′17"	50.22′	100.00′		
(645)	154.00′	74°55′05"	117.99′	201.37′		
(648)	400.00′	14°57′42"	52.53′	104.45′		
(650)	400.00′	35°33′48"	128.29′	248.28′	2083074.987	6206779.068
(651)	862.00′	23°20′25"	178.04′	351.15′	2083858.319	6206649.643



FOR NOTES, ABBREVIATIONS
AND LEGEND, SEE SHEET L-1

LAYOUT

SCALE: 1" = 50′

L-21

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 1/18/12

PLANS APPROVAL DATE

N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

BKF ENGINEERS
4670 WILLOW ROAD, SUITE 250
PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612

REVISED BY	DATE REVISED
TC	1/18/12

CALCULATED-DESIGNED BY: TRAVIS CHAN
CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

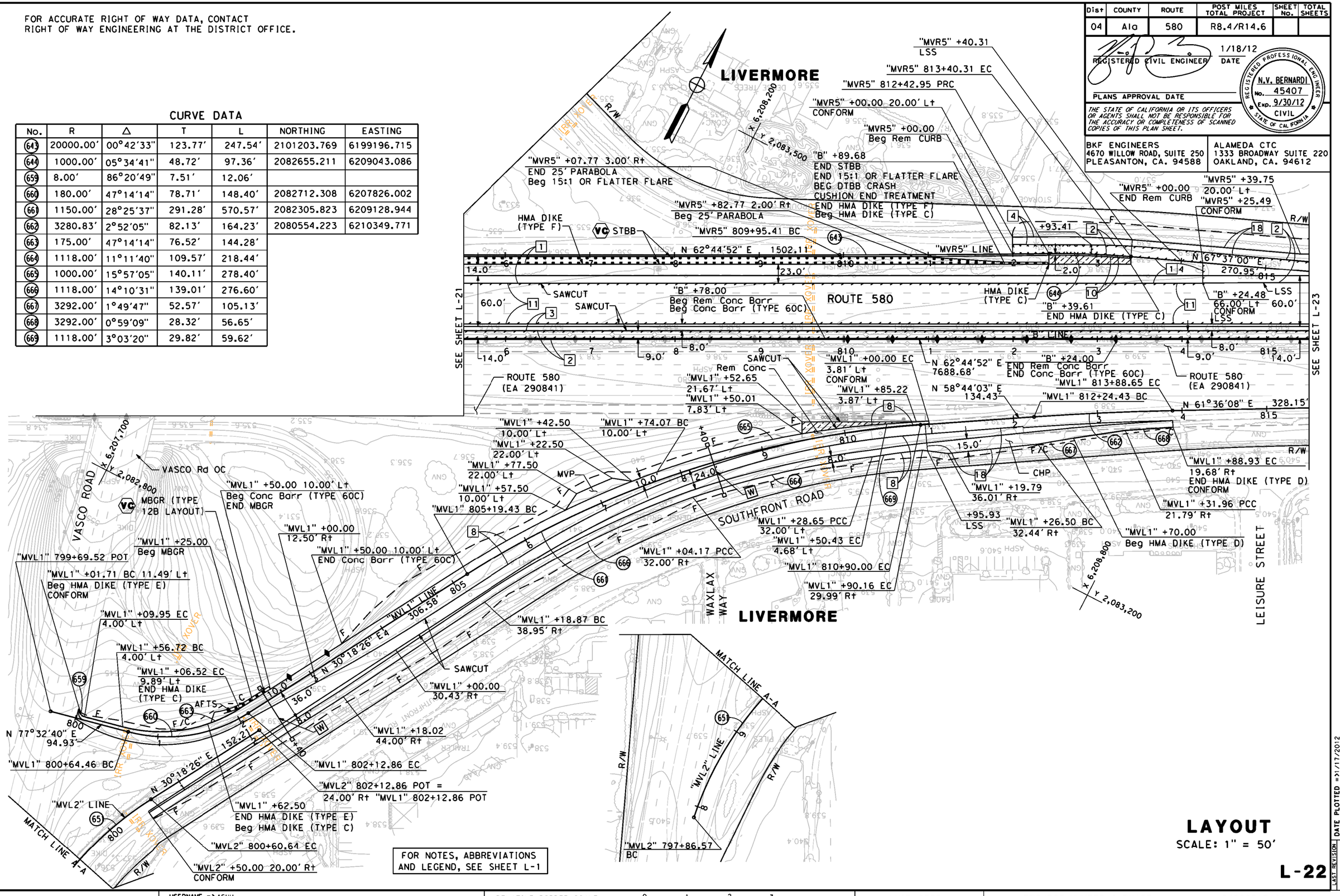
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 01-18-12
DATE PLOTTED => 1/17/2012
TIME PLOTTED => 7:07:39 PM

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
643	20000.00'	00°42'33"	123.77'	247.54'	2101203.769	6199196.715
644	1000.00'	05°34'41"	48.72'	97.36'	2082655.211	6209043.086
659	8.00'	86°20'49"	7.51'	12.06'		
660	180.00'	47°14'14"	78.71'	148.40'	2082712.308	6207826.002
661	1150.00'	28°25'37"	291.28'	570.57'	2082305.823	6209128.944
662	3280.83'	2°52'05"	82.13'	164.23'	2080554.223	6210349.771
663	175.00'	47°14'14"	76.52'	144.28'		
664	1118.00'	11°11'40"	109.57'	218.44'		
665	1000.00'	15°57'05"	140.11'	278.40'		
666	1118.00'	14°10'31"	139.01'	276.60'		
667	3292.00'	1°49'47"	52.57'	105.13'		
668	3292.00'	0°59'09"	28.32'	56.65'		
669	1118.00'	3°03'20"	29.82'	59.62'		



LAYOUT

SCALE: 1" = 50'

L-22

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 1/18/12

PLANS APPROVAL DATE

N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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4670 WILLOW ROAD, SUITE 250
PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612

REVISED BY	DATE REVISED
TC	1/18/12

TRAVIS CHAN — CALCULATED-DESIGNED BY
LUIS GARCIA — CHECKED BY

NATALINA V. BERNARDI — CONSULTANT FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 01-18-12
DATE PLOTTED =>1/17/2012
TIME PLOTTED =>7:07:50 PM

BORDER LAST REVISED 7/2/2010
USERNAME => ASHU
DGN FILE => 0400021248ea022.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0735
PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 1/18/12

PLANS APPROVAL DATE

N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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PLEASANTON, CA. 94588

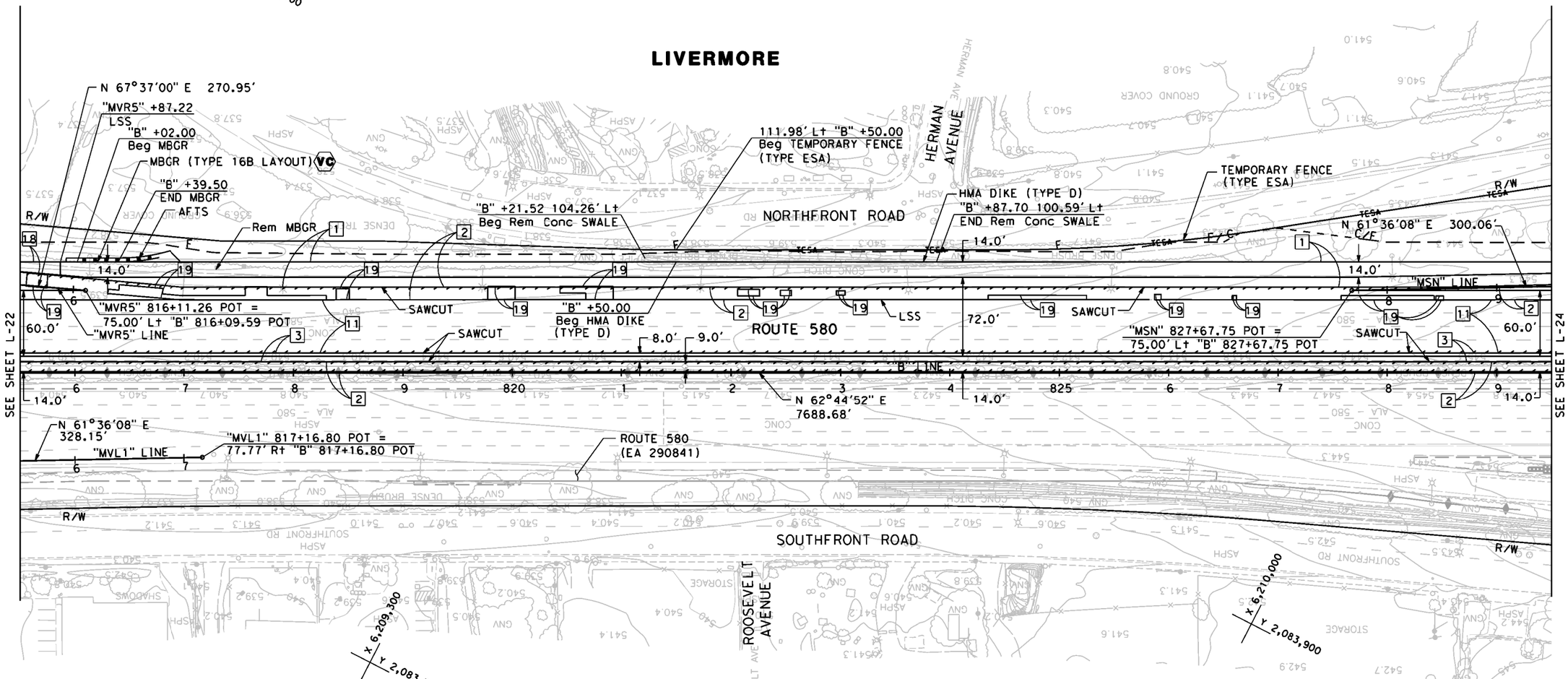
ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612

REVISED BY	DATE REVISED
TC	1/18/12

CALCULATED-DESIGNED BY: TRAVIS CHAN
CHECKED BY: LUIS GARCIA

CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

LAYOUT

SCALE: 1" = 50'

L-23

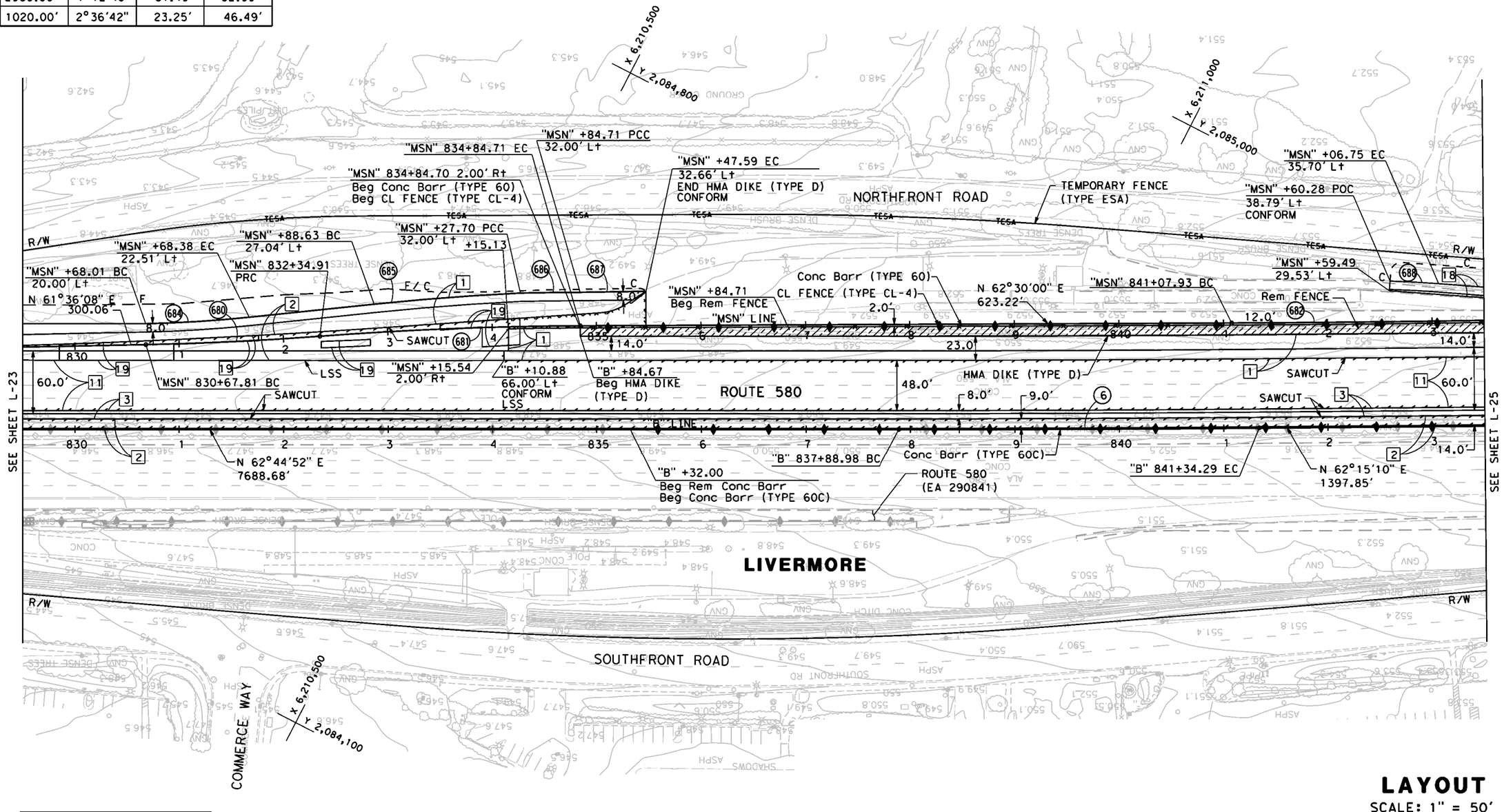
LAST REVISION 01-18-12 | DATE PLOTTED =>1/17/2012 | TIME PLOTTED =>7:08:02 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ea023.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
6	39968.00′	0°29′42"	172.65′	345.30′	2120145.887	6192583.026
680	3000.00′	3°11′29"	83.57′	167.10′	2086995.080	6208779.610
681	3500.00′	4°05′21"	124.95′	249.80′	2081458.218	6212184.483
682	20000.00′	0°54′15"	157.79′	315.57′	2102590.743	6201886.191
684	1192.00′	4°47′34"	49.88′	99.71′		
685	2508.00′	3°12′22"	70.19′	140.34′		
686	3532.00′	0°56′00"	28.77′	57.53′		
687	2980.00′	1°12′40"	31.49′	62.99′		
688	1020.00′	2°36′42"	23.25′	46.49′		



FOR NOTES, ABBREVIATIONS
AND LEGEND, SEE SHEET L-1

LAYOUT

SCALE: 1" = 50′

L-24

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 1/18/12

N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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BKF ENGINEERS
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PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612

REVISED BY	DATE REVISED
TC	1/18/12

TRAVIS CHAN — CALCULATED-DESIGNED BY
LUIS GARCIA — CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR
NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 01-18-12
DATE PLOTTED =>1/17/2012
TIME PLOTTED =>7:08:13 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ea024.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
(682)	20000.00'	0°54'15"	157.79'	315.57'	2102590.743	6201886.191
(683)	1000.00'	5°31'33"	48.26'	96.45'	2084118.829	6211875.605
(700)	5000.00'	13°55'27"	610.57'	1215.12'	2080962.275	6214775.500

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/18/12 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — STATE OF CALIFORNIA

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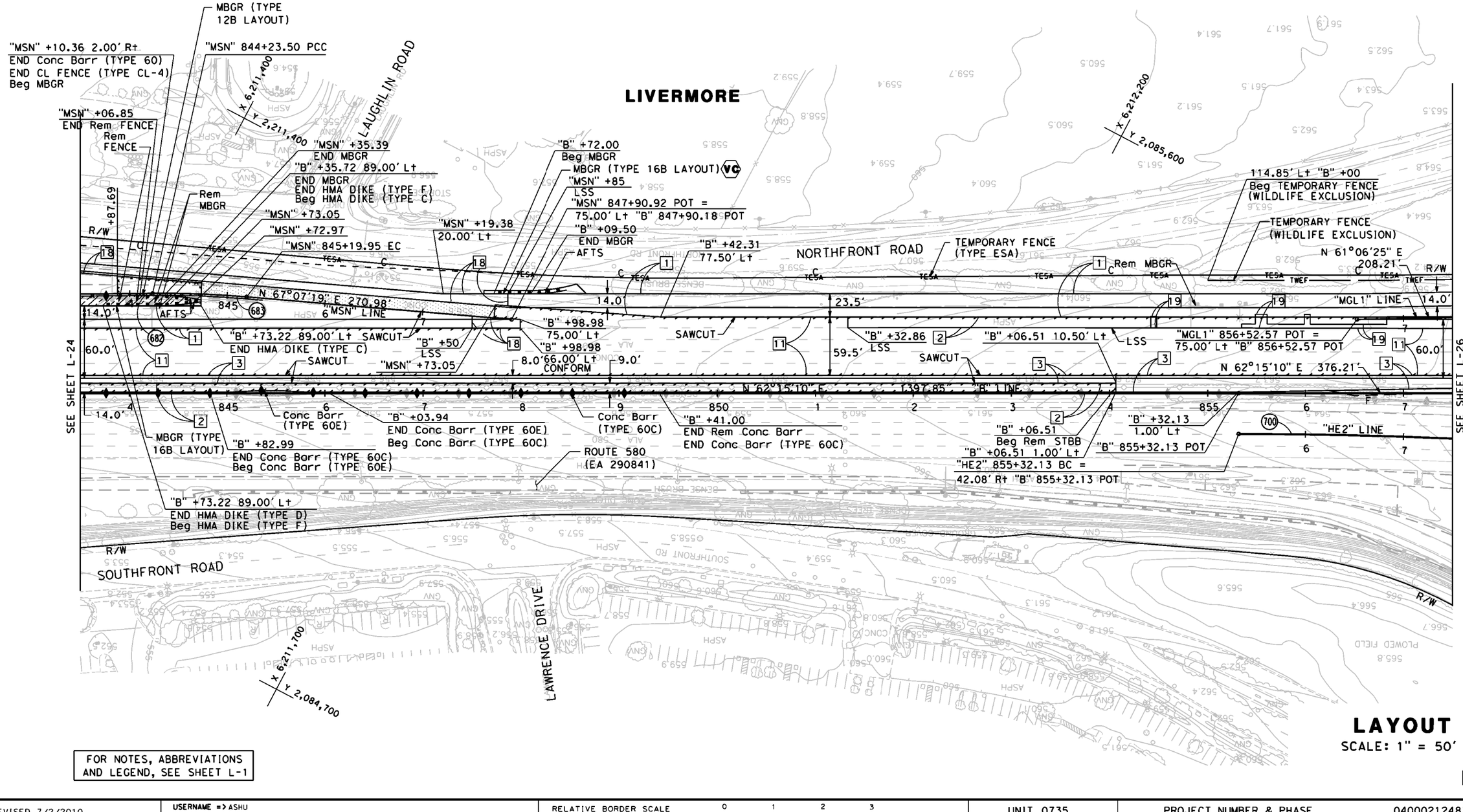
BKF ENGINEERS
4670 WILLOW ROAD, SUITE 250
PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

LAYOUT
SCALE: 1" = 50'

L-25

REVISED BY	DATE REVISED
TC	1/18/12

CALCULATED-DESIGNED BY: TRAVIS CHAN
CHECKED BY: LUIS GARCIA
SUPERVISOR: NATALINA V. BERNARDI
CONSULTANT FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION: DATE PLOTTED =>1/17/2012 01-18-12 TIME PLOTTED =>7:08:26 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ea025.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
(7)	4685.00′	14°09′29"	581.81′	1157.69′	2081453.445	6214942.199
(70)	4692.00′	4°35′45"	188.28′	376.35′		
(71)	4758.00′	8°37′31"	358.81′	716.27′		

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 1/18/12

PLANS APPROVAL DATE

N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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BKF ENGINEERS
4670 WILLOW ROAD, SUITE 250
PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612

NORTHFRONT ROAD

"MGL1" +74.13 EC 77.80′ Lt
END Rem CURB
END CURB (TYPE A2-6)
"MGL1" +28.00
END HMA DIKE (TYPE E)
"MGL1" +99.39 206.03′ Lt
END TEMPORARY FENCE (WILDLIFE EXCLUSION)
END TEMPORARY FENCE (TYPE ESA)
Rem CURB AND MEDIAN PAVING
SEE DETAIL "A" ON SHEET C-23
"MGL1" 866+36.99 POT
"MGL1" +28.89 5.74′ Rt
END Rem CURB CONFORM
R = 1.0′
"MGL1" +22.82 10.30′ Rt
Beg TEMPORARY FENCE (WILDLIFE EXCLUSION)
N 01°02′50" W 64.66′
"MGL1" 865+72.33 EC
"MGL1" +11.82 BC 34.11′ L†
"MGL1" +97.95
END HMA DIKE (TYPE C)
Beg HMA DIKE (TYPE E)
"MGL1" +27.98
END MBGR
END HMA DIKE (TYPE F)
Beg HMA DIKE (TYPE C)
MBGR (TYPE 12B LAYOUT)
"MGL1" +97.12 32.00′ L†
Beg CURB (TYPE A2-6) CONFORM
"MGL1" +51.85
Beg Rem CURB
"B" +65.88
80.06′ L†
"B" +85.66
91.85′ L†
"B" +29.91
91.39′ L†
MVP
"MGL1" +12.62 EC 32.00′ L†
"MGL1" +00.00
END Conc Barr (TYPE 60C)
Beg HMA DIKE (TYPE F)
Beg MBGR
"MGL1" +41.20 25.14′ L†
"MGL1" +11.47 31.04′ L†
"MGL1" +00.00
END HMA DIKE (TYPE E)
Beg Conc Barr (TYPE 60C)
"MGL1" +91.29 EC 30.18′ L†
"MGL1" +60.00
Beg HMA DIKE (TYPE E)
"MGL1" +04.61 BC 27.44′ L†
"MGL1" 858+60.78 BC
"MGL1" 862+57.80 BC
"MGL1" +35.21 BC 28.60′ L†
N 59°01′25" E 138.08′
+03.84 LSS
"MGL1" +68.84
"B" +41.66
Beg Rem CURB
Rem MBGR
"B" +49.45 79.19′ L†
SAWCUT
ROUTE 580
"B" LINE
"B" +97.98 BC
"B" +00.00 EC 7.0′ L† CONFORM
"B" +00.00 15.71′ L† Rem CURB
"MGL1" 859+52.62 PCC
LSS "MGL1" 861+19.72 EC
SEE Sht C-36, DETAIL B FOR ADDITIONAL INFORMATION
865+00
N 61°06′25" E 208.21′
"B" +24.09 BC 6.24′ L†
"B" 859+08.34 BC
"B" +96.19 END Rem STBB
SEE SHEET L-25
"MGR2" 865+42.43 PCC
"HE2" 867+47.25 EC
"MGR2" 867+47.40 EC
N 62°10′37" E 4652.70′
N 75°01′53" E 121.31′
"MGR2" 868+68.71 POT = 40.83′ R† "HE2" 868+68.71 POT
"MGR2" +84.85
Beg MBGR
"HE" LINE
MBGR (TYPE 12D LAYOUT)
"MGR2" +47.57 19.69′ R† EC
END MBGR
CONNECT TO Exist MBGR
CONFORM
"MGR2" +98.20 PCC 21.41′ R†
"MGR2" 863+40.92 PCC
"HE2" +59.50
"HE2" +96.46
"HE2" +35.69
Rem Conc
"MGR2" +39.16
"MGR2" 862+20.92 PCC
"MGR2" +85.00 24.24′ R†
END RW #19
"MGR2" +91.61 32.22′ R† PCC
"MGR2" +42.48 PCC 33.96′ R†
"MGR2" +21.24 PCC 34.75′ R†
"MGR2" +63.27 BC 41.12′ R† LSS
"MGR2" +63.93
"B" +43.41 63.50′ L† CONFORM LSS
"MGR2" +81.67 4.00′ L†
"MGR2" +61.93 16.00′ L†
"MGR2" +16.54 16.00′ L†
"MGR2" +96.80 4.00′ L†
"MGR2" +72.64
END Rem CURB
"MGR2" 859+57.46 BC
"MGR2" +27.49 EC 4.00′ L†
"MGR2" +26.92 BC 7.92′ L† Beg Rem CURB CONFORM
"MGR2" +51.93 9.00′ R†
SAWCUT
"MGR2" 857+98.56 POT
"MGR2" +81.67 33.00′ R†
"MGR2" +98.27 32.59′ R†
"MGR2" +25.00 43.73′ R† Beg RW #19
"MGR2" +25.00 42.25′ R†
END HMA DIKE (TYPE F)
END MBGR
CONNECT TO RW
"MGR2" +78.61 55.23′ R†
"MGR2" +71.04 55.43′ R† CONFORM
"MGR2" +00.00 33.00′ R†
Beg HMA DIKE (TYPE F)
"MGR2" +85.00
END Conc Barr (TYPE 60)
Beg MBGR
"MGR2" +52.00
END MBGR
Beg Conc Barr (TYPE 60)
MBGR (TYPE 12B LAYOUT)
"MGR2" +27.48
Beg MBGR
MBGR (TYPE 12D LAYOUT)
"MGR2" +47.57 19.69′ R† EC
END MBGR
CONNECT TO Exist MBGR
CONFORM
"MGR2" +98.20 PCC 21.41′ R†
"MGR2" +81.67 33.00′ R†
"B" +02.47 EC 74.46′ L†
"B" +44.52 73.91′ L†
CONFORM
END TEMPORARY FENCE (WILDLIFE EXCLUSION)
TEMPORARY FENCE (WILDLIFE EXCLUSION)
"B" +44.52 62.94′ L†
"B" +44.52 7.00′ L†
"B" 870+88.37 POT
"B" 870+66.03 EC
N 76°24′39" E 22.34′
CONFORM (SEE Sht C-24 FOR DETAIL)
ROUTE 580 (EA 290841)
SAWCUT
SOUTHFRONT ROAD
LIVERMORE
Ret WALL No. 19
(SEE Ret WALL PLANS)
AFTS
MVP
CHP
LSS
Rem CURB
Rem MBGR
X 6,213,400
Y 2,086,000
X 6,212,750
Y 2,085,350
X 6,213,400
Y 2,085,500
R/W

CURVE DATA

No.	R	Δ	T	L	NORTHING	EASTING
(700)	5000.00′	13°55′27"	610.57′	1215.12′	2080962.275	6214775.500
(720)	4748.00′	1°06′30"	45.92′	91.84′	2081490.637	6214976.138
(721)	3000.00′	3°11′29"	83.57′	167.10′	2088345.321	6211364.378
(722)	300.00′	60°04′15"	173.45′	314.53′	2086101.461	6212872.410
(723)	492.00′	8°21′34"	35.95′	71.78′		
(724)	1485.00′	3°18′40"	42.92′	85.81′		
(725)	53.75′	77°12′55"	42.92′	72.44′		
(740)	300.00′	50°19′01"	140.90′	263.46	2085381.673	6213325.170
(741)	262.47′	26°11′44"	61.07′	120.00′	2085407.237	6213297.689
(742)	3280.83′	3°31′09"	100.79′	201.51′	2082586.981	6214373.187
(743)	4921.25′	2°23′11"	102.50′	204.97′	2081021.245	6214862.511
(750)	2.00′	163°33′56"	13.85′	5.71′		
(751)	151.50′	18°56′08"	25.26′	50.07′		
(752)	225.00′	4°45′10"	9.34′	18.66′		
(753)	3285.00′	0°50′56"	24.33′	48.67′		
(754)	3292.00′	1°50′59"	53.14′	106.27′		
(755)	3292.00′	0°46′15"	22.14′	44.29′		

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1

LAYOUT

SCALE: 1" = 50′

L-26

CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
TRAVIS CHAN	LUIS GARCIA	TC	1/18/12

CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

LAST REVISION: DATE PLOTTED =>1/17/2012 TIME PLOTTED =>7:08:39 PM
01-18-12

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU DGN FILE => 0400021248ea026.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

4. Temporary Creek Diversion Details

FOR ACCURATE RIGHT OF WAY AND ACCESS DATA,
CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 1/18/12

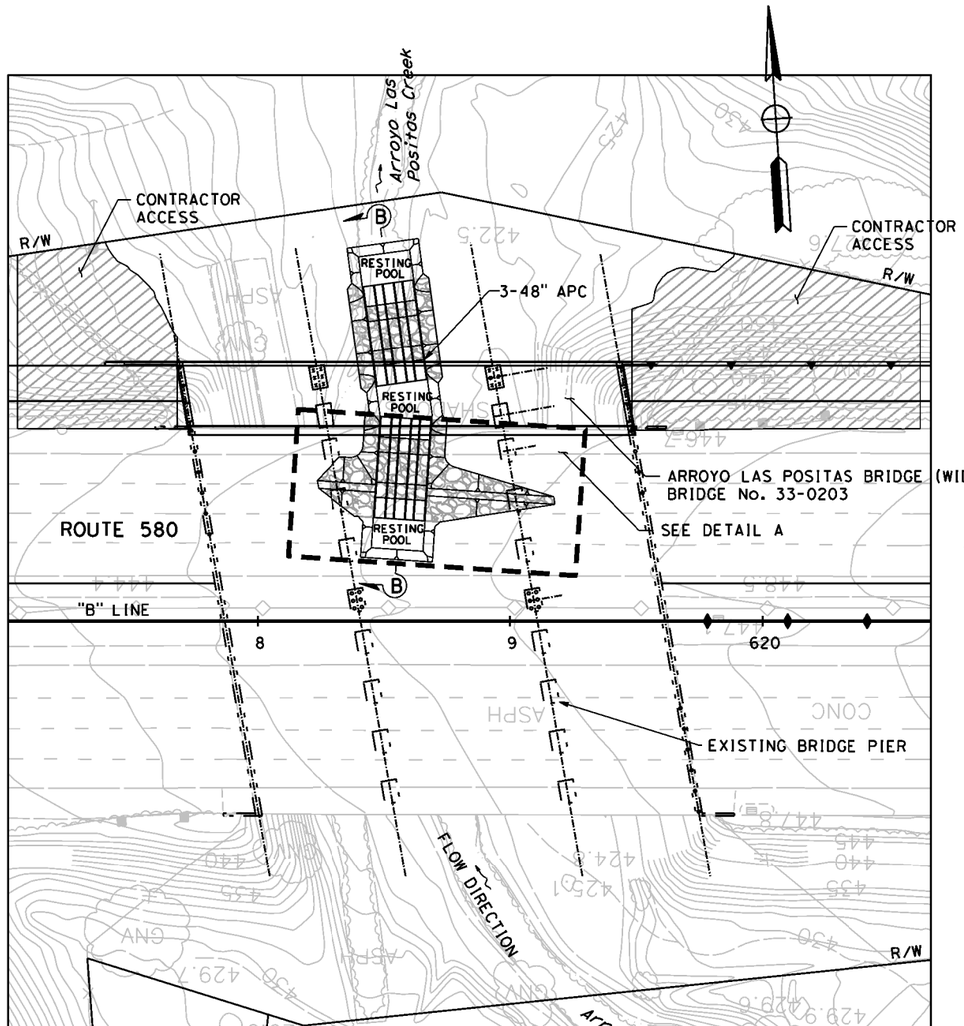
PLANS APPROVAL DATE

N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

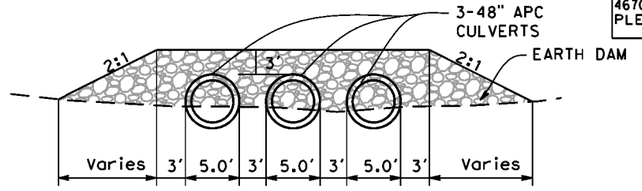
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

BKF ENGINEERS
4670 WILLOW ROAD, SUITE 250
PLEASANTON, CA. 94588

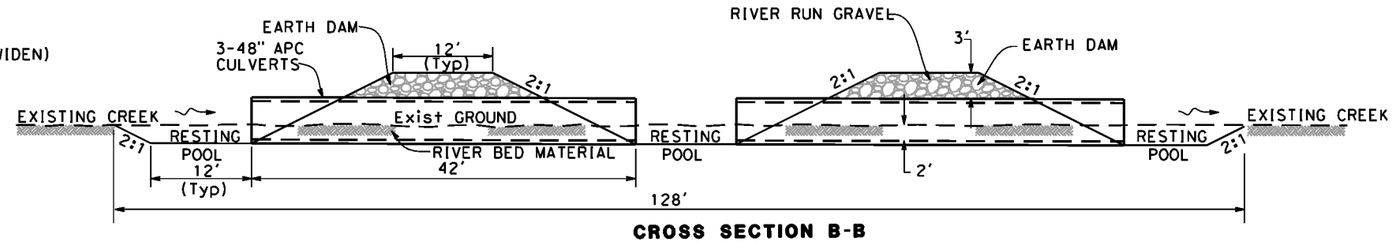
ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612



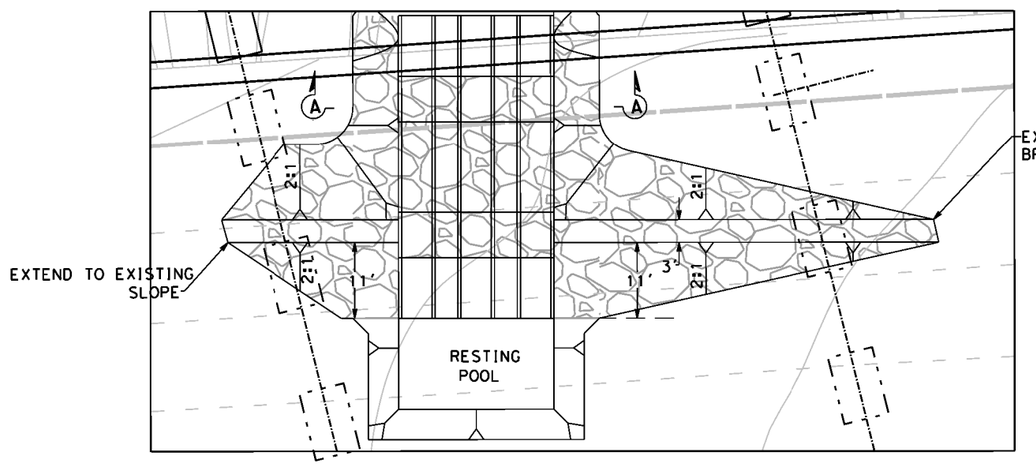
TEMPORARY CREEK DIVERSION SYSTEM
FOR ARROYO LAS POSITAS
SCALE: 1"=30'



CROSS SECTION A-A
NO SCALE



CROSS SECTION B-B
NO SCALE



DETAIL A
SCALE: 1"=10'

TEMPORARY CREEK DIVERSION
Arroyo Las Positas Creek (33-0203)
AS SHOWN

C-27

FOR NOTES, LEGEND AND ABBREVIATIONS, SEE SHEET C-1.

REVISED BY | DATE REVISED
CALCULATED-DESIGNED BY | CHECKED BY
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 01-18-12 | DATE PLOTTED =>1/17/2012 | TIME PLOTTED =>6:51:15 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ga027.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/18/12 DATE

PLANS APPROVAL DATE

N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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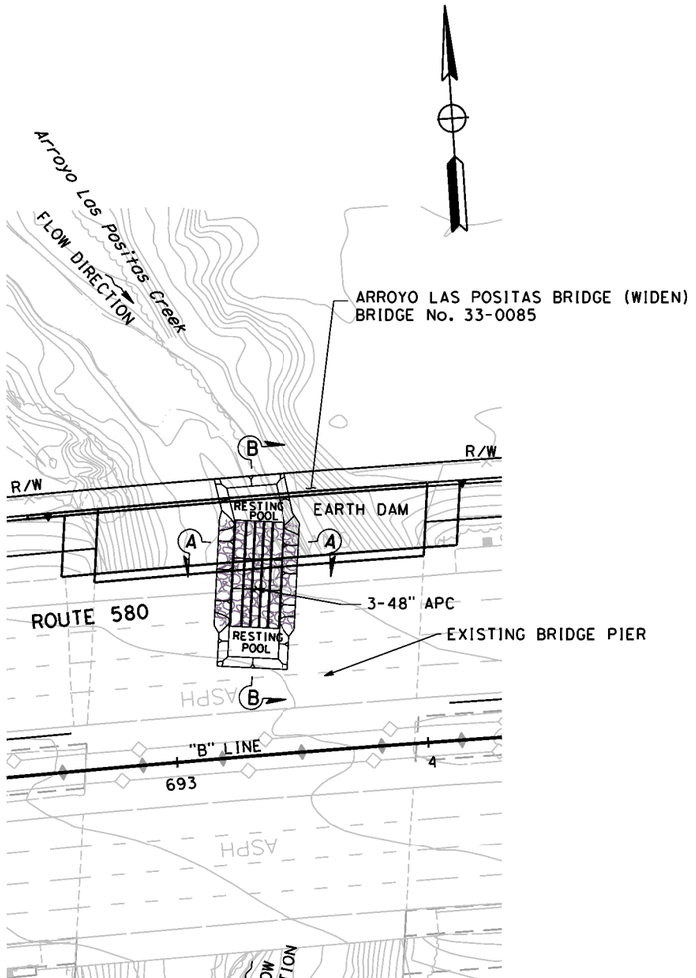
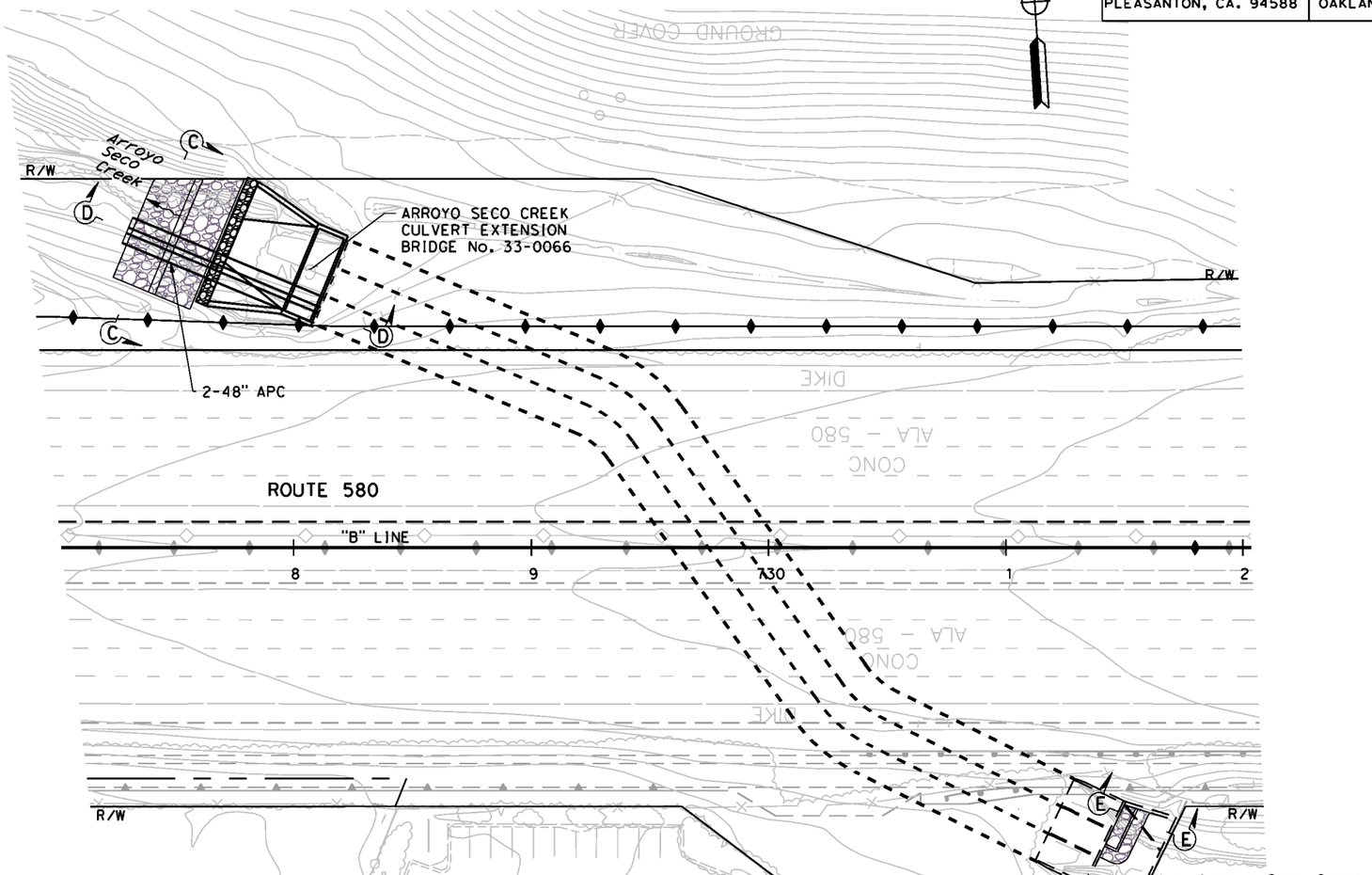
BKF ENGINEERS
4670 WILLOW ROAD, SUITE 250
PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612



TEMPORARY CREEK DIVERSION SYSTEM
FOR ARROYO LAS POSITAS

NOTE:
NO VEHICLE ACCESS ALLOWED.



TEMPORARY CREEK DIVERSION SYSTEM
FOR ARROYO SECO CREEK

NOTE:
NO VEHICLE ACCESS ALLOWED.

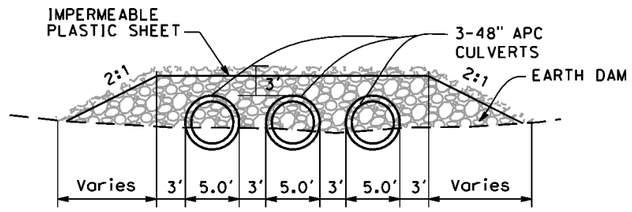
CONSTRUCTION DETAILS
TEMPORARY CREEK DIVERSION
SCALE: 1" = 30'

C-28

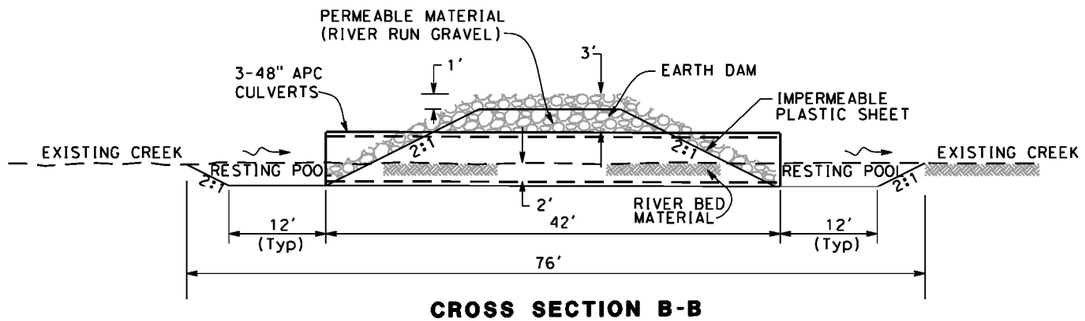
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION | CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI | CALCULATED-DESIGNED BY: DAT Q. NGUYEN | CHECKED BY: LUIS GARCIA | REVISED BY: DON | DATE REVISED: 1/18/12

LAST REVISION 01-18-12 | DATE PLOTTED =>1/17/2012 | TIME PLOTTED =>6:51:25 PM

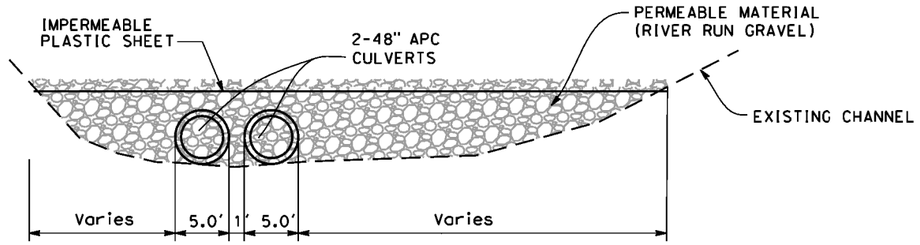
BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ga028.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481



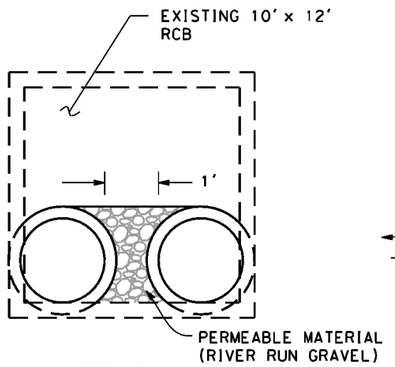
CROSS SECTION A-A



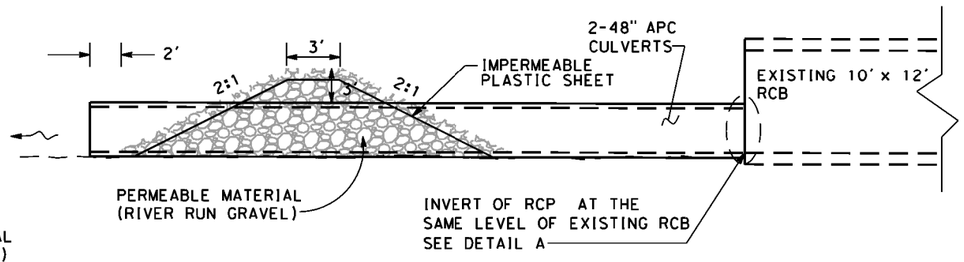
CROSS SECTION B-B



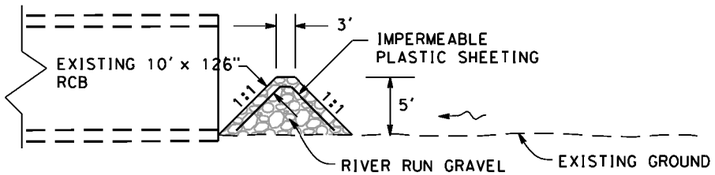
CROSS SECTION C-C



DETAIL A



CROSS SECTION D-D



CROSS SECTION E-E

NOTE:
NO VEHICLE ACCESS ALLOWED.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 1/18/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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BKF ENGINEERS
4670 WILLOW ROAD, SUITE 250
PLEASANTON, CA. 94588

ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612

CONSTRUCTION DETAILS
TEMPORARY CREEK DIVERSION
NO SCALE

C-29

REVISED BY	DATE REVISED
DON	1/18/12

CALCULATED-DESIGNED BY: DAT Q. NGUYEN
CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION: DATE PLOTTED =>1/17/2012 01-18-12 | TIME PLOTTED =>6:51:33 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => ASHU | DGN FILE => 0400021248ga029.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

5. Erosion Control Plans and Details

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

LEGEND:

DIRECTION OF FLOW

PROPOSED STORM DRAIN INLET AND PIPE SYSYEM

EXISTING STORM DRAIN INLET AND PIPE SYSYEM

ERC (TYPE 1)
EROSION CONTROL (COMPOST BLANKET)
FIBER ROLLS
EROSION CONTROL (HYDROSEED)

ERC (TYPE 2)
EROSION CONTROL (COMPOST BLANKET)
ROLLED EROSION CONTROL PRODUCT (NETTING)
FIBER ROLLS
EROSION CONTROL (HYDROSEED)

ERC (TYPE 3)
IMPORTED BIOFILTRATION SOIL
ROLLED EROSION CONTROL PRODUCT (NETTING)
EROSION CONTROL (HYDROSEED)

NOTES:

1. EROSION CONTROL ADJUSTMENTS ARE SUBJECT TO ACTUAL SITE CONDITIONS AND AS DIRECTED BY THE ENGINEER.
2. EROSION CONTROL (HYDROSEED) SHALL BE APPLIED TO ALL DISTURBED AREAS AS PROVIDED IN THE SPECIAL PROVISIONS.
3. ALL ROLLED EROSION CONTROL PRODUCT (NETTING) SHALL BE TYPE B

ABBREVIATION:

ERC EROSION CONTROL

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

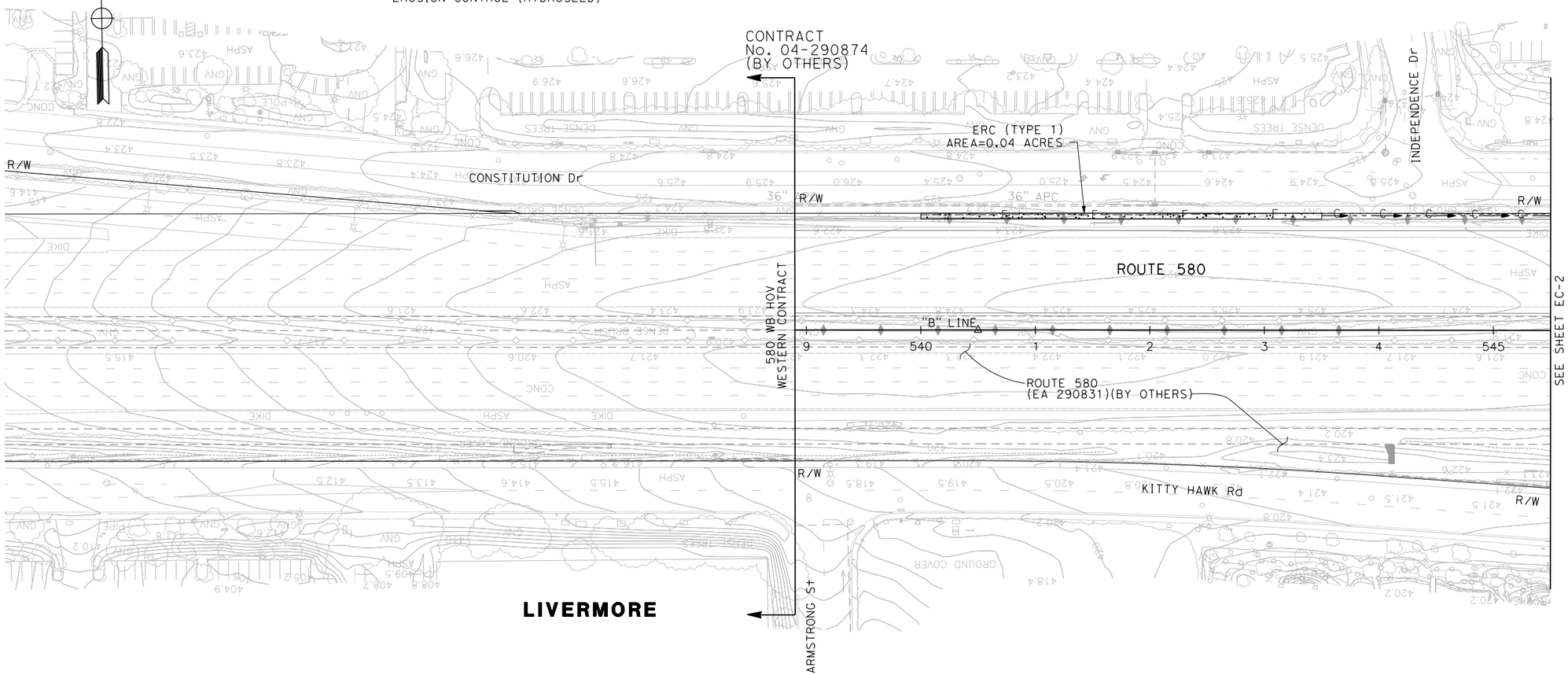
REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

WMH CORPORATION	ALAMEDA CTC
555 12th St Suite 1900 Oakland, CA 94607	1333 Broadway Suite 220 Oakland, CA 94612



EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

REVISED BY	DATE REVISED
BG	1/13/12
YF	11/11/11
YF	05/01/10
Y. FAROUQI	DAVID M. DICKINSON
CALCULATED-DESIGNED BY	CHECKED BY
CONSULTANT FUNCTIONAL SUPERVISOR	TIMOTHY J. LEE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION 01-13-12 | DATE PLOTTED => 1/17/2012 | TIME PLOTTED => 7:20:17 PM

X:\580 WB HOV\000_CAD\Sheets\East of Sta 540+00\CT-Electronic-Submittal 20120113\009-Erosion_Control\GE-Plans\04000212481ge001.dgn

BORDER LAST REVISED 7/2/2010 | USERNAME => benrile | DGN FILE => 04000212481ge001.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

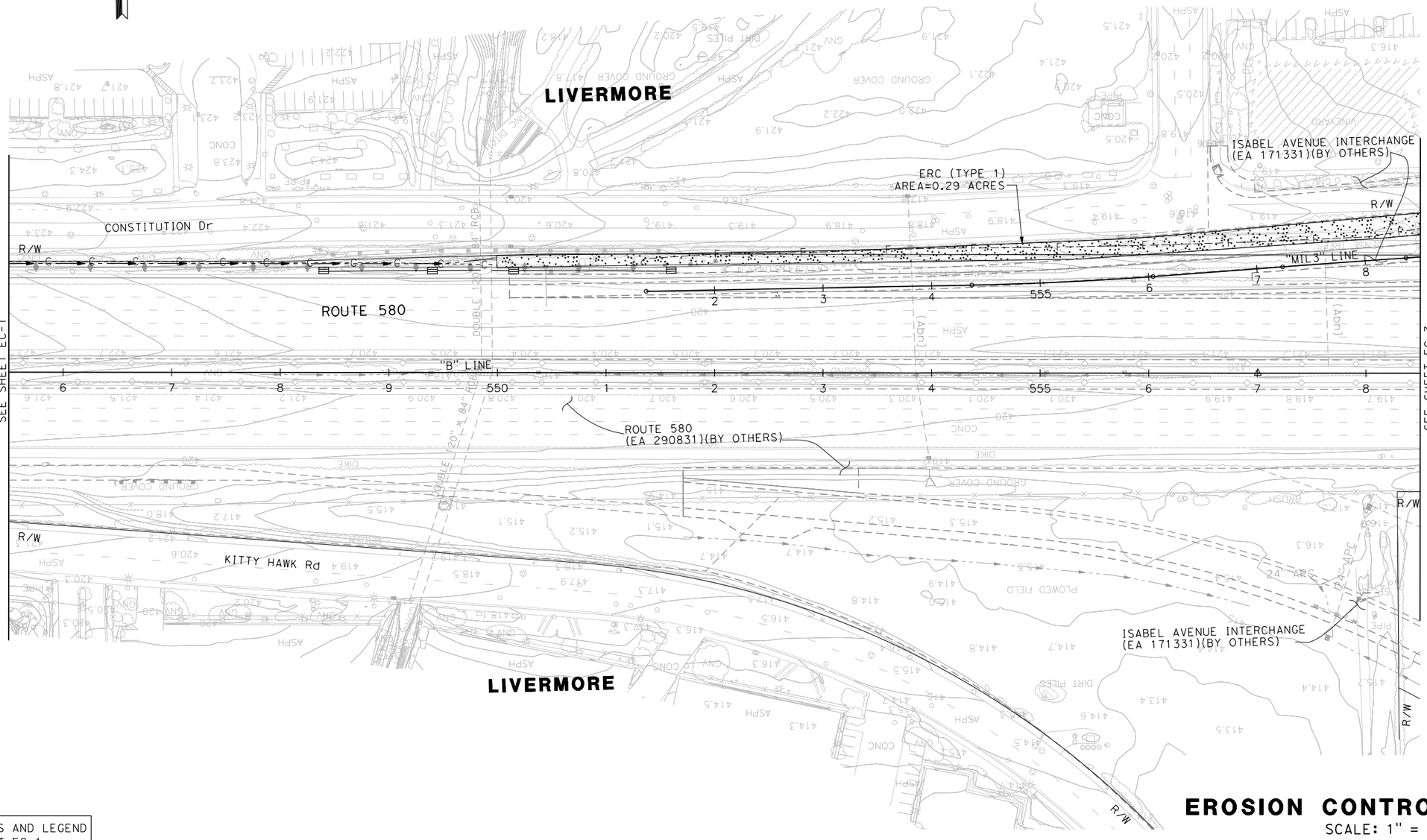
REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
DAVID M. DICKINSON
No. 50815
Exp. 9-30-13
CIVIL
STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

WMH CORPORATION	ALAMEDA CTC
555 12th St	1333 Broadway
Suite 1900	Suite 220
Oakland, CA 94607	Oakland, CA 94612



FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-2

	REVISED BY	DATE REVISED
BG		1/13/12
YF		11/11/11
YF		05/01/10

CALCULATED-DESIGNED BY: Y. FAROUQI
CHECKED BY: DAVID M. DICKINSON

SUPERVISOR: TIMOTHY J. LEE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
CONSULTANT FUNCTIONAL SUPERVISOR

Caltrans

LAST REVISION 01-13-12
DATE PLOTTED => 1/17/2012
TIME PLOTTED => 7:20:20 PM

X:\580 WB HOV\000_CAD\Sheets\East of Sta 540+00\CT-Electronic-Submittal 20120113\009-Erosion_Control\GE-Plans\04000212481ge002.dgn

BORDER LAST REVISED 7/2/2010 | USERNAME => benrile | DGN FILE => 04000212481ge002.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

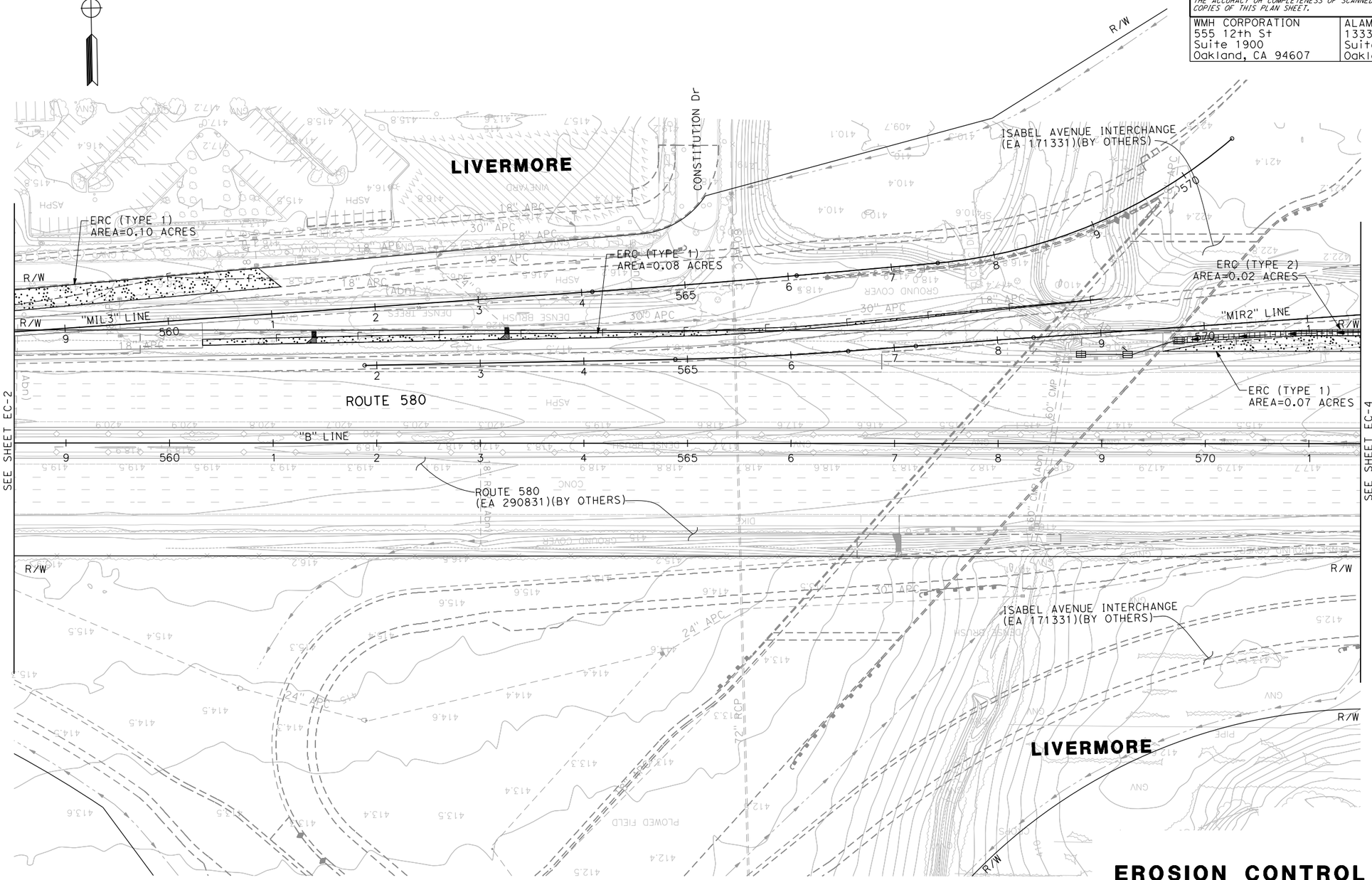
PLANS APPROVAL DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

WMH CORPORATION 555 12th St Suite 1900 Oakland, CA 94607	ALAMEDA CTC 1333 Broadway Suite 220 Oakland, CA 94612

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE



FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-3

BG	1/13/12			
YF	11/11/11			
YF	05/01/10			
REVISED BY	DATE REVISED			
Y. FAROUQI	DAVID M. DICKINSON			
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BORDER LAST REVISED 7/2/2010 | USERNAME => benrile | DGN FILE => 0400021248ge003.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — STATE OF CALIFORNIA

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ISABEL AVENUE INTERCHANGE
(EA 171331)(BY OTHERS)

LIVERMORE

ERC (TYPE 3)
AREA=0.03 ACRES

ERC (TYPE 2)
AREA=0.02 ACRES

ERC (TYPE 2)
AREA=0.01 ACRES

ERC (TYPE 1)
AREA=0.19 ACRES

ERC (TYPE 1)
AREA=0.09 ACRES

ROUTE 580

"MIR2" LINE

"MIR3" LINE

"B" LINE

ROUTE 580
(EA 290831)(BY OTHERS)

BIO-SWALE

36" APC

24" APC

18" APC

18" RCP

R/W

SEE SHEET EC-3

SEE SHEET EC-5

LIVERMORE

EAST AIRWAY Blvd

FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-4

BG	1/13/12			
YF	11/11/11			
YF	05/01/10			
REVISED BY	DATE REVISED			
Y. FAROUQI	DAVID M. DICKINSON			
CALCULATED-DESIGNED BY	CHECKED BY			

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BORDER LAST REVISED 7/2/2010 | USERNAME => benrile | DGN FILE => 0400021248ge004.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

PLANS APPROVAL DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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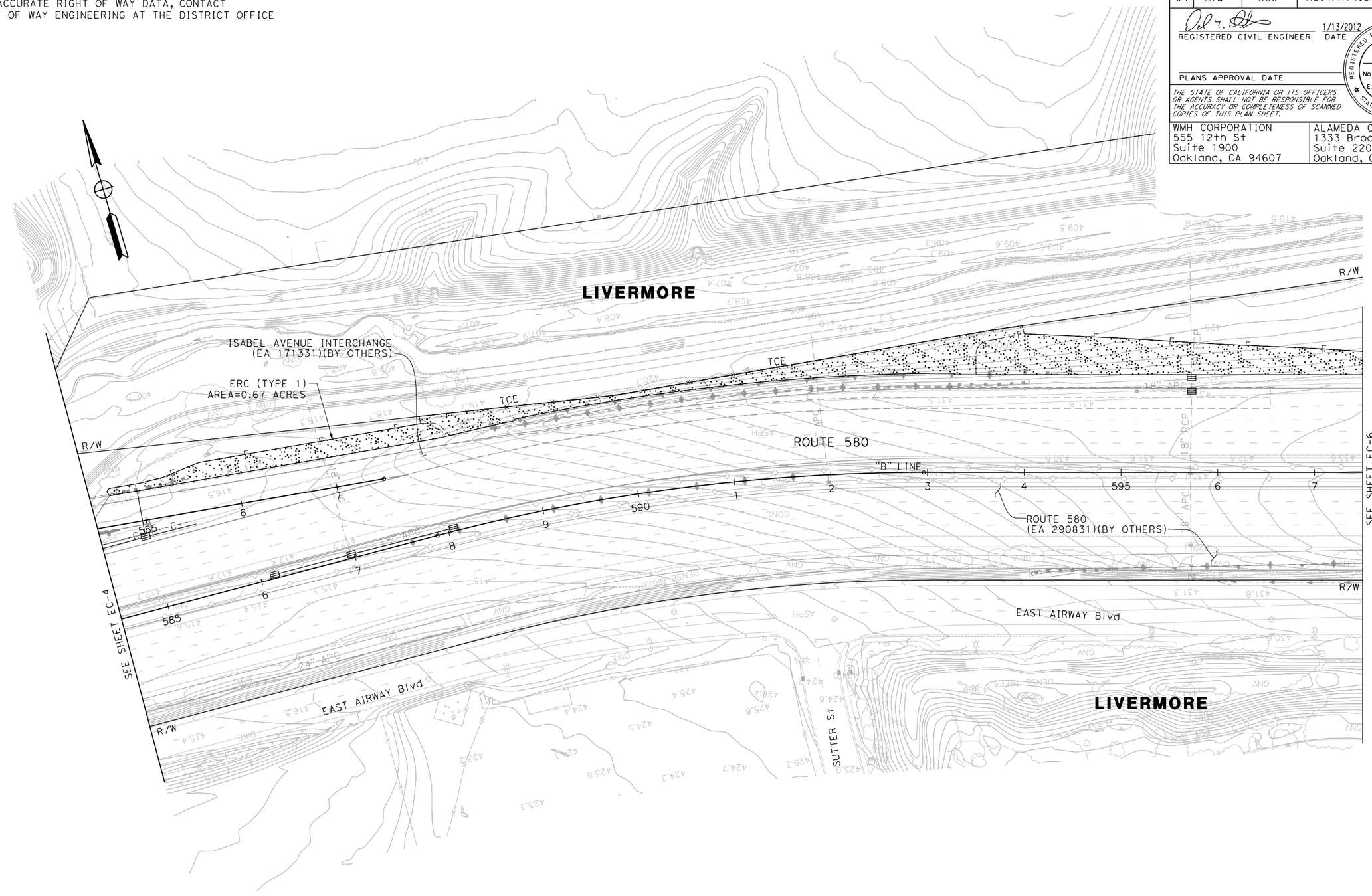

FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-5

BG	YF	YF	REVISED BY
1/13/12	11/11/11	05/01/10	DATE REVISED

Y. FAROUQI — CALCULATED-DESIGNED BY
DAVID M. DICKINSON — CHECKED BY
TIMOTHY J. LEE — CONSULTANT FUNCTIONAL SUPERVISOR

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FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — STATE OF CALIFORNIA

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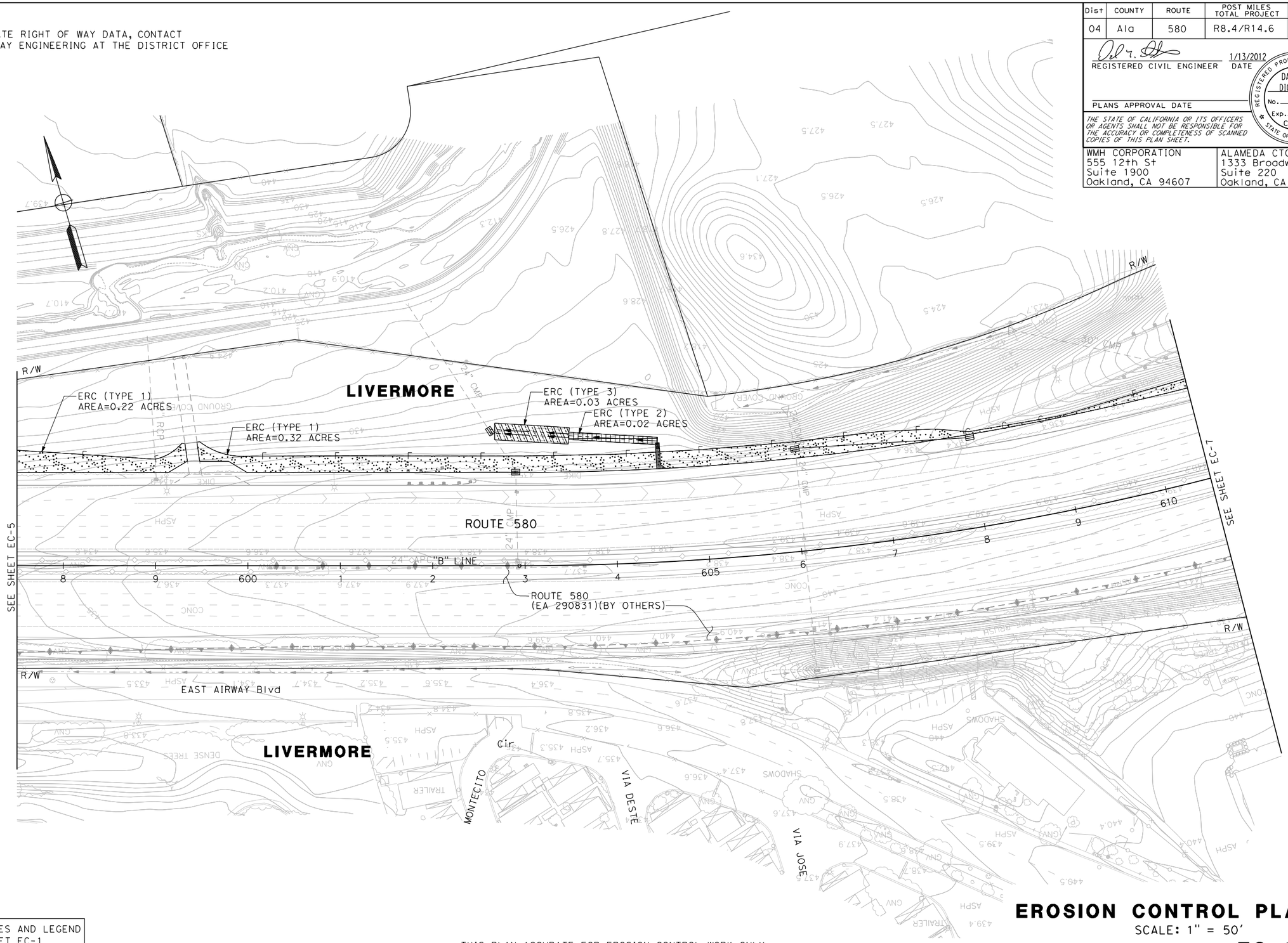

FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-6

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	REVISED BY	YF	YF	YF	BG
	DATE REVISED	05/01/10	11/11/11	1/13/12	
Y. FAROUQI	DAVID M. DICKINSON				
CALCULATED-DESIGNED BY	CHECKED BY				

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FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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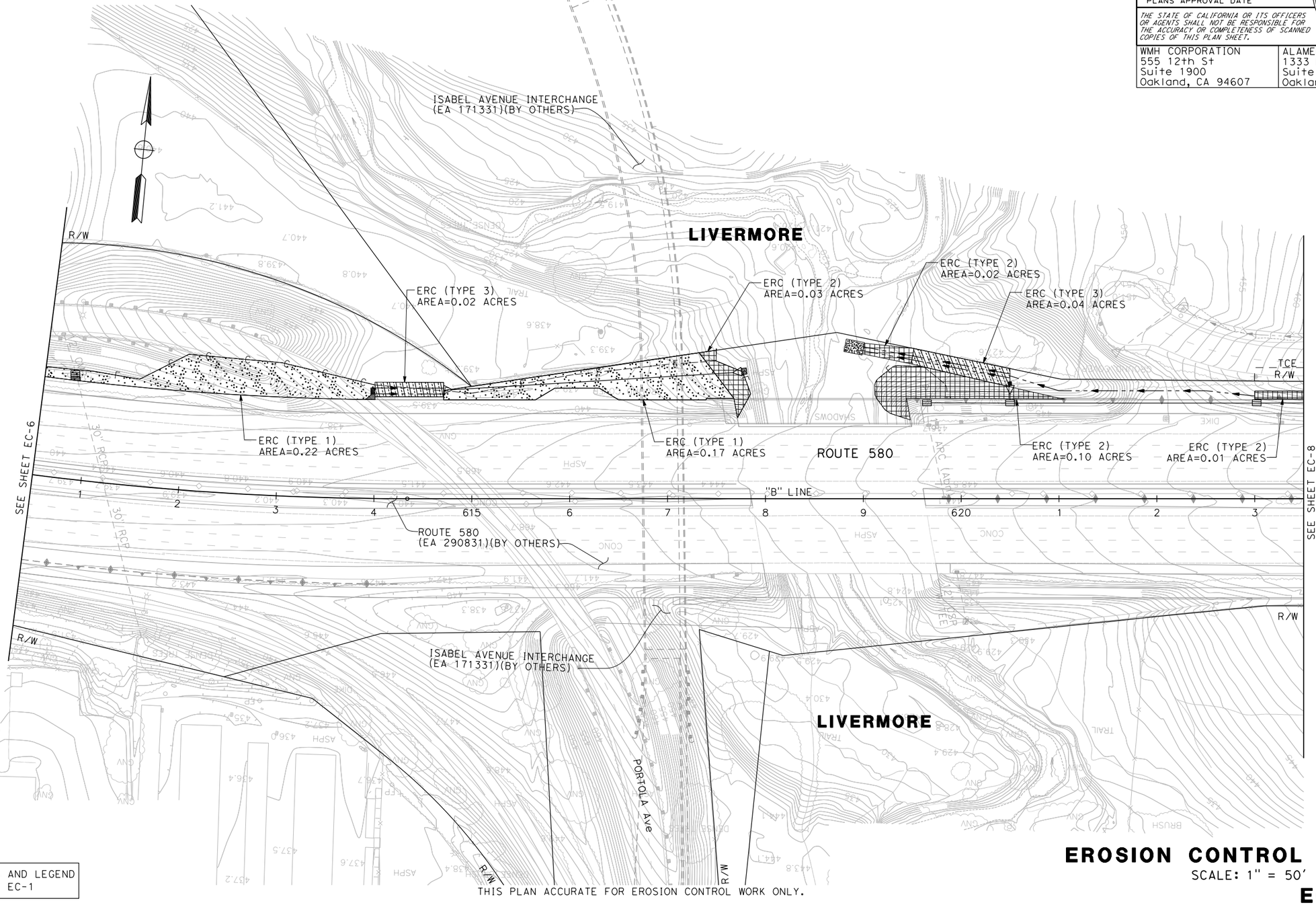

FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-7

	BG	1/13/12
	YF	11/11/11
	YF	05/01/10
REVISED BY	DATE REVISED	
Y. FAROUQI	DAVID M. DICKINSON	
CALCULATED-DESIGNED BY	CHECKED BY	

TIMOTHY J. LEE
CONSULTANT FUNCTIONAL SUPERVISOR

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FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — DAVID M. DICKINSON — No. 50815 — Exp. 9-30-13 — CIVIL — STATE OF CALIFORNIA

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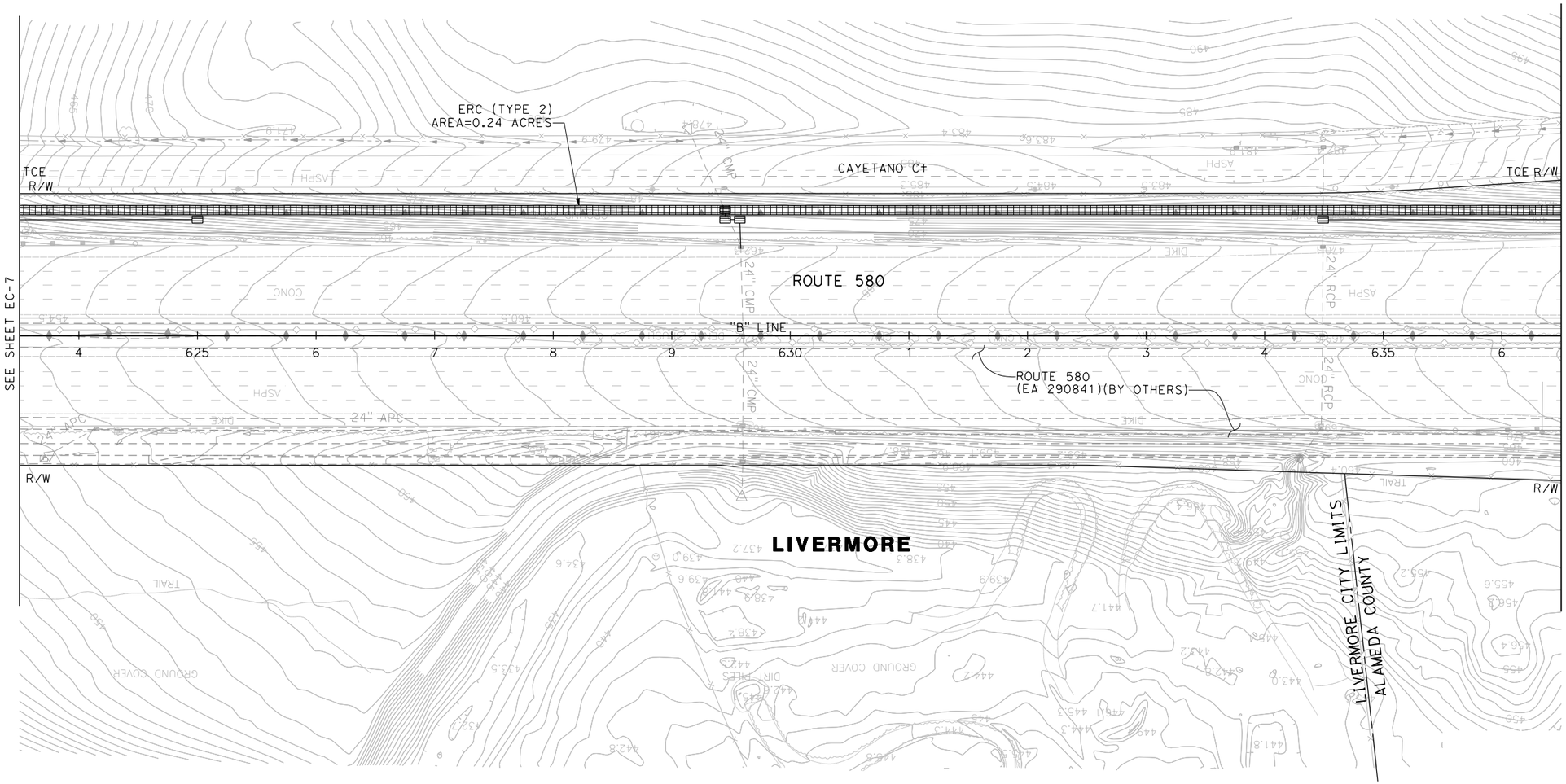
LIVERMORE



FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-8

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISED BY	BG
Caltrans	TIMOTHY J. LEE	CHECKED BY	DATE REVISED	1/13/12
	DAVID M. DICKINSON	Y. FAROUQI	YF	11/11/11
			YF	05/01/10

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TIME PLOTTED => 7:20:34 PM

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BORDER LAST REVISED 7/2/2010 | USERNAME => benrile | DGN FILE => 0400021248ge008.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

PLANS APPROVAL DATE

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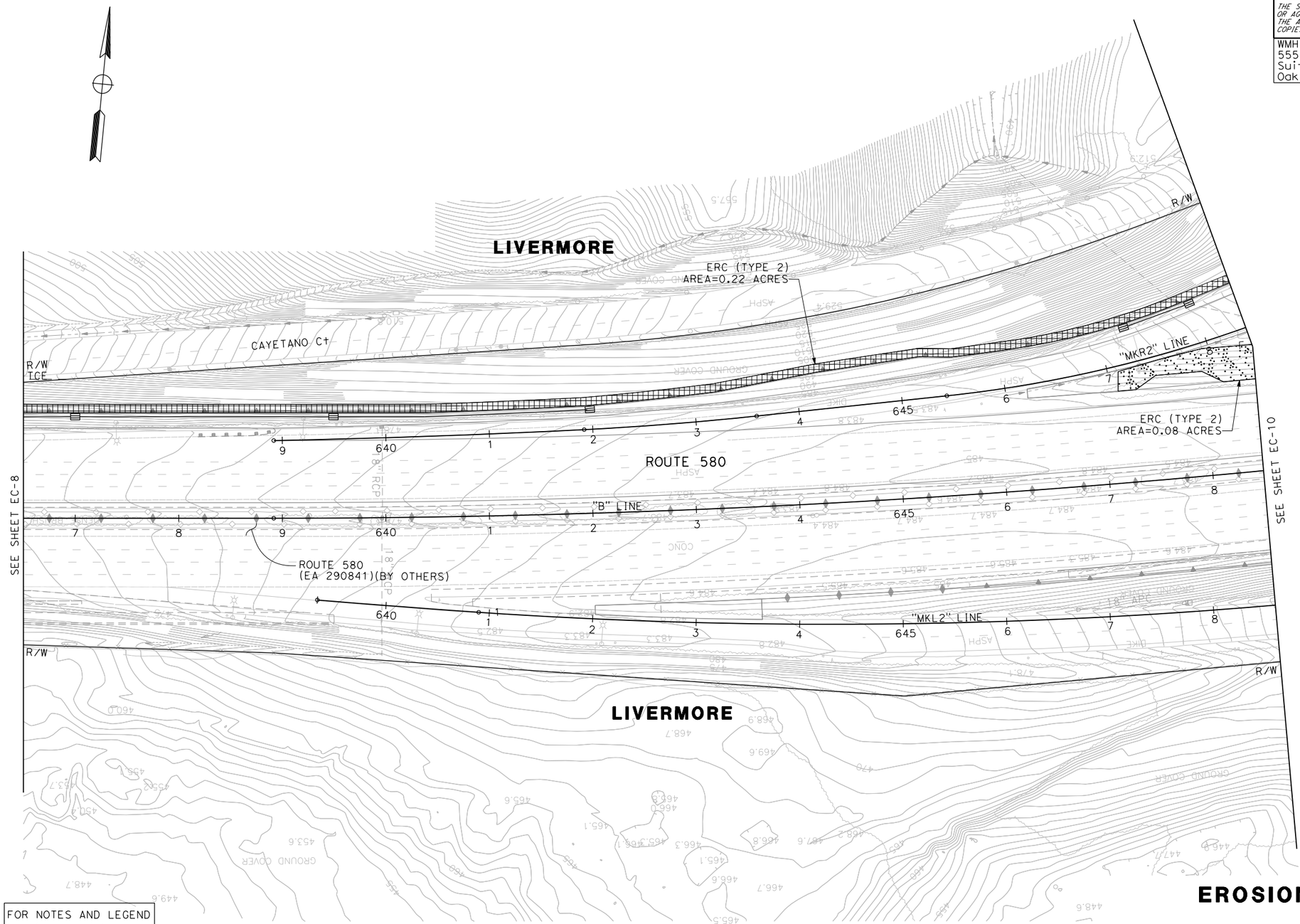

FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-9

	BG	YF	YF	Y. FAROUQI		
	1/13/12	11/11/11	05/01/10	DAVID M. DICKINSON		
				CHECKED BY	CALCULATED-DESIGNED BY	REVISED BY
						DATE REVISED

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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BORDER LAST REVISED 7/2/2010	USERNAME => benrile DGN FILE => 0400021248ge009.dgn	RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3	UNIT 0735	PROJECT NUMBER & PHASE	04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — DAVID M. DICKINSON — No. 50815 — Exp. 9-30-13 — CIVIL — STATE OF CALIFORNIA

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CAYETANO Ct

ERC (TYPE 1)
AREA=0.15 ACRES

R/W

"MK" LINE

NORTH LIVERMORE Ave

LIVERMORE

"MKR2" LINE

"MKR1" LINE

ERC (TYPE 1)
AREA=0.03 ACRES

R/W

ROUTE 580

ERC (TYPE 1)
AREA=0.09 ACRES

ERC (TYPE 1)
AREA=0.21 ACRES

ERC (TYPE 2)
AREA=0.07 ACRES

SEE SHEET EC-9

SEE SHEET EC-11

"B" LINE

ERC (TYPE 2)
AREA=0.01 ACRES

ROUTE 580
(EA 290841)(BY OTHERS)

"MKL4" LINE

"MKL2" LINE

R/W

LIVERMORE

"MKL3" LINE

ERC (TYPE 1)
AREA=0.02 ACRES

R/W

FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-10

	REVISED BY	DATE REVISED
BG		1/13/12
YF		11/11/11
YF		05/01/10

Y. FAROUQI — CALCULATED-DESIGNED BY

DAVID M. DICKINSON — CHECKED BY

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

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FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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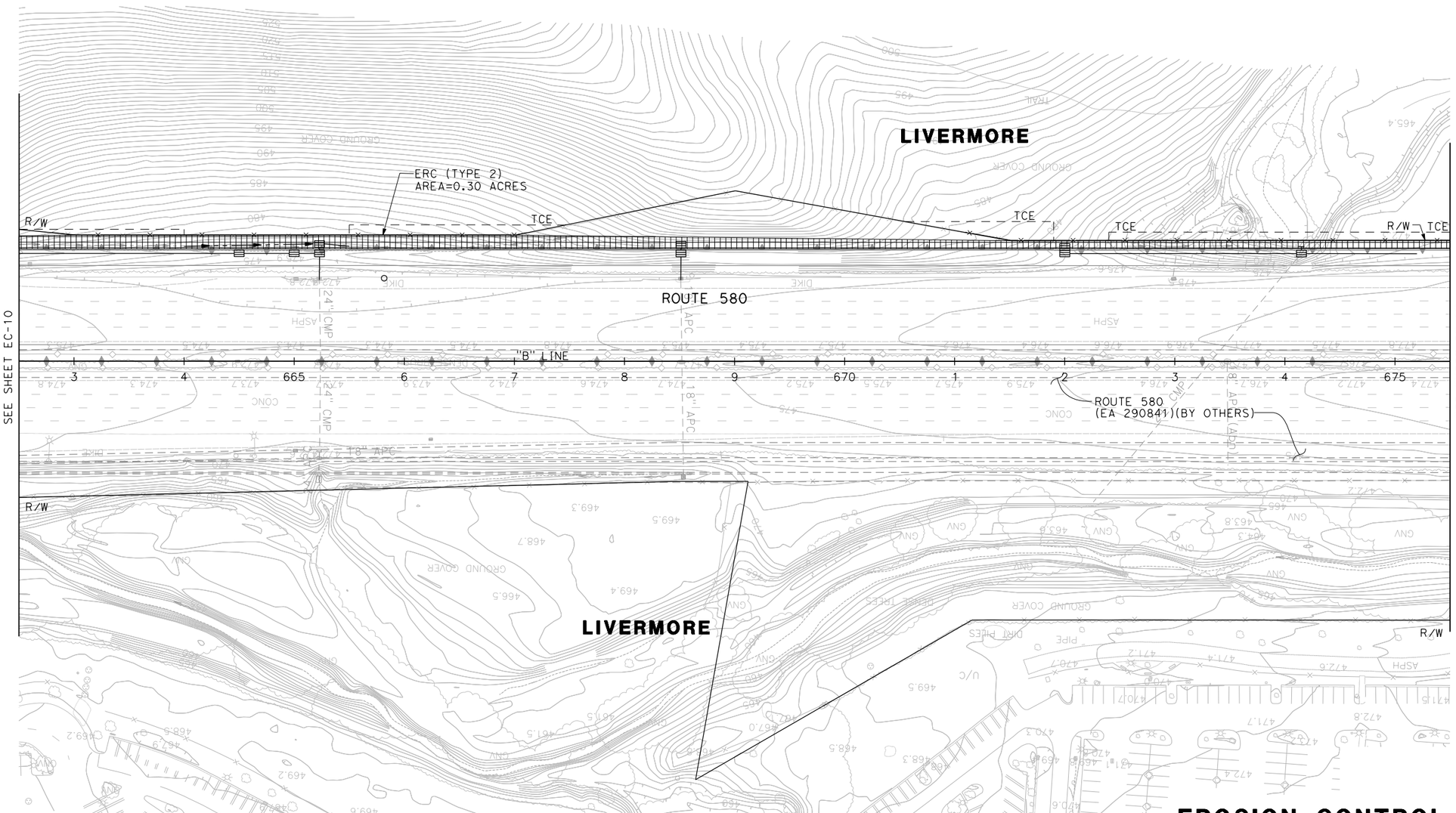

FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-11

BG	1/13/12		
YF	11/11/11		
YF	05/01/10		
REVISED BY	DATE REVISED		
Y. FAROUQI	DAVID M. DICKINSON		
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FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

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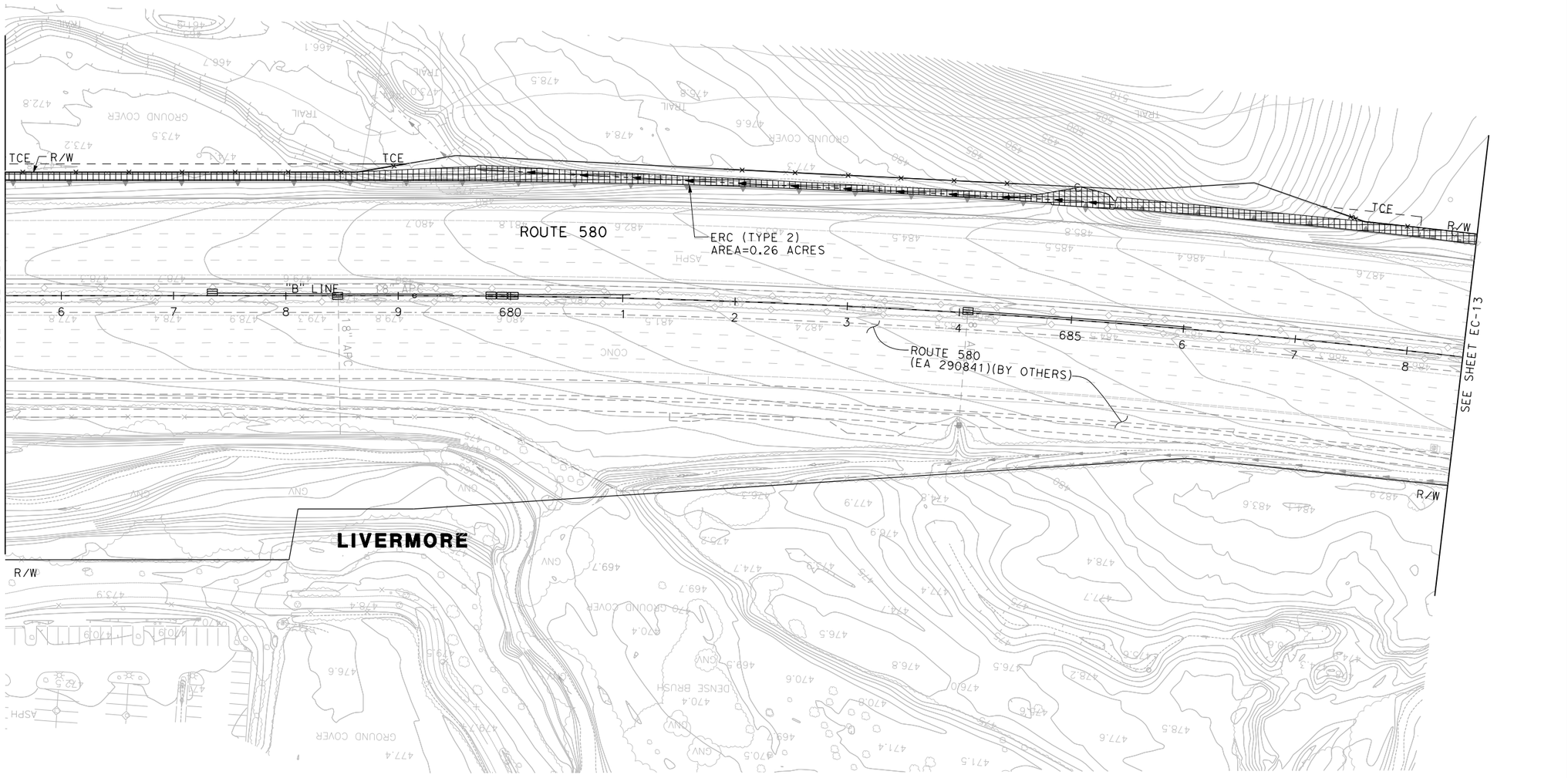
LIVERMORE



FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-12

	REVISED BY	YF	YF	BG
	DATE REVISED	05/01/10	11/11/11	1/13/12

Y. FAROUQI	DAVID M. DICKINSON
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FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

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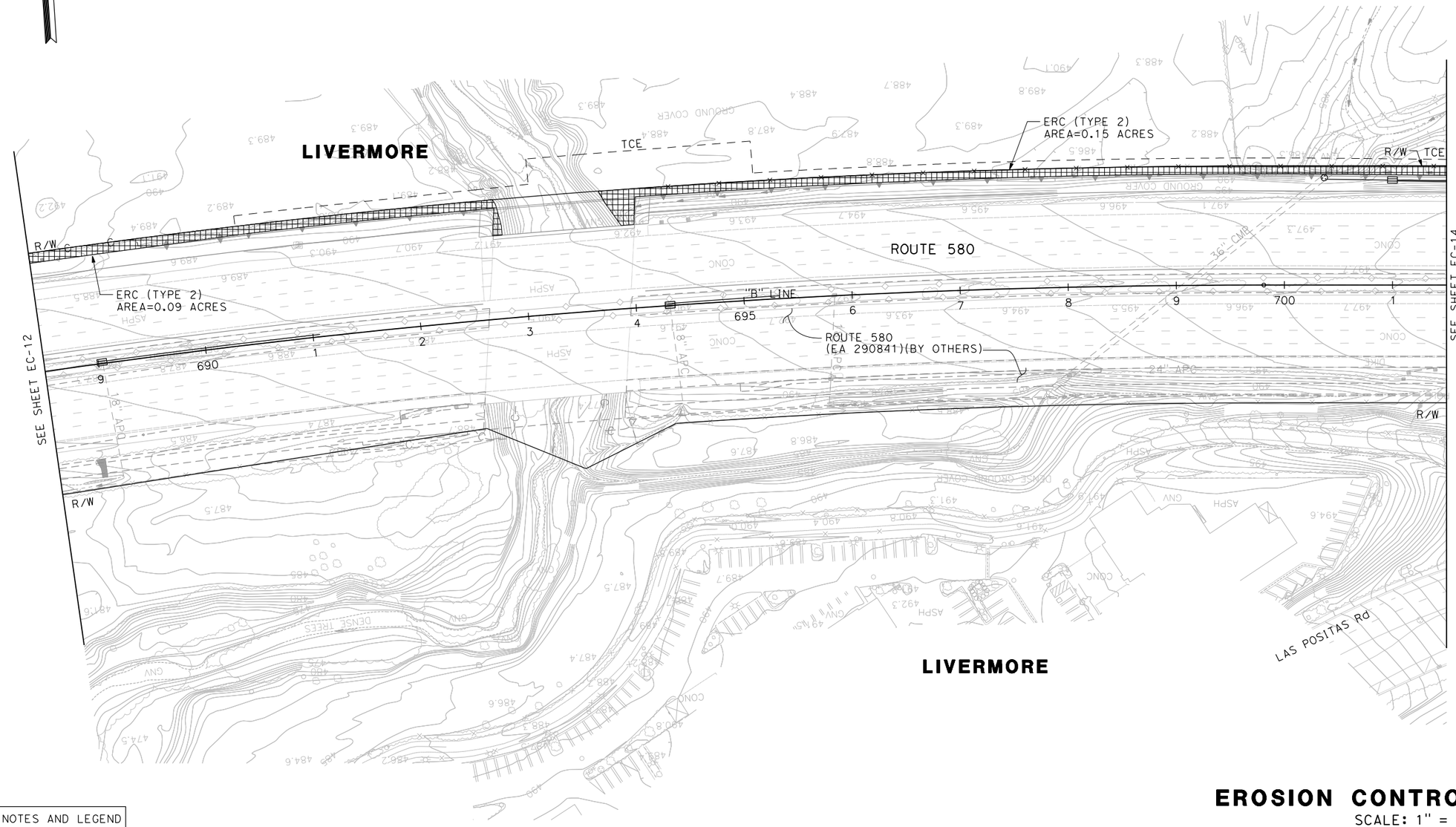

FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-13

	REVISED BY	YF	YF	YF	BG
	DATE REVISED	05/01/10	11/11/11	1/13/12	
CALCULATED-DESIGNED BY	Y. FAROUQI				
CHECKED BY	DAVID M. DICKINSON				
CONSULTANT FUNCTIONAL SUPERVISOR	TIMOTHY J. LEE				
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	Caltrans®				

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FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

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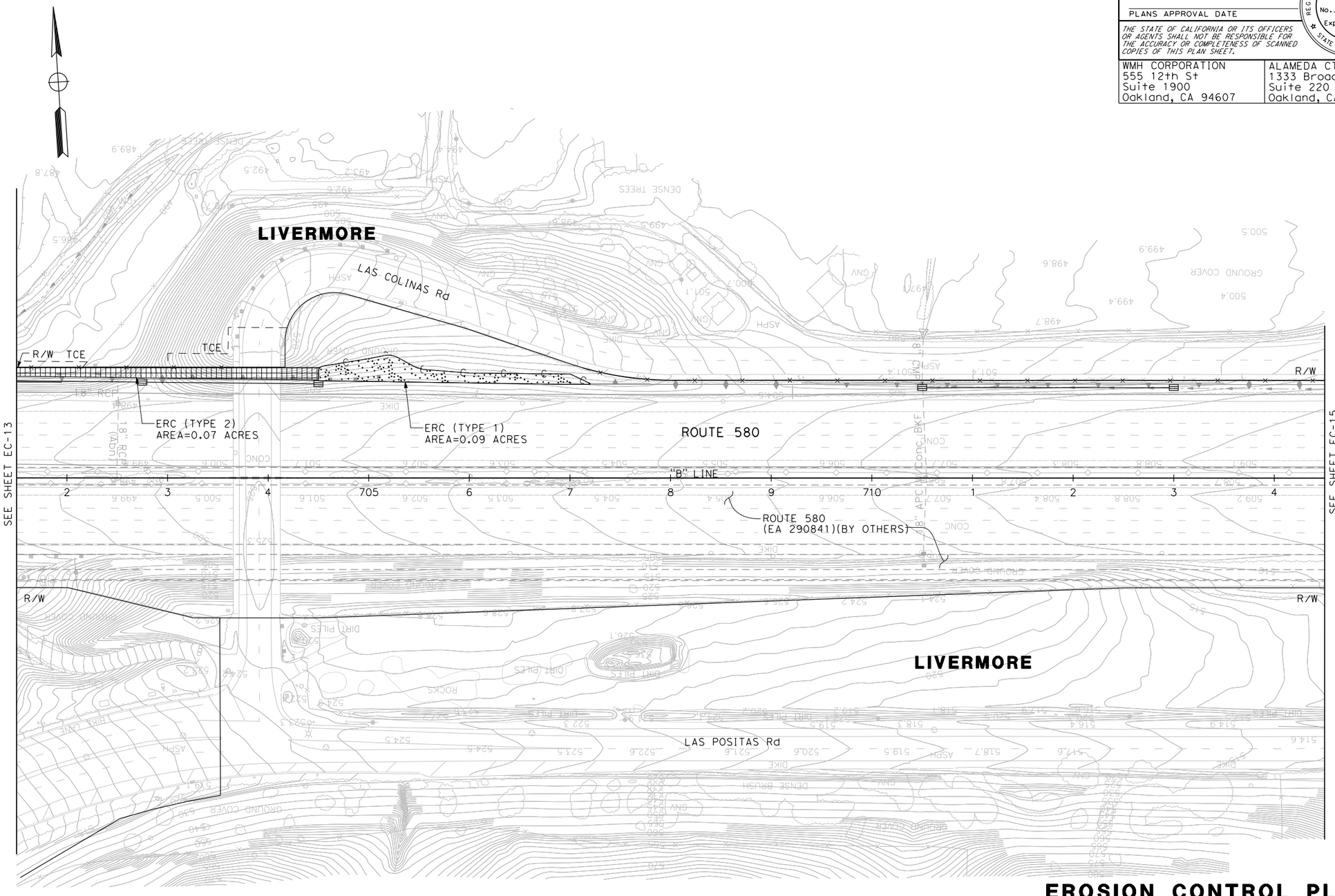

FOR NOTES AND LEGEND
SEE SHEET EC-1

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EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-14

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	TIMOTHY J. LEE	
CHECKED BY	CALCULATED-DESIGNED BY	DAVID M. DICKINSON	Y. FAROUQI
DATE REVISED	REVISED BY		
05/01/10	YF		
11/11/11	YF		
1/13/12	BG		

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BORDER LAST REVISED 7/2/2010 | USERNAME => benrile | DGN FILE => 04000212481ge014.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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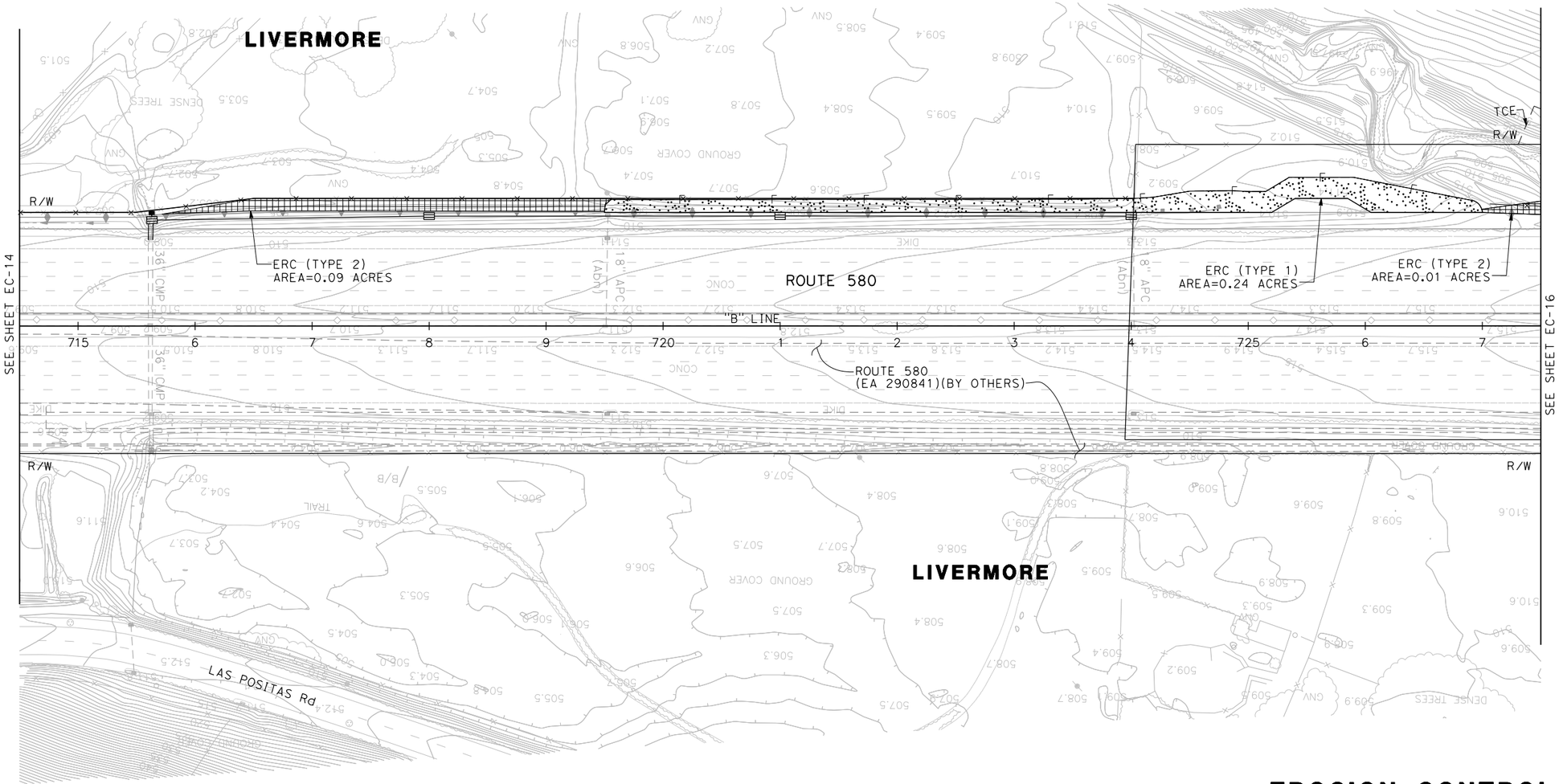

FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-15

REVISED BY	YF	YF	YF	BG
DATE REVISED	05/01/10	11/11/11	1/13/12	

CALCULATED-DESIGNED BY: Y. FAROUQI
CHECKED BY: DAVID M. DICKINSON
CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE
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BORDER LAST REVISED 7/2/2010 | USERNAME => benrile | DGN FILE => 0400021248ge015.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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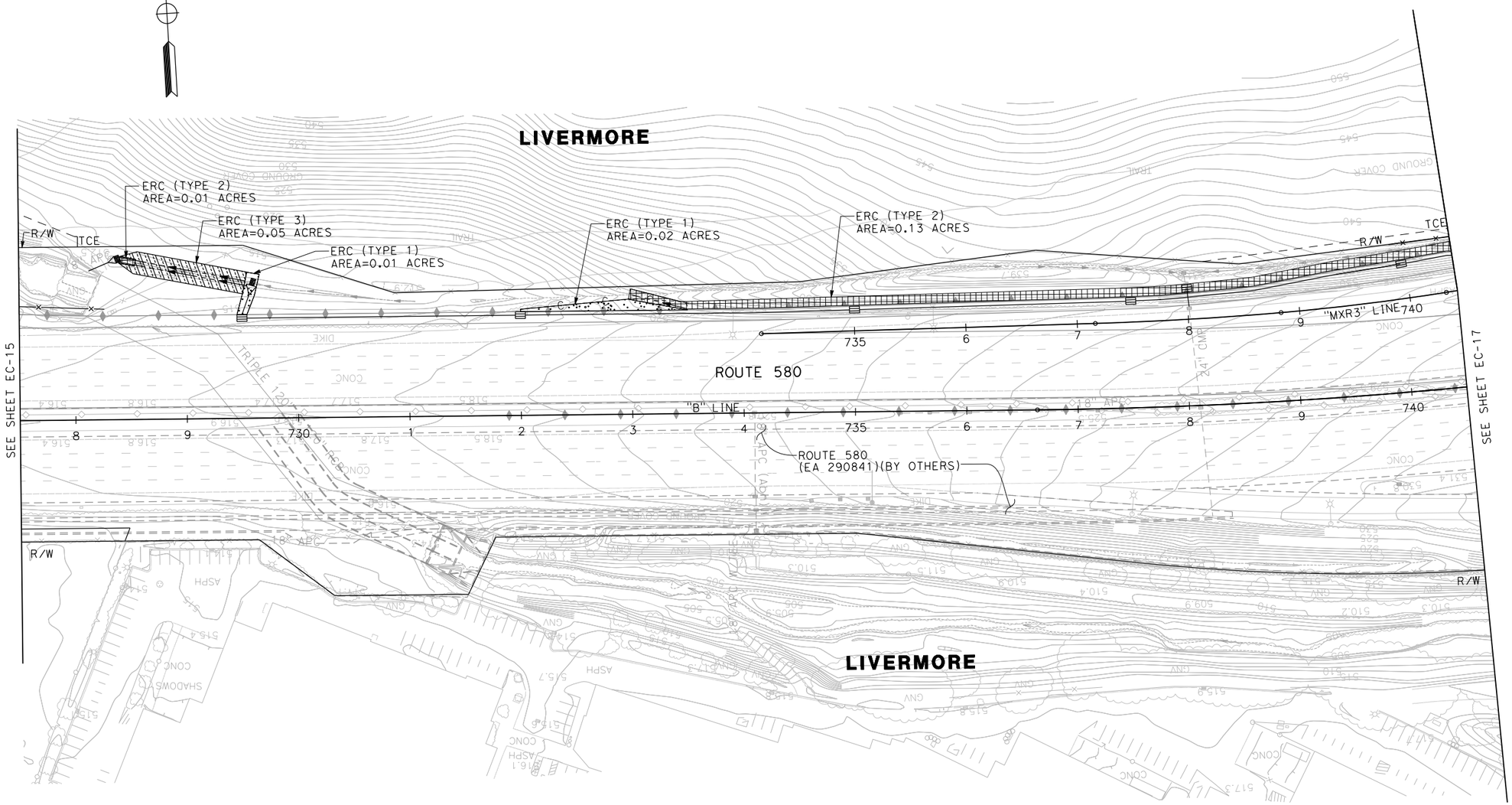

FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-16

	REVISED BY	DATE REVISED
BG	YF	1/13/12
YF		11/11/11
		05/01/10

CALCULATED-DESIGNED BY: Y. FAROUQI
CHECKED BY: DAVID M. DICKINSON
CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE
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FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

LIVERMORE

ERC (TYPE 1)
AREA=0.10 ACRES

ERC (TYPE 2)
AREA=0.04 ACRES

ERC (TYPE 1)
AREA=0.02 ACRES

ERC (TYPE 1)
AREA=0.36 ACRES

"MXR3" LINE

"MXR1" LINE

"B" LINE

"MXL4" LINE

MXL3 LINE

ROUTE 580

ROUTE 580
(EA 290841)(BY OTHERS)

ERC (TYPE 3)
AREA=0.10 ACRES

ERC (TYPE 1)
AREA=0.11 ACRES

ERC (TYPE 2)
AREA=0.04 ACRES

ERC (TYPE 2)
AREA=0.02 ACRES

ERC (TYPE 1)
AREA=0.31 ACRES

ERC (TYPE 1)
AREA=0.11 ACRES

SEE SHEET EC-16

SEE SHEET EC-18

FIRST St

SOUTHFRONT Rd

R/W

FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-17

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
DAVID M. DICKINSON
No. 50815
Exp. 9-30-13
CIVIL
STATE OF CALIFORNIA

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YF		05/01/10

CALCULATED-DESIGNED BY: Y. FAROUQI

CHECKED BY: DAVID M. DICKINSON

CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE

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Caltrans

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FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — STATE OF CALIFORNIA

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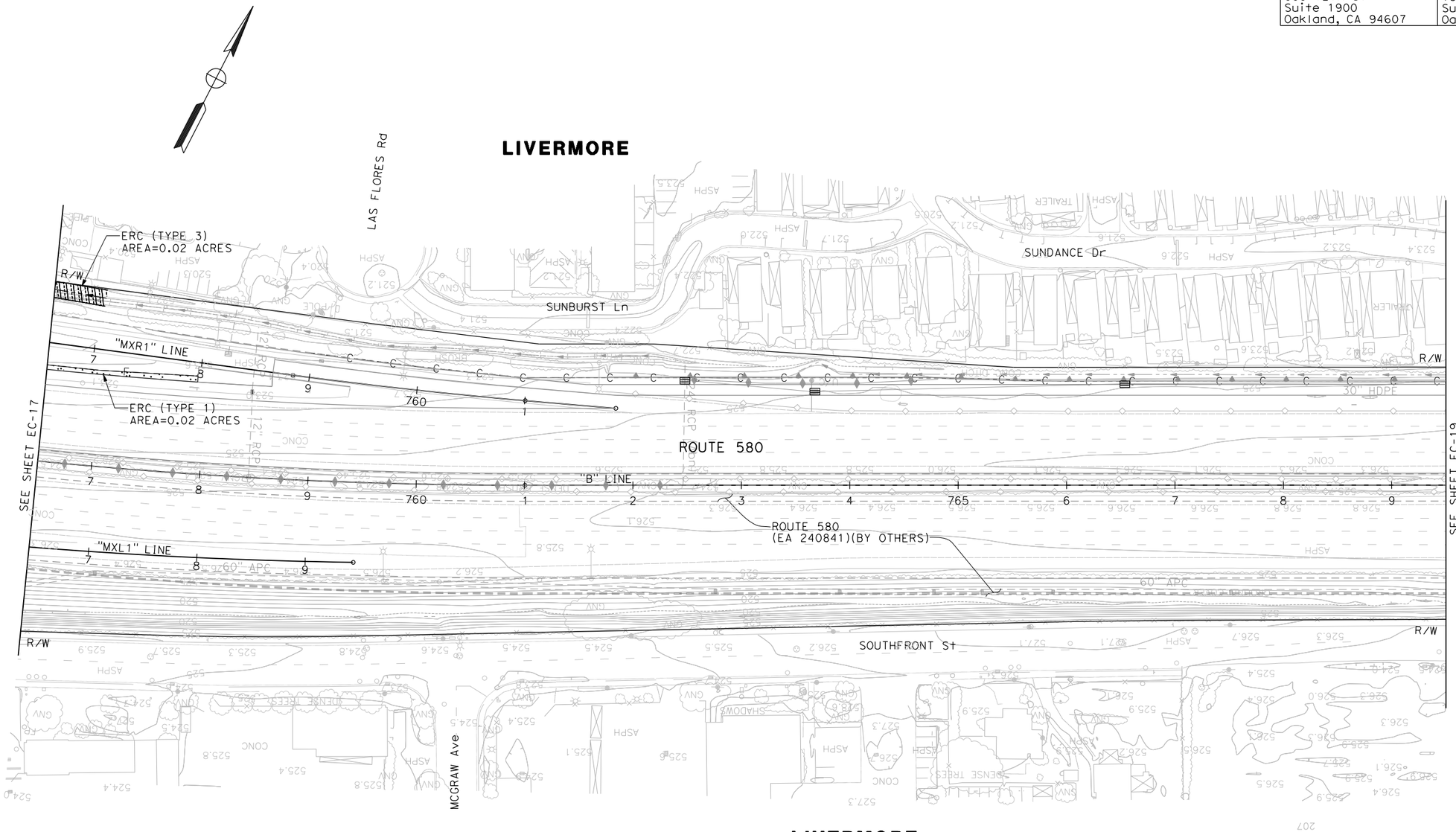

LIVERMORE

FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-18

LAST REVISION	DATE PLOTTED => 1/17/2012
01-13-12	TIME PLOTTED => 7:20:58 PM

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	YF	11/11/11
	YF	05/01/10
REVISED BY		DATE REVISED
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CALCULATED-DESIGNED BY		CHECKED BY
TIMOTHY J. LEE		
CONSULTANT FUNCTIONAL SUPERVISOR		
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		

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BORDER LAST REVISED 7/2/2010 | USERNAME => benrile | DGN FILE => 0400021248ge018.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

PLANS APPROVAL DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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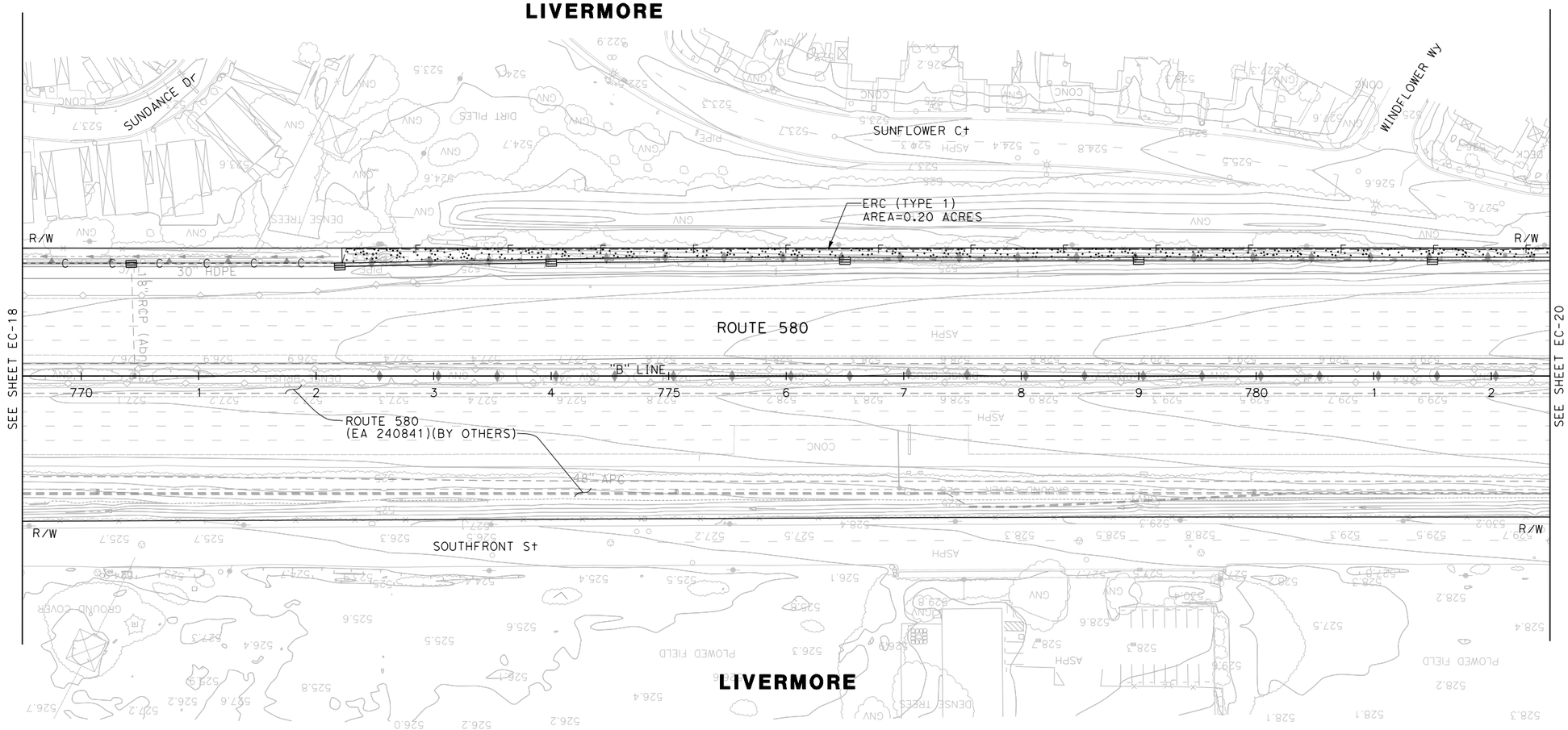

FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC- 19

	BG	YF	YF	Y. FAROUQI	Y. FAROUQI	TIMOTHY J. LEE
REVISED BY						
DATE REVISED	1/13/12	11/11/11	05/01/10			
CALCULATED-DESIGNED BY						
CHECKED BY				DAVID M. DICKINSON		

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans®

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LAST REVISION 01-13-12 — DATE PLOTTED => 1/17/2012 — TIME PLOTTED => 7:21:00 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => benrile | DGN FILE => 0400021248ge019.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

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RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — STATE OF CALIFORNIA

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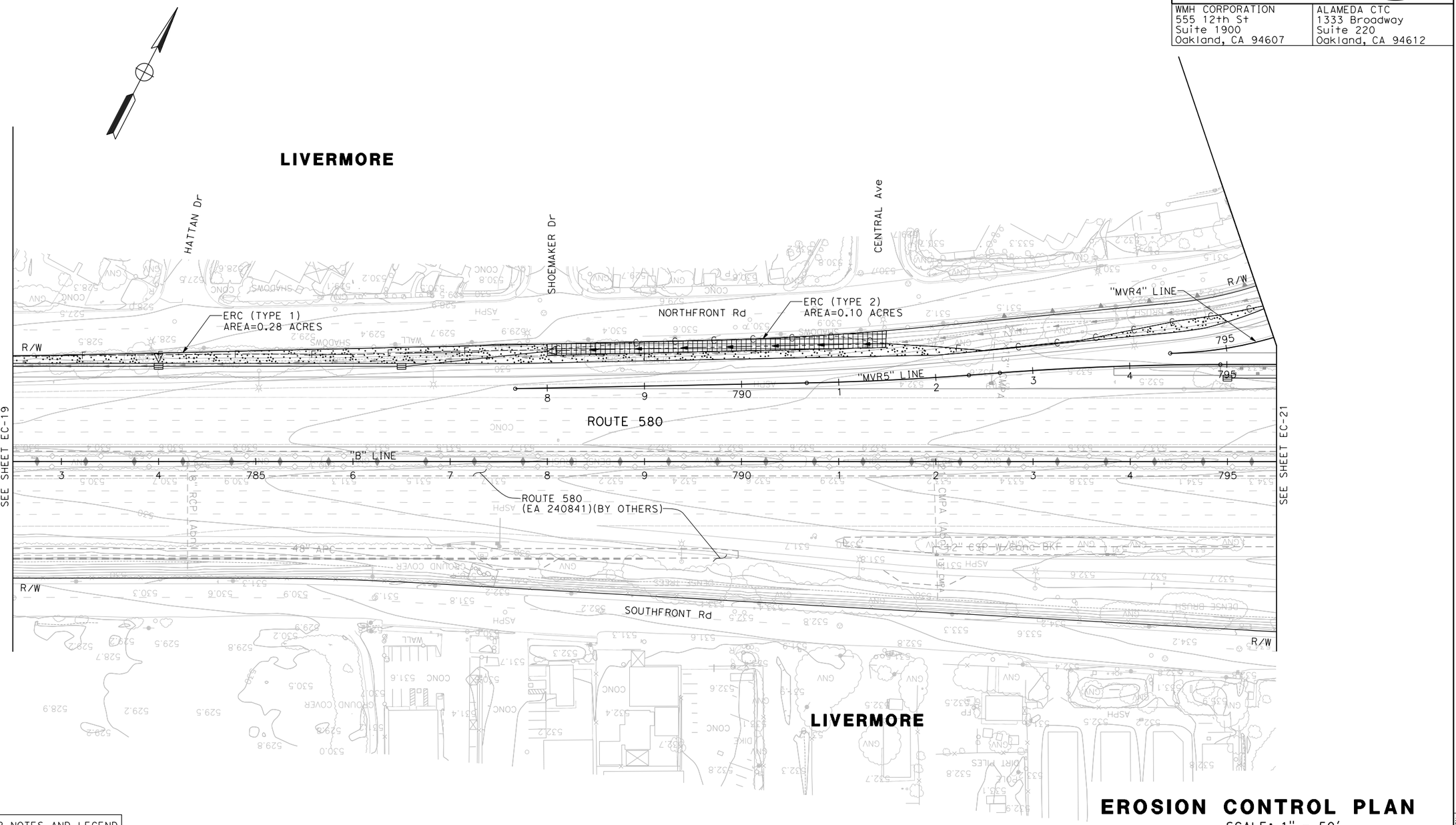

FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-20

	REVISED BY	YF	YF	YF	BG
	DATE REVISED	05/01/10	11/11/11	1/13/12	
CALCULATED-DESIGNED BY	Y. FAROUQI				
CHECKED BY	DAVID M. DICKINSON				

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE

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BORDER LAST REVISED 7/2/2010 | USERNAME => benrile | DGN FILE => 04000212481248ge020.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

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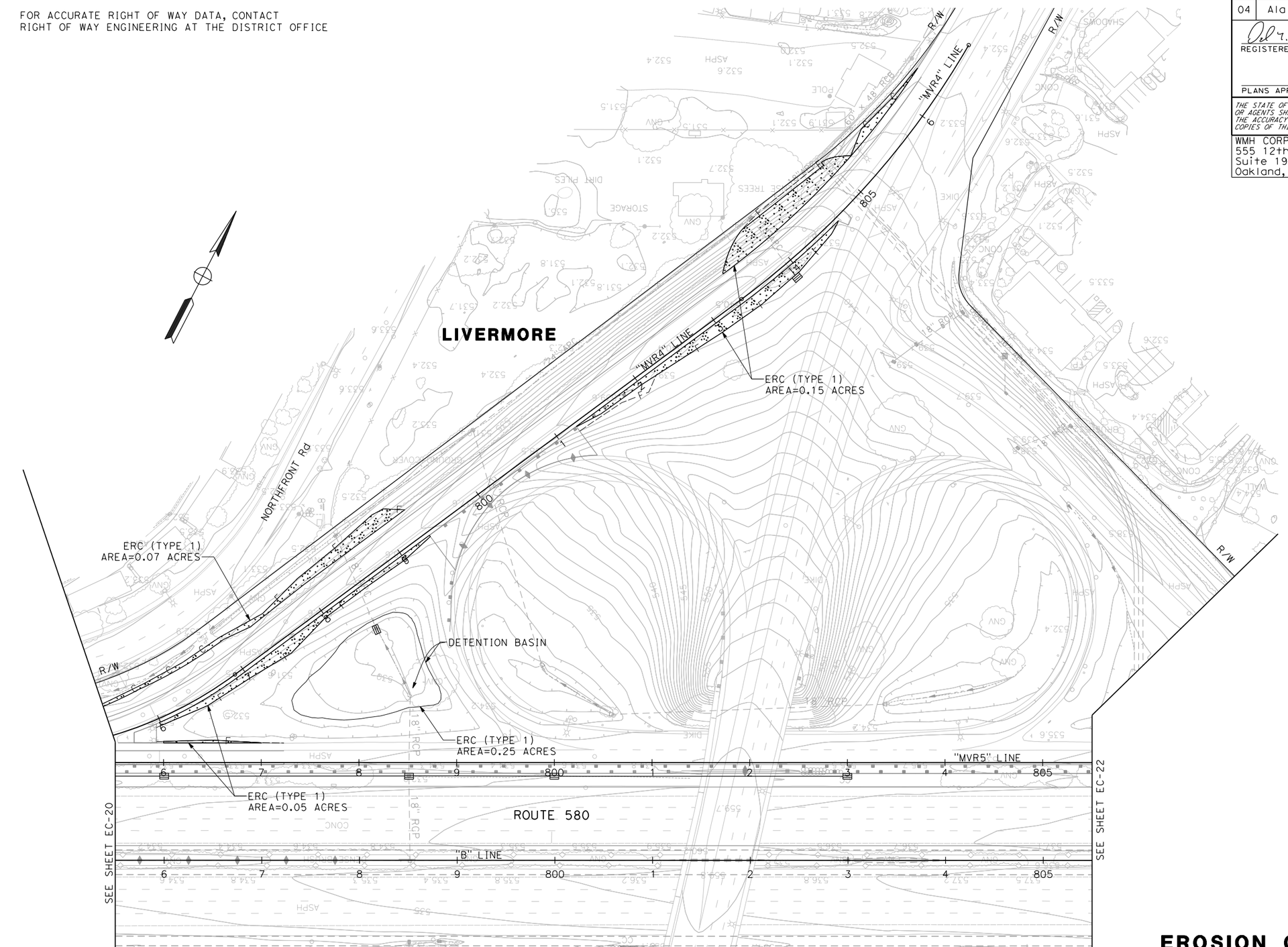
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE



FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-21

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — STATE OF CALIFORNIA

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YF		11/11/11
YF		05/01/10

CALCULATED-DESIGNED BY: Y. FAROUQI
CHECKED BY: DAVID M. DICKINSON
CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 01-13-12 DATE PLOTTED => 1/17/2012 TIME PLOTTED => 7:21:05 PM

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BORDER LAST REVISED 7/2/2010 | USERNAME => benrile | DGN FILE => 0400021248ge021.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

PLANS APPROVAL DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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1333 Broadway
Suite 220
Oakland, CA 94612

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

LIVERMORE

R/W

ERC (TYPE 1)
AREA=0.08 ACRES

"MVR5" LINE

ROUTE 580

"B" LINE

SEE SHEET EC-21

SEE SHEET EC-23

DOUBLE 36" RCP

18" RCP

VASCO Rd

ERC (TYPE 1)
AREA=0.20 ACRES

"MVL1" LINE

"MVL2" LINE

ERC (TYPE 1)
AREA=0.23 ACRES

24" RCP

18" RCP

R/W

LIVERMORE

FOR NOTES, ABBREVIATIONS
AND LEGEND, SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-22

	BG	1/13/12
	YF	11/11/11
	YF	05/01/10
REVISED BY		DATE REVISED
Y. FAROUQI		DAVID M. DICKINSON
CALCULATED-DESIGNED BY		CHECKED BY
SUPERVISOR		TIMOTHY J. LEE
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		CONSULTANT FUNCTIONAL SUPERVISOR

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LAST REVISION 01-13-12 | DATE PLOTTED => 1/17/2012 | TIME PLOTTED => 7:21:07 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => benrile | DGN FILE => 04000212481248ge022.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

PLANS APPROVAL DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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Suite 1900	Suite 220
Oakland, CA 94607	Oakland, CA 94612

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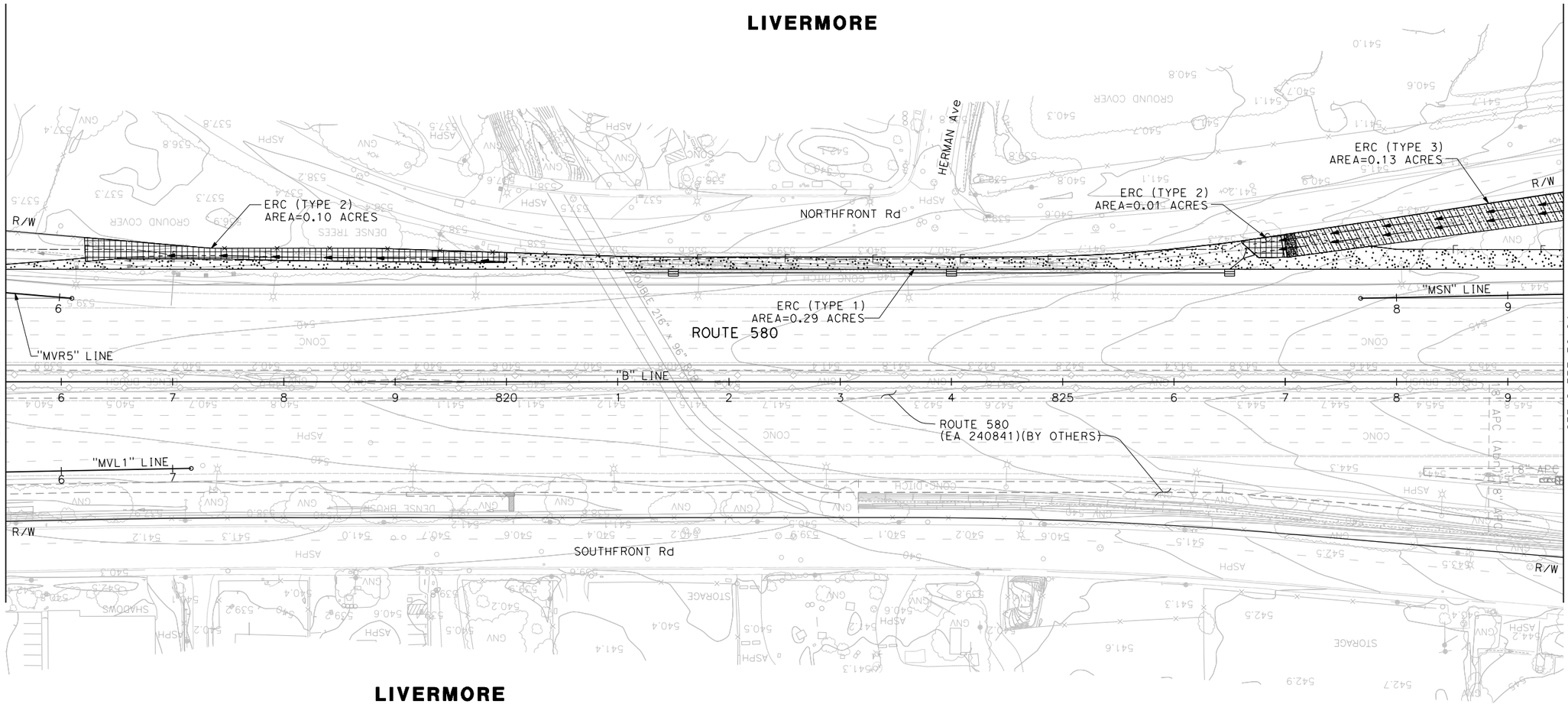
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

LIVERMORE



LIVERMORE

FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-23

BG	YF	YF	REVISED BY	CALCULATED-DESIGNED BY	CHECKED BY
1/13/12	11/11/11	05/01/10	DATE REVISED	Y. FAROUQI	DAVID M. DICKINSON

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LAST REVISION 01-13-12 | DATE PLOTTED => 1/17/2012 | TIME PLOTTED => 7:21:09 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => benrile | DGN FILE => 0400021248ge023.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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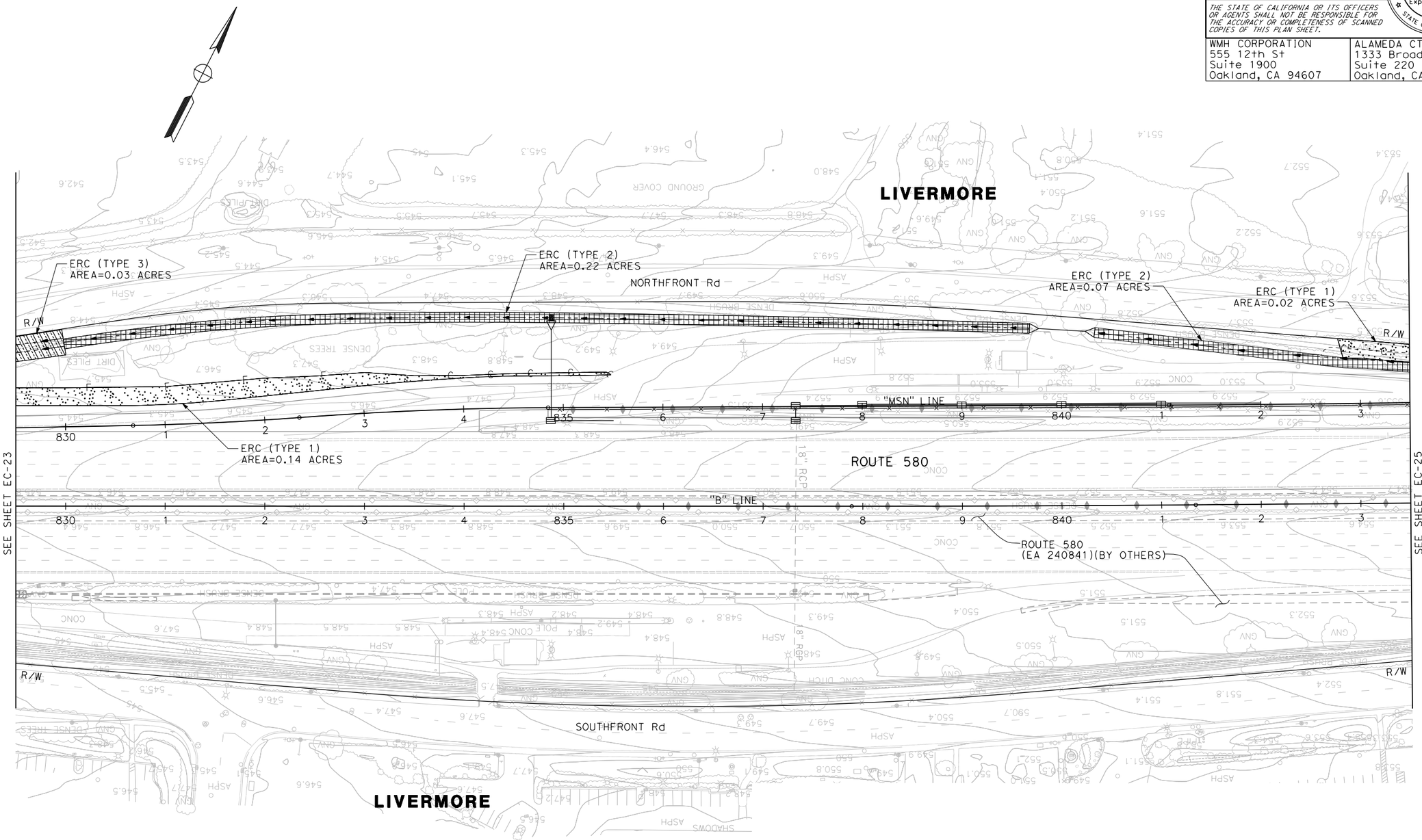

FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-24

	BG	1/13/12
	YF	11/11/11
	YF	05/01/10
REVISED BY		DATE REVISED
Y. FAROUQI		DAVID M. DICKINSON
CALCULATED-DESIGNED BY		CHECKED BY

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BORDER LAST REVISED 7/2/2010 | USERNAME => benrile DGN FILE => 04000212481248ge024.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — STATE OF CALIFORNIA

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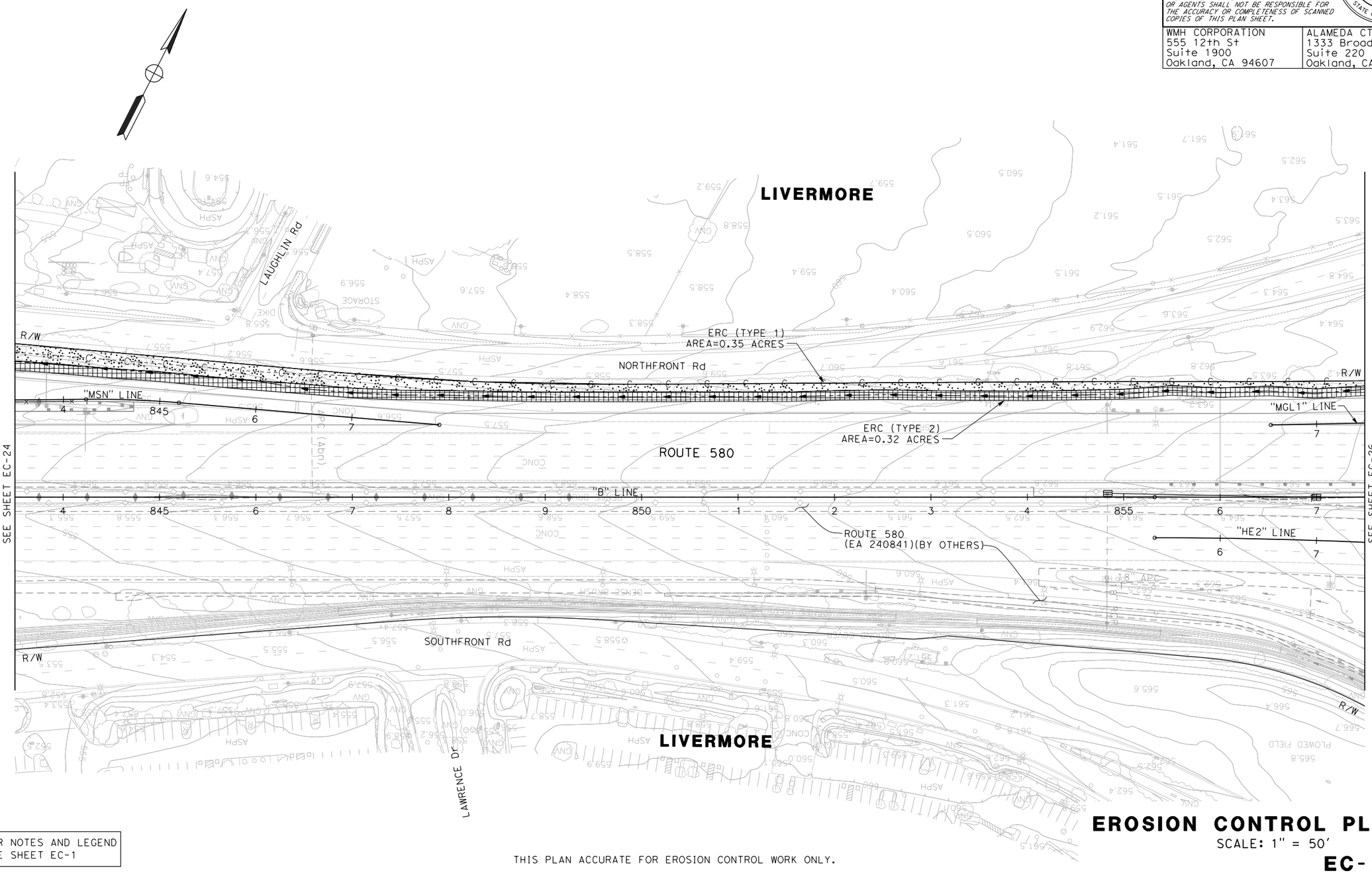

FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-25

	REVISED BY	YF	YF	YF	BG
	DATE REVISED	05/01/10	11/11/11	1/13/12	
CALCULATED-DESIGNED BY	Y. FAROUQI				
CHECKED BY	DAVID M. DICKINSON				

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CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE

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X:\580 WB HOV\000_CAD\Sheets\East of Sta 540+00\CT-Electronic-Submittal 20120113\009-Erosion_Control\GE

BORDER LAST REVISED 7/2/2010 | USERNAME => benrile | DGN FILE => 04000212481ge025.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

PLANS APPROVAL DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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ALAMEDA CTC
1333 Broadway
Suite 220
Oakland, CA 94612

NORTHFRONT Rd

LIVERMORE

ERC (TYPE 1)
AREA=0.23 ACRES

ERC (TYPE 3)
AREA=0.05 ACRES

ERC (TYPE 3)
AREA=0.02 ACRES

ERC (TYPE 2)
AREA=0.07 ACRES

ERC (TYPE 1)
AREA=0.01 ACRES

ERC (TYPE 1)
AREA=0.34 ACRES

ROUTE 580

"MGL1" LINE

"B" LINE

"HE2" LINE

"MGR2" LINE

ROUTE 580
(EA 240841)(BY OTHERS)

R/W

SEE SHEET EC-25

ERC (TYPE 2)
AREA=0.06 ACRES

ERC (TYPE 1)
AREA=0.13 ACRES

ERC (TYPE 1)
AREA=0.05 ACRES

SOUTHFRONT Rd

FOR NOTES AND LEGEND
SEE SHEET EC-1

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL PLAN

SCALE: 1" = 50'

EC-26

	BG	1/13/12
	YF	11/11/11
	YF	05/01/10
REVISED BY		DATE REVISED
Y. FAROUQI		DAVID M. DICKINSON
CALCULATED-DESIGNED BY		CHECKED BY
CONSULTANT FUNCTIONAL SUPERVISOR		TIMOTHY J. LEE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

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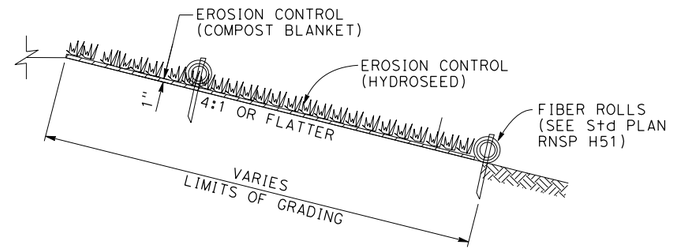
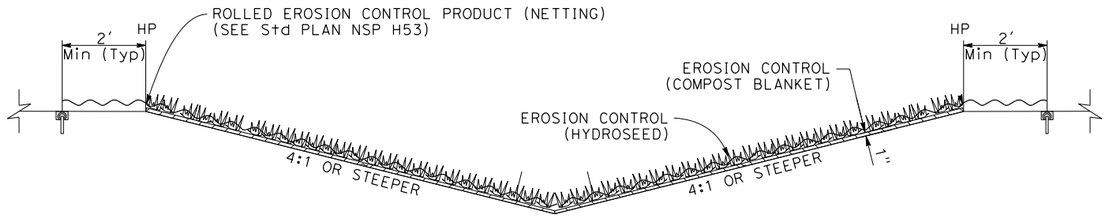
BORDER LAST REVISED 7/2/2010 | USERNAME => benrile | DGN FILE => 04000021248ge026.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

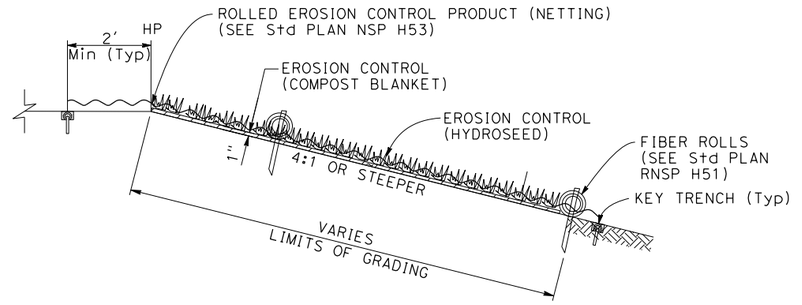


SECTION

EROSION CONTROL (TYPE 1)

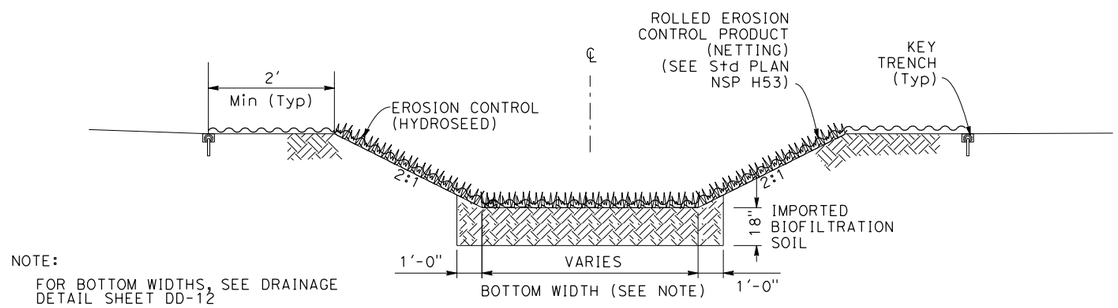


SECTION AT DITCH AND GUTTER LOCATIONS



SECTION AT SLOPES 4:1 OR STEEPER

EROSION CONTROL (TYPE 2)



NOTE:
FOR BOTTOM WIDTHS, SEE DRAINAGE DETAIL SHEET DD-12

SECTION

EROSION CONTROL (TYPE 3)

THIS PLAN ACCURATE FOR EROSION CONTROL WORK ONLY.

EROSION CONTROL DETAILS

NO SCALE

ECD-1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/13/2012 DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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	REVISED BY	DATE REVISED
Y. FAROUQI	YF	05/01/10
DAVID M. DICKINSON	YF	11/11/11
	YF	01/13/12

CALCULATED-DESIGNED BY
CHECKED BY
SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE

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6. Contour Grading Plans

FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/18/12 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
N.V. BERNARDI
No. 45407
Exp. 9/30/12
CIVIL
STATE OF CALIFORNIA

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ALAMEDA CTC
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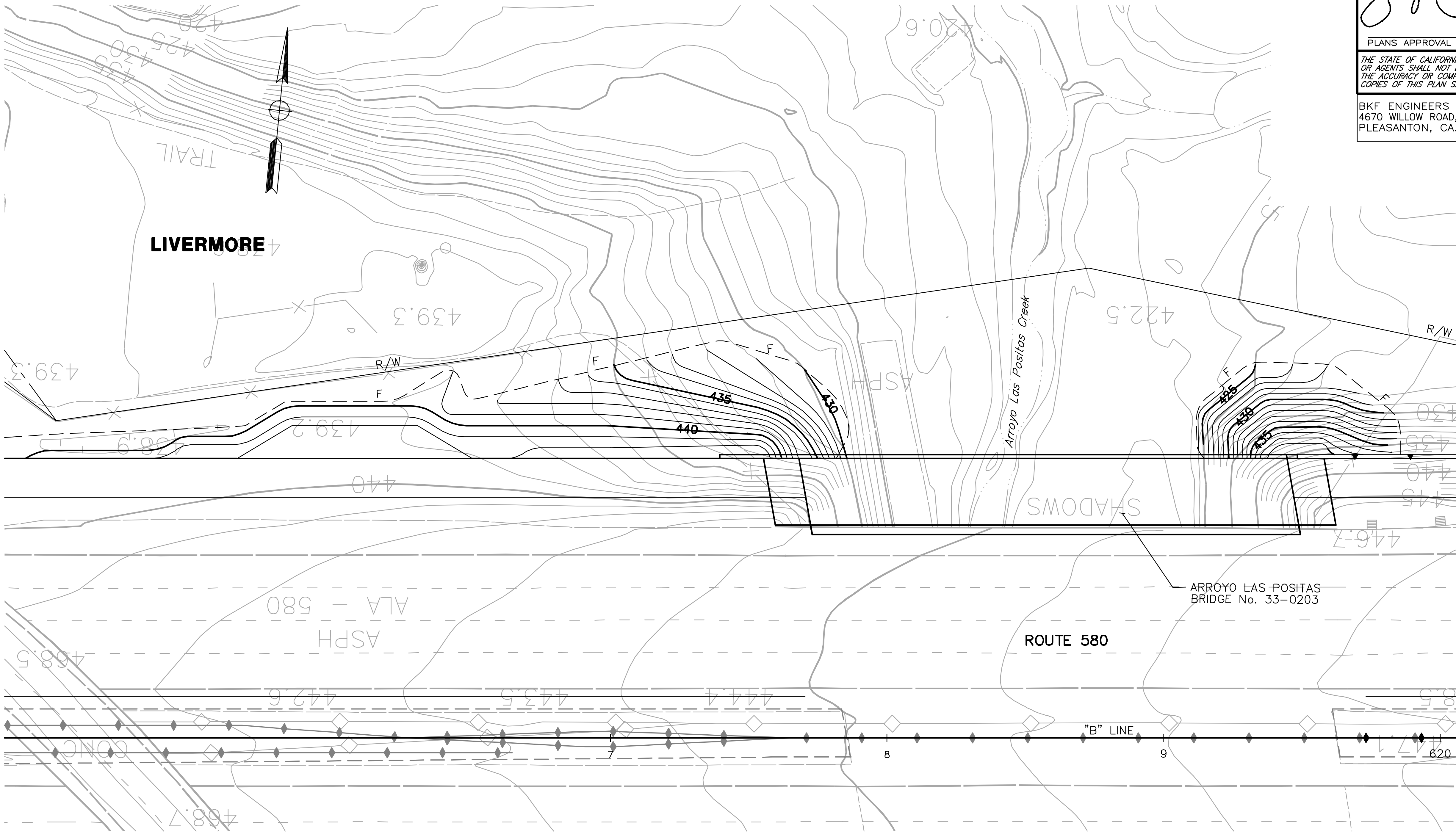
OAKLAND, CA. 94612



THIS PLAN ACCURATE FOR CONTOUR GRADING WORK ONLY

CONTOUR GRADING

SCALE: 1" = 20'

G-1

REVISED BY	DATE REVISED
AL	11/18/11

CALCULATED-DESIGNED BY: ARMANDO LOERA
CHECKED BY: LUIS GARCIA
CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION
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DATE PLOTTED => Jan 18 2012
TIME PLOTTED => 2:46 pm
LAST REVISION 01-18-12

BORDER LAST REVISED 7/2/2010 | USERNAME => $USER | DGN FILE => $REQUEST | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 1/18/12 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — N.V. BERNARDI — No. 45407 — Exp. 9/30/12 — CIVIL — STATE OF CALIFORNIA

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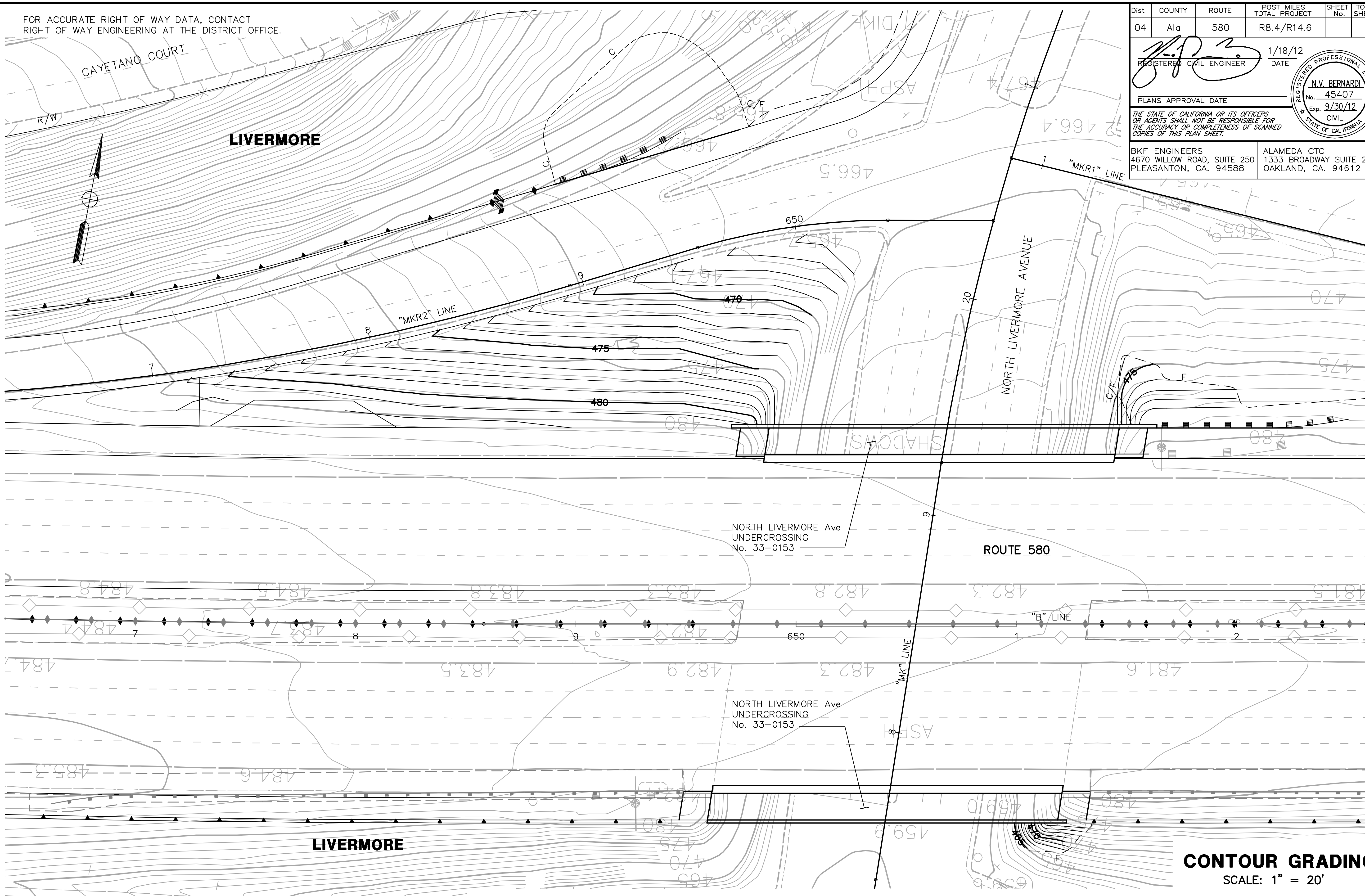
ALAMEDA CTC
1333 BROADWAY SUITE 220
OAKLAND, CA. 94612



CONTOUR GRADING

SCALE: 1" = 20'

G-2

THIS PLAN ACCURATE FOR CONTOUR GRADING WORK ONLY

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION — Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: NATALINA V. BERNARDI

CALCULATED-DESIGNED BY: ARMANDO LOERA

CHECKED BY: LUIS GARCIA

REVISED BY: AL

DATE REVISED: 11/18/11

DATE PLOTTED => Jan 18 2012
TIME PLOTTED => 2:48 pm

LAST REVISION 01-18-12

BORDER LAST REVISED 7/2/2010

USERNAME => $USER
DGN FILE => $REQUEST

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0735

PROJECT NUMBER & PHASE 04000212481

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — DATE 1/18/12

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER N.V. BERNARDI No. 45407 Exp. 9/30/12 CIVIL STATE OF CALIFORNIA

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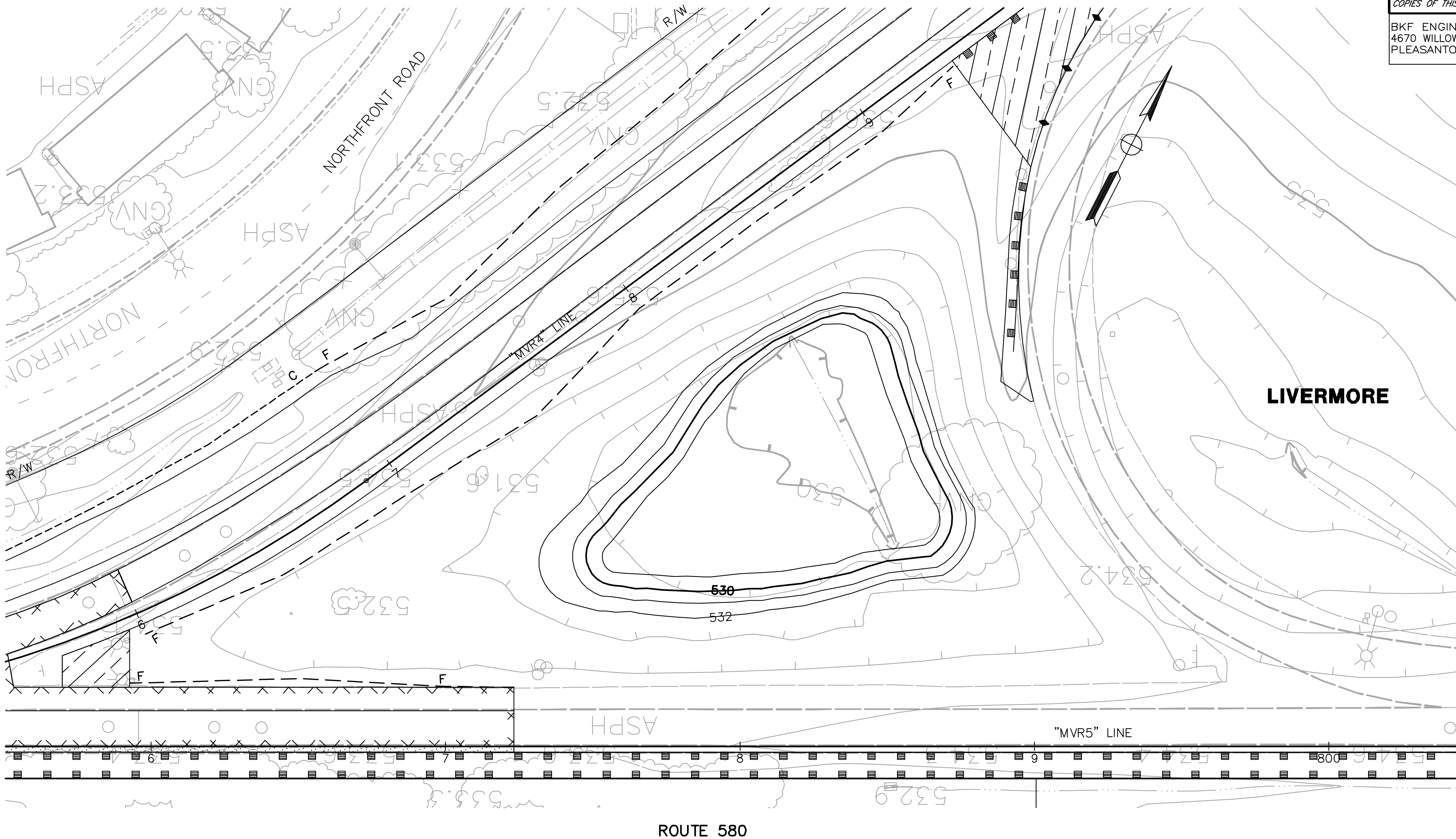

THIS PLAN ACCURATE FOR CONTOUR GRADING WORK ONLY

CONTOUR GRADING

SCALE: 1" = 20'

G-3

STATE OF CALIFORNIA – DEPARTMENT OF TRANSPORTATION

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CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISED BY	
NATALINA V. BERNARDI	ARMANDO LOERA	AL	
	CHECKED BY	DATE REVISED	
	LUIS GARCIA	1/18/12	

DATE PLOTTED => Jan 18 2012
TIME PLOTTED => 2:49 pm

LAST REVISION 01-18-12

BORDER LAST REVISED 7/2/2010 | USERNAME => $USER DGN FILE => $REQUEST | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000212481

7. Drainage Plans with Discharge Locations and Sampling Locations

FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

LEGEND

- (No.) DRAINAGE SYSTEM NO.
- DRAINAGE UNIT
- HMAOD
- EXISTING DRAINAGE INLET
- DRAINAGE INLET
- EXISTING DITCH FLOW LINE
- GUTTER/DITCH FLOW LINE
- EXISTING BIO-FILTRATION SWALE
- BIO-FILTRATION SWALE
- EXISTING ROCK SLOPE PROTECTION
- ROCK SLOPE PROTECTION

X DISCHARGE LOCATION

No. SAMPLING LOCATION

ABBREVIATONS

HMAOD	ASPHALT CONCRETE OVERSIDE DRAIN
SGD	STANDARD GUTTER DEPRESSION
TW	TOP OF WALL
w/	WITH
DA	DEPRESSED APRON
TCE	TEMPORARY CONSTRUCTION EASEMENT

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

11/18/2011
REGISTERED CIVIL ENGINEER — DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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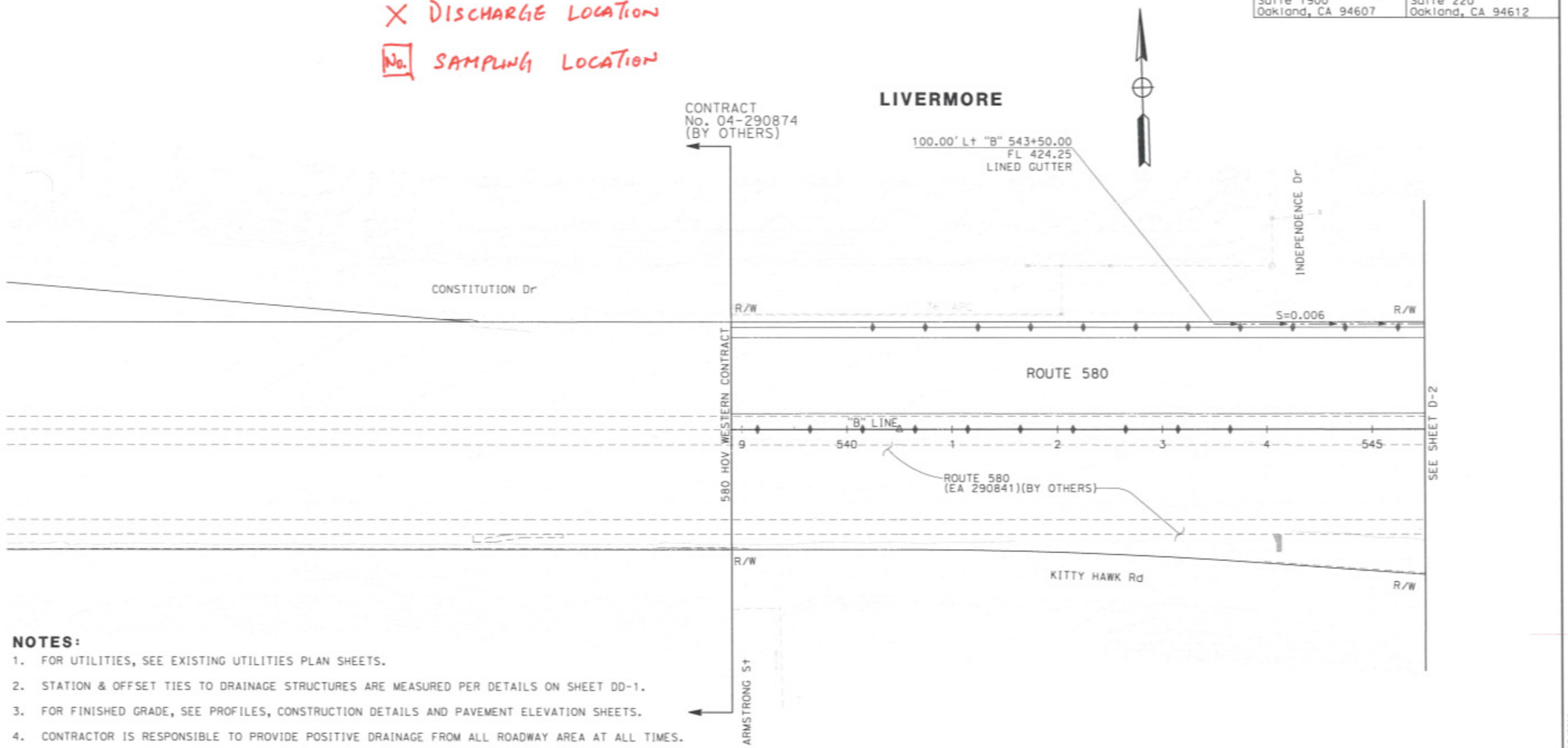
Oakland, CA 94612



NOTES:

1. FOR UTILITIES, SEE EXISTING UTILITIES PLAN SHEETS.
2. STATION & OFFSET TIES TO DRAINAGE STRUCTURES ARE MEASURED PER DETAILS ON SHEET DD-1.
3. FOR FINISHED GRADE, SEE PROFILES, CONSTRUCTION DETAILS AND PAVEMENT ELEVATION SHEETS.
4. CONTRACTOR IS RESPONSIBLE TO PROVIDE POSITIVE DRAINAGE FROM ALL ROADWAY AREA AT ALL TIMES.
5. LOCATIONS OF EXISTING DRAINAGE FACILITIES ARE APPROXIMATE. VERIFY LOCATION AND ELEVATION OF EXISTING DRAINAGE FACILITIES PRIOR TO MODIFYING.
6. THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.
7. PROPOSED RCB CULVERTS ARE DESIGNATED AS 10' MAXIMUM EARTH COVER.
8. GRATED LINE DRAIN GRATES & FRAME SHALL BE ONE PIECE. SEE D98C.

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-1

11/11/11	YF		
05/01/10	YF		
06/20/09	YF		
DATE REVISED	REVISED BY		
Y. FAROUQI	DAVID M. DICKINSON	TIMOTHY J. LEE	
CALCULATED-DESIGNED BY	CHECKED BY	CONSULTANT FUNCTIONAL SUPERVISOR	

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

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LAST REVISION: DATE PLOTTED => 11/15/2011 TIME PLOTTED => 2:15:43 AM

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouq1 DGN FILE => 429086la001.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

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RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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Oakland, CA 94607

ALAMEDA CTC
1333 Broadway
Suite 220
Oakland, CA 94612

100.20' Lt "B" 546+00.00
FL 422.70
LINED GUTTER

100.31' Lt "B" 547+00.00
FL 422.19
LINED GUTTER

100.30' Lt "B" 548+00.00
FL 421.04
LINED GUTTER

100.23' Lt "B" 549+00.00
FL 418.47
LINED GUTTER

100.32' Lt "B" 549+50.00
FL 417.95
LINED GUTTER

104.86' Lt "B" 549+95.11
FL 417.16
LINED GUTTER

1

LIVERMORE

CONSTITUTION Dr

R/W

S=0.005 S=0.012 S=0.026 S=0.010 S=0.016

G2 DI w/SGD (e)
18" APC (f)
G2 DI w/SGD (g)
18" APC w/TEE CONNECTION (h)
ROUTE 580
(a) G2 DI w/SGD
(b) 24" APC
(c) G2 DI w/SGD
(d) 18" APC w/TEE CONNECTION

ISABEL AVENUE INTERCHANGE
(EA 171331)(BY OTHERS)

"B" LINE

6 7 8 9 550 1 2 3 4 555 6 7 8

SEE SHEET D-1

SEE SHEET D-3

ROUTE 580
(EA 290841)(BY OTHERS)

KITTY HAWK Rd

ISABEL AVENUE INTERCHANGE
(EA 171331)(BY OTHERS)

LIVERMORE

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-2

REVISED BY	DATE REVISED
YF	11/11/11
YF	05/01/10
YF	06/20/09

CALCULATED-DESIGNED BY: Y. FAROUOI
CHECKED BY: DAVID M. DICKINSON

CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

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DATE PLOTTED => 11/15/2011
TIME PLOTTED => 21:51:48 AM

LAST REVISION 11-18-11

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouqi | DGN FILE => 4290861a002.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

REGISTERED PROFESSIONAL ENGINEER — DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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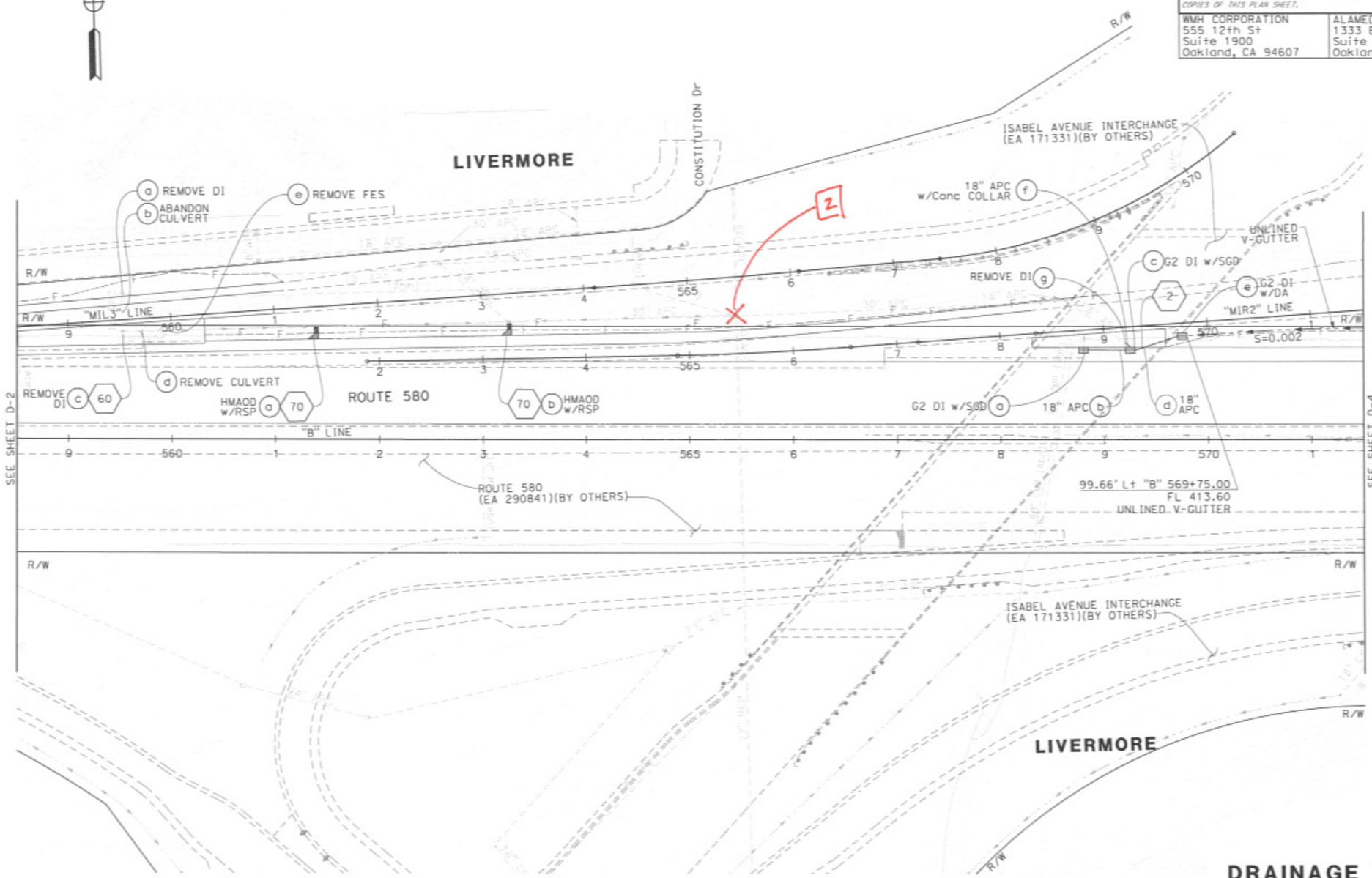
Suite 1900	Suite 220
Oakland, CA 94607	Oakland, CA 94612



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-3

YF	11/11/11		
YF	05/01/10		
YF	06/20/09		
REVISED BY	DATE REVISED		
Y. FAROUQI			
DAVID M. DICKINSON			
CALCULATED-DESIGNED BY			
CHECKED BY			
SUPERVISOR	CONSULTANT FUNCTIONAL		
TIMOTHY J. LEE			

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BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouql | DGN FILE => 4290861a003.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — STATE OF CALIFORNIA

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FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

ISABEL AVENUE INTERCHANGE (EA 171331)(BY OTHERS)

101.58' Lt "B" 579+70.00
FL 414.72
UNLINED TRAPEZOIDAL DITCH

LIVERMORE

100.52' Lt "B" 580+50.00
FL 414.32
END UNLINED TRAPEZOIDAL DITCH
BEGIN UNLINED V-GUTTER

95.33' Lt "B" 581+50.00
FL 415.80
UNLINED V-GUTTER

(c) G2 DI w/DA

UNLINED V-GUTTER

"MIR2" LINE

HMAOD w/RSP (a) 3

S=0.002

S=0.005

S=0.015

"MIR3" LINE

100.25' Lt "B" 572+00.00
FL 414.00
UNLINED V-GUTTER

ROUTE 580

UNLINED TRAPEZOIDAL DITCH (b)

18" APC (d)

UNLINED V-GUTTER

"B" LINE

SEE SHEET D-3

SEE SHEET D-5

ROUTE 580
(EA 290841)(BY OTHERS)

(e) ADJUST DI

R/W

LIVERMORE

Arroyo Las Positas

ACFC & WCD

EAST AIRWAY Blvd

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-4

YF	11/11/11				
YF	05/01/10				
YF	06/20/09				
REVISED BY	DATE REVISED				
Y. FAROUQI	DAVID M. DICKINSON				
CALCULATED-DESIGNED BY	CHECKED BY				

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE

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LAST REVISION: DATE PLOTTED => 11/15/2011 TIME PLOTTED => 21:16:00 AM

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouq1 | DGN FILE => 4290861a004.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

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REGISTERED PROFESSIONAL ENGINEER — DAVID M. DICKINSON — No. 50815 — Exp. 9-30-13 — CIVIL — STATE OF CALIFORNIA

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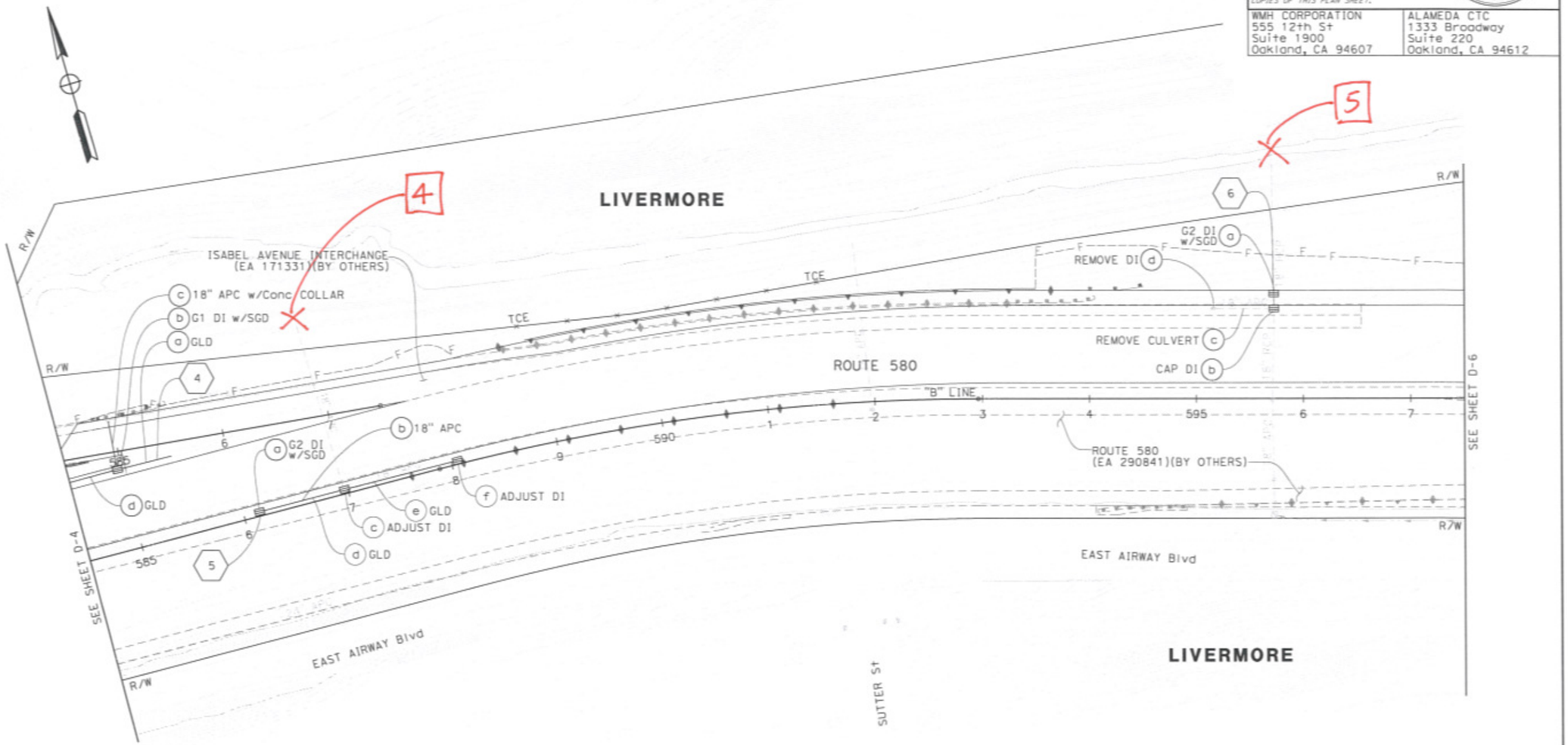
WMH CORPORATION 555 12th St Suite 1900 Oakland, CA 94607	ALAMEDA CTC 1333 Broadway Suite 220 Oakland, CA 94612



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-5

Y. FAROUQI	DAVID M. DICKINSON	TIMOTHY J. LEE	YF	YF	YF
CALCULATED-DESIGNED BY	CHECKED BY	CONSULTANT FUNCTIONAL SUPERVISOR	REVISED BY	05/01/10	06/20/09
			DATE REVISED	11/11/11	

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

X:\580 WB HOV\000_CAD\Sheets\East of Sta 540+00\001-Drainage\1A-Plans\429086la005.dgn

LAST REVISION: DATE PLOTTED => 11/15/2011 — TIME PLOTTED => 21:16:03 AM — 11-18-11

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouql | DGN FILE => 429086la005.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL	POST MILES PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6			

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

PLANS APPROVAL DATE

DAVID W. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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140.68' Lt "B" 603+50.00
FL 429.75
END UNLINED TRAPEZOIDAL DITCH
BEGIN UNLINED V-DITCH

145.64' Lt "B" 602+67.00
FL 429.31
UNLINED TRAPEZOIDAL DITCH

131.18' Lt "B" 604+50.00
FL 430.25
UNLINED V-DITCH

6

7

R/W

7 a G2 DI w/SGD

LIVERMORE

G2 DI w/DA 8 c

S = 0.005

S = 0.005

b UNLINED DITCH

F

C/F

F/C

e REMOVE CULVERT

d REMOVE DI

b REMOVE DI

REMOVE CULVERT c

ADJUST DI d

CAPPED DI
(EA 290841)(BY OTHERS)

ROUTE 580

8 a HMAOD w/RSP

b 24" APC w/Conc COLLAR

c ADJUST DI

9 a G2 DI w/SGD

SEE SHEET D-5

SEE SHEET D-7

"B" LINE

8 9 600 1 2 3 4 605 6 7 8 9 610

ROUTE 580
(EA 290841)(BY OTHERS)

R/W

R/W

EAST AIRWAY Blvd

LIVERMORE

Cir

MONTECITO

VIA DESTE

VIA JOSE

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-6

CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
Y. FAROUQI	DAVID M. DICKINSON	YF	06/20/09
		YF	05/01/10
		YF	11/11/11

RESIDENT ENGINEER / SUPERVISOR
CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION: DATE PLOTTED => 11/15/2011 TIME PLOTTED => 21:16:07 AM

X:\580 WB HOV\GOD_CAD\Sheets\Cost of Sta 540+00\011-Drainage\1A-Plans\429086la006.dgn

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouq1 | DGN FILE => 429086la006.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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Suite 1900
Oakland, CA 94607

ALAMEDA CTC
1333 Broadway
Suite 220
Oakland, CA 94612

ISABEL AVENUE INTERCHANGE
(EA 171331)(BY OTHERS)

ACFC & WCD
Arroyo Las Positas

LIVERMORE

8

153.06' Lt "B" 619+00.00
FL 424.0
UNLINED V-DITCH

143.84' Lt "B" 619+50.00
FL 425.00
UNLINED V-DITCH

ACFC & WCD
Cayetano Creek

h UNLINED TRAPEZOIDAL DITCH

125.40' Lt "B" 620+50.00
FL 425.50
END UNLINED TRAPEZOIDAL DITCH
BEGIN LINED V-DITCH

104.94' Lt "B" 623+00.00
FL 458.00
LINED V-DITCH

24" APC b

g AFES w/RSP

12

LINED V-DITCH i

TCE
R/W

R/W

109.74' Lt "B" 614+00.00
FL 437.50
TRAPEZOIDAL DITCH

110.70' Lt "B" 614+70.00
FL 437.15
TRAPEZOIDAL DITCH

AFES w/RSP e

RSP i

REMOVE FES o

10 a ADJUST DI

F F/C C C C C C C/F

S=0.005

S=0.020

S=0.005

S=0.085 S=0.156 S=0.167 S=0.131

b HMAOD

HMAOD w/RSP a 11

UNLINED TRAPEZOIDAL DITCH b

AFES c

18" APC d

G2 DI w/SGD j

24" APC f

G2 DI w/SGD e

k 18" APC

c G2 DI w/SGD

d 24" APC

ROUTE 580

REMOVE CULVERT n
"B" LINE

REMOVE DI m

SEE SHEET D-6

SEE SHEET D-8

1 2 3 4 615 6 7 8 9 620 1 2 3

ROUTE 580
(EA 290841)(BY OTHERS)

110.36' Lt "B" 621+00.00
FL 428.76
LINED V-DITCH

113.01' Lt "B" 621+50.00
FL 436.58
LINED V-DITCH

R/W

ISABEL AVENUE INTERCHANGE
(EA 171331)(BY OTHERS)

ACFC & WCD
Arroyo Las Positas

110.24' Lt "B" 622+00.00
FL 444.94
LINED V-DITCH

110.24' Lt "B" 622+50.00
FL 451.47
LINED V-DITCH

LIVERMORE

9

PORTOLA Ave

R/W

R/W

R/W

THIS PLAN FOR DRAINAGE WORK ONLY.

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

DRAINAGE PLAN

SCALE: 1" = 50'

D-7

Y. FAROUQI	REVISED BY	YF	YF	. YF
DAVID M. DICKINSON	DATE REVISED	06/20/09	05/01/10	11/11/11
CALCULATED-DESIGNED BY				
CHECKED BY				
TIMOTHY J. LEE	CONSULTANT FUNCTIONAL SUPERVISOR			

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

X:\580 WB HOV\000_CAD\Sheets\East of Sta 540+00\011-Bridges\1A-Plans\4290861a007.dgn

LAST REVISION 11-18-11 | DATE PLOTTED => 11/15/2011 | TIME PLOTTED => 2116:17 AM

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouqi | DGN FILE => 4290861a007.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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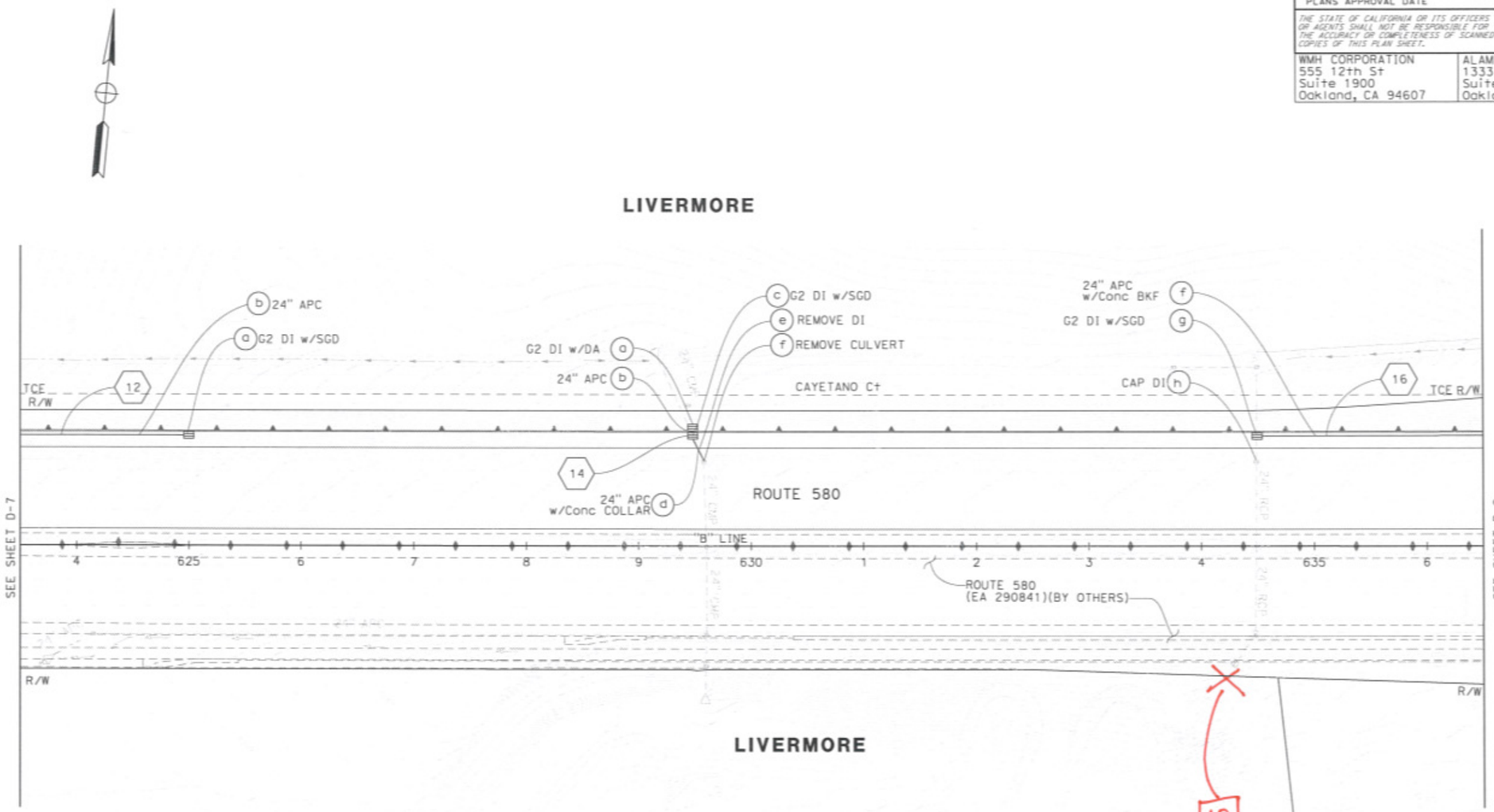
ALAMEDA CTC
1333 Broadway
Suite 220
Oakland, CA 94612



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-8

	REVISED BY	DATE REVISED
CALCULATED-DESIGNED BY	Y. FAROUQI	
CHECKED BY	DAVID M. DICKINSON	
	YF	06/20/09
	YF	05/01/10
	YF	11/11/11

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE

DATE PLOTTED => 11/15/2011
TIME PLOTTED => 21h23 AM

BORDER LAST REVISED 7/2/2010

USERNAME => yfarouqi
DGN FILE => 429086Ta008.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0735

PROJECT NUMBER & PHASE 04000202111

X:\580 WB HOV\000 CAD\Sheets\Ea+ of Sta 540+00\011-Drainage\1A-Plans\429086Ta008.dgn

FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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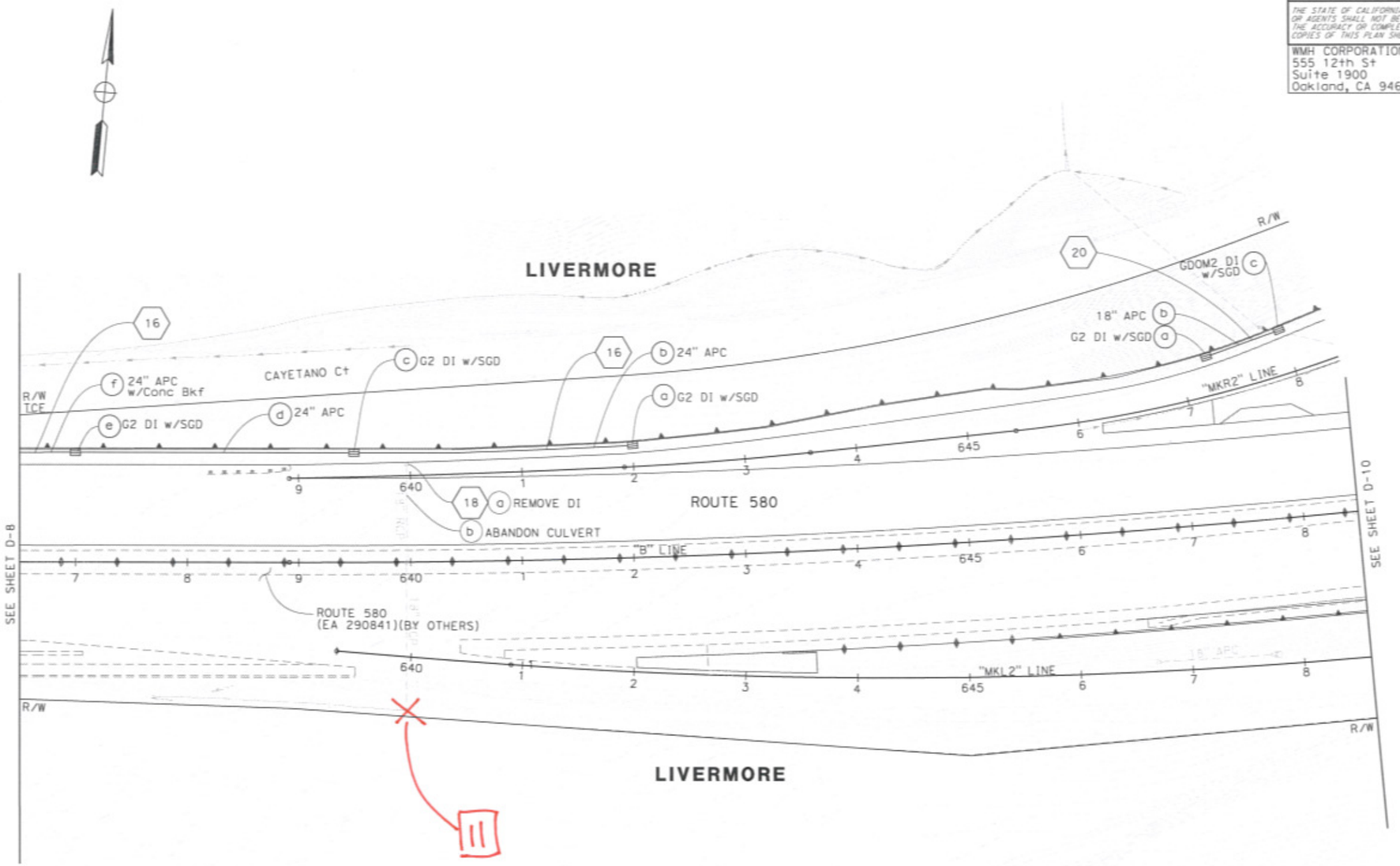
1333 Broadway
Suite 220
Oakland, CA 94612



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-9

Y. FAROUQI	YF	06/20/09	05/01/10	11/11/11
CALCULATED-DESIGNED BY	REVISED BY	DATE REVISED		
CHECKED BY				
DAVID M. DICKINSON				
SUPERVISOR				
TIMOTHY J. LEE				
CONSULTANT FUNCTIONAL SUPERVISOR				

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

X:\580 MR HOV\000_CAD\Sheets\Dist of Sig 540+00\011-Drainage\1A-Plans\429086\a009.dgn

DATE PLOTTED => 11/15/2011
TIME PLOTTED => 21:16:27 AM

LAST REVISION 11-18-11

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouq1 | DGN FILE => 429086\a009.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

REGISTERED PROFESSIONAL ENGINEER — DAVID W. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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CAYETANO Ct

"MK" LINE

NORTH LIVERMORE Ave

LIVERMORE

R/W

ADJUST DI (b)

HMAOD (a)

21

"MKR2" LINE

"MKR1" LINE

G2 DI w/SGD (a)

G1 DI (m)

12" WSP w/RISER SAFETY CAGE (n)

(b) 24" APC

(a) 23 HMAOD w/RSP

ROUTE 580

25

G2 DI w/SGD (c)

24" APC (d)

SEE SHEET D-9

SEE SHEET D-11

CAP DI (c)

GLD (b)

22

GDOM2 DI w/SGD (a)

"MKL2" LINE

"MKL4" LINE

"MKL3" LINE

REMOVE DI (g)

REMOVE CULVERT (f)

(c) G2 DI w/SGD

(e) GLD

ROUTE 580 (EA 290841)(BY OTHERS)

24

12

13

G2 DI w/SGD (a)

18" APC (b)

GLD (d)

ACFC & WCD Arroyo Las Positas

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-10

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
Caltrans	TIMOTHY J. LEE	Y. FAROUQI	DAVID M. DICKINSON	YF	06/20/09
				YF	05/01/10
				YF	11/11/11

X:\580 MR HOV\000 CAD\Sheets\East of Sta 540+00\01-Drainage\1A-Plans\4290861a010.dgn

BORDER LAST REVISED 7/2/2010

USERNAME => yfarouql
DGN FILE => 4290861a010.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0735

PROJECT NUMBER & PHASE 04000202111

LAST REVISION 11-18-11

DATE PLOTTED => 11/15/2011
TIME PLOTTED => 2116:30 AM

FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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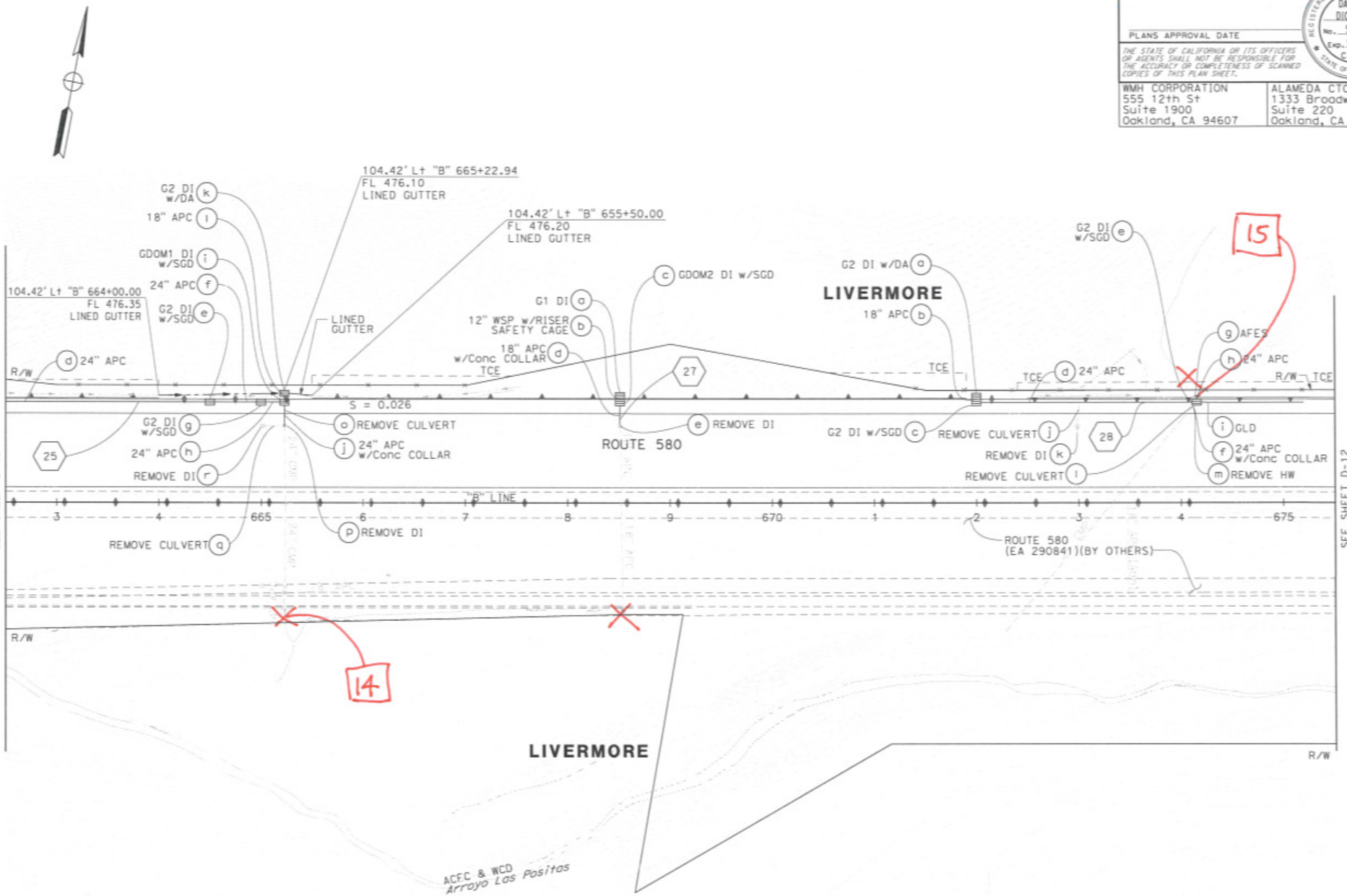
1333 Broadway
Suite 220
Oakland, CA 94612



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-11

Y. FAROUQI	11/11/11	YF		
DAVID M. DICKINSON	05/01/10	YF		
TIMOTHY J. LEE	06/20/09	YF		
CALCULATED-DESIGNED BY	DATE REVISED	REVISED BY		
CHECKED BY				

CONSULTANT FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

X:\580 WB HOV\000_CAD\Sheets\Eas* of Sta 540+00\011-Drainage\1A-Plans\429086ja011.dgn

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouq1 | DGN FILE => 429086ja011.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

LAST REVISION DATE PLOTTED => 11/15/2011 TIME PLOTTED => 2:16:34 AM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

DAVID W. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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Suite 220
Oakland, CA 94612

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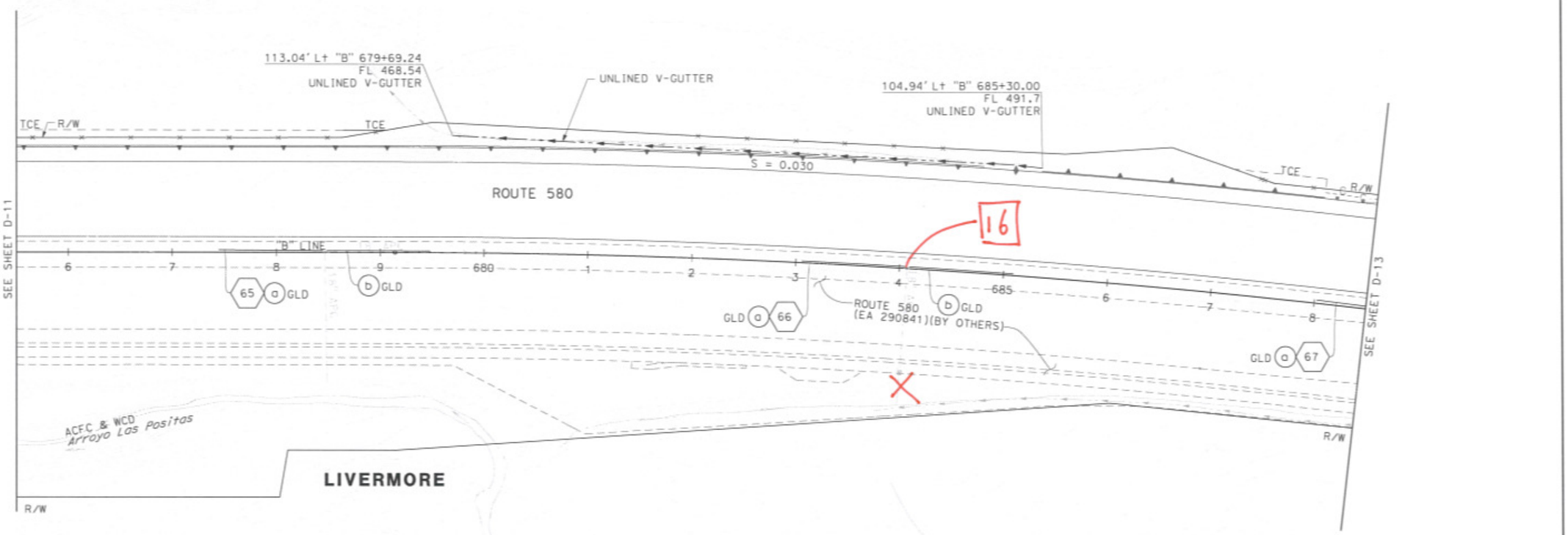
LIVERMORE



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-12

CALCULATED-DESIGNED BY	Y. FAROUQI	REVISED BY	YF	11/11/11
CHECKED BY	DAVID M. DICKINSON	DATE REVISED	06/20/09	05/01/10

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE

K:\580 WB HOVGOD CAD\Sheets\Dist of Sta 540+00\011-Drainage\1A-Plans\4290861a012.dgn

LAST REVISION: DATE PLOTTED => 11/15/2011 11-18-11 TIME PLOTTED => 21:16:42 AM

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouq1 DGN FILE => 4290861a012.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

REGISTERED PROFESSIONAL ENGINEER — DAVID W. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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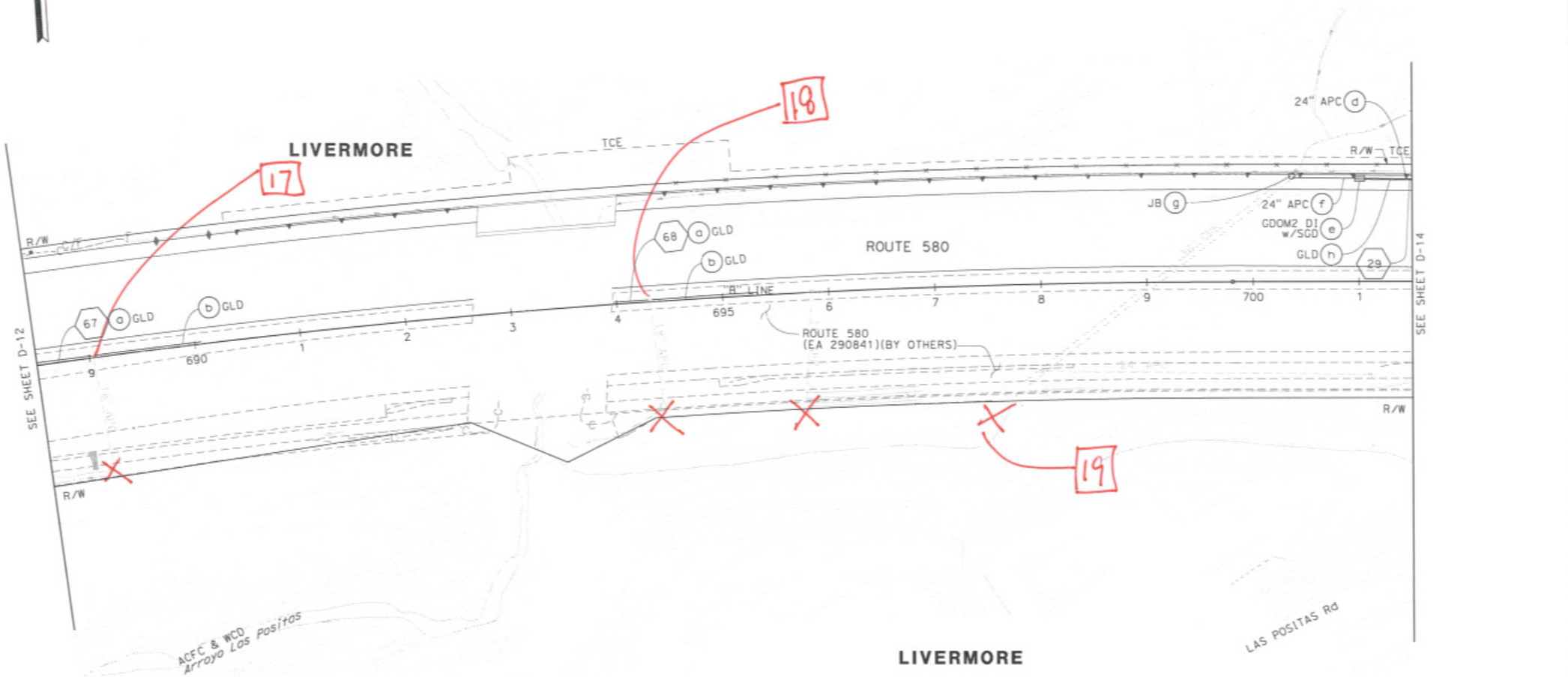
1333 Broadway
Suite 220
Oakland, CA 94612



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-13

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE

CALCULATED-DESIGNED BY: Y. FAROUQI
CHECKED BY: DAVID M. DICKINSON

REVISED BY	DATE REVISED
YF	06/20/09
YF	05/01/10
YF	11/11/11

LAST REVISION: DATE PLOTTED => 11/15/2011 TIME PLOTTED => 21:51:52 AM

X:\580 MB HOV\800 CAD\Sheets\Dist of Stg 540+00\011-Drainage\1A-Plans\429086\d013.dgn

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouqi | DGN FILE => 429086\d013.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

PLANS APPROVAL DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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1333 Broadway
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Oakland, CA 94612

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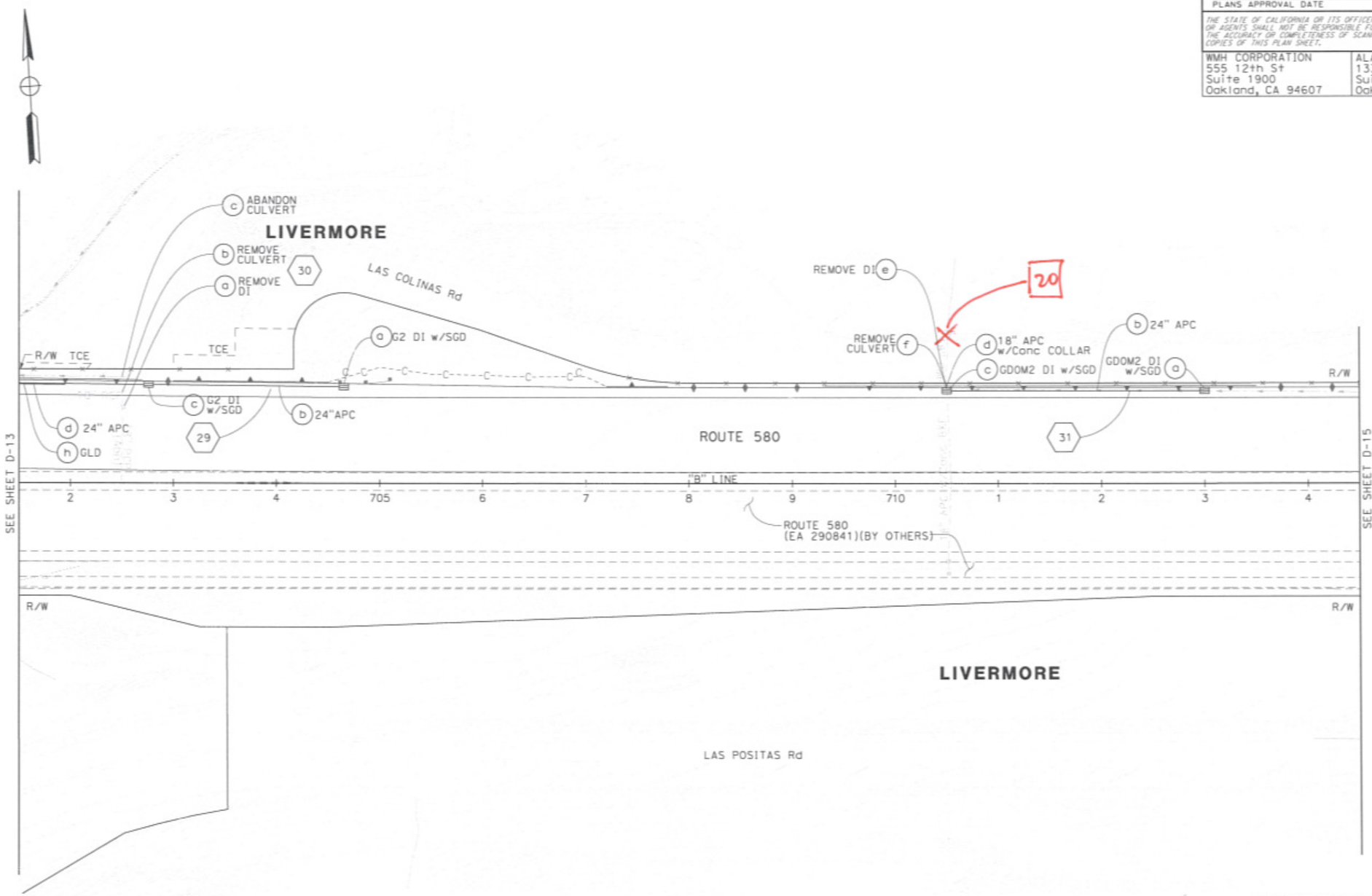

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-14

CALCULATED-DESIGNED BY	CHECKED BY	CONSULTANT FUNCTIONAL SUPERVISOR	REVISED BY	DATE REVISED
Y. FAROUQI	DAVID M. DICKINSON	TIMOTHY J. LEE	YF	06/20/09
			YF	05/01/10
			YF	11/11/11

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

LAST REVISION: DATE PLOTTED => 11/15/2011 TIME PLOTTED => 2116158 AM

X:\580 WB HOV\000_CAD\Sheets\Cost of Sta 540+00\011-Drainage\1A-Plans\4290861a014.dgn

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouql DGN FILE => 4290861a014.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — DAVID W. DICKINSON — No. 50815 — Exp. 9-30-13 — CIVIL — STATE OF CALIFORNIA

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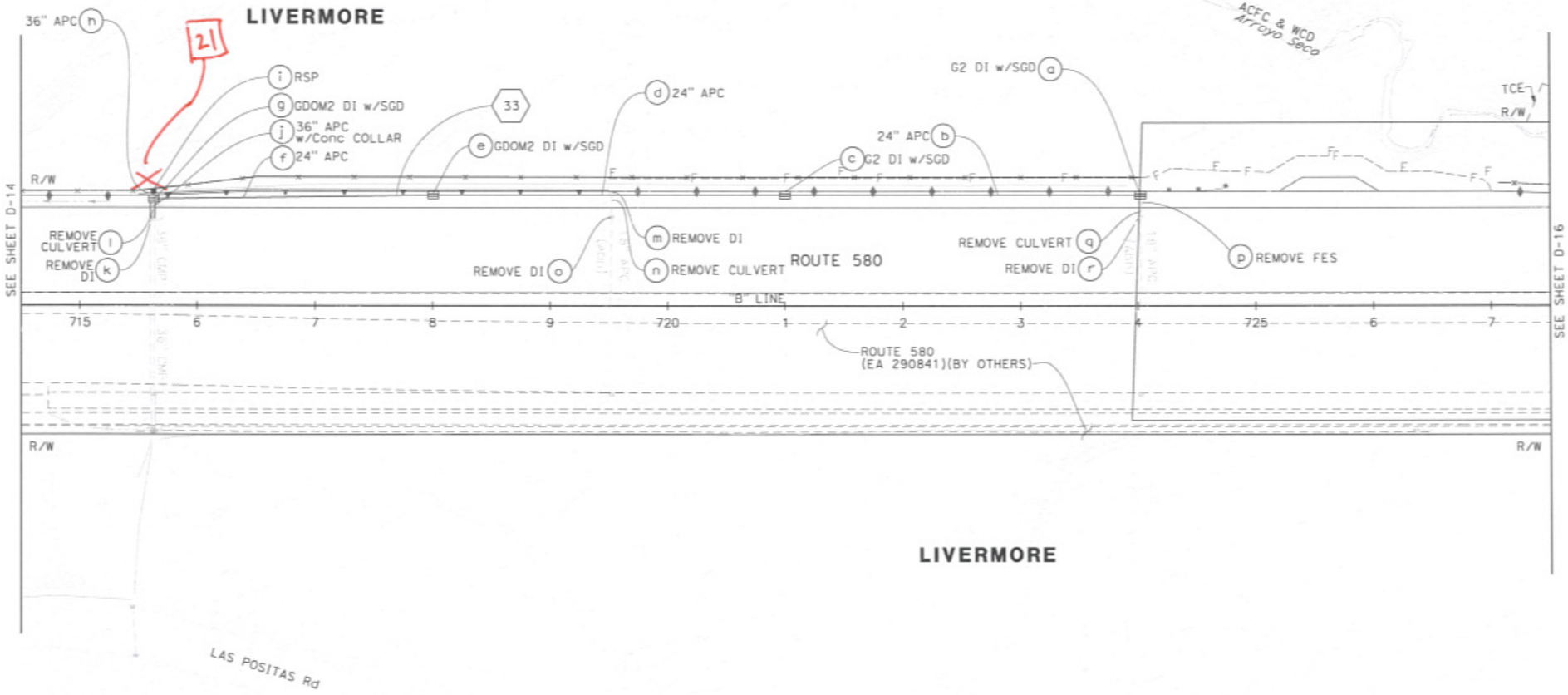
Suite 220
Oakland, CA 94612

FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE



FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-15

BORDER LAST REVISED 7/2/2010	USERNAME => yfarouql DGN FILE => 4290861a015.dgn	RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3	UNIT 0735	PROJECT NUMBER & PHASE 04000202111

CALCULATED-DESIGNED BY	Y. FAROUQI	REVISED BY	YF	YF	YF
CHECKED BY	DAVID M. DICKINSON	DATE REVISED	06/20/09	05/01/10	11/11/11
CONSULTANT FUNCTIONAL SUPERVISOR	TIMOTHY J. LEE				

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 11-18-11
DATE PLOTTED => 11/15/2011
TIME PLOTTED => 211702 AM

X:\580 WB HOV\000 CAD\Sheets\Eas* of Sta 540+00\011-Drainage\1A-Plans\4290861a015.dgn

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — DAVID W. DICKINSON — No. 50815 — Exp. 9-30-13 — CIVIL — STATE OF CALIFORNIA

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ALAMEDA CTC
1333 Broadway
Suite 220
Oakland, CA 94612

FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

22

144.63' Lt "B" 728+35.61
FL 509.7
UNLINED TRAPEZOIDAL DITCH

141.48' Lt "B" 728+50.00
FL 509.76
UNLINED TRAPEZOIDAL DITCH

LIVERMORE

AFES w/RSP (o)
24" APC (p)
R/W
TCE
S=0.005
REMOVE CULVERT (q)
REMOVE AFES (r)
SEE SHEET D-15

(n) UNLINED TRAPEZOIDAL DITCH
(m) AFES w/RSP
(l) 24" APC
(k) G2 DI w/SGD
35 G2 DI w/SGD (g)
(j) 24" APC
24" APC (h)
(i) G2 DI w/SGD
S=0.051
107.05' Lt "B" 733+00.00
FL 520.60
UNLINED V-DITCH
93.94' Lt "B" 733+50.00
FL 523.22
LINED GUTTER

24" APC (f)
G2 DI w/SGD 35 (e)
REMOVE CULVERT 34 (c)
REMOVE DI (d)

24" APC (b) 35
G2 DI w/SGD (c)
24" APC (d)
34 (a) G2 DI w/DA
"MXR3" LINE740
34 (b) 24" APC w/Conc COLLAR
SEE SHEET D-17

ROUTE 580

"B" LINE
730 8 9 1 2 3 4 735 6 7 8 9 740

ROUTE 580
(EA 290841)(BY OTHERS)

121.90' Lt "B" 729+50.00
FL 510.19
UNLINED TRAPEZOIDAL DITCH

R/W

ACFC & WCD
Arroyo Seco

LIVERMORE

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-16

REVISED BY	DATE REVISED
YF	11/11/11
YF	05/01/10
YF	06/20/09

CALCULATED-DESIGNED BY: Y. FAROUQI
CHECKED BY: DAVID M. DICKINSON
SUPERVISOR: TIMOTHY J. LEE
CONSULTANT FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

DIST. DIVISION | DATE PLOTTED => 11/15/2011 | TIME PLOTTED => 2117:11 AM | 11-18-11

X:\580 WB HOV\000_CAD\SheetsVars of Sta 540+00\011-DraImage\1A-Plans\429086la016.dgn

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouql | DGN FILE => 429086la016.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

LIVERMORE

SEE SHEET D-16

SEE SHEET D-18

ROUTE 580

"MXR3" LINE

"MXR1" LINE

"MXL4" LINE

"MXL1" LINE

"B" LINE

FIRST St

SOUTHFRONT Rd

UNLINED V-GUTTER

ROUTE 580 (EA 290841)(BY OTHERS)

- (a) GDOM2 DI w/SGD
- (b) 18" APC w/Conc Bkf
- (c) G2 DI w/SGD
- (d) 18" APC w/Conc Bkf
- (e) G2 DI w/SGD
- (f) REMOVE DI
- (g) REMOVE CULVERT
- 24" APC (D)
- CAP DI (f)
- G2 DI w/DA (a)
- G2 DI w/DA (c)
- G2 DI w/DA (d)
- 18" APC w/Conc Bkf (b)
- 18" APC w/Conc Bkf (e)
- HMAOD w/RSP (a) 38

88.44' Rt "B" 756+00.00
FL 523.70
UNLINED V-GUTTER

88.93' Lt "B" 754+00.00
FL 523.1
UNLINED V-GUTTER

83.50' Rt "B" 751+90.00
FL 523.50
UNLINED V-GUTTER

88.82' Lt "B" 755+00.00
FL 523.50
UNLINED V-GUTTER

23

24

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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Oakland, CA 94607

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1333 Broadway
Suite 220
Oakland, CA 94612

DATE REVISED	REVISED BY
11/11/11	YF
05/01/10	YF
06/20/09	YF

CALCULATED-DESIGNED BY: Y. FAROUQI
CHECKED BY: DAVID M. DICKINSON
CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

DRAINAGE PLAN

LIVERMORE

SCALE: 1" = 50'

D-17

LAST REVISION: DATE PLOTTED => 11/15/2011
11-18-11 TIME PLOTTED => 21:17:23 AM

X:\580 WB HOV\000_CAD\Sheets\East of Sta 540+00\011-Drainage\1A-Plans\4290861a017.dgn

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouq | DGN FILE => 4290861a017.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — DAVID M. DICKINSON — No. 50815 — Exp. 9-30-13 — CIVIL — STATE OF CALIFORNIA

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Oakland, CA 94612

FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

LIVERMORE

LAS FLORES Rd

SUNBURST Ln

SUNDANCE Dr

25

R/W

"MXR1" LINE

"MXL1" LINE

"B" LINE

REMOVE DI (a)

12" APC w/Conc COLLARS (b)

41 (s) ADJUST DI

41 (r) ADJUST DI

41 (q) ADJUST DI

40

ROUTE 580

ROUTE 580
(EA 240841)(BY OTHERS)

SEE SHEET D-17

SEE SHEET D-19

SOUTHFRONT St

MCGRAW Ave

LIVERMORE

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-18

REVISED BY	DATE REVISED
YF	11/11/11
YF	05/01/10
YF	06/20/09

CALCULATED-DESIGNED BY: Y. FAROUQI
CHECKED BY: DAVID M. DICKINSON
SUPERVISOR: TIMOTHY J. LEE
CONSULTANT FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 11-18-11 | DATE PLOTTED => 11/15/2011 | TIME PLOTTED => 21:17:26 AM

X:\580 #B HOV\000_CAD\Sheets\East of Sta 540+00\D11-Drainage\1A-Plans\4290861a018.dgn

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouql | DGN FILE => 4290861a018.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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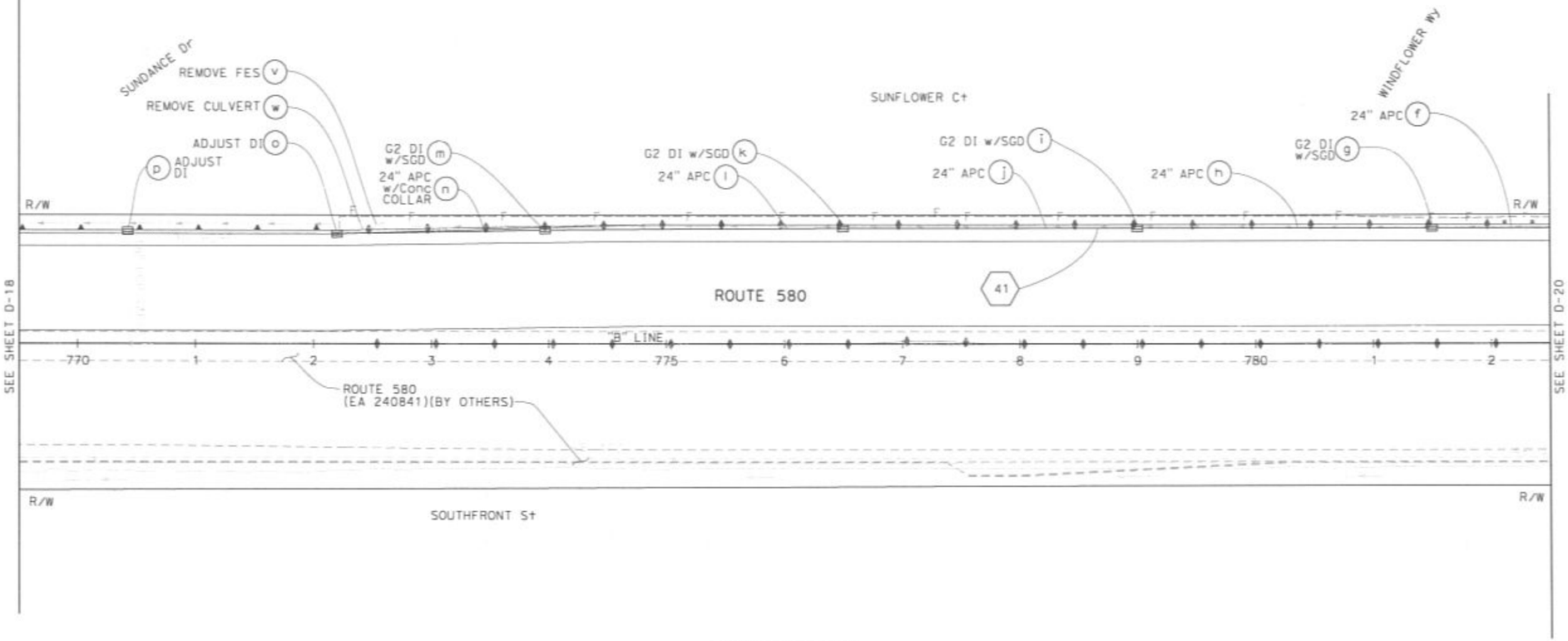
LIVERMORE



LIVERMORE

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D - 19

YF	11/11/11				
YF	05/01/10				
YF	06/20/09				
REVISED BY	DATE REVISED				
CALCULATED-DESIGNED BY	Y. FAROUQI				
CHECKED BY	DAVID M. DICKINSON				
CONSULTANT FUNCTIONAL SUPERVISOR	TIMOTHY J. LEE				

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

K:\580 Rt HOV\00 CAD\Sheets\Cost of Sig 540+00\01-Drainage\A-Plans\429086Ta019.dgn

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouq1 | DGN FILE => 429086Ta019.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

LAST REVISION DATE PLOTTED => 11/15/2011 TIME PLOTTED => 2117132 AM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — STATE OF CALIFORNIA

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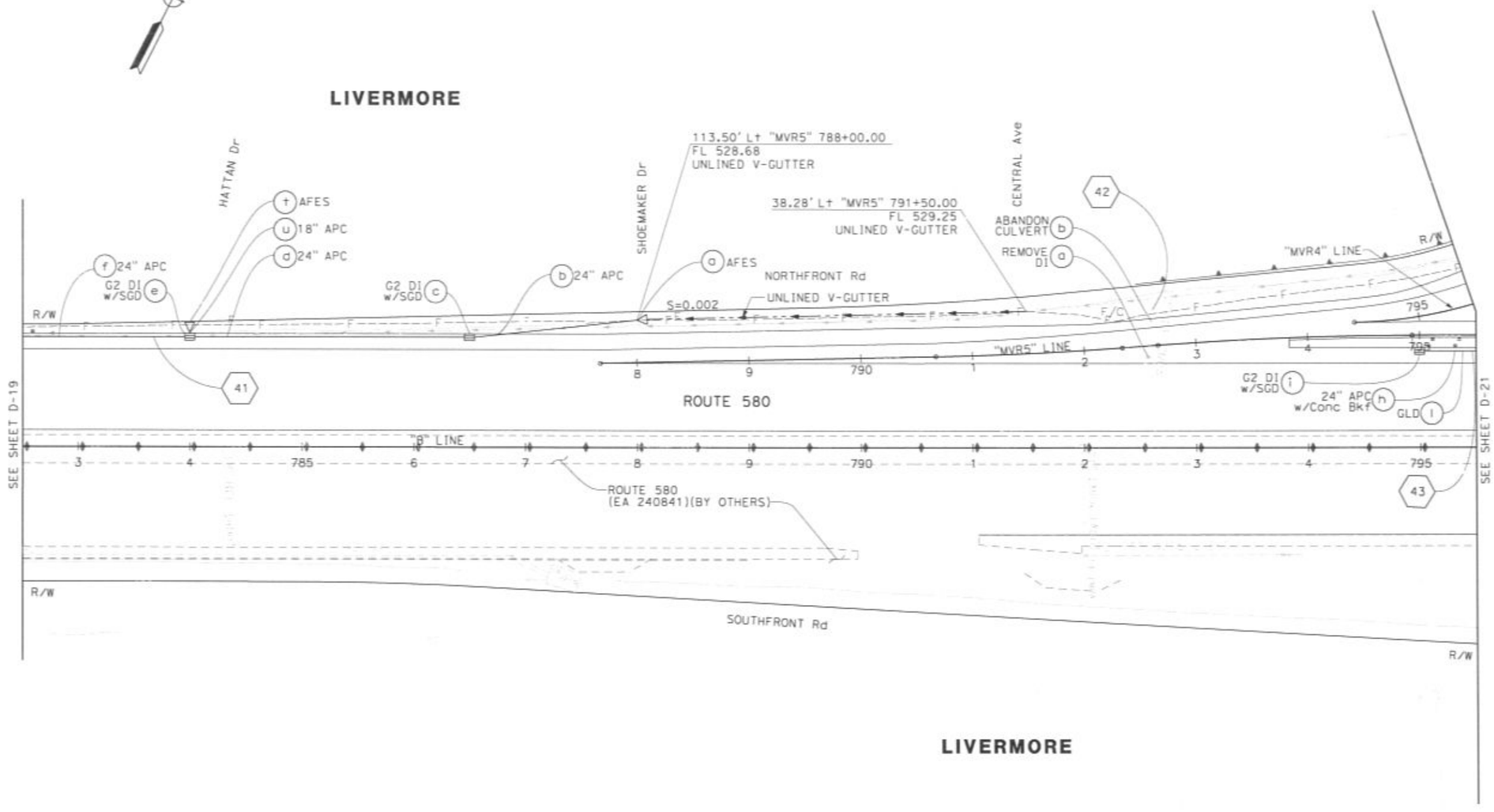
LIVERMORE



LIVERMORE

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-20

Y. FAROUQI	YF	06/20/09	1
DAVID M. DICKINSON	YF	05/01/10	2
CHECKED BY	YF	11/11/11	3
CALCULATED-DESIGNED BY			

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
SUPERVISOR: TIMOTHY J. LEE
CONSULTANT FUNCTIONAL SUPERVISOR

K:\580 MR HOV\000_CAD\Sheets\Plot of Sts 540+00\011-Orelinoga\1A-Plans\429086TA020.dgn

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouqi | DGN FILE => 429086TA020.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

LAST REVISION DATE PLOTTED => 11/15/2011
TIME PLOTTED => 23:17:37 AM

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

11/18/2011
REGISTERED CIVIL ENGINEER — DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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1333 Broadway
Suite 220
Oakland, CA 94612

'26

LIVERMORE

NORTHFRONT Rd

"MVR4" LINE

"MVR5" LINE

"B" LINE

ROUTE 580

44 REMOVE DI (c)
18" APC w/Conc COLLAR (b)
G2 DI w/DA (a)

71
G2 DI w/DA (a)
REMOVE AFES (b)

(h) 24" APC w/Conc Bkf
(g) G2 DI w/SGD
(l) GLD
(f) 24" APC w/Conc Bkf
(e) ADJUST DI
(d) 24" APC w/Conc Bkf
(k) GLD
(c) G2 DI w/SGD
(j) GLD
43
(b) 24" APC w/Conc Bkf
G2 DI w/SGD (a)

R/W
C/F
F—F
6
805
800
SEE SHEET D-20
SEE SHEET D-22

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-21

CALCULATED-DESIGNED BY	Y. FAROUQI	REVISED BY	YF
CHECKED BY	DAVID M. DICKINSON	DATE REVISED	06/20/09
			05/01/10
			11/11/11

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE

LAST REVISION: DATE PLOTTED => 11/15/2011 TIME PLOTTED => 211742 AM

X:\580 WB HOV\000_CAD\Sheets\East of Sta 540+00\011-Drainage\1A-Plans\4290861a021.dgn

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouqi DGN FILE => 4290861a021.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER — DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — STATE OF CALIFORNIA

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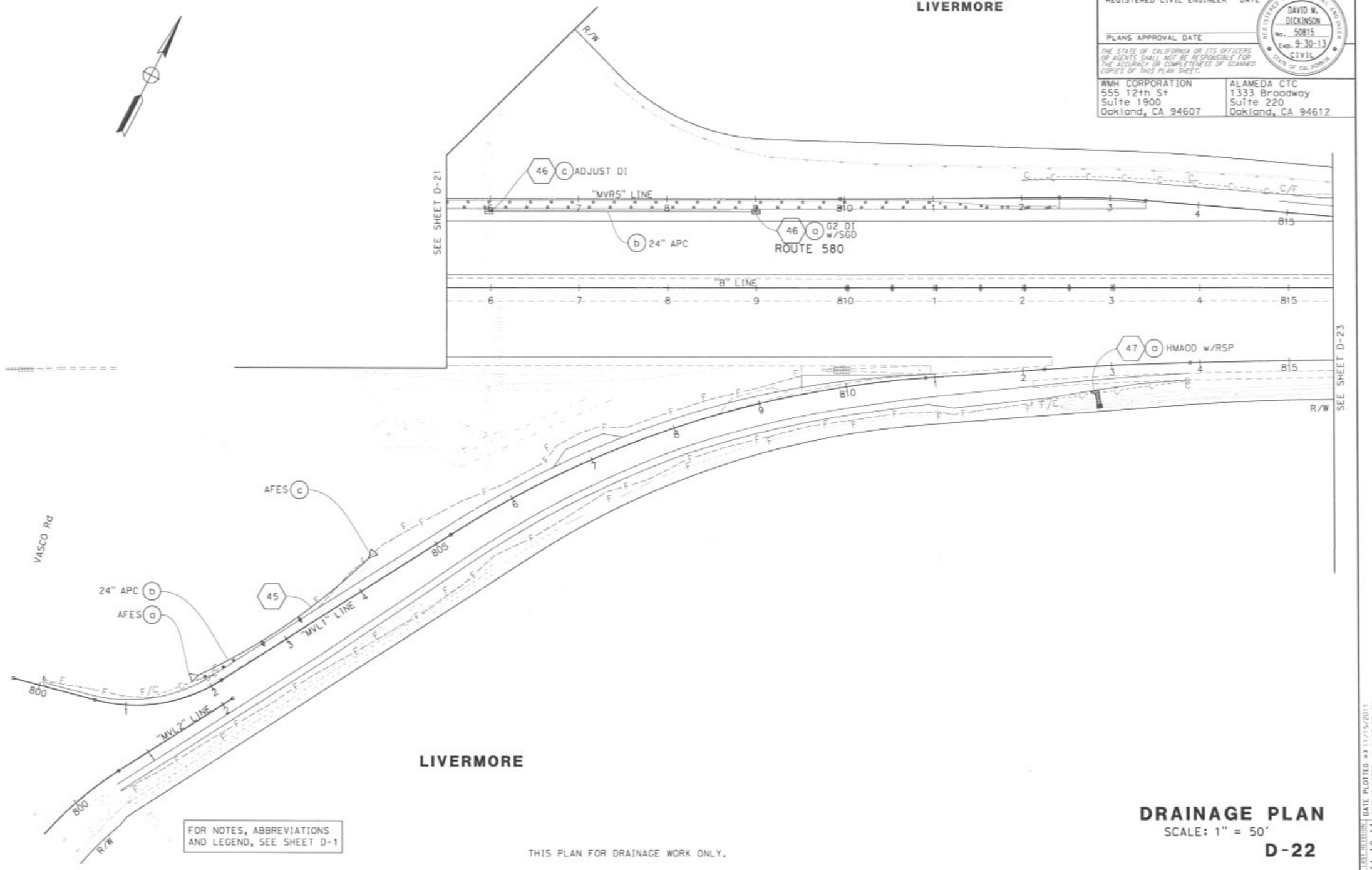
LIVERMORE



LIVERMORE

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-22

Y. FAROUQI	REVISED BY	YF	YF	YF
DAVID M. DICKINSON	DATE REVISED	06/20/09	05/01/10	11/11/11
CHECKED BY				
CALCULATED-DESIGNED BY				

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE

X:\580 WB HOV\800_CAD\Sheets\Vcs# of Sts 540+00\01-Drainage\1A-Plans\4290861a022.dgn

LAST REVISION: DATE PLOTTED => 11/15/2011 TIME PLOTTED => 21:17:55 AM

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouq | DGN FILE => 4290861a022.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

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RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

PLANS APPROVAL DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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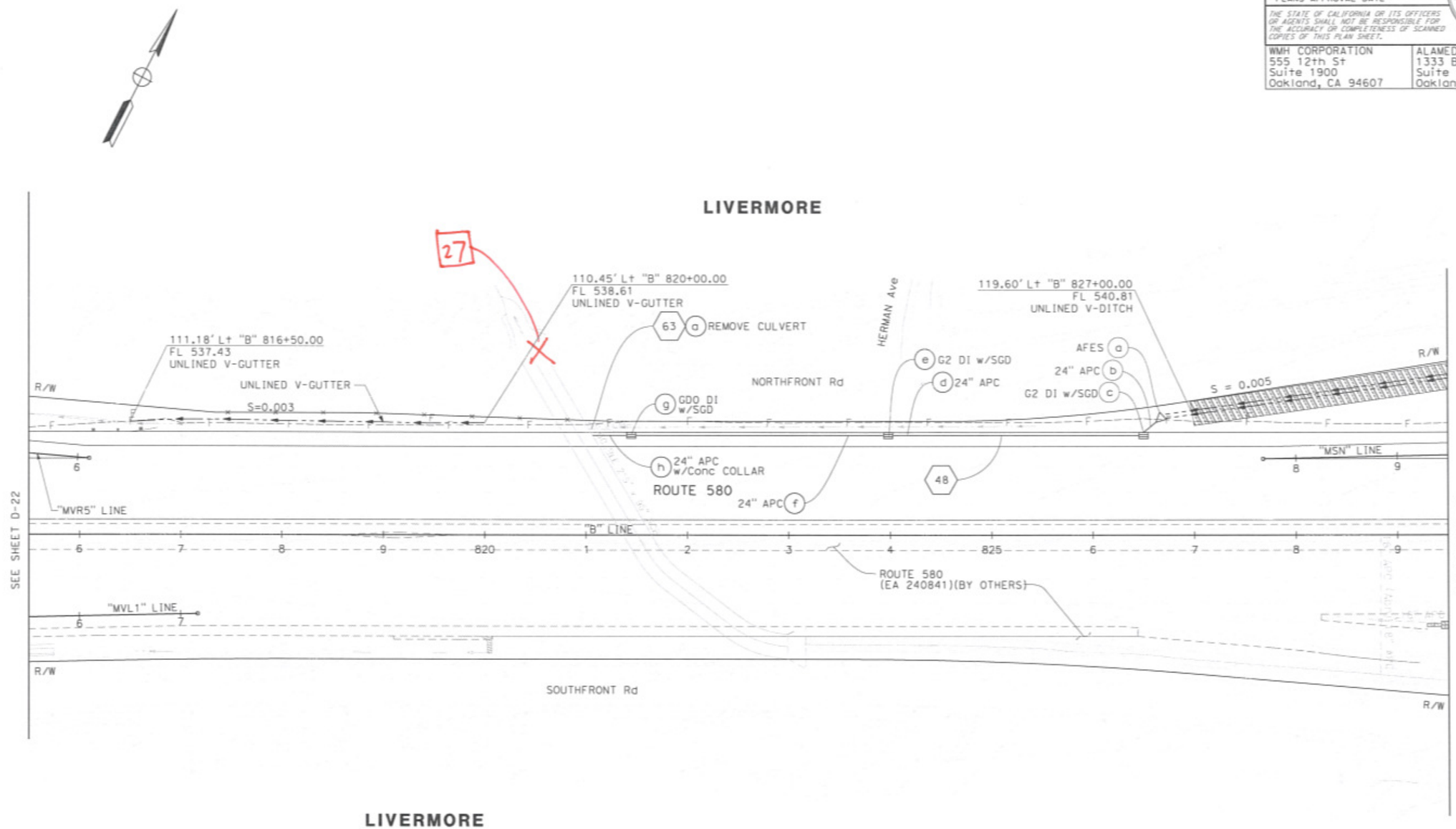

LIVERMORE

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-23

DESIGN	CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
Y. FAROUQI	Y. FAROUQI	DAVID M. DICKINSON	YF	11/11/11
			YF	05/01/10
			YF	06/20/09

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE

LAST REVISION: DATE PLOTTED => 11/15/2011 — 11-18-11 TIME PLOTTED => 21:18:06 AM

K:\580 WB HOV\00 CAD\Sheets\East of Sta 540+00\01-Drainage\1A-Plans\4290861a023.dgn

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouq1 | DGN FILE => 4290861a023.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

PLANS APPROVAL DATE

DAVID W. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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1333 Broadway
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Oakland, CA 94612

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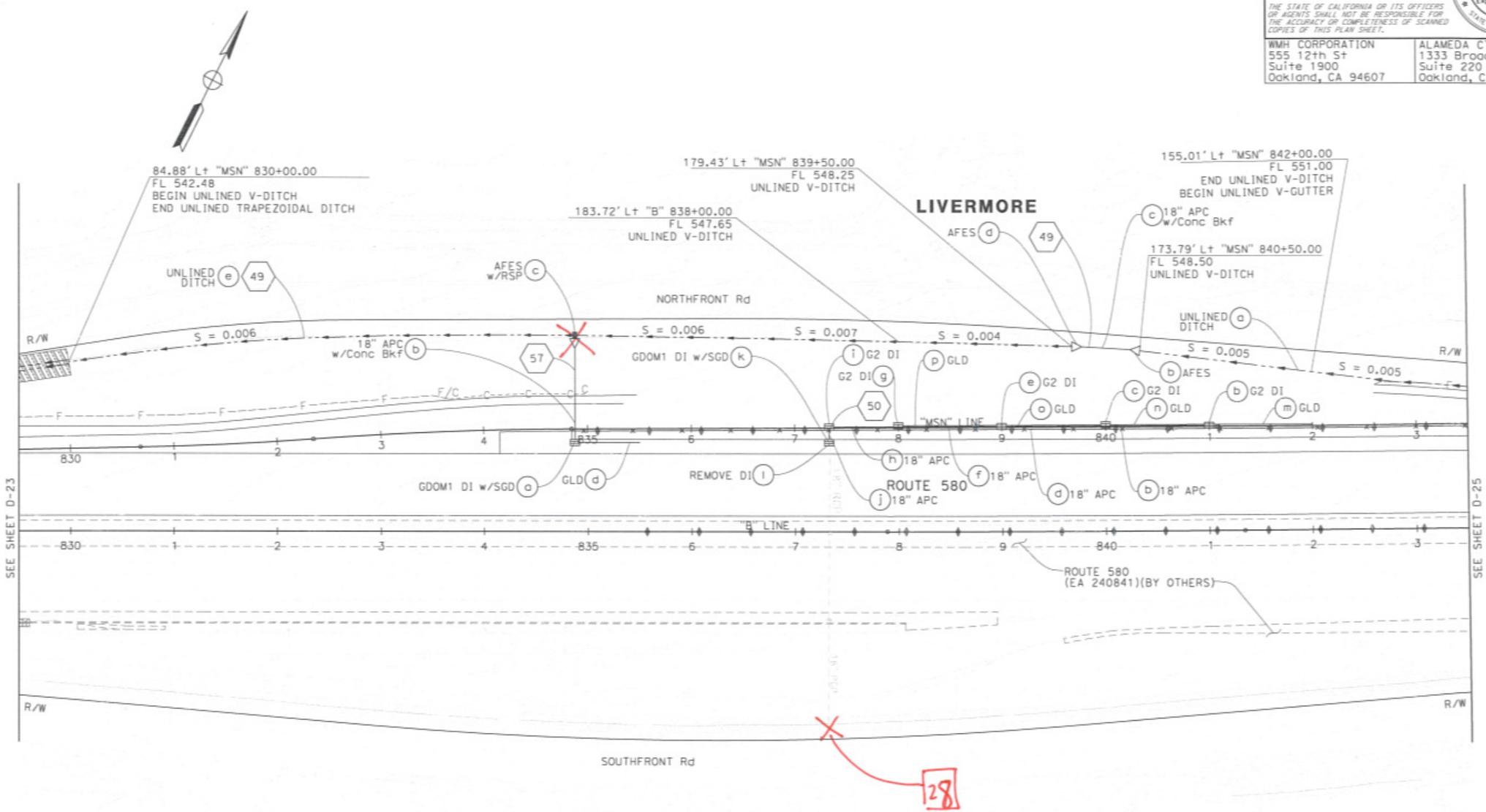
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE



LIVERMORE

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-24

	REVISED BY	DATE REVISED
YF	YF	06/20/09
YF	YF	05/01/10
YF		11/11/11

CALCULATED-DESIGNED BY: Y. FAROUQI
CHECKED BY: DAVID M. DICKINSON
SUPERVISOR: TIMOTHY J. LEE
CONSULTANT FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

X:\580 WB HOV\000 CAD\Sheets\East of Sta 540+00\011-Drainage\1A-Plans\429086to024.dgn

DATE PLOTTED => 11/15/2011
TIME PLOTTED => 21:11:12 AM

BORDER LAST REVISED 7/2/2010	USERNAME => yfarouqi DGN FILE => 429086to024.dgn	RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3	UNIT 0735	PROJECT NUMBER & PHASE	04000202111

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

DAVID M. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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1333 Broadway
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Oakland, CA 94612

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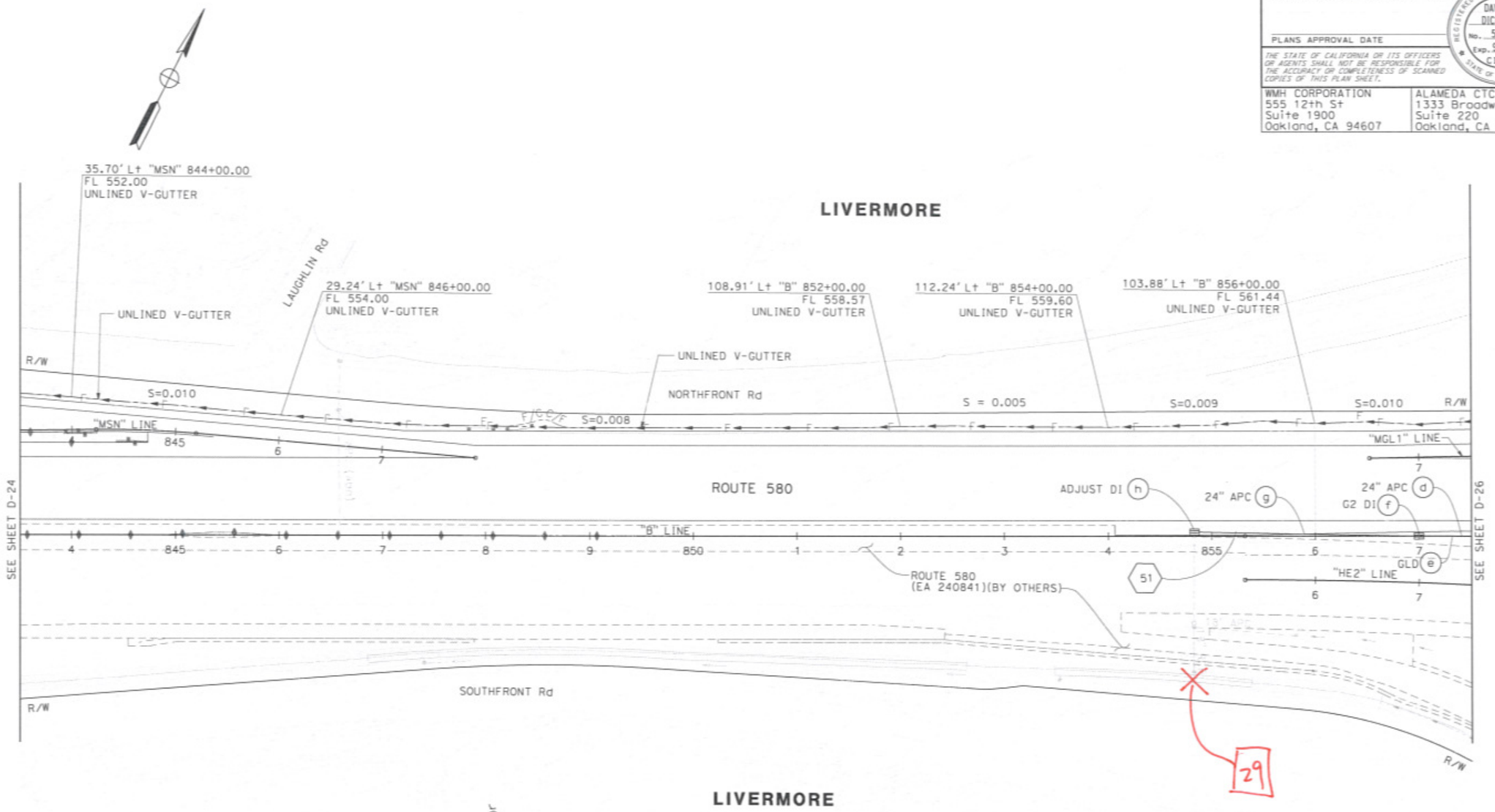

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-25

	REVISED BY	DATE REVISED
	YF	11/11/11
	YF	05/01/10
	YF	06/20/09

CALCULATED-DESIGNED BY: Y. FAROUQI
CHECKED BY: DAVID M. DICKINSON

CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

X:\580 WB HOV\000_CAD\Sheets\Post of Sta 540+80\011-Drainage\1A-Plans\4290861a025.dgn

LAST REVISION: DATE PLOTTED => 11/15/2011 11-18-11 TIME PLOTTED => 23:16:16 AM

BORDER LAST REVISED 7/2/2010 | USERNAME => yfarouql | DGN FILE => 4290861a025.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0735 | PROJECT NUMBER & PHASE 04000202111

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R8.4/R14.6		

REGISTERED CIVIL ENGINEER — 11/18/2011 DATE

DAVID W. DICKINSON No. 50815 Exp. 9-30-13 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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WMH CORPORATION
555 12th St
Suite 1900
Oakland, CA 94607

ALAMEDA CTC
1333 Broadway
Suite 220
Oakland, CA 94612

FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE

NORTHFRONT Rd

148.00' Lt "B" 864+68.00
FL 565.49
UNLINED V-DITCH

158.33' Lt "B" 865+00.00
FL 564.00
UNLINED TRAPEZOIDAL DITCH

161.68' Lt "B" 866+00.00
FL 564.55
UNLINED TRAPEZOIDAL DITCH

R/W

AFES a
18" APC b
G2 DI w/SGD c
18" APC w/Conc Bkf d
41.32' Lt "MGL1" 860+50.00
FL 566.03
UNLINED V-GUTTER
G2 DI w/SGD e
24" APC w/Conc Bkf f
53

LIVERMORE

AFES i
UNLINED V-GUTTER
38.69' Lt "B" 858+00.00
FL 563.38
UNLINED V-GUTTER
18" APC h
G2 DI w/SGD g
S=0.009
R/W
"MGL1" LINE
860
41.08' Lt "MGL1" 860+00.00
FL 565.12
UNLINED V-DITCH

ROUTE 580

c UNLINED TRAPEZOIDAL DITCH
S=0.005
d UNLINED TRAPEZOIDAL DITCH
k REMOVE HW
j 24" APC w/Conc Bkf
54
100.00' Lt "B" 864+82.00
FL 566.27
UNLINED V-DITCH
b AFES w/RSP
e REMOVE HW
a 18" APC w/Conc COLLAR
"B" LINE
865+00
870

d 24" APC
ROUTE 580 (EA 240841)(BY OTHERS)
55 a AFES
b 18" APC
c ADJUST DI w/SGD
"HE2" LINE
ROUTE 580 (EA 240841)(BY OTHERS)
"MGR2" LINE
865

SEE SHEET D-25

c GLD
b G2 DI w/SGD
a GLD
e GLD
51
REMOVE CULVERT c
REMOVE DI b
52
d HMAOD w/RSP
a G2 DI w/SGD
860

R/W

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

SOUTHFRONT Rd

THIS PLAN FOR DRAINAGE WORK ONLY.

DRAINAGE PLAN

SCALE: 1" = 50'

D-26

REVISED BY	DATE REVISED
YF	11/11/11
YF	05/01/10
YF	06/20/09

CALCULATED-DESIGNED BY: Y. FAROUQI
CHECKED BY: DAVID M. DICKINSON
SUPERVISOR: TIMOTHY J. LEE
CONSULTANT FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION: 11-18-11
DATE PLOTTED => 11/15/2011
TIME PLOTTED => 21:18:20 AM

X:\SBD MB HOV\000 CAD\Sheets\Cost of Sta 840+80\011-Drainage\1a-Plans\429086la026.dgn

BORDER LAST REVISED 7/2/2010
USERNAME => yfarouqi
DGN FILE => 429086la026.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0735
PROJECT NUMBER & PHASE 04000202111

8. Drainage Area Maps and Hydrology Data

9. Rainfall Data

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Service

Climatography of the United States No. 20 1971-2000

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: LIVERMORE, CA

COOP ID: 044997

Climate Division: CA 4 **NWS Call Sign:** **Elevation: 480 Feet** **Lat: 37˚42N** **Lon: 121˚47W**

Precipitation (inches)

Precipitation Totals

Month	Means/ Medians(1) Mean	Means/ Medians(1) Median	Extremes Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year
Jan	2.99	1.94	3.45	1952	12	6.64	1995	.30	1976
Feb	2.77	2.71	2.93	1963	1	7.30	1998	.15	1997
Mar	2.47	2.32	2.00	1937	21	6.66	1995	.06	1997
Apr	.96	.76	1.80	1958	3	3.51	1983	.15	1997
May	.43	.18	.82	1990	28	2.00	1998	.00+	1992
Jun	.09	.04	.60	1995	16	.70	1995	.00+	1996
Jul	.03	.00	.67	1980	2	.70	1980	.00+	2000
Aug	.08	.00	.50	1983	19	.91	1976	.00+	1998
Sep	.24	.04	1.53	1959	19	1.48	1982	.00+	1997
Oct	.84	.58	2.17	1962	13	2.98	1972	.00+	1995
Nov	1.88	1.37	3.05	1950	19	5.44	1983	.01	1995
Dec	2.04	1.96	3.26	1955	23	5.37	1995	.10	1989
Ann	14.82	13.37	3.45	Jan 1952	12	7.30	Feb 1998	.00+	Jul 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.1	6.2	1.9	.7
Feb	9.2	6.2	2.1	.5
Mar	9.9	6.4	1.4	.3
Apr	5.7	3.0	.3	@
May	3.1	1.3	.1	.0
Jun	.9	.3	@	.0
Jul	.2	.1	@	.0
Aug	.5	.2	@	.0
Sep	1.4	.6	.1	@
Oct	3.3	1.8	.6	.1
Nov	7.7	4.4	1.2	.2
Dec	8.4	4.9	1.3	.2
Ann	60.4	35.4	9.0	2.0

Precipitation Probabilities (1)

Probability that the monthly/annual precipitation will be equal to or less than the indicated amount

Monthly/Annual Precipitation vs Probability Levels
These values were determined from the incomplete gamma distribution

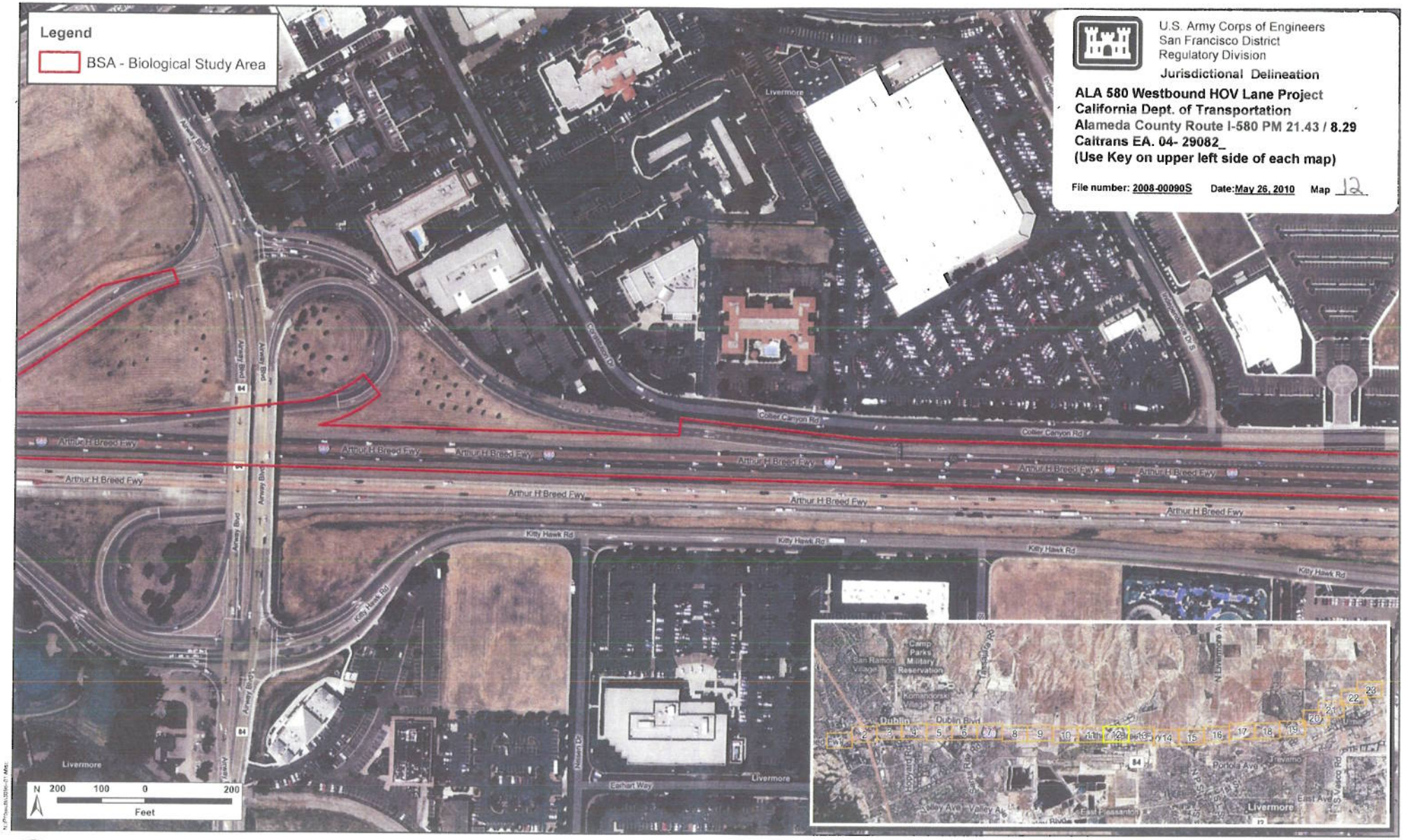
Month	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.28	.49	.90	1.31	1.77	2.28	2.89	3.65	4.70	6.44	8.14
Feb	.28	.48	.86	1.25	1.67	2.14	2.69	3.38	4.32	5.89	7.42
Mar	.18	.34	.66	.99	1.37	1.81	2.33	3.00	3.92	5.47	7.00
Apr	.13	.21	.35	.48	.62	.77	.95	1.17	1.46	1.93	2.39
May	.00	.00	.00	.03	.10	.19	.31	.49	.74	1.21	1.70
Jun	.00	.00	.00	.00	.00	.02	.06	.11	.17	.27	.38
Jul	.00	.00	.00	.00	.00	.00	.00	.00	.00	.07	.21
Aug	.00	.00	.00	.00	.00	.00	.00	.00	.04	.25	.50
Sep	.00	.00	.00	.00	.00	.04	.11	.22	.40	.74	1.09
Oct	.00	.03	.12	.24	.37	.54	.74	1.01	1.39	2.05	2.71
Nov	.06	.14	.33	.57	.85	1.20	1.64	2.23	3.06	4.52	6.00
Dec	.25	.41	.70	.98	1.28	1.62	2.01	2.49	3.14	4.21	5.25
Ann	6.77	8.08	9.88	11.35	12.71	14.08	15.54	17.21	19.32	22.50	25.38

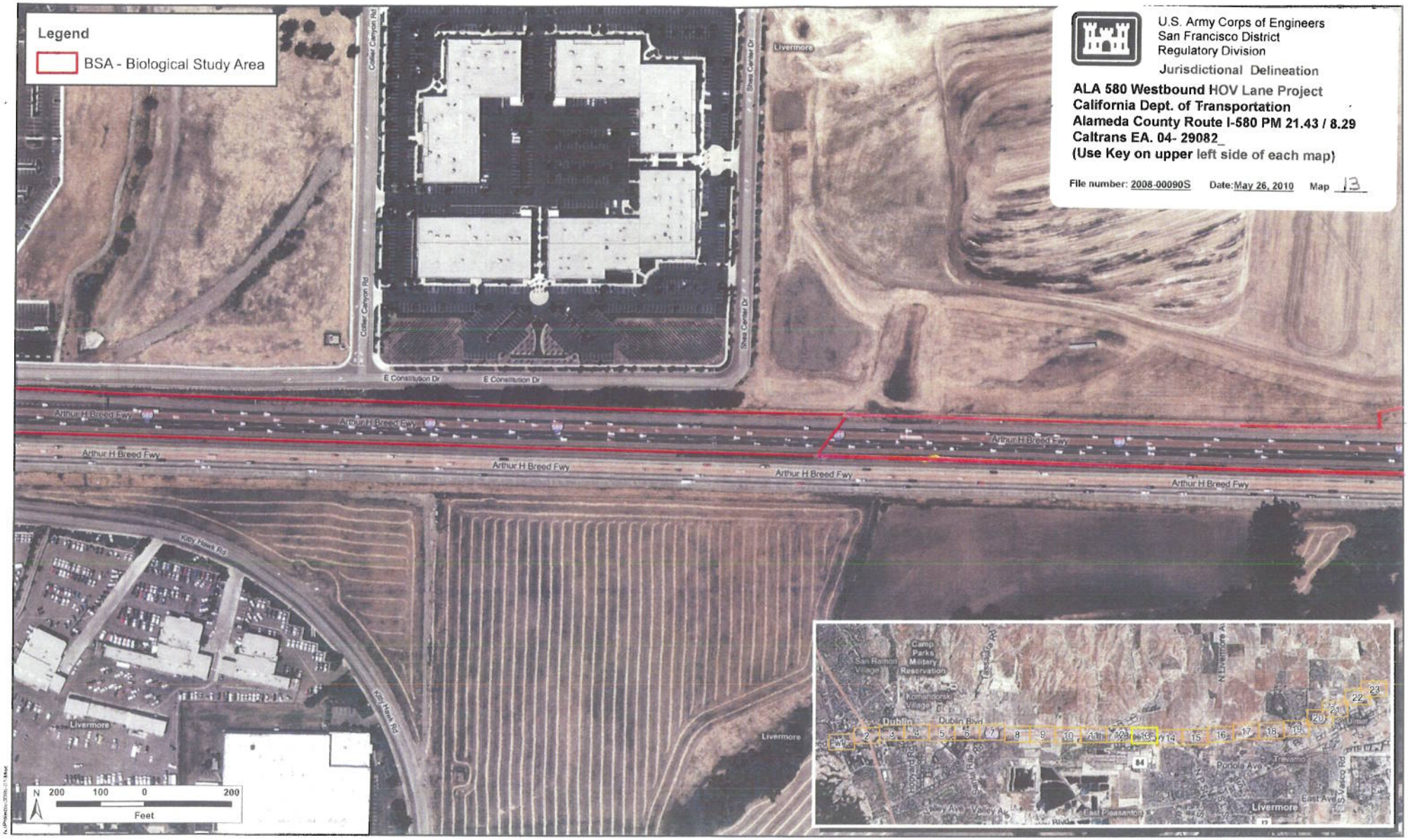
\+ Also occurred on an earlier date(s)
\# Denotes amounts of a trace
@ Denotes mean number of days greater than 0 but less than .05
****** Statistics not computed because less than six years out of thirty had measurable precipitation

(1) From the 1971-2000 Monthly Normals
(2) Derived from station's available digital record: 1930-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

10. Wetlands and Waters of the U.S.


Legend
BSA - Biological Study Area
U.S. Army Corps of Engineers
San Francisco District
Regulatory Division
Jurisdictional Delineation
ALA 580 Westbound HOV Lane Project
California Dept. of Transportation
Alameda County Route I-580 PM 21.43 / 8.29
Caltrans EA. 04- 29082_
(Use Key on upper left side of each map)
File number: 2008-00090S
Date: May 26, 2010
Map 12
Arthur H Breed Fwy
Kitty Hawk Rd
Arroyo Blvd
Collier Canyon Rd
Livermore
Dublin
Dublin Blvd
Camp Parks Military Reservation
Portola Ave
Trevarno
East Ave
Valley Ave
East Passandro
N 200 100 0 200
Feet


Legend
BSA - Biological Study Area
U.S. Army Corps of Engineers
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Jurisdictional Delineation
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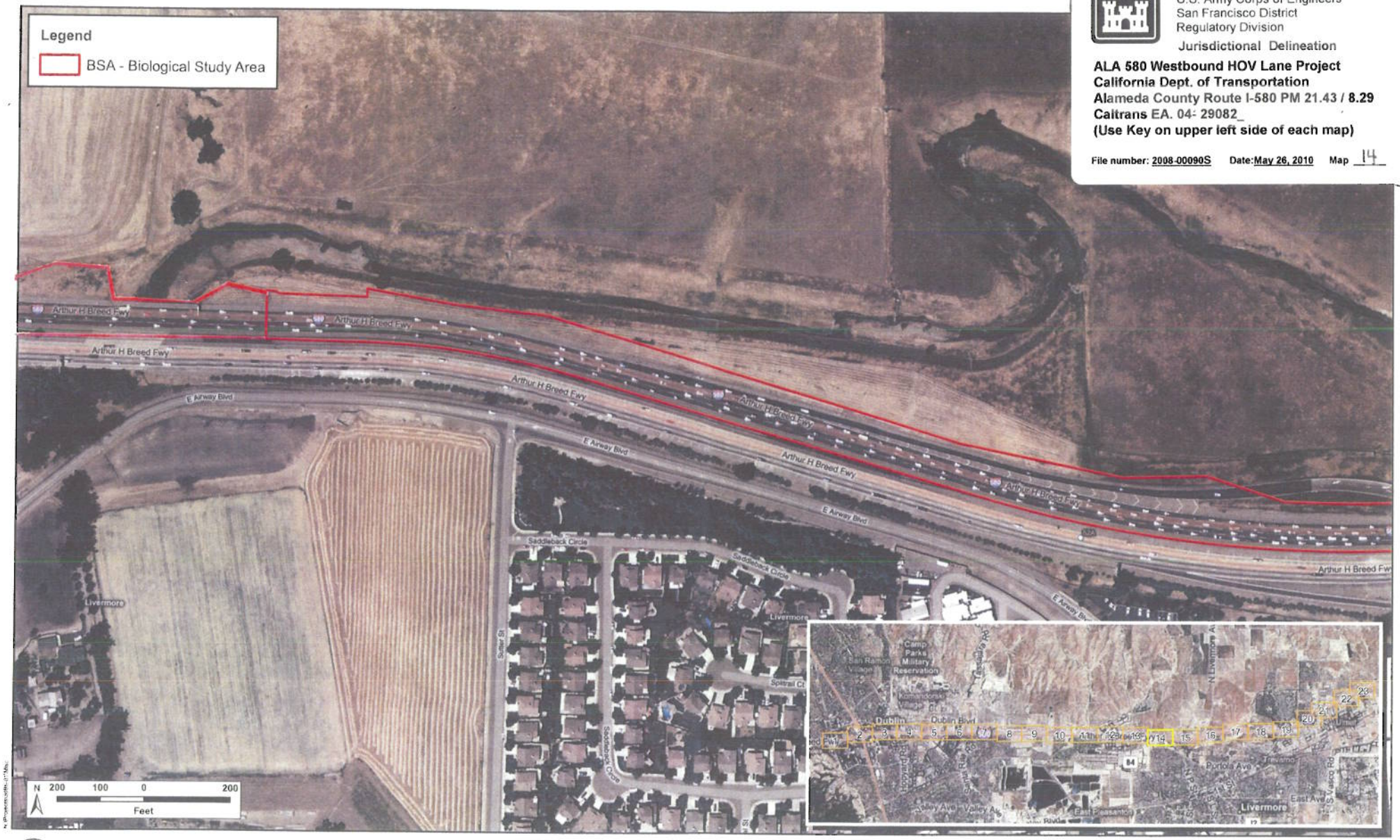
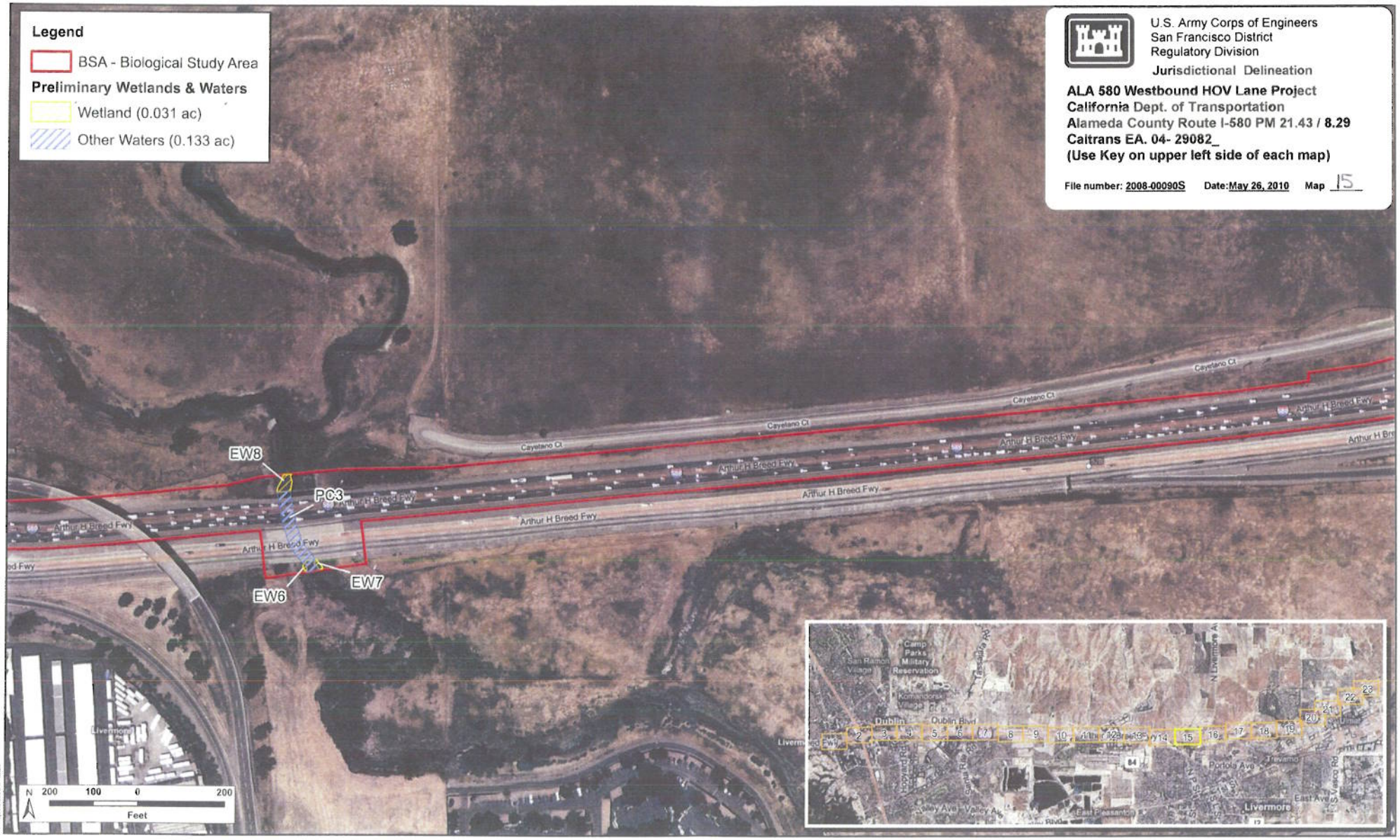
California Dept. of Transportation
Alameda County Route I-580 PM 21.43 / 8.29
Caltrans EA. 04- 29082_
(Use Key on upper left side of each map)
File number: 2008-00090S
Date: May 26, 2010
Map 13
Collier Canyon Rd
Shea Center Dr
E Constitution Dr
Livermore
Arthur H Breed Fwy
Kitty Hawk Rd
N 200 100 0 200
Feet
Camp Parks Military Reservation
San Ramon Village
Dublin
Dublin Blvd
Tassajara Rd
Portola Ave
Valley Ave
East Pleasanton
East Ave
Vasco Rd
84

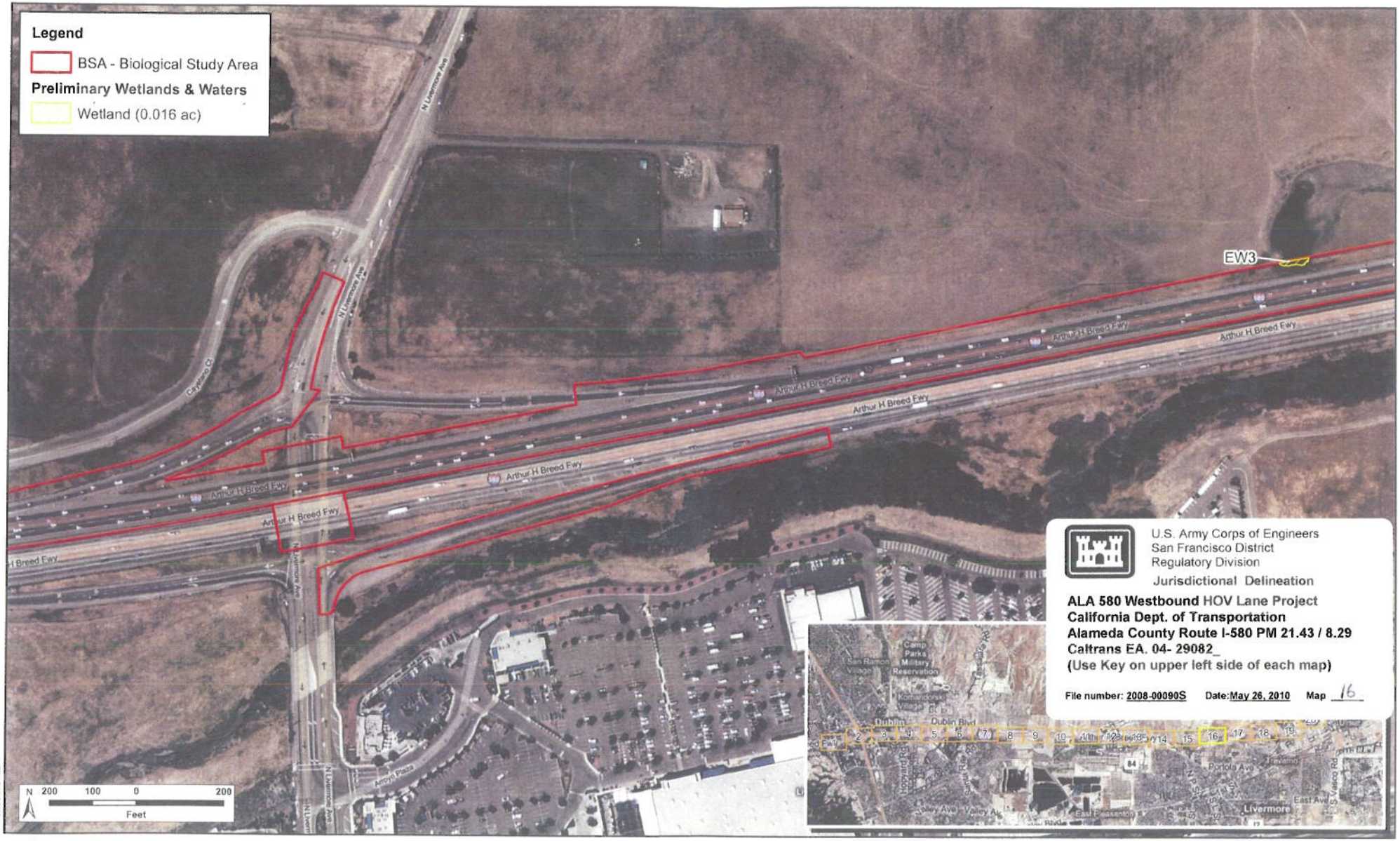


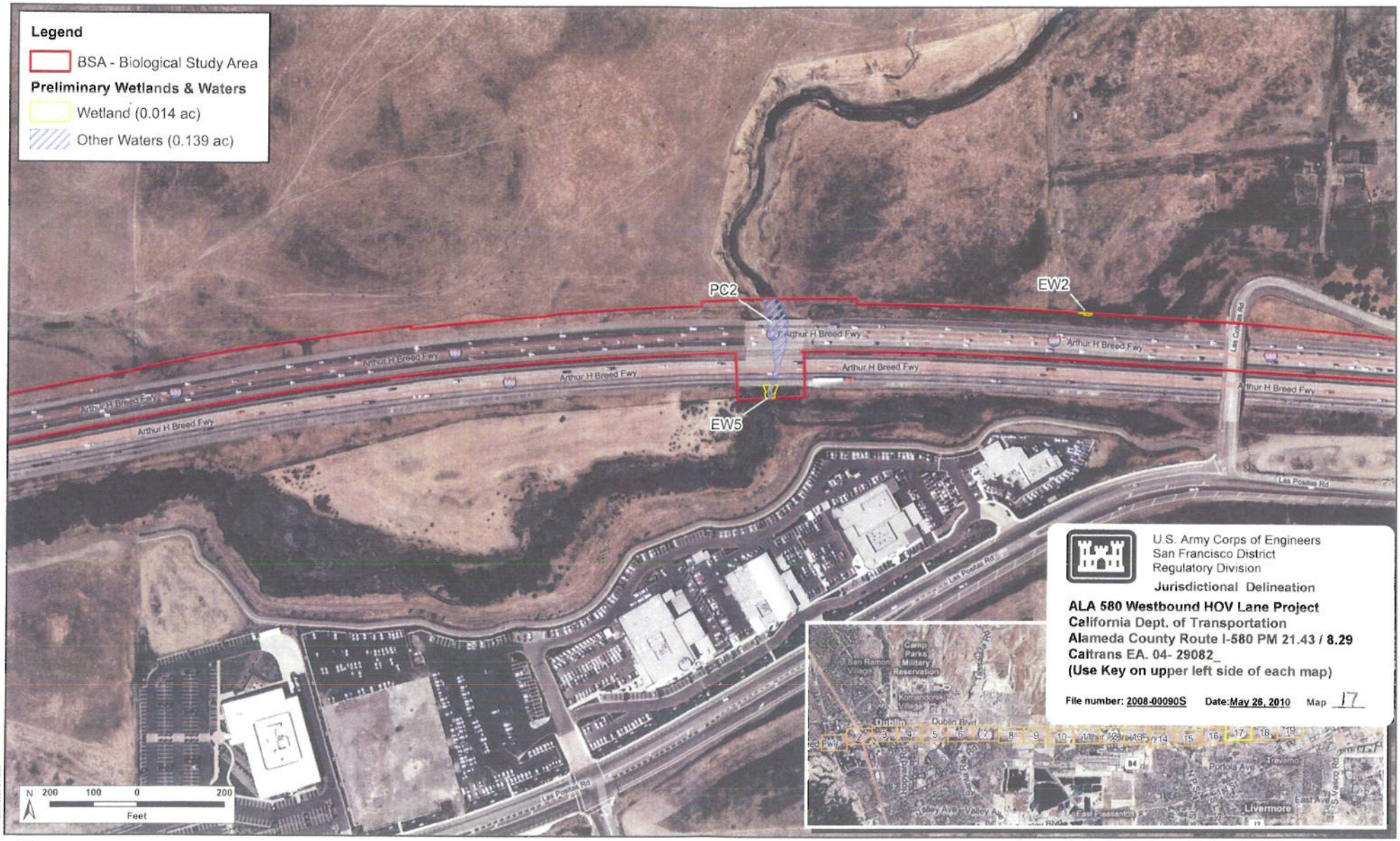
U.S. Army Corps of Engineers
San Francisco District
Regulatory Division
Jurisdictional Delineation

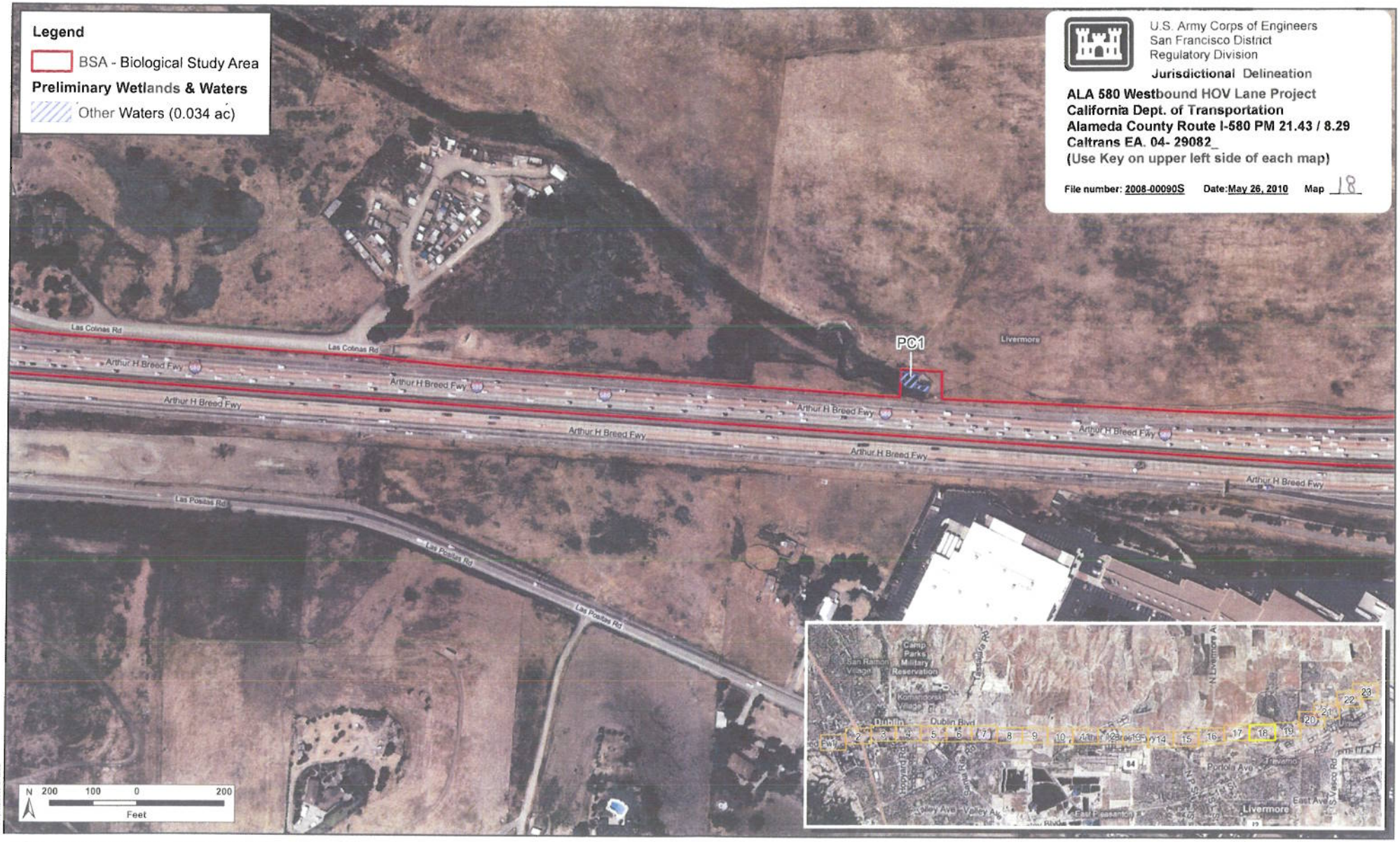
ALA 580 Westbound HOV Lane Project
California Dept. of Transportation
Alameda County Route I-580 PM 21.43 / 8.29
Caltrans EA. 04- 29082_
(Use Key on upper left side of each map)

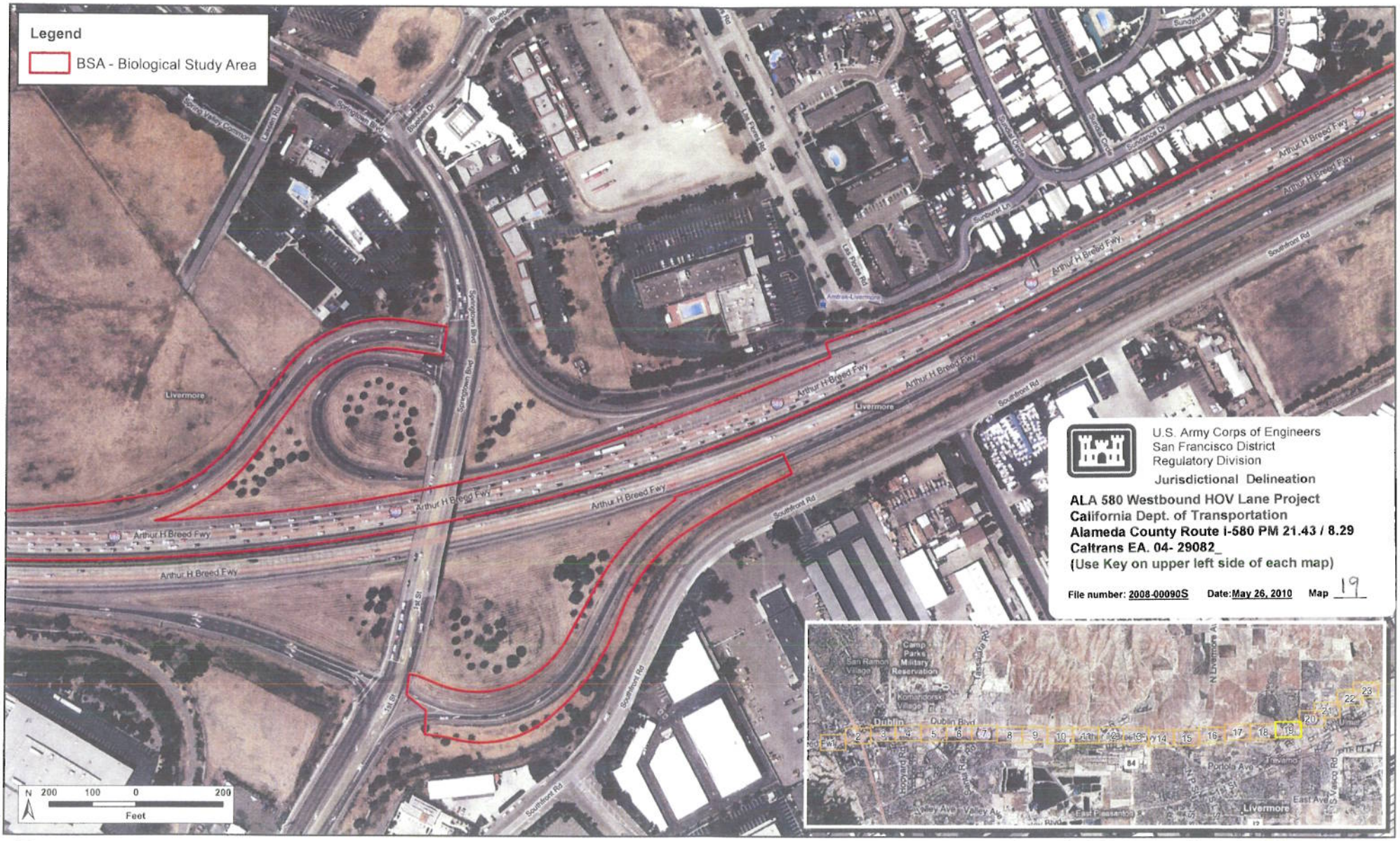
File number: 2008-00090S Date: May 26, 2010 Map 14


Legend
BSA - Biological Study Area
Preliminary Wetlands & Waters
Wetland (0.031 ac)
Other Waters (0.133 ac)
U.S. Army Corps of Engineers
San Francisco District
Regulatory Division
Jurisdictional Delineation
ALA 580 Westbound HOV Lane Project
California Dept. of Transportation
Alameda County Route I-580 PM 21.43 / 8.29
Caltrans EA. 04- 29082_
(Use Key on upper left side of each map)
File number: 2008-00090S
Date: May 26, 2010
Map 15
EW8
PC3
EW6
EW7
Arthur H Breed Fwy
Cayetano Ct
N 200 100 0 200
Feet

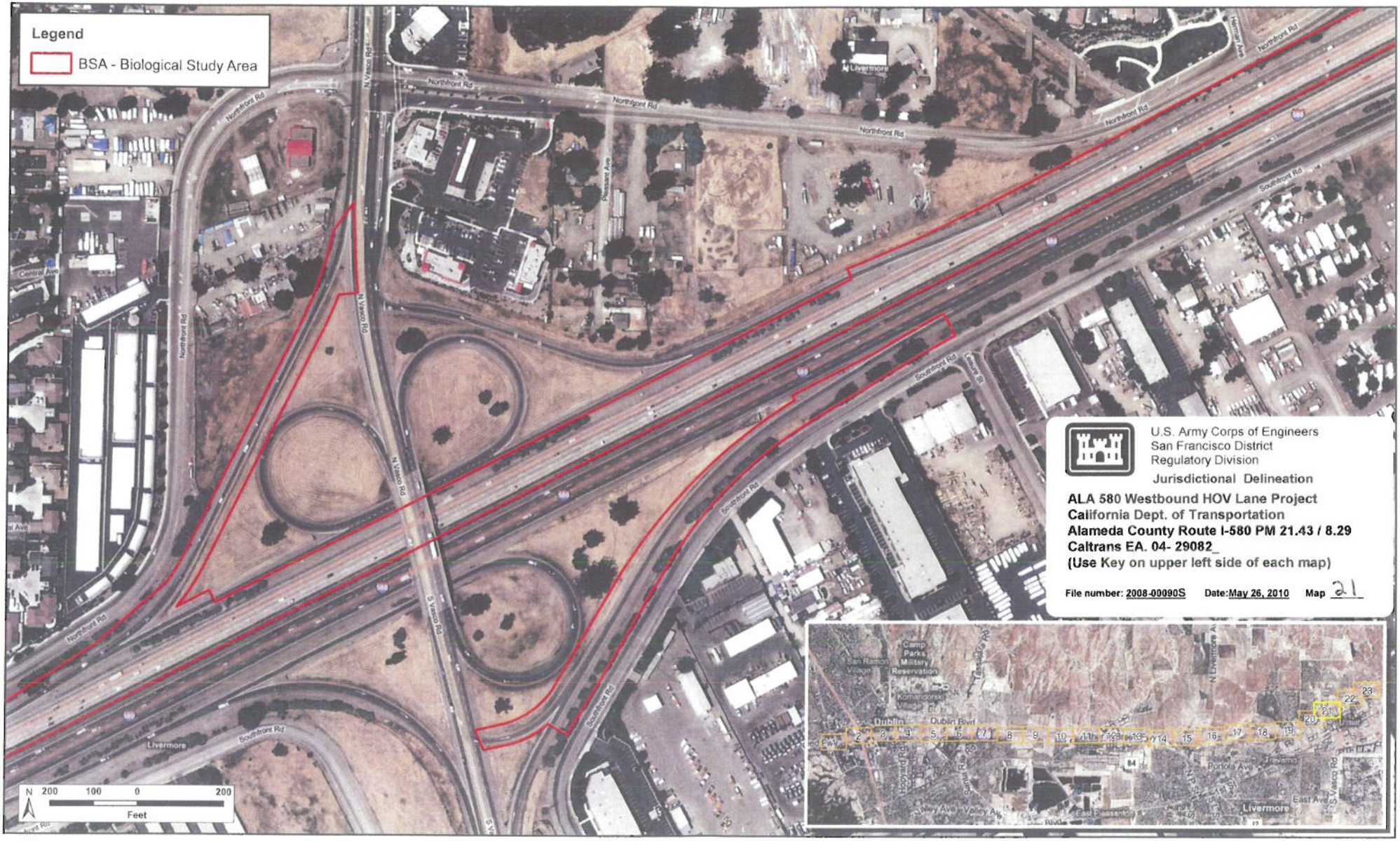

Legend
BSA - Biological Study Area
Preliminary Wetlands & Waters
Wetland (0.016 ac)
EW3
Arthur H Breed Fwy
N Livermore Ave
Cypress Ct
Amoni Plaza
N 200 100 0 200
Feet
U.S. Army Corps of Engineers
San Francisco District
Regulatory Division
Jurisdictional Delineation
ALA 580 Westbound HOV Lane Project
California Dept. of Transportation
Alameda County Route I-580 PM 21.43 / 8.29
Caltrans EA. 04- 29082_
(Use Key on upper left side of each map)
File number: 2008-00090S
Date: May 26, 2010
Map 16
Camp Parks Military Reservation
San Ramon Village
Dublin
Dublin Blvd
Hacienda Dr
Tassajara Rd
Portola Ave
Livermore
East Ave
Valley Ave
Ruby Hill Dr


Legend
BSA - Biological Study Area
Preliminary Wetlands & Waters
Wetland (0.014 ac)
Other Waters (0.139 ac)
PC2
EW2
EW5
Arthur H Breed Fwy
Las Positas Rd
Las Positas Rd
Las Positas Rd
N 200 100 0 200
Feet
U.S. Army Corps of Engineers
San Francisco District
Regulatory Division
Jurisdictional Delineation
ALA 580 Westbound HOV Lane Project
California Dept. of Transportation
Alameda County Route I-580 PM 21.43 / 8.29
Caltrans EA. 04- 29082_
(Use Key on upper left side of each map)
File number: 2008-00090S
Date: May 26, 2010
Map 17
Camp Parks Military Reservation
Dublin
Dublin Blvd
Livermore
Portola Ave
East Ave
Valley Ave
Vasco Rd


Legend
BSA - Biological Study Area
Preliminary Wetlands & Waters
Other Waters (0.034 ac)
U.S. Army Corps of Engineers
San Francisco District
Regulatory Division
Jurisdictional Delineation
ALA 580 Westbound HOV Lane Project
California Dept. of Transportation
Alameda County Route I-580 PM 21.43 / 8.29
Caltrans EA. 04- 29082_
(Use Key on upper left side of each map)
File number: 2008-00090S
Date: May 26, 2010
Map 18
PC1
Las Colinas Rd
Arthur H Breed Fwy
Las Positas Rd
Livermore
Dublin
Dublin Blvd
Camp Parks Military Reservation
San Ramon Village
Portola Ave
Valley Ave
East Avenue
N 200 100 0 200
Feet


Legend
BSA - Biological Study Area
U.S. Army Corps of Engineers
San Francisco District
Regulatory Division
Jurisdictional Delineation
ALA 580 Westbound HOV Lane Project
California Dept. of Transportation
Alameda County Route I-580 PM 21.43 / 8.29
Caltrans EA. 04- 29082_
(Use Key on upper left side of each map)
File number: 2008-00090S
Date: May 26, 2010
Map 19
Arthur H Breed Fwy
Livermore
Southfront Rd
Springtown Blvd
1st St
N 200 100 0 200
Feet

Legend
BSA - Biological Study Area
U.S. Army Corps of Engineers
San Francisco District
Regulatory Division
Jurisdictional Delineation
ALA 580 Westbound HOV Lane Project
California Dept. of Transportation
Alameda County Route I-580 PM 21.43 / 8.29
Caltrans EA. 04- 29082_
(Use Key on upper left side of each map)
File number: 2008-00090S
Date: May 26, 2010
Map 20
N 200 100 0 200
Feet
Livermore
Dublin
Arthur H Breed Fwy
Southfront Rd
Dublin Blvd
Camp Parks Military Reservation
San Ramon Village
Portola Ave
East Ave
Valley Ave


Legend
BSA - Biological Study Area
U.S. Army Corps of Engineers
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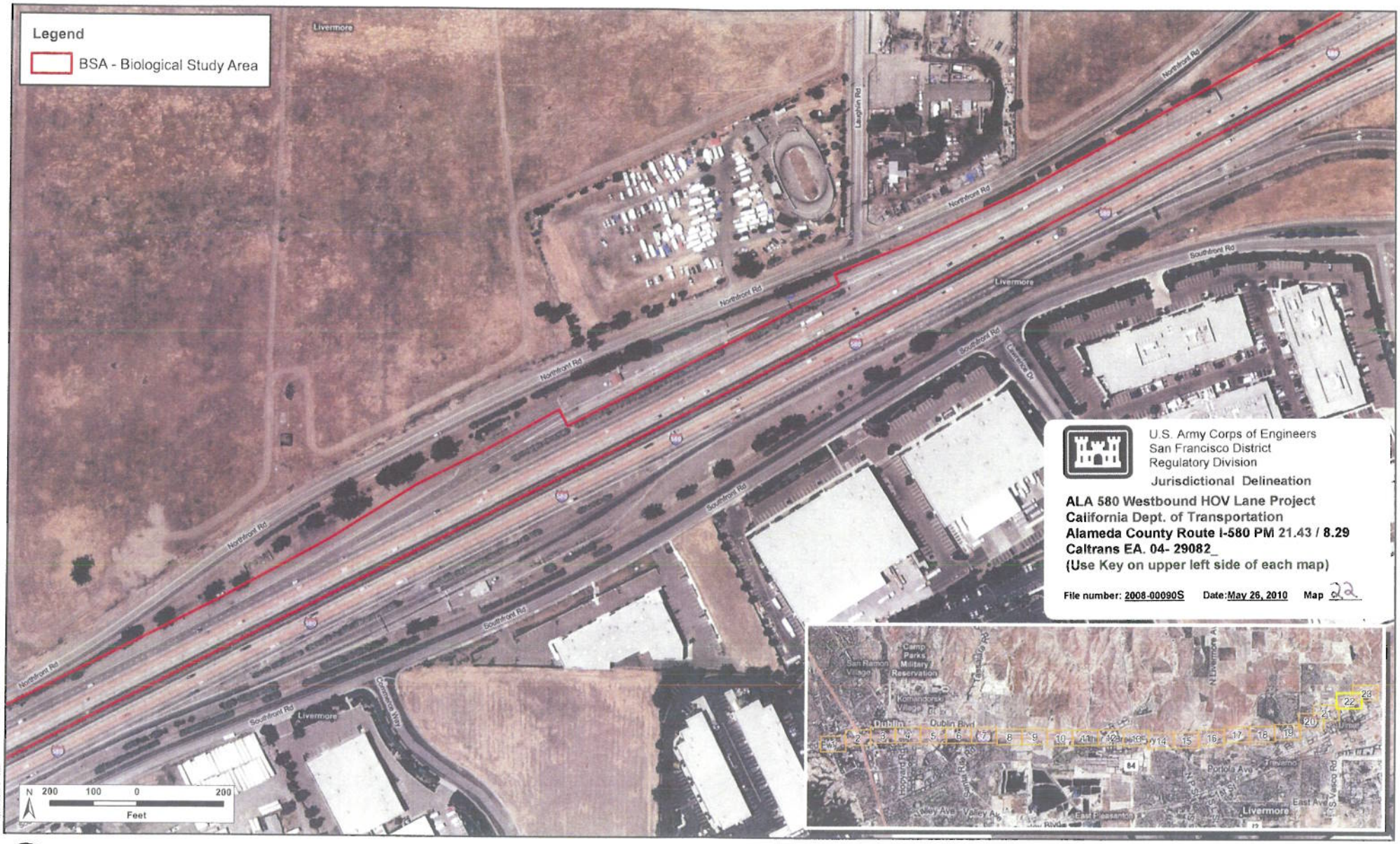
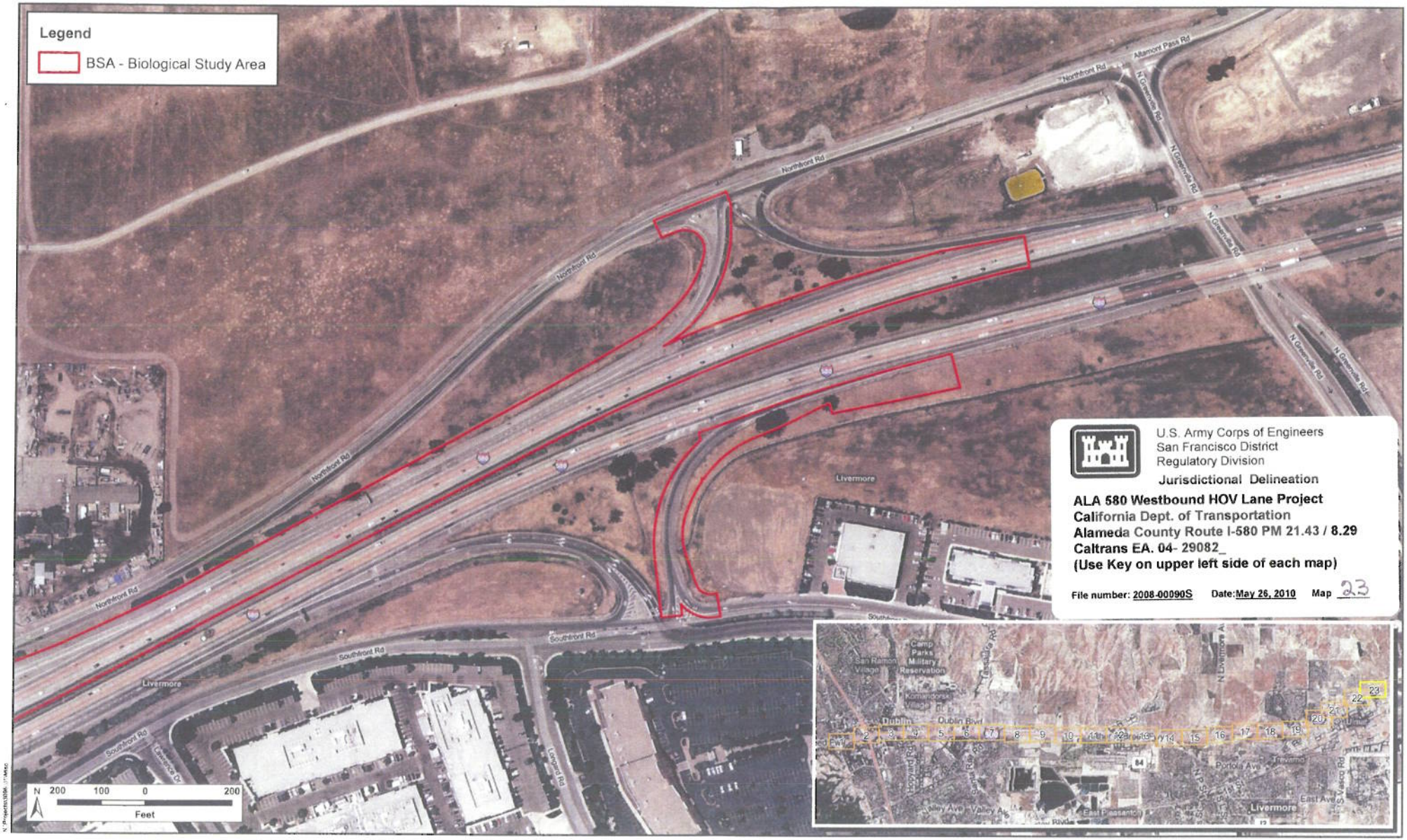
ALA 580 Westbound HOV Lane Project
California Dept. of Transportation
Alameda County Route I-580 PM 21.43 / 8.29
Caltrans EA. 04- 29082_
(Use Key on upper left side of each map)
File number: 2008-00090S
Date: May 26, 2010
Map 21
N 200 100 0 200
Feet
Northfront Rd
Southfront Rd
N Vasco Rd
S Vasco Rd
Pleasant Ave
Livermore
Dublin
Dublin Blvd
Camp Parks Military Reservation
Tassajara Rd
Portola Ave
East Ave
Valley Ave


Legend
BSA - Biological Study Area
Livermore
Northfront Rd
Southfront Rd
Laughlin Rd
Livermore
Clarmenia Dr
N 200 100 0 200
Feet
U.S. Army Corps of Engineers
San Francisco District
Regulatory Division
Jurisdictional Delineation
ALA 580 Westbound HOV Lane Project
California Dept. of Transportation
Alameda County Route I-580 PM 21.43 / 8.29
Caltrans EA. 04- 29082_
(Use Key on upper left side of each map)
File number: 2008-00090S
Date: May 26, 2010
Map 22
Camp Parks Military Reservation
San Ramon Village
Dublin
Dublin Blvd
Tassajara Rd
N Livermore Ave
Portola Ave
Livermore
East Ave
Valley Ave
84


Legend
BSA - Biological Study Area
Northfront Rd
Altamont Pass Rd
N Greenville Rd
Livermore
Southfront Rd
Dublin
Dublin Blvd
Camp Parks Military Reservation
San Ramon Village
Komandorski Village
Tassajara Rd
Portola Ave
East Ave
Valley Ave
East Passanto
N 200 100 0 200
Feet
U.S. Army Corps of Engineers
San Francisco District
Regulatory Division
Jurisdictional Delineation
ALA 580 Westbound HOV Lane Project
California Dept. of Transportation
Alameda County Route I-580 PM 21.43 / 8.29
Caltrans EA. 04- 29082_
(Use Key on upper left side of each map)
File number: 2008-00090S
Date: May 26, 2010
Map 23

11. CRWQCB 401 Certification

California Regional Water Quality Control Board
San Francisco Bay Region

Linda S. Adams
Acting Secretary for Environmental Protection

1515 Clay Street, Suite 1400, Oakland, California 94612
(510) 622-2300 • Fax (510) 622-2460
http://www.waterboards.ca.gov/sanfranciscobay

Edmund G. Brown, Jr.
Governor

July 11, 2011
CIWQS Place No. 736556 (BT)
401 Database Site No. 02-01-C1093

Sent via electronic mail: No hard copy to follow

California Department of Transportation
Attn: Mr. Issa Bouri
Issa_Bouri@dot.ca.gov
111 Grand Ave.
Oakland, CA 94612-3717

Subject: Water Quality Certification for the Westbound Interstate 580 HOV Lane Construction Project, Cities of Dublin, Pleasanton, and Livermore, Alameda County

Department Project No.: EA 04-29082

Dear Mr. Bouri:

We have reviewed and hereby issue water quality certification to the California Department of Transportation (Department) for the Westbound Interstate 580 HOV Lane Construction Project (Project). The Department has received Nationwide Permit No. 14, *Linear Transportation Projects*, from the U.S. Army Corps of Engineers (Corps), pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344). As such, the Department has applied to the Water Board for a Clean Water Act Section 401 water quality certification that the Project will not violate State water quality standards.

Project: The Department is proposing to construct an approximately 13.1 mile high occupancy vehicle (HOV) lane along westbound Interstate 580 in Alameda County between post miles 8.29 and 21.43. Other Project elements include:

- Constructing a westbound auxiliary lane between the Vasco Road and First Street interchanges;
- Constructing a westbound auxiliary lane between the North Livermore and First Street interchanges;
- Constructing approximately 3,800 feet of auxiliary lane along westbound I-580 from the North Livermore on-ramp;

- Constructing approximately 4,800 feet of auxiliary lane along westbound I-580 from the Airway Boulevard on-ramp;
- Widening of the North Livermore Avenue undercrossing in both the east and westbound directions;
- Widening of the Dougherty undercrossing in the westbound direction;
- Constructing HOV lanes at the eastbound and westbound on-ramps at Greenville Road, Vasco Road, First Street, and North Livermore Avenue, and the westbound on-ramp at Airway Boulevard;
- Widening of shoulders to standard roadway widths by a minimum of 10 feet, at all I-580 mainline locations east of the San Ramon Road/Foothill Dougherty Road/Hopyard Road overcrossing to west of the Greenville road undercrossing. Shoulders will not be widened between San Ramon Road/Foothill Road and Dougherty Road/Hopyard Road, at the First Street interchange, and between the Hacienda Drive interchange and the Tassajara Creek Bridge; and
- An additional 4 feet of inside shoulder widening at most locations (14 feet, total) to accommodate California Highway Patrol enforcement areas, and wherever possible, construction of 4 feet of additional pavement width on the outside shoulders (14 feet, total) in anticipation of a future high-occupancy toll lane project.

Jurisdictional Wetlands and Waters Impacts: Project implementation would result in the permanent fill or shading of approximately 0.042 acres of jurisdictional seasonal freshwater wetlands, the permanent shading of approximately 113 linear feet (0.072 acres) of jurisdictional waters, and the permanent fill of approximately 30 linear feet (and 0.030 acres) of jurisdictional waters. Permanent Project impacts are summarized below in Table 1, *Summary of Permanent Impacts.*

Approximately 756 linear feet (0.445 acres) of jurisdictional waters would be temporarily impacted due to diversion of creek flows in order to provide dry in-channel work areas. equipment staging and construction access. Temporary Project impacts are summarized below in Table 2, *Summary of Temporary Impacts.*

Table 1: Summary of Permanent Impacts

Activity	Jurisdictional Feature Impacted (Feature ID)	Acreage and/or Linear Footage of Permanent Impact
Covering and shading of existing concrete, bed, bank and channel due to roadway widening	Tassajara Creek (PC-5)	60 linear feet (0.024 acres)
Widening of bridge deck to cause loss of wetland due to shading	Emergent Wetland at Arroyo Las Positas-West (EW-8)	0.023 acres
Covering and shading of channel due to roadway widening	Arroyo Las Positas-East (PC-2)	43 linear feet (0.041 acres)
Covering and shading of channel	Arroyo Las Positas-West (PC-3)	10 linear feet (0.007 acres)

Activity	Jurisdictional Feature Impacted (Feature ID)	Acreage and/or Linear Footage of Permanent Impact
due to roadway widening		
Fill of earthen channel due to extension of concrete apron and construction of bank armoring in earthen channel	Arroyo Seco (PC-1)	30 linear feet (0.028 acres)
Widening of roadway to fill wetlands.	Seasonal Wetland (SW-2)	0.015 acres
Widening of roadway to fill wetlands	Emergent Wetland (EW-3)	0.004 acres
	Total:	0.042 acres of wetland impacts due to filling or shading; 113 linear feet (0.072 acres) of creek shading; 30 linear feet (0.028 acres) of creek impacts due to filling

Table 2: Summary of Temporary Impacts

Activity	Jurisdictional Feature Impacted	Acreage and/or Linear Footage of Temporary Impact
Temporary access to widen bridge and diversion of stream flow within existing concrete bed, bank and channel	Tassajara Creek (PC-5)	243 linear feet (0.167 acres)
Stream diversion for construction access	Arroyo Las Positas-West (PC-3)	193 linear feet (0.133 acres)
Stream diversion for construction access	Arroyo Las Positas-East (PC-2)	250 linear feet (0.139 acres)
Stream diversion of existing concrete bed, bank and channel for construction access	Arroyo Seco (PC-1)	70 linear feet (0.006 acres)
	Total:	756 linear feet (0.445 acres)

Roadway Pollutant Impacts: Project implementation would result in approximately 46.2 acres of added and reworked impervious area. Stormwater runoff from impervious areas may contain hydrocarbons, metals, volatile organic compounds, trash, and sediment at levels that may significantly impact jurisdictional waters if left untreated.

Hydromodification impacts: Added impervious areas may result in alterations to existing hydrologic regimes, resulting in erosion and/or changes of sediment transport in receiving waters (hydromodification). Project implementation would result in approximately 23.0 acres of added impervious area and therefore the Department is required to evaluate and mitigate potential

hydromodification impacts. The Department evaluated susceptibility for hydromodification impacts to all receiving waters within the Project limits. The Department has identified receiving waters susceptible to hydromodification impacts and has proposed mitigation as appropriate (see Hydromodification Mitigation, below).

Jurisdictional Wetlands and Waters Mitigation: To mitigate for impacts to approximately 0.042 acres of jurisdictional seasonal wetlands and 143 linear feet of jurisdictional waters, the Department shall create 0.14 acres of seasonal wetland and enhance 113 linear feet of riparian channel on Cayetano Creek at the Eagle Ridge Preserve in Livermore (see Table 3, below). The Eagle Ridge Preserve is located approximately two miles north of the Project limits between North Livermore Avenue and Collier Canyon Road. The Department has submitted a Mitigation and Monitoring Plan for the Eagle Ridge Preserve Property (MMP), dated November 2010, that includes plans for 0.20 acres of wetland creation and 287 linear feet of riparian enhancement. This certification requires the Department submit a map showing exactly which portions of the wetland creation and riparian enhancement areas described in the MMP are proposed to meet the mitigation requirements of this certification (see condition no. 5).

Table 3: Mitigation for Proposed Permanent Impacts

Activity	Jurisdictional Feature Impacted (Feature ID)	Acreage and/or Linear Footage of Permanent Impact	Mitigation for Permanent Impacts
Covering and shading of existing concrete, bed, bank and channel due to roadway widening	Tassajara Creek (PC-5)	60 linear feet (0.024 acres)	60 linear feet of riparian enhancement at the Eagle Ridge Preserve
Widening of bridge deck to cause loss of wetland due to shading	Emergent Wetland at Arroyo Las Positas-West (EW-8)	0.023 acres	0.046 acres of wetland creation at the Eagle Ridge Preserve
Covering and shading of channel due to roadway widening	Arroyo Las Positas-East (PC-2)	43 linear feet (0.041 acres)	43 linear feet of riparian enhancement at off-site mitigation at the Eagle Ridge Preserve
Covering and shading of channel due to roadway widening	Arroyo Las Positas-West (PC-3)	10 linear feet (0.007 acres)	10 linear feet of riparian enhancement at off-site mitigation at the Eagle Ridge Preserve
Fill of earthen channel due to extension of concrete apron and construction of bank armoring in earthen channel	Arroyo Seco (PC-1)	30 linear feet (0.028 acres)	0.056 acres of wetland creation at the Eagle Ridge Preserve

Activity	Jurisdictional Feature Impacted (Feature ID)	Acreage and/or Linear Footage of Permanent Impact	Mitigation for Permanent Impacts
Widening of roadway to fill wetlands.	Seasonal Wetland (SW-2)	0.015 acres	0.030 acres off-site mitigation at the Eagle Ridge Preserve
Widening of roadway to fill wetlands	Emergent Wetland (EW-3)	0.004 acres	0.008 acres off-site mitigation at the Eagle Ridge Preserve
	Total:	0.042 acres of wetland impacts due to filling or shading; 113 linear feet of creek shading; 30 linear feet of creek impacts due to filling	0.140 acres of wetland creation and 113 linear feet of riparian channel enhancement at Eagle Ridge Preserve

To mitigate for temporary impacts to State waters as a result of diversion, the Department shall restore the creek beds and temporarily dewatered areas to their original morphological and vegetated condition. A diversion plan shall be submitted to and found acceptable to Water Board staff prior to commencement of any diversion activities at Arroyo Las Positas and Arroyo Seco (see condition no. 11)

Roadway Pollutant Mitigation: As mitigation for increased pollutant loads associated with impervious areas, the Department shall provide treatment of stormwater runoff from approximately 46.2 acres of impervious area using 24 compost-amended biofiltration strips and 12 bioretention swales. The swales and strips shall be installed per the plans included in Attachment A, *Biofiltration Swale and Strip Design and Soil Plans and Specifications*.

The following biofiltration strips and corresponding locations will mitigate water quality impacts resulting from Project implementation:

BMP ID No.	From Post Mile	To Post Mile	Treated Impervious Area (ac)
1	21.26	21.33	0.90
2	21.22	21.29	0.76
3	19.42	19.49	0.97
4	19.33	19.43	0.98
5	19.22	19.33	1.02
6	18.88	19.01	1.85
7	18.84	18.88	0.45
8	18.71	18.76	0.52
9	18.60	18.73	1.52
10	18.05	18.28	3.18
11	17.98	18.04	0.69
12	17.82	17.92	1.11
13	16.93	17.06	2.61
14	16.80	16.82	0.94

BMP ID No.	From Post Mile	To Post Mile	Treated Impervious Area (ac)
15	16.60	16.66	0.70
16	15.01	15.15	1.89
17	14.86	14.94	0.83
18	14.20	14.25	0.50
19	13.97	14.07	0.84
20	13.84	13.88	0.31
21	13.42	13.59	2.07
22	10.71	10.80	1.00
23	10.63	10.70	0.41
24	9.78	9.92	1.72
		total:	27.8

The following bioretention swales and corresponding locations will mitigate water quality impacts resulting from Project implementation:

BMP ID No.	Located at Post Mile	Treated Impervious Area (ac)
1	21.33	0.43
2	20.88	0.43
3	18.58	0.18
4	13.87	0.23
5	13.45	0.32
6	13.17	0.32
7	13.14	0.50
8	11.06	0.61
9	10.56	9.08
10	9.15	5.43
11	8.49	0.28
12	8.48	0.61
	total:	18.4

Hydromodification Mitigation: To mitigate for catchments susceptible to hydromodification impacts, the Department shall utilize the 24 biofiltration strips and twelve bioretention swales, as well as one detention basin planned in the northwest quadrant of the Vasco Road/I-580 interchange, to control stormwater flow volume and duration from the Project area.

California Wetlands Portal: It has been determined through regional, state, and national studies that tracking of mitigation/restoration projects must be improved to better assess the performance of these projects, following monitoring periods that last several years. In addition, to effectively carry out the State's Wetlands Conservation Policy of no net loss to wetlands, the State needs to closely track both wetland losses and mitigation/restoration project success. Therefore, we require that the Department use the California Wetlands Form to provide Project information related to impacts and mitigation/restoration measures (see Condition No. 12 of this

Certification). An electronic copy of the form and instructions can be downloaded at: http://www.waterboards.ca.gov/sanfranciscobay/certs.shtml. Project information concerning impacts and mitigation/restoration will be made available at the web link: http://www.californiawetlands.net.

CEQA Compliance: The Project was evaluated pursuant to the requirements of the California Environmental Quality Act (CEQA) in a Mitigated Negative Declaration. The Department filed a Notice of Determination on February 4, 2010, that the Project would not have a significant effect on the environment.

Certification: I hereby issue an order certifying that any discharge from the referenced project will comply with the applicable provisions of sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act, and with other applicable requirements of State law. This discharge is also regulated under State Water Resources Control Board Order No. 2003 - 0017 – DWQ, "General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received State Water Quality Certification" which requires compliance with all conditions of this Water Quality Certification. The following conditions are associated with this certification:

1. The Project shall be constructed in conformance with the Project Description described in this certification and certification application materials. Any change in the Project may require modification to the certification and shall be reported to the Water Board;

2. The Department shall install 24 compost-amended biofiltration strips and 12 biofiltration swales to treat stormwater contaminants from no less than 46 acres of impervious area. Swale and strips shall be installed and consistent with the information summarized above in "Roadway Pollutant Mitigation," and in Attachment A, *Biofiltration Swale and Strip Design and Soil Plans and Specifications*. Within 60 days of completing the biofiltration swales and strips, the Department shall submit an as-built report to the Water Board. The report shall document that swales and strips were constructed per the plans in certification Attachment A;

3. The Department shall construct a detention basin in the northwest quadrant of the Vasco Road/I-580 interchange to mitigate for potential hydromodification impacts associated with added impervious area. Within 60 days of completing the detention basin, the Department shall submit an as-built report to the Water Board;

4. The Department shall create no less than 0.14 acres of seasonal wetlands and enhance no less than 113 linear feet of riparian channel along the west branch of Cayetano Creek at the Eagle Ridge Preserve mitigation site in Livermore no later than December 1, 2011. Creation and enhancement activities, and monitoring and reporting shall be implemented consistent with the *Mitigation and Monitoring Plan for the Eagle Ridge Preserve Property*

(MMP), dated November 2010. Implementation, monitoring and reporting requirements shall include:

a. Planting of valley oaks, California black walnut, red and arroyo willows, California wild rose and blackberry, and wild lilac to enhance the West Cayeano Creek riparian area;
b. Implementation of an invasive species removal program for wetland and riparian areas;
c. Seeding of created wetland areas with a seed mix native to the local area;
d. The use of onsite wetlands, *W1*, *W2*, and *W3*, as reference sites for the proposed wetland creation activities. Biological baseline monitoring shall be conducted and include evaluation of soil, hydrology and vegetation conditions, as well as assessment of habitat functions and values;
e. Application of the following wetland creation performance standards:
    i. The frequency of inundation and/or saturation of the wetlands shall be a minimum of 18.25 continuous days per year;
    ii. Native vegetative cover in created wetlands shall be no less than 90 percent by monitoring Year 5;
    iii. Total wetlands vegetation cover shall average greater than 65% of reference wetlands by monitoring Year 3, and 80% by monitoring Year 5;
f. Application of the following riparian enhancement performance standards:
    i. At no time during the 10-year monitoring period shall the number of riparian plant species remaining from the original planting be lower than 80% cumulative survival. If fewer than 80% of the original plantings remain at any time during the monitoring period, replanting shall be conducted so that the original plantings are replaced;
    ii. Site maintenance shall be conducted to assess weed control, irrigation adequacy, trash removal, and vandalism; and
    iii. The health and vigor of each planted riparian species will be assessed using plant color, seed development, new growth, herbivory, drought stress, fungal/insect infestation, and physical damage factors;
g. Submittal of annual monitoring reports for no less than 5 years for wetland creation activities, and no less than 10 years for riparian habitat activities. The Department may limit submittal of annual monitoring reports to years 0, 1, 3, 5, 7, 9, and 10. The Year 0 report shall be submitted no later than April 1, 2012. All other monitoring reports shall be submitted no later than February 15 of the year following the subject monitoring activities; and
h. Designation of permanent photo-monitoring points and submittal of a Year 0 report. Following installation of the mitigation, the immediate post-construction condition of the site shall be photo-documented and a report shall be submitted to the Water Board. The report shall include the post-construction photographs, the as-built plan based on the post-construction survey, a description of the construction activities, including any adjustments to the final grading plan, and a

map with the locations of the photo-documentation points clearly marked (Year 0 report);

5. No later than 15 days from the issuance date of this certification, the Department shall submit a map of the riparian enhancement and wetland creation areas, subject to the acceptance of Water Board staff. The map shall delineate the proposed 113 linear foot section of riparian enhancement at West Cayetano Creek and the 0.14 acres of wetland creation that the Department is proposing as mitigation for Project impacts;

6. Any planting established as part of the Project off-site mitigation plan shall not be considered successfully established until supplemental irrigation systems have been terminated for two or more full growing seasons;

7. Off-site mitigation shall not be considered to satisfy the conditions of this certification until a final mitigation success report has been submitted to the Water Board and found acceptable by the Executive Officer;

8. The Department shall prepare and submit a Grazing Management Plan, subject to the acceptance of Water Board staff, for grazing activities that may affect the off-site wetland creation and riparian habitat restoration activities. Grazing is prohibited within the wetland creation and riparian habitat enhancement areas until a Grazing Management Plan has been found acceptable by Water Board staff;

9. Not later than January 1, 2012, the Department shall submit a copy of the Conservation Easement for the Eagle Ridge Preserve mitigation site to the Water Board Executive Officer for review and approval. The language of the Conservation Easement shall follow the CDFG and/or USFWS templates for conservation easements and shall identify the third-party non-profit entity, qualified to hold a conservation easement under California Civil Code section 815.3, to whom the easement would be granted. The easement should include provisions and responsibilities of the Department and the designated land trust organization, including any future transfers of the easement or fee interest that may be anticipated, and should grant access rights to Water Board staff. The easement should also specify the purposes for which it is established and should include a list of prohibited activities that are inconsistent with the maintenance of the mitigation site. Failure to provide an acceptable conservation easement by January 1, 2012, may result in an enforcement order and requirement to provide additional mitigation;

10. Construction of temporary work platforms within Arroyo Seco and Arroyo Las Positas are prohibited unless a proposal has first been submitted to and found acceptable by Water Board staff. Diversion of Arroyo Las Positas and Arroyo Seco flows are prohibited unless a diversion plan has first been submitted to and found acceptable by Water Board staff. Any

diversion plan shall include a plan to have the diversion system removed by October 1 and installed no sooner than April 15;

11. The Department is required to use the standard California Wetlands Form to provide Project information describing impacts and restoration measures within 45 days from the date of this certification. An electronic copy of the form can be downloaded at: http://www.waterboards.ca.gov/sanfranciscobay/certs.shtml. The completed form shall be submitted electronically habitatdata@waterboards.ca.gov or shall be submitted as a hard copy to both (1) the address on the letterhead (or to the Water Board), to the attention of California Wetlands Portal and (2) to the San Francisco Estuary Institute, 7770 Pardee Lane, 2nd Floor, Oakland, CA, 94621 to the attention of Mike May;

12. The Department shall adhere to the Standard conditions imposed by Nationwide Permit No. 14, issued to the Department by the Corps, and to the Biological Opinion and any subsequent amendments issued to the Department by the United States Fish and Wildlife Service (File no. 81420-2008-F-0487-2);

13. All temporarily disturbed areas shall be restored to pre-construction or enhanced conditions, using only native plant species, immediately following cessation of construction activities in those areas;

14. Except as expressly allowed in this Certification, the discharge, or creation of the potential for discharge, to waters of the State of any construction wastes and/or soil materials including cement, fresh concrete, or washings thereof, silts, clay, sand, oil or petroleum products and other organic materials to waters of the State is prohibited;

15. Erosion control measures shall be utilized throughout all phases of construction where sediment runoff from disturbed areas threatens to enter waters of the State, regardless of date. At no time shall silt-laden runoff be allowed to enter waters of the State;

16. Except as expressly allowed in this certification, no equipment shall be operated in areas of flowing or standing water. No fueling, cleaning or maintenance of vehicles or equipment shall take place within jurisdictional waters or within any areas where an accidental discharge to waters of the State may occur;

17. This certification does not allow for the take, or incidental take, of any special status species. The Department shall use the appropriate protocols, as approved by the California Department of Fish and Game and the U.S. Fish and Wildlife Service, to ensure that Project activities do not impact the Beneficial Use of the Preservation of Rare and Endangered Species;

18. The Department shall maintain a copy of this water quality certification at the Project site so as to be available at all times to site operating personnel. It is the responsibility of the

Department to assure that all personnel (employees, contractors, and subcontractors) are adequately informed and trained regarding the conditions of this certification;

19. This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Section 13330 of the California Water Code (CWC) and Section 3867 of Title 23 of the California Code of Regulations(23 CCR);

20. This certification action does not apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license, unless the pertinent certification application was filed pursuant to California Code of Regulations (CCR) Title 23, Subsection 3855(b) and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought; and

21. Certification is conditioned upon total payment of the full fee required in State regulations (23 CCR Section 3833). Water Board staff received full payment of $640.00 on August 17, 2010.

We anticipate your cooperation in implementing these conditions. However, please be advised that any violation of water quality certification conditions is a violation of State law and subject to administrative civil liability pursuant to California Water Code (CWC) section 13350. Failure to respond, inadequate response, late response, or failure to meet any condition of this certification may subject you to civil liability imposed by the Water Board to a maximum of $5,000 per day per violation or $10 for each gallon of waste discharged in violation of this certification.

Conditions 2, 4, 5, and 8-11 are requirements for information or reports. Any requirement for a report made as a condition to this action is a formal requirement pursuant to CWC section 13267, and failure or refusal to provide, or falsification of such required report is subject to civil liability as described in CWC section 13268.

We anticipate no further action on this request. Should new information come to our attention that indicates a water quality problem with this project, the Water Board may issue Waste Discharge Requirements pursuant to 23 CCR Section 3857.

If you have any question, please contact Brendan Thompson at (510) 622-2506, or via e-mail to BThompson@waterboards.ca.gov.

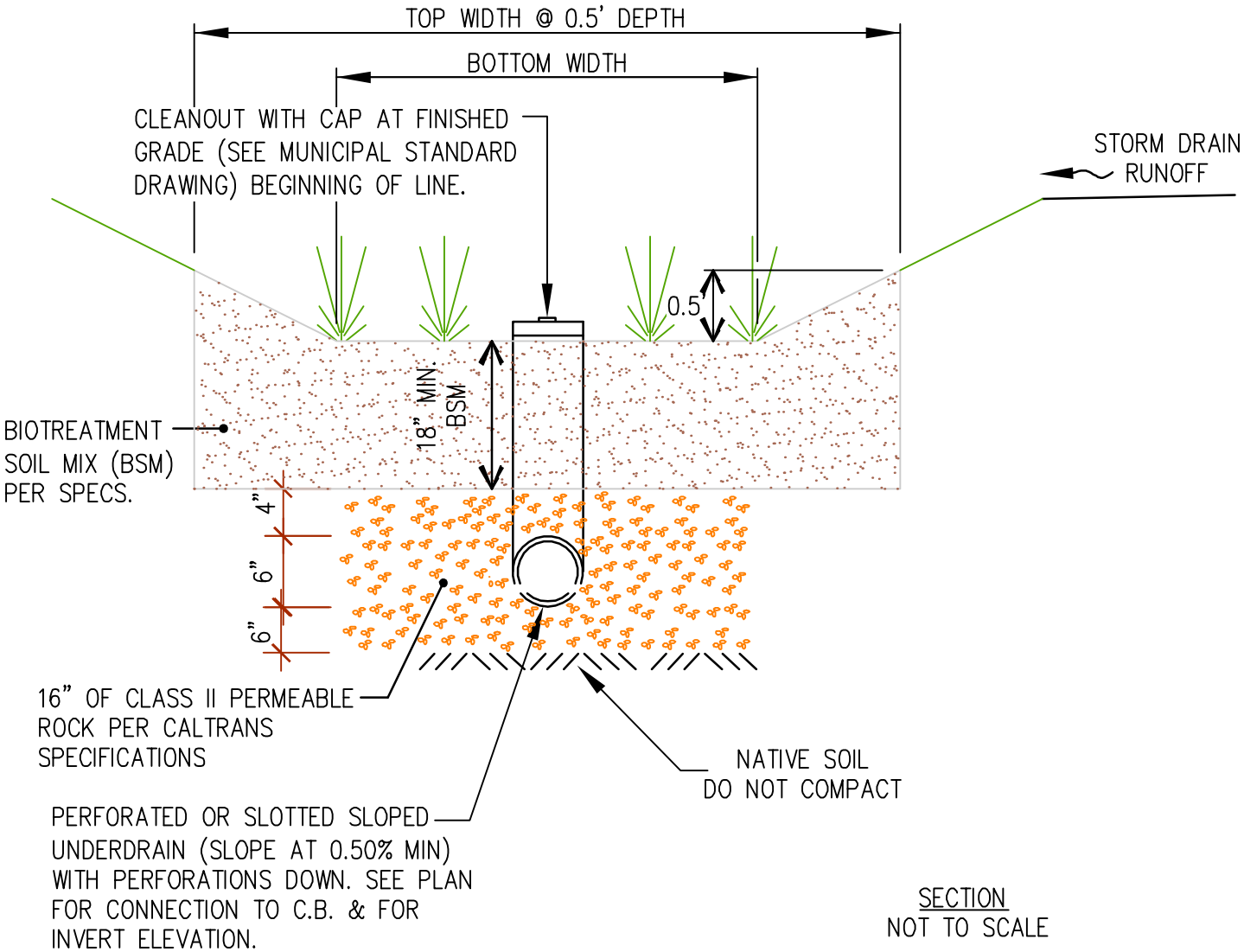
Sincerely,

Bruce H. Wolfe
Executive Officer

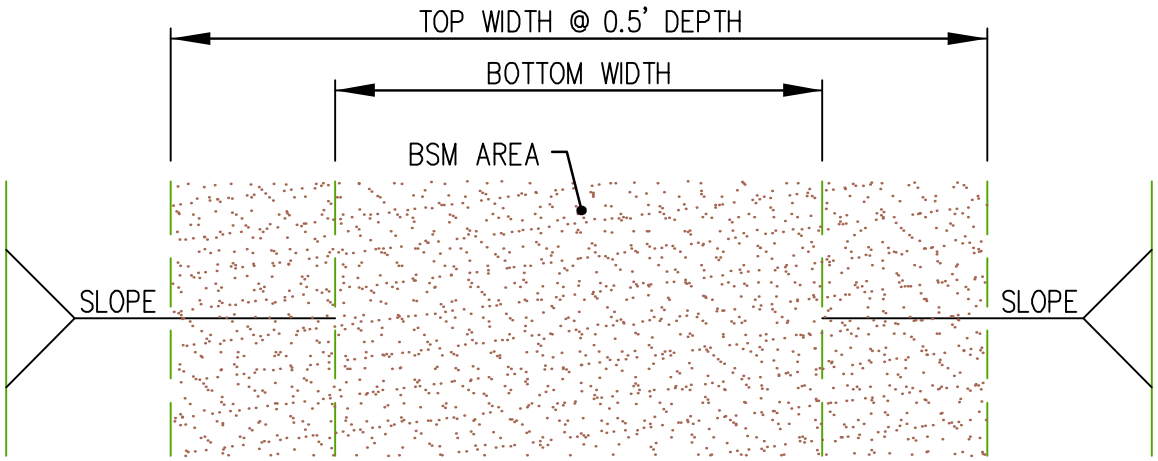
cc (via e-mail): Mr. Bill Orme SWRCB-DWQ
Mr. Hal Durio, Regulatory Branch, USACE
Ms. Jane Hicks, Regulatory Branch, USACE
Ms. Holly Costa, Regulatory Branch, USACE
Mr. Cameron Johnson, USACE
Ms. Marcia Grefsrud, CDFG
Mr. Dale Bowyer, Water Board
Mr. Cyrus Vafai, Caltrans
Mr. Hardeep Takhar, Caltrans
Mr. Jason Brush, USEPA
Mr. Jerry Roe, USFWS
Mr. Liam Davis, CDFG

Attachment A

Biofiltration Swale and Strip Design and Soil Plans and Specifications



SECTION
NOT TO SCALE



PLAN
NOT TO SCALE

EXHIBIT A

580 WESTBOUND HOV IMPROVEMENTS
LINEAR BIORETENTION SWALE

JOB NO:	**20077061**
DATE:	**APRIL, 2011**
BY:	**R.A.M**
REV:	**ED BOSCACCI**

BkF

DRAWING NAME: J:\Eng07\077061\dwg\Exhibits\401-Certification\2011-04\Bioretention.dwg
PLOT DATE: 04-28-11 PLOTTED BY: muro

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	580	R14.6/R21.6		

REGISTERED CIVIL ENGINEER — 5/20/2011 DATE

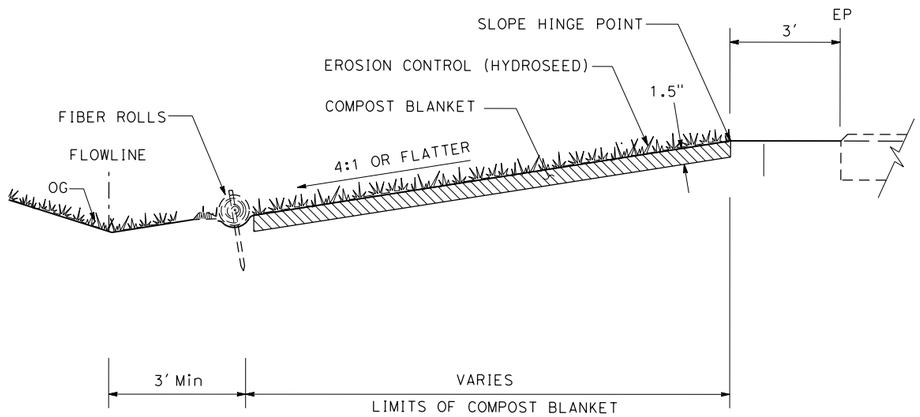
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — DAVID M. DICKINSON — No. 50815 — Exp. 9-30-11 — CIVIL — STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

WMH CORPORATION
555 12th St
Suite 1900
Oakland, CA 94607

ALAMEDA CTC
1333 Broadway
Suite 220
Oakland, CA 94612



BIOFILTRATION STRIP

EROSION CONTROL DETAILS

NO SCALE

ECD-1

REVISED BY	DATE REVISED
AV	02/22/10
YF	08/30/10
YF	04/18/11

CALCULATED-DESIGNED BY: Y. FAROUQI \ A. VALASQUEZ
CHECKED BY: DAVID M. DICKINSON

CONSULTANT FUNCTIONAL SUPERVISOR: TIMOTHY J. LEE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans®

LAST REVISION 00-00-00
DATE PLOTTED => 5/23/2011
TIME PLOTTED => 2:51:20 PM

X:\580 WB HOV\000_CAD\Sheets\West of Sta 540+00\009-Erosion Control\GF-Details\429087gf001.dgn

BORDER LAST REVISED 7/2/2010

USERNAME => yfarouqi
DGN FILE => 429087gf001.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0735

PROJECT NUMBER & PHASE 04000202111

10-1.__ IMPORTED BIOFILTRATION SOIL

GENERAL

Summary

This work includes furnishing, and applying imported biofiltration soil.

Submittals

Compost: Before mixing compost with sand and topsoil, submit:

1. A Certificate of Compliance from the compost supplier in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.
2. A copy of the compost producer's compost technical data sheet. The compost technical data sheet must include:

    2.1. Laboratory analytical test results
    2.2. List of product ingredients

3. A copy of the compost producers Seal of Testing Assurance certification.

Imported biofiltration soil: Imported biofiltration soil must be accompanied by a Certificate of Compliance, from the soil supplier, in conformance with the provisions in Section 6-1.07, “Certificates of Compliance,” of the Standard Specifications.

Quality Control and Assurance

Saturated hydraulic conductivity for imported biofiltration soil must be at least 5 inches per hour.

MATERIAL

Imported biofiltration soil consists of a uniform mixture of sand, compost, and topsoil. The ratio of the components of imported biofiltration soil by volume must consist of two-parts sand; one-part compost; 0.5-part topsoil.

Sand

Sand must be free of wood, waste, coating such as clay, stone dust, carbonate, or any other deleterious material. All aggregate passing No. 200 sieve size must be non-plastic. Sand must be graded within the following limits:

Sieve Sizes	Percentage Passing
3/8"	100
No. 4	90 - 100
No. 8	70 - 100
No. 16	40 - 95
No. 30	15 - 70
No. 40	5-55
No. 100	0 - 15
No. 200	0 - 5

Grain size analysis results of the sand component must be performed in accordance with ASTM D 422, Standard Test Method for Particle Size Analysis of Soils.

Compost

The compost producer must be fully permitted as specified under the California Integrated Waste Management Board, Local Enforcement Agencies and any other State and Local Agencies that regulate solid waste facilities. If exempt from State permitting requirements, the composting facility must certify that it follows guidelines and procedures for production of compost meeting the environmental health standards of Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7.

The compost producer must be a participant in the United States Composting Council's Seal of Testing Assurance program.

Compost may be derived from any single or mixture of any of the following feedstock materials:

1. Green material consisting of chipped, shredded, or ground vegetation; or clean processed recycled wood products
2. Biosolids
3. Manure
4. Mixed food waste

Compost feedstock materials such that weed seeds, pathogens and deleterious materials are reduced as specified under Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7, Section 17868.3.

Compost must not be derived from mixed municipal solid waste and must be reasonably free of visible contaminates. Compost must not contain paint, petroleum products, pesticides or any other chemical residues harmful to animal life or plant growth. Compost must not possess objectionable odors.

Metal concentrations in compost must not exceed the maximum metal concentrations listed in Title 14, California Code of Regulations, Division 7, Chapter 3.1, Section 17868.2.

Compost must comply with the following:

Physical and Chemical Requirements

Property	Test Method	Requirement
pH	TMECC 04.11-A Elastometric pH 1:5 Slurry Method pH Units	6.5–8.0
Soluble Salts	TMECC 04.10-A Electrical Conductivity 1:5 Slurry Method dS/m (mmhos/cm)	0–6.0
Moisture Content	TMECC 03.09-A Total Solids & Moisture at 70+/- 5 deg C % Wet Weight Basis	30–60
Organic Matter Content	TMECC 05.07-A Loss-On-Ignition Organic Matter Method (LOI) % Dry Weight Basis	35–75
Maturity	TMECC 05.05-A Germination and Vigor Seed Emergence Seedling Vigor % Relative to Positive Control	 80 or Above 80 or Above
Stability	TMECC 05.08-B Carbon Dioxide Evolution Rate mg CO_2-C/g OM per day	 8 or below
Particle Size	TMECC 02.02-B Sample Sieving for Aggregate Size Classification % Dry Weight Basis	Inches % Passing 3 100% 1/2 0 – 95% 1/4 0-75% Max. Length 4 inches
Pathogen	TMECC 07.01-B Fecal Coliform Bacteria < 1000 MPN/gram dry wt.	Pass
Pathogen	TMECC 07.01-B Salmonella < 3 MPN/4 grams dry wt.	Pass
Physical Contaminants	TMECC 02.02-C Man Made Inert Removal and Classification: Plastic, Glass and Metal % > 4mm fraction	Combined Total: < 1.0
Physical Contaminants	TMECC 02.02-C Man Made Inert Removal and Classification: Sharps (Sewing needles, straight pins and hypodermic needles) % > 4mm fraction	None Detected

NOTE: TMECC refers to "Test Methods for the Examination of Composting and Compost," published by the United States Department of Agriculture and the United States Compost Council (USCC).

Topsoil

Topsoil must be free of wood, waste or other deleterious material. The topsoil texture must be loamy. Overall dry weight percentages must be 60 to 90 percent sand, with less than 20 percent passing the No.200 sieve, less than 5 percent clay, and no gravel.

CONSTRUCTION

Comply with Section 20-3.02, "Preparation," of the Standard Specifications.

Place imported biofiltration soil in lifts 8 to 12 inches. Lifts are not to be compacted.

MEASUREMENT AND PAYMENT

Quantity of imported biofiltration soil is measured by the cubic yard.

The contract unit price paid per cubic yard for imported biofiltration soil includes full compensation for furnishing all labor, materials, tools, equipment, incidentals, and for doing all the work involved in imported biofiltration soil, including testing, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

12. Risk Assessment

BKF
ENGINEERS / SURVEYORS / PLANNERS

255 Shoreline Drive, Suite 200
Redwood City, CA 94065
(650) 482-6300, Fax (650) 482-6399

TECHNICAL MEMORANDUM

Date: November 3, 2011

BKF No.: 20077061-10

To: Wing K Lok
Transportation Engineer
Caltrans District 4
Mail Station 9C
111 Grand Avenue
PO Box 23660
Oakland, CA 94623

Copies To:

From: Ramon Alvarez-Muro

Subject: I-580 Westbound HOV Improvements – Eastern Segment
SWPPP Risk Factor Analysis

I-580 HOV Improvements – Eastern Segment
SWPPP Risk Factor Analysis

The following documents the risk level for compliance with the construction general permit for I-580 Westbound HOV Improvements through the city of Livermore, California and unincorporated Alameda County. The project area and disturbed soil areas are shown in Figure 1 through 9.

Sediment Risk Factor

The Sediment Risk Factor is the combination of three factors; rainfall erosivity (R-Factor), soil erodibility (K-Factor), and the effect of topography (LS-Factor).

Rainfall erosivity factor (R-Factor) is calculated based on amount of anticipated rainfall during period of construction. The start date for construction is estimated as October 2012 and the end date October 2014. The rainfall erosivity factor was determined from a link to an R-Factor calculator as referenced from the Risk Determination Worksheet provided on the State Water Resource Control Board website. This is the calculator the Board is requiring Caltrans to use to determine R-Factor. Both documents, the calculator output and worksheet, are attached. R-Factor for the project is 41.97.

Soil erodibility factor (K-Factor) is based on the texture of the soil at the project site. K-Factor was determined using a web soil survey tool from the National Resources Conservation Services (NRCS) website. The results of the soil survey are attached. K-Factor for the project is 0.29.

The topography (LS-Factor) is based on the effect of hillslope-length and the hillslope-gradient. The length of sheet and rill flow and slope within the soil disturbed limits were calculated at cross sections spaced at 500 foot intervals per Caltrans Project Risk Determination Guidance Section 2.2. A weighted average (by length) LS-Factor is computed for each cross section using the table provided in the Risk Determination Worksheet. The average of all the cross sections LS-Factors is used for the project site. The LS-Factor for the project is 1.05. Weighted average calculation for LS-Factor are attached.

The Site Sediment Risk Factor is Low, 13 tons/acre.

Receiving Water Risk Factor

The Receiving Water Risk Factor is based on the characteristics of the receiving watershed and poses the question, Does the disturbed area discharge (either directly or indirectly to a 303(d)-listed waterbody impaired by sediment or with designated beneficial uses of spawn cold & migritory? The project runoff flows to various creeks and flood control canals upstream of the confluence with the Alamo Canal eventually flowing to the Alameda Creek. Alameda Creek is identified as having existing beneficial use of spawn, cold & migratory on Table 2-1: Beneficial Uses of Water Bodies in the SF Bay Region. The corresponding page from Table 2-1 is attached.

The Receiving Water Risk Factor is High.

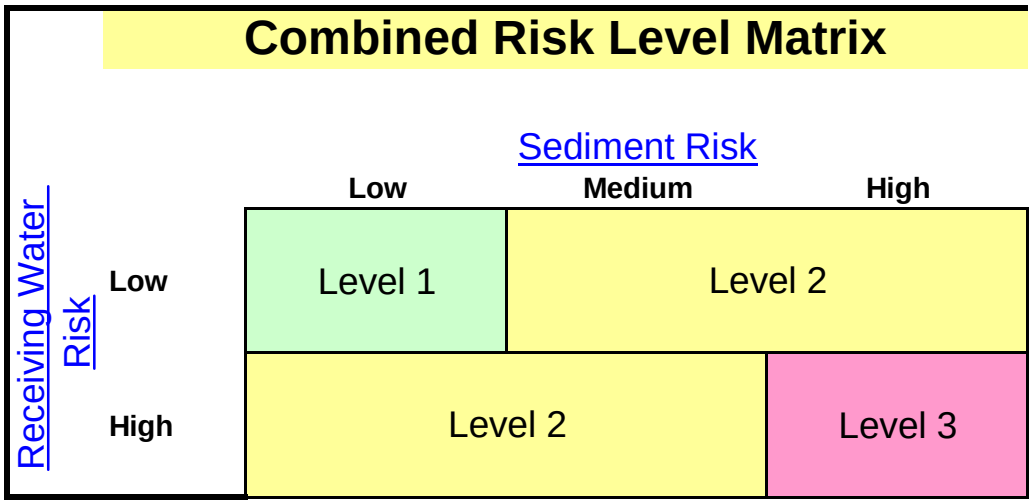
SWPPP Risk Factor

In compliance with the procedures outlined in the Risk Determination Worksheet, I-580 Westbound HOV Eastern Segment Improvements are classified as a Risk Level 2 project.

	A	B	C
1	**Sediment Risk Factor Worksheet**		**Entry**
2	**A) R Factor**		
3	Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.		
4	http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm		
5	**R Factor Value**		41.92
6	**B) K Factor (weighted average, by area, for all site soils)**		
7	The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.		
8	Site-specific K factor guidance		
9	**K Factor Value**		0.29
10	**C) LS Factor (weighted average, by area, for all slopes)**		
11	The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.		
12	LS Table		
13	**LS Factor Value**		1.05
14			
15	**Watershed Erosion Estimate (=RxKxLS) in tons/acre**		13
16	**Site Sediment Risk Factor**		**Low**
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			

Receiving Water (RW) Risk Factor Worksheet	Entry	Score
A. Watershed Characteristics	**yes/no**	
A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment** (For help with impaired waterbodies please visit the link below) or has a **USEPA approved TMDL implementation plan for sediment**?:	**Yes**	**High**
http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml		
OR		
A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? (For help please review the appropriate Regional Board Basin Plan)		
http://www.waterboards.ca.gov/waterboards_map.shtml		
Region 1 Basin Plan		
Region 2 Basin Plan		
Region 3 Basin Plan		
Region 4 Basin Plan		
Region 5 Basin Plan		
Region 6 Basin Plan		
Region 7 Basin Plan		
Region 8 Basin Plan		
Region 9 Basin Plan		

Combined Risk Level Matrix



Project Sediment Risk:	**Low**
Project RW Risk:	**High**
Project Combined Risk:	**Level 2**

Rainfall Erosivity Factor Calculator for Small Construction Sites

Facility Information

Facility Name: I-580 Westbound HOV Improvements – Eastern Segment
Start Date: 10/15/2012
End Date: 10/10/2014
Latitude: 37.7027
Longitutde: -121.7388

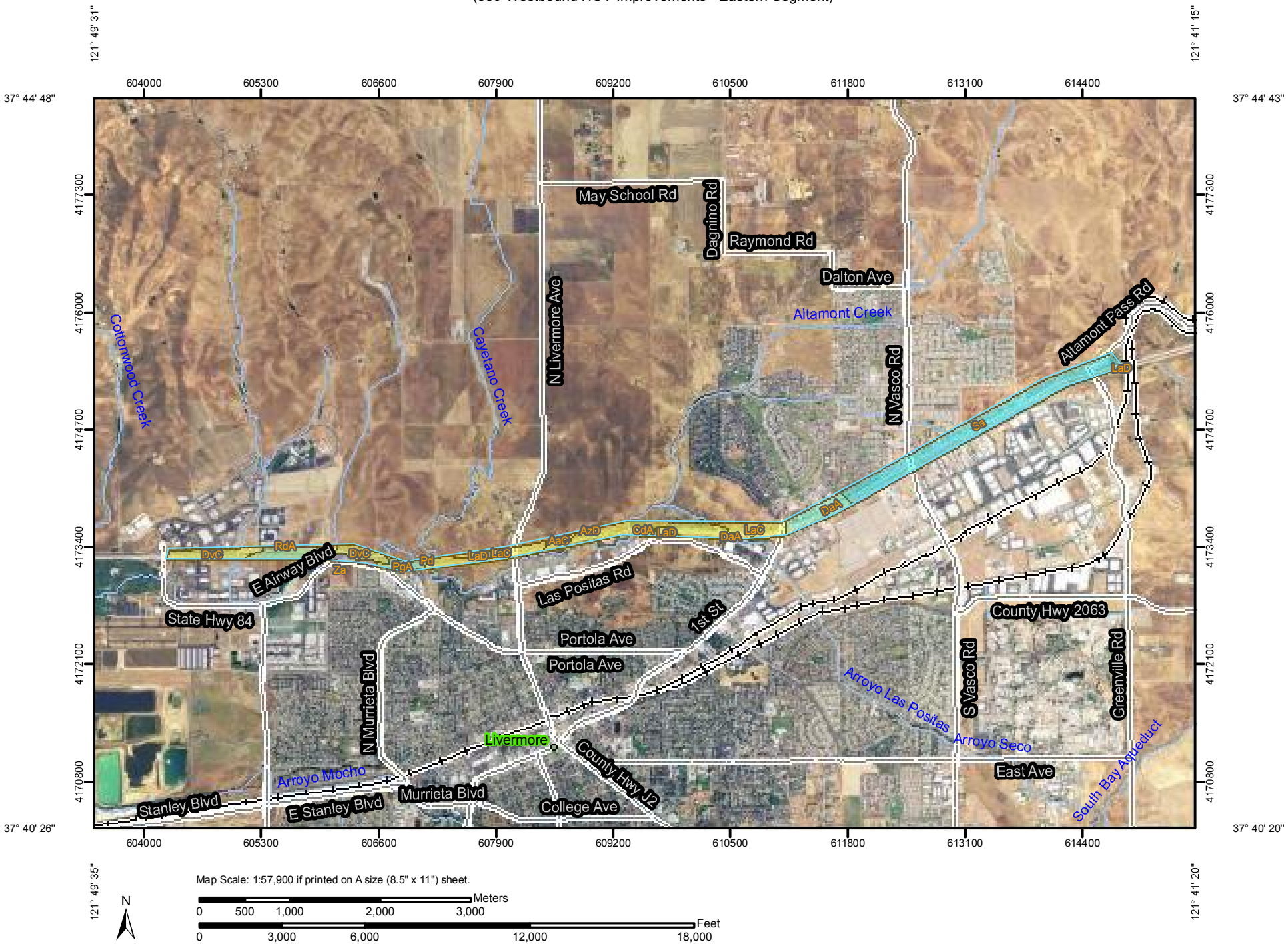
Erosivity Index Calculator Results

AN EROSIVITY INDEX VALUE OF **41.92** HAS BEEN DETERMINED FOR THE CONSTRUCTION PERIOD OF **10/15/2012** - **10/10/2014**.

A rainfall erosivity factor of 5.0 or greater has been calculated for your site and period of construction. **You do not qualify for a waiver from NPDES permitting requirements**.

Start Over

You will need Adobe Reader to view some of the files on this page. See EPA's PDF page to learn more.


121° 49' 31"
121° 41' 15"
37° 44' 48"
37° 44' 43"
604000
605300
606600
607900
609200
610500
611800
613100
614400
4177300
4176000
4174700
4173400
4172100
4170800
37° 40' 26"
37° 40' 20"
121° 49' 35"
121° 41' 20"
May School Rd
Dagnino Rd
Raymond Rd
Dalton Ave
Altamont Creek
Altamont Pass Rd
Cottonwood Creek
Cayetano Creek
N Livermore Ave
N Vasco Rd
LaD
Sa
DaA
DvC
RdA
DyC
Za
PgA
Pd
LaD
LaC
AaC
AzD
CdA
LaD
DaA
LaC
E Airway Blvd
State Hwy 84
Las Positas Rd
1st St
Portola Ave
Portola Ave
County Hwy 2063
S Vasco Rd
Greenville Rd
N Murrieta Blvd
Arroyo Las Positas
Arroyo Seco
Livermore
County Hwy J2
East Ave
Arroyo Mocho
Stanley Blvd
E Stanley Blvd
Murrieta Blvd
College Ave
South Bay Aqueduct
Map Scale: 1:57,900 if printed on A size (8.5" x 11") sheet.
N
Meters
0 500 1,000 2,000 3,000
Feet
0 3,000 6,000 12,000 18,000

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Soil Ratings
- .02
- .05
- .10
- .15
- .17
- .20
- .24
- .28
- .32
- .37
- .43
- .49
- .55
- .64
- Not rated or not available

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads

MAP INFORMATION

Map Scale: 1:57,900 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Alameda Area, California
Survey Area Data: Version 6, Jul 26, 2010

Date(s) aerial images were photographed: 6/13/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

K Factor, Rock Free

K Factor, Rock Free— Summary by Map Unit — Alameda Area, California (CA609)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AaC	Altamont clay, 3 to 15 percent slopes	.20	4.9	1.1%
AzD	Azule clay loam, 3 to 30 percent slopes	.28	0.1	0.0%
CdA	Clear Lake clay, drained, 0 to 3 percent slopes	.20	64.2	14.9%
DaA	Danville silty clay loam, 0 to 3 percent slopes	.32	36.9	8.5%
DvC	Diablo clay, very deep, 3 to 15 percent slopes	.20	46.3	10.7%
LaC	Linne clay loam, 3 to 15 percent slopes	.20	57.2	13.2%
LaD	Linne clay loam, 15 to 30 percent slopes	.20	14.6	3.4%
Pd	Pescadero clay	.28	0.4	0.1%
PgA	Pleasanton gravelly loam, 0 to 3 percent slopes	.32	15.8	3.7%
RdA	Rincon clay loam, 0 to 3 percent slopes	.28	24.2	5.6%
Rh	Riverwash		1.4	0.3%
Sa	San Ysidro loam	.37	154.8	35.9%
Za	Zamora silt loam, 0 to 4 percent slopes	.49	10.9	2.5%
Totals for Area of Interest			**431.6**	**100.0%**

Description

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kf (rock free)" indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

Layer Options: Surface Layer

I-580 Westbound HOV Improvements - Eastern Segment
Weighted LS Factor

Station	Line Segment 1			Line Segment 2			Line Segment 3					Weighted Ave by Length	Table Value
	Length ft	Slope	LxS	Length ft	Slope	LxS	Length ft	Slope	LxS	$S_1+S_2+S_3$	$L_1+L_2+L_3$	S	LS
545	7	0.05	0.35							0.050	7	0.05	0.23
550	6	0.05	0.30							0.050	6	0.05	0.23
555	36	0.10	3.60							0.100	36	0.10	0.91
560	56	0.05	2.80							0.050	56	0.05	0.46
565	26	0.04	1.04							0.040	26	0.04	0.26
570	20	0.12	2.40							0.120	20	0.12	0.71
575	26	0.02	0.52							0.020	26	0.02	0.16
580	15	0.03	0.45							0.030	15	0.03	0.17
585	50	0.02	1.00							0.020	50	0.02	0.21
590	21	0.33	6.93							0.330	21	0.33	1.86
595	55	0.12	6.60							0.120	55	0.12	1.15
600	18	0.16	2.88							0.160	18	0.16	0.67
605													
610	21	0.06	1.26							0.060	21	0.06	0.36
615	31	0.03	0.93							0.030	31	0.03	0.21
620	26	0.62	16.12							0.620	26	0.62	3.36
625	26	0.42	10.92							0.420	26	0.42	2.41
630	26	0.50	13.00							0.500	26	0.50	2.91
635	24	0.33	7.92							0.330	24	0.33	1.86
640	12	0.50	6.00							0.500	12	0.50	1.62
645	25	0.62	15.50							0.620	25	0.62	3.36
650				14	0.500	7.00				0.500	14	0.50	1.91
655	37	0.12	4.44							0.120	37	0.12	1.15
660	6	0.40	2.40							0.400	6	0.40	0.85
665	25	0.08	2.00							0.080	25	0.08	0.45
670	25	0.50	12.50							0.500	25	0.50	2.91
675	25	0.11	2.75							0.110	25	0.11	0.57
680	26	0.50	13.00							0.500	26	0.50	2.91
685	25	0.12	3.00							0.120	25	0.12	0.71
690	25	0.02	0.50							0.020	25	0.02	0.16
695	25	0.31	7.75							0.310	25	0.31	1.86
700	25	0.62	15.50							0.620	25	0.62	3.36
705	35	0.21	7.35							0.210	35	0.21	2.10
710	17	0.16	2.72							0.160	17	0.16	0.67
715	16	0.09	1.44							0.090	16	0.09	0.40
720	31	0.30	9.30							0.300	31	0.30	1.86
725	37	0.15	5.55							0.150	37	0.15	1.40
730	16	0.05	0.80							0.050	16	0.05	0.26
735	10	0.50	5.00							0.500	10	0.50	1.62
740	21	0.50	10.50							0.500	21	0.50	2.91
745	17	0.06	1.02	5	0.060	0.30				0.120	22	0.06	0.36
750	1	0.02	0.02	36	0.120	4.32				0.140	37	0.12	1.15
755	12	0.03	0.36	18	0.100	1.80				0.130	30	0.07	0.45
760													
765	30	0.06	1.80							0.060	30	0.06	0.36
770	28	0.02	0.56							0.020	28	0.02	0.16
775	30	0.28	8.40							0.280	30	0.28	1.86
780	31	0.14	4.34							0.140	31	0.14	0.98
785	27	0.14	3.78							0.140	27	0.14	0.85
790	24	0.15	3.60							0.150	24	0.15	0.98
795	12	0.06	0.72							0.060	12	0.06	0.26
800	20	0.05	1.00							0.050	20	0.05	0.31
805				42	0.070	2.94				0.070	42	0.07	0.54
810				18	0.070	1.26				0.070	18	0.07	0.32
815													
820	20	0.04	0.80							0.040	20	0.04	0.26
825	22	0.12	2.64							0.120	22	0.12	0.71
830	18	0.01	0.18							0.010	18	0.01	0.10
835	14	0.02	0.28							0.020	14	0.02	0.13
840													
845	6	0.03	0.18							0.030	6	0.03	0.17
850	15	0.02	0.30							0.020	15	0.02	0.13
855	21	0.03	0.63							0.030	21	0.03	0.21
860	30	0.06	1.80	20	0.120	2.40				0.180	50	0.08	0.70
865	23	0.10	2.30	7	0.020	0.14	17	0.380	6.46	0.500	47	0.19	2.10
870													
											Weighted Average LS Factor =		1.05

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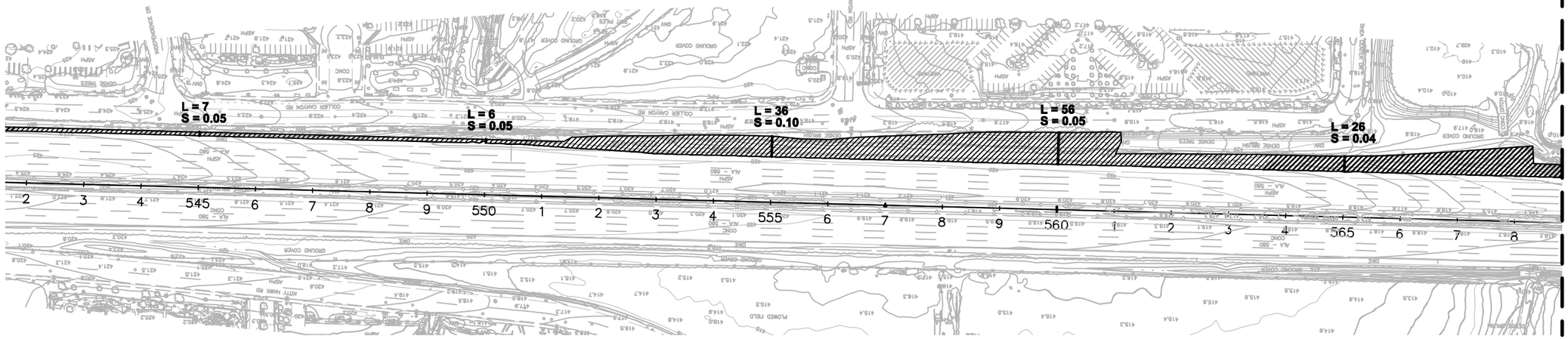
BEGIN WORK OF
EASTERN SEGMENT



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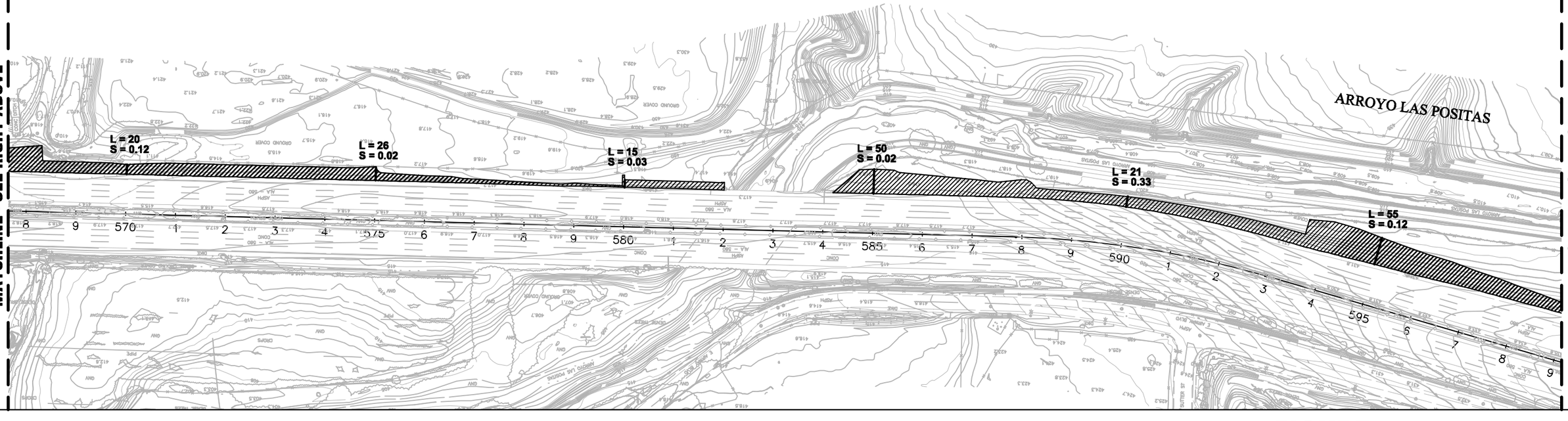

MATCHLINE - SEE FIGURE 2

LEGEND:

DISTURBED SOIL AREA

GRAPHIC SCALE

200 0 200 400

NORTH

JOB NO: 20077061
DATE: NOVEMBER, 2011
BY: R.A.M
REV: ED BOSCACCI

FIGURE 1

580 WESTBOUND HOV IMPROVEMENTS
LS RISK FACTOR

BkF

DRAWING NAME: J:\Eng07\07706\dwg\Exhibits\Risk_Level\LS FACTOR-EAST.dwg
PLOT DATE: 11-02-11
PLOTTED BY: muro

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MATCHLINE - SEE FIGURE 1

MATCHLINE - SEE LEFT BELOW

MATCHLINE - SEE RIGHT ABOVE

MATCHLINE - SEE FIGURE 3

L = 18
S = 0.16

L = 21
S = 0.06

L = 31
S = 0.03

L = 26
S = 0.62

L = 26
S = 0.42

L = 37
S = 0.12

L = 25
S = 0.62

L = 12
S = 0.50

L = 24
S = 0.33

L = 26
S = 0.50

L = 14
S = 0.50

E. AIRWAY BLVD

PORTOLA AVE

N. LIVERMORE AVE

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PLOT DATE: 11-02-11
PLOTTED BY: muro

JOB NO: 20077061
DATE: NOVEMBER, 2011
BY: R.A.M
REV: ED BOSCACCI

NORTH

GRAPHIC SCALE
200 0 200 400

LEGEND:

DISTURBED SOIL AREA

FIGURE 2

580 WESTBOUND HOV IMPROVEMENTS
LS RISK FACTOR

BkF

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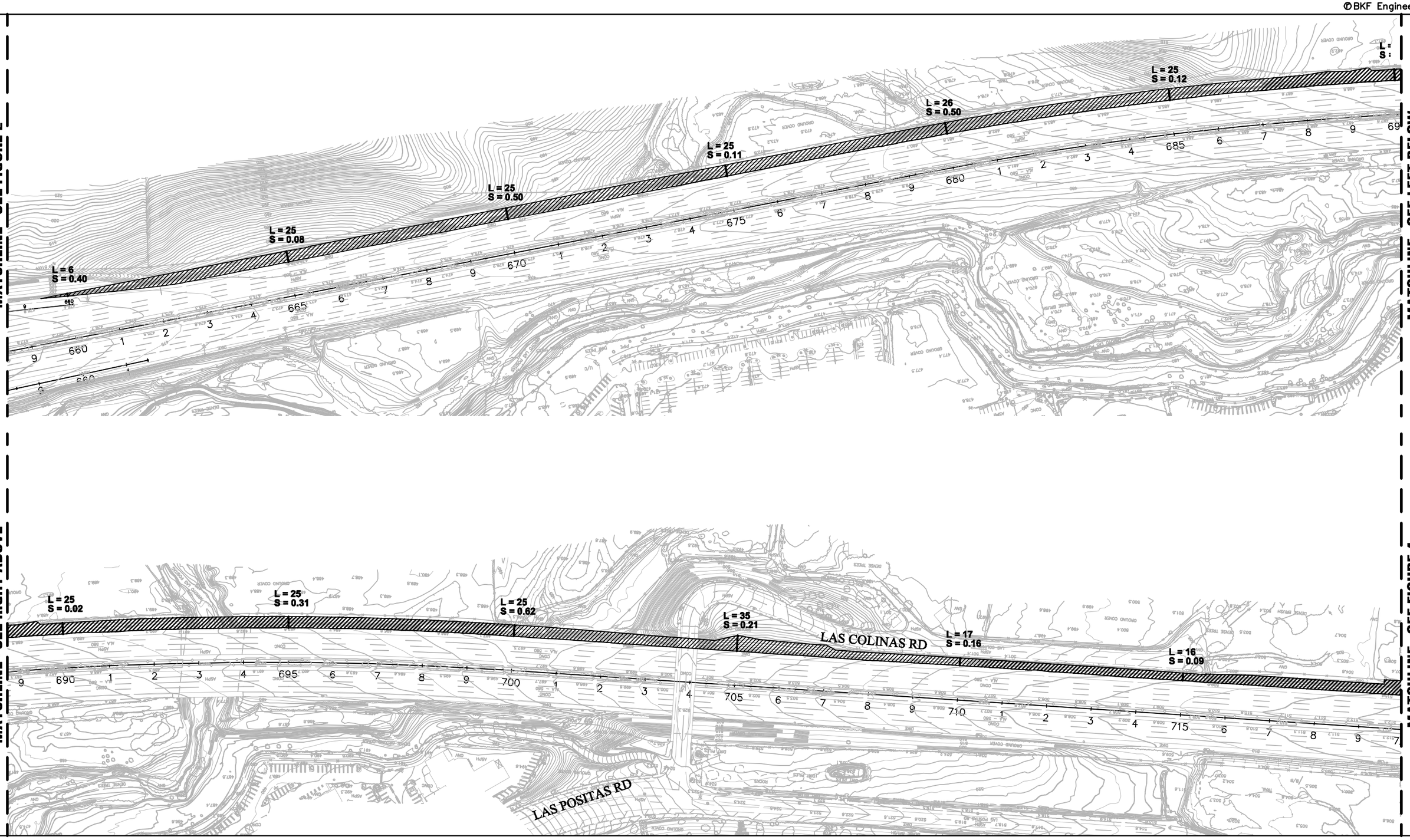

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PLOT DATE: 11-02-11
PLOTTED BY: muro

JOB NO: 20077061
DATE: NOVEMBER, 2011
BY: R.A.M
REV: ED BOSCACCI

NORTH

GRAPHIC SCALE
200 0 200 400

LEGEND:
DISTURBED SOIL AREA

FIGURE 3
580 WESTBOUND HOV IMPROVEMENTS
LS RISK FACTOR

BkF

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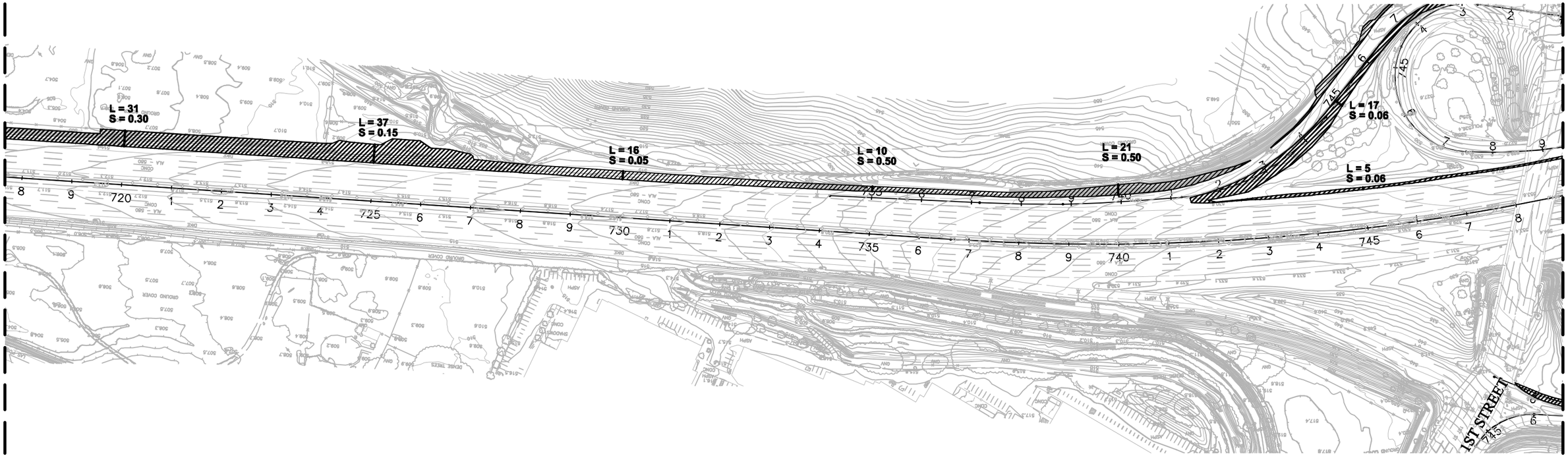
MATCHLINE - SEE FIGURE 3



MATCHLINE - SEE FIGURE 5

LEGEND:

DISTURBED SOIL AREA

JOB NO: 20077061
DATE: NOVEMBER, 2011
BY: R.A.M
REV: ED BOSCACCI

NORTH

GRAPHIC SCALE

200 0 200 400

FIGURE 4

580 WESTBOUND HOV IMPROVEMENTS
LS RISK FACTOR

BkF

DRAWING NAME: J:\Eng07\077081\dwg\Exhibits\Risk_Level\LS FACTOR-EAST.dwg
PLOT DATE: 11-02-11
PLOTTED BY: muro

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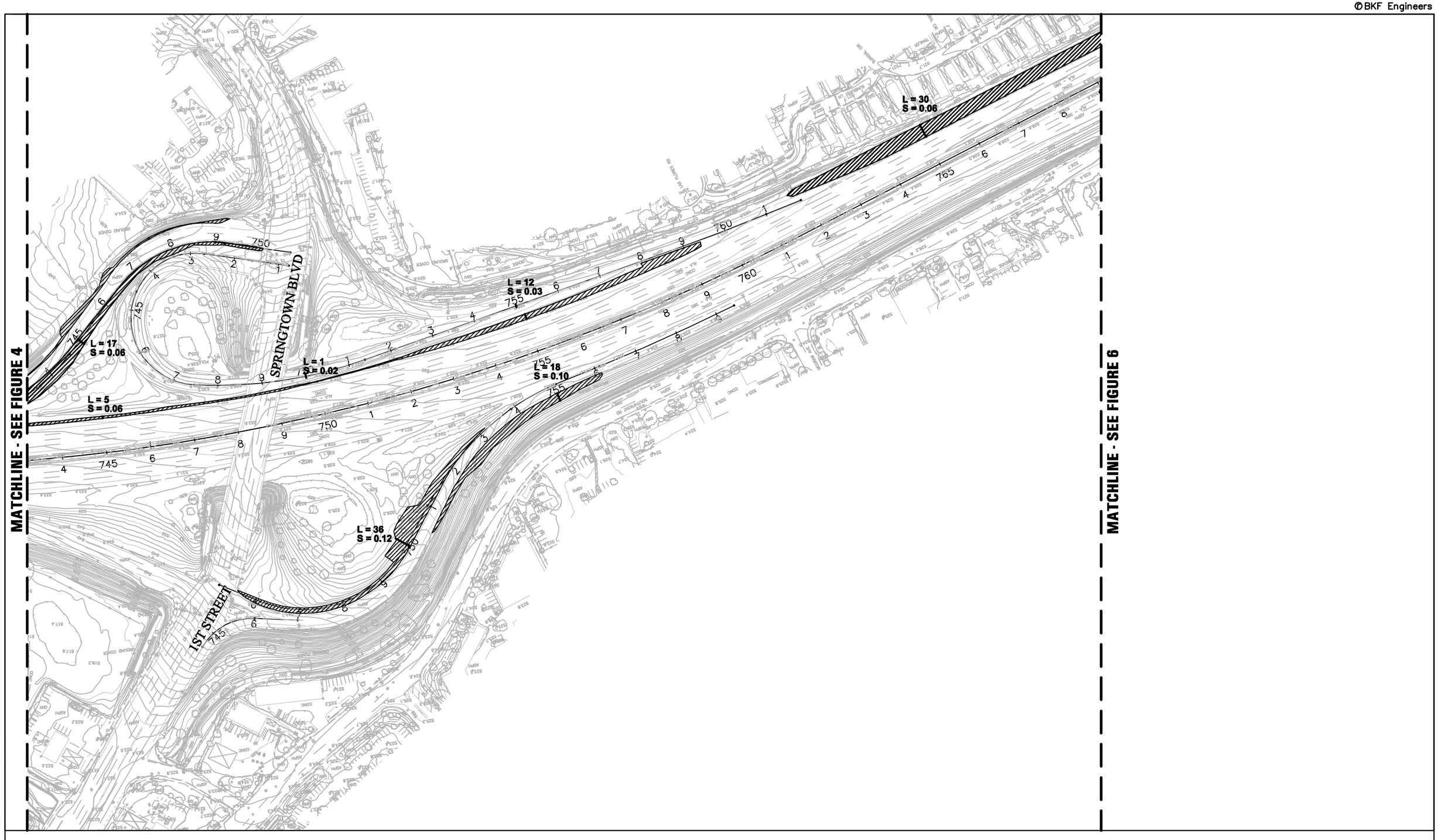

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PLOT DATE: 11-02-11
PLOTTED BY: muro

JOB NO: 20077061
DATE: NOVEMBER, 2011
BY: R.A.M
REV: ED BOSCACCI

NORTH

GRAPHIC SCALE
200 0 200 400

LEGEND:
DISTURBED SOIL AREA

FIGURE 5
580 WESTBOUND HOV IMPROVEMENTS
LS RISK FACTOR

BkF

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MATCHLINE - SEE FIGURE 5

MATCHLINE - SEE FIGURE 7

DRAWING NAME: J:\Eng07\077061\dwg\Exhibits\Risk_Level\LS FACTOR-EAST.dwg
PLOT DATE: 11-02-11
PLOTTED BY: muro

JOB NO: 20077061
DATE: NOVEMBER, 2011
BY: R.A.M
REV: ED BOSCACCI

NORTH

GRAPHIC SCALE
200 0 200 400

LEGEND:
DISTURBED SOIL AREA

FIGURE 6
580 WESTBOUND HOV IMPROVEMENTS
LS RISK FACTOR

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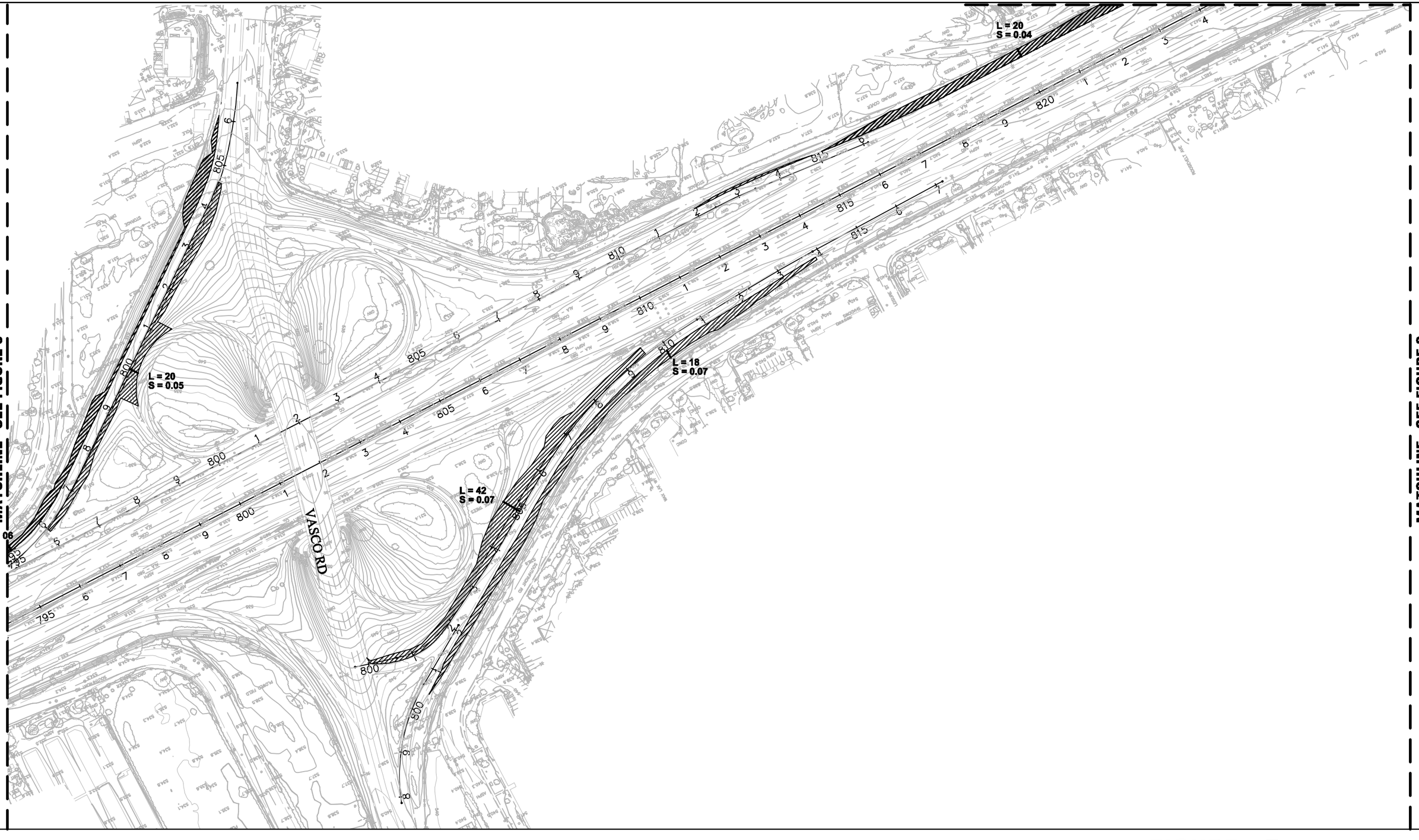

JOB NO: 20077061
DATE: NOVEMBER, 2011
BY: R.A.M
REV: ED BOSCACCI

NORTH

GRAPHIC SCALE
200 0 200 400

LEGEND:
DISTURBED SOIL AREA

FIGURE 7
580 WESTBOUND HOV IMPROVEMENTS
LS RISK FACTOR

BkF

DRAWING NAME: J:\Eng07\077061\dwg\Exhibits\Risk_Level\LS FACTOR-EAST.dwg
PLOT DATE: 11-02-11
PLOTTED BY: muro

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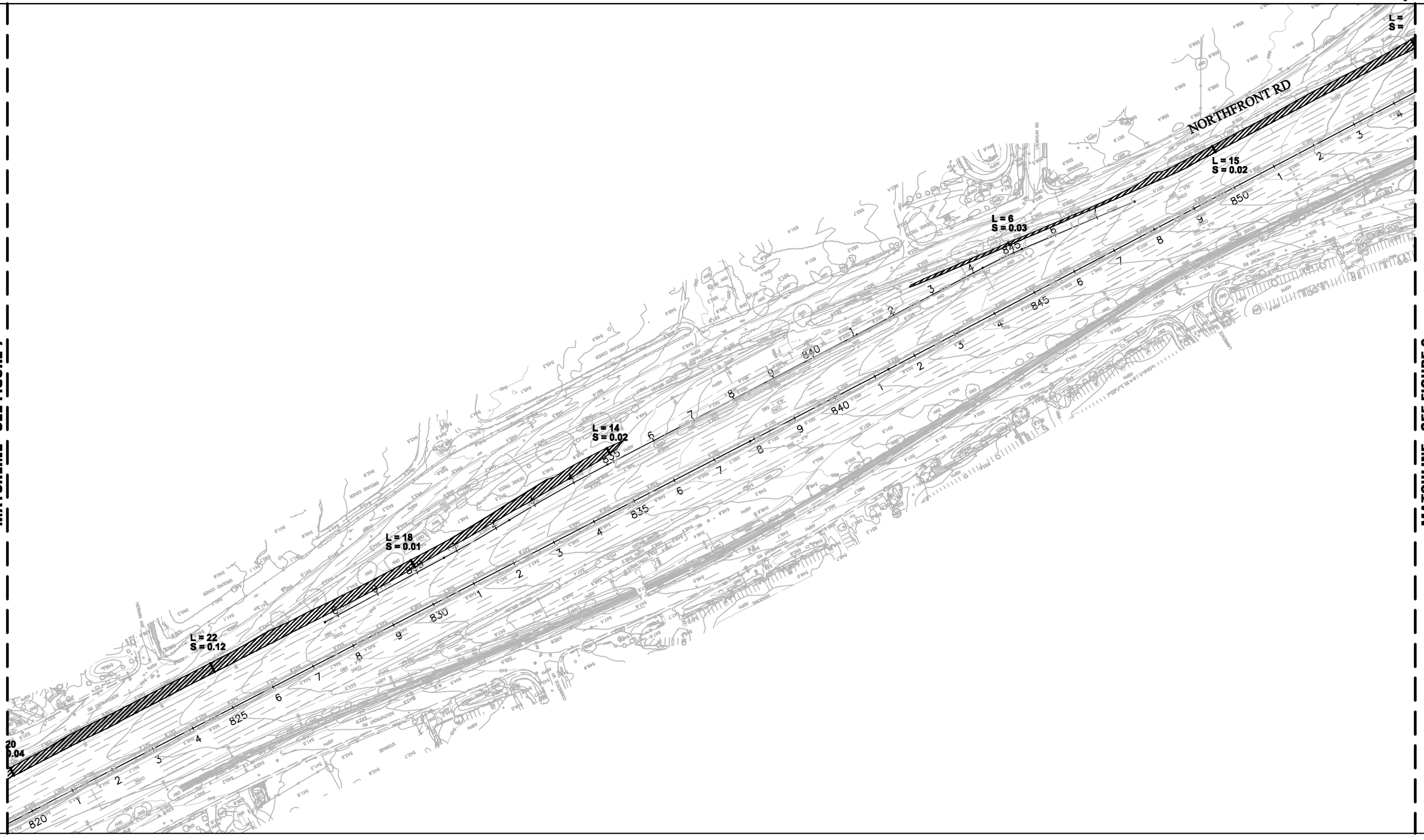
MATCHLINE - SEE FIGURE 7

MATCHLINE - SEE FIGURE 9



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PLOT DATE: 11-02-11
PLOTTED BY: muro

JOB NO: 20077061
DATE: NOVEMBER, 2011
BY: R.A.M
REV: ED BOSCACCI

NORTH

GRAPHIC SCALE
200 0 200 400

LEGEND:
DISTURBED SOIL AREA

FIGURE 8
580 WESTBOUND HOV IMPROVEMENTS
LS RISK FACTOR

BkF

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MATCHLINE - SEE FIGURE 8

END WORK OF
EASTERN SEGMENT

GREENVILLE RD

L = 23
S = 0.10

L = 7
S = 0.2

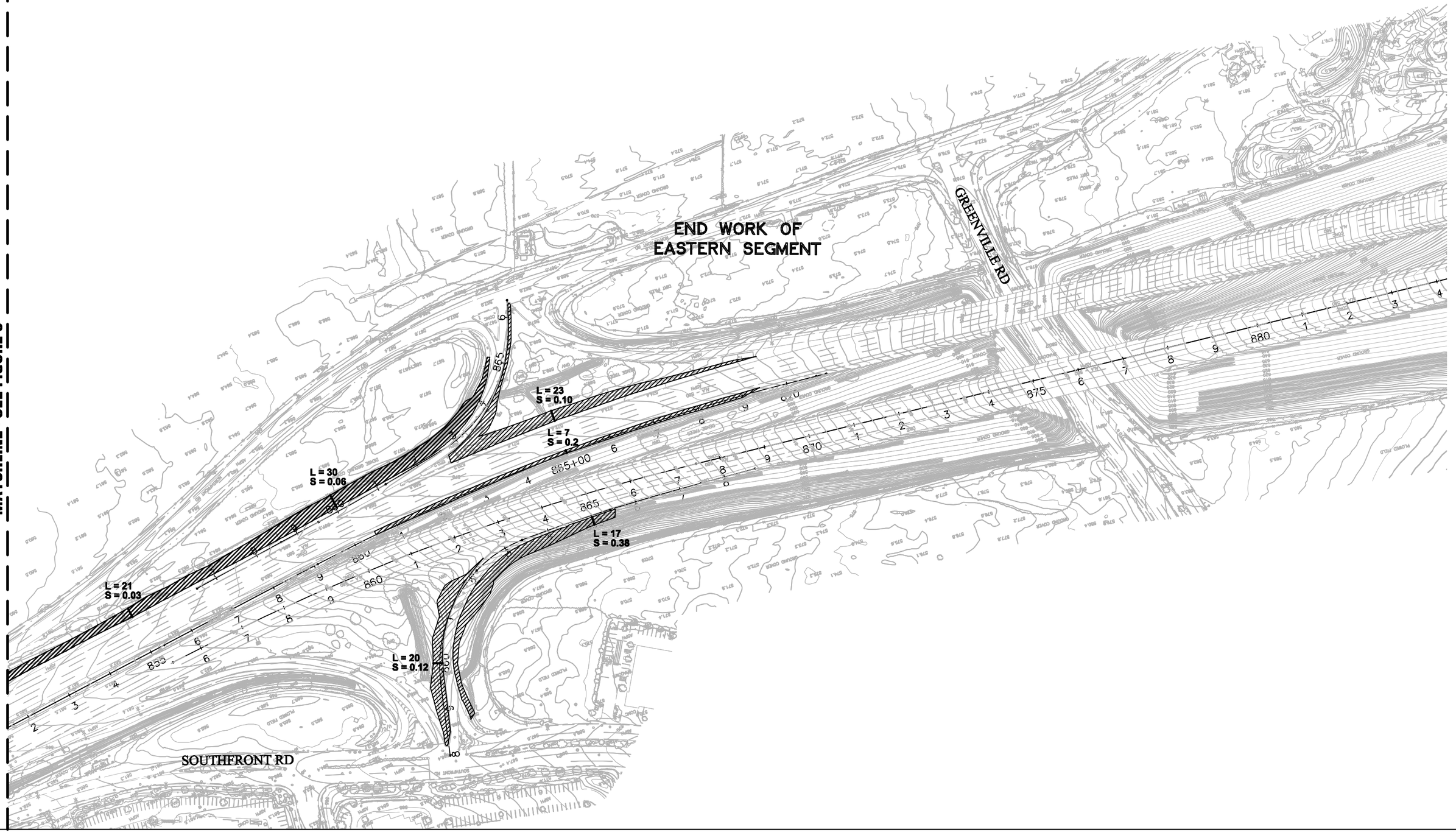
L = 30
S = 0.06

L = 21
S = 0.03

L = 17
S = 0.38

L = 20
S = 0.12

SOUTHFRONT RD



LEGEND:

DISTURBED SOIL AREA

GRAPHIC SCALE

200 0 200 400

NORTH

JOB NO: 20077061
DATE: NOVEMBER, 2011
BY: R.A.M
REV: ED BOSCACCI

FIGURE 9

580 WESTBOUND HOV IMPROVEMENTS
LS RISK FACTOR

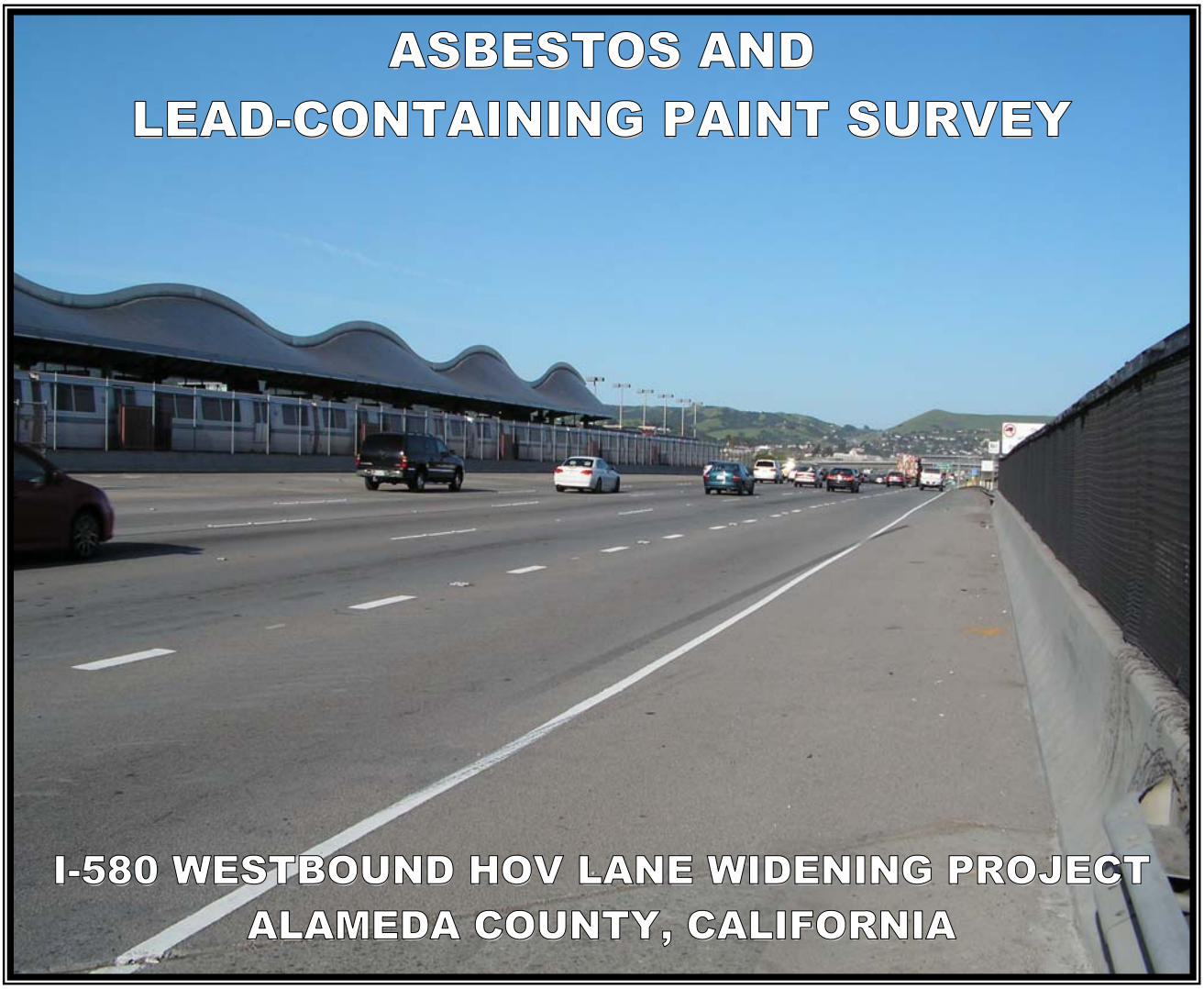
BkF

DRAWING NAME: J:\Eng07\077061\dwg\Exhibits\Risk_Level\LS FACTOR-EAST.dwg
PLOT DATE: 11-02-11
PLOTTED BY: muro

COUNTY Waterbody	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
ALAMEDA COUNTY, continued																			
Grass Valley Creek			E						E						E	E	E	E	
Upper San Leandro Creek			E						E			P		P	PE	E	PE	PE	
Upper San Leandro Reservoir		E							E					E	E	E	LE*	P	
Kaiser Creek			E						E					E	E	E	E	E	
Buckhorn Creek			E						E					E	E	E	E	E	
Redwood Creek (Alameda)			E						E					E	E	E	E	E	
Moraga Creek (in Contra Costa Co.)			E						E					E	E	E	E	E	
Estudillo Canal															E	E	E	E	
San Lorenzo Creek		E	E	E					E			E		E	E	E	E	E	
Don Castro Reservoir							E		E					E	E	E	E	E	
Castro Valley Creek									E				E		E	E	E	E	
Crow Creek									E			E	E	E	E	E	E	E	
Cull Creek									E				E	E	E	E	E	E	
Cull Canyon Reservoir							E		E					E	E	E	E	E	
Bolinas Creek									E						E	E	E	E	
Norris Creek									E						E	E	E	E	
Palomares Creek									E			E		E	E	E	E	E	
Eden Canyon Creek									E						E	E	E	E	
Hollis Creek									E				E		E	E	E	E	
Sulphur Creek (west Alameda)															E	E	E	E	
Mount Eden Creek										E						E	E	E	
Old Alameda Creek										E						E	E	E	
Ward Creek															E	E	E	E	
Zeile Creek															E	E	E	E	
Alameda Creek Quarry Ponds				E			E		E						E	E	E	E	
Coyote Hills Slough										E		E	E	E		E	E	E	
Alameda Creek	E			E			E		E			E	E	E	E	E	E	E	
Crandall Creek															E	E	E	E	
Dry Creek (Alameda, low in watershed)													E		E	E	E	E	
Stonybrook Creek									E			E	E	E	E	E	E	E	
Sinbad Creek									E			E	E	E	E	E	E	E	
San Antonio Creek (Alameda)			E						E				E	E	E	E	E*	E	
San Antonio Reservoir		E							E				E	E	E	E	LE*	E	

E: Existing beneficial use E*: Water quality objectives apply; water contact recreation is prohibited or limited to protect public health P: Potential beneficial use

ASBESTOS AND LEAD-CONTAINING PAINT SURVEY



I-580 WESTBOUND HOV LANE WIDENING PROJECT
ALAMEDA COUNTY, CALIFORNIA

PREPARED FOR:
BKF ENGINEERS
4670 WILLOW ROAD, SUITE 250
PLEASANTON, CALIFORNIA 94558

PREPARED BY:
GEOCON CONSULTANTS, INC.
6671 BRISA STREET
LIVERMORE, CALIFORNIA

GEOCON

GEOCON PROJECT No. E8474-06-01

NOVEMBER 2010

Project No. E8474-06-01
November 10, 2010

Natalina Bernardi
BKF Engineers
4670 Willow Road, Suite 250
Pleasanton, California 94558

Subject: ASBESTOS AND LEAD-CONTAINING PAINT SURVEY
I-580 WESTBOUND HOV LANE WIDENING PROJECT
ALAMEDA COUNTY, CALIFORNIA

Dear Ms. Bernardi:

Geocon has performed an asbestos and lead-containing paint survey at the subject site. The scope of services provided by Geocon included surveying various structures (bridges, a culvert, and a soundwall) for suspect asbestos-containing materials and lead-containing paint, collecting bulk samples, and submitting the samples to laboratories for analyses.

The accompanying report summarizes the services performed and laboratory analysis.

The contents of this report reflect the views of Geocon Consultants, Inc., who is responsible for the facts and accuracy of the data presented herein. This report does not constitute a standard, specification, or regulation.

Please call us if you have any questions.

Sincerely,

GEOCON CONSULTANTS, INC.

Chris Giuntoli, CAC
Senior Project Scientist

David A. Watts, CAC
Senior Project Scientist

(8 + CD) Addressee

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ASBESTOS AND LEAD-CONTAINING PAINT SURVEY REPORT

1.0 INTRODUCTION

1.1 Site Description

The project consists of seven structures (bridges and a culvert) on Interstate 580 (I-580) within the project limits in Alameda County, California. The project limits extend approximately 13 miles from west of San Ramon/Foothill Road Overcrossing (OC) in Dublin to west of Greenville Road Undercrossing (UC) in Livermore, as depicted on the Vicinity Map, Figure 1. We performed an asbestos and lead-containing paint (LCP) survey on the following structures:

- North Livermore Avenue UC (33-0153),
- Tassajara Creek Bridges (33-0015R/L),
- Arroyo Seco Creek Box Culvert (33-0066),
- Arroyo Las Positas Creek Bridge (33-0085),
- Arroyo Las Positas Creek Bridge (33-0203), and
- Dougherty UC (33-0150L, Bay Area Rapid Transit station).

In addition to the seven structures, the soundwalls located adjacent to eastbound I-580 east of Santa Rita Road were included in our survey. The project locations are depicted on the Site Plans, Figures 2a and 2b.

1.2 General Objectives

Our objectives were to assess the potential presence and quantity of asbestos and LCP at the project location prior to planned bridge widening activities. The information obtained from this investigation will be used by BKF Engineers for waste profiling, determining California Occupational Safety and Health Administration (Cal/OSHA) applicability, and coordinating asbestos and LCP disturbance activities.

> *It was <u>not</u> our intent during this inspection to conduct an evaluation of lead-based paint hazards in accordance with United States Department of Housing and Urban Development (HUD) guidelines.*

2.0 BACKGROUND

2.1 Asbestos

The *Code of Federal Regulations (CFR)*, 40 CFR 61, Subpart M, National Emissions Standards for Hazardous Air Pollutants (NESHAP) and Federal Occupational Safety and Health Administration (FED OSHA) classify asbestos-containing material (ACM) as any material or product that contains *greater than* 1% asbestos. Nonfriable ACM is classified by NESHAP as either Category I or Category II material defined as follows:

- **Category I** – asbestos-containing packings, gaskets, resilient floor coverings, and asphalt roofing products.
- **Category II** – all remaining types of nonfriable asbestos-containing material not included in Category I that when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Regulated asbestos-containing material (RACM), a hazardous waste when friable, is classified as any material that contains *greater than* 1% asbestos by dry weight *and* is:

- Friable; or
- Category I material that has become friable; or
- Category I material that has been subjected to sanding grinding, cutting or abrading; or
- Category II nonfriable material that has a high probability of becoming crumbled, pulverized, or reduced to a powder during demolition or renovation activities.

Activities that disturb materials containing *any* amount of asbestos are subject to certain requirements of the Cal/OSHA asbestos standard contained in Title 8, CCR Section 1529. Typically, removal or disturbance of more than 100 square feet of material containing more than 0.1% asbestos must be performed by a registered asbestos abatement contractor, but associated waste labeling is not required if the material contains 1% or less asbestos. When the asbestos content of a material exceeds 1%, virtually all requirements of the standard become effective.

Materials containing more than 1% asbestos are also subject to NESHAP regulations (40 CFR Part 61, Subpart M). RACM (friable ACM and nonfriable ACM that will become friable during demolition operations) must be removed from structures prior to demolition. Certain nonfriable ACM and materials containing 1% or less asbestos may remain in structures during demolition; however, there are waste handling/disposal issues and Cal/OSHA work requirements that must be addressed. Contractors are responsible for segregating and characterizing waste streams prior to disposal.

With respect to potential worker exposure, notification, and registration requirements, Cal/OSHA defines asbestos-containing construction material (ACCM) as construction material that contains more than 0.1% asbestos (Title 8, CCR 341.6).

2.2 Lead Paint

Construction activities (including demolition) that disturb materials or paints containing *any* amount of lead are subject to certain requirements of the Cal/OSHA lead standard contained in Title 8, CCR, Section 1532.1. Deteriorated paint is defined by Title 17, CCR, Division 1, Chapter 8, §35022 as a surface coating that is cracking, chalking, flaking, chipping, peeling, non-intact, failed, or otherwise separated from a component. Demolition of a deteriorated LCP component would require waste characterization and appropriate disposal. Intact LCP on a component is currently accepted by most landfill facilities; however, contractors are responsible for segregating and characterizing waste streams prior to disposal.

For a solid waste containing lead, the waste is classified as California hazardous when: 1) the total lead content equals or exceeds the respective Total Threshold Limit Concentration (TTLC) of 1,000 milligrams per kilogram (mg/kg); or 2) the soluble lead content equals or exceeds the respective Soluble Threshold Limit Concentration (STLC) of 5 milligrams per liter (mg/l) based on the standard Waste Extraction Test (WET). A waste has the potential for exceeding the lead STLC when the waste's total lead content is greater than or equal to ten times the respective STLC value since the WET uses a 1:10 dilution ratio. Hence, when total lead is detected at a concentration greater than or equal to 50 mg/kg, and assuming that 100 percent of the total lead is soluble, soluble lead analysis is required. Lead-containing waste is classified as "Resource, Conservation, and Recovery Act" (RCRA) hazardous, or Federal hazardous, when the soluble lead content equals or exceeds the Federal regulatory level of 5 mg/l based on the Toxicity Characteristic Leaching Procedure (TCLP).

The above regulatory criteria are based on chemical concentrations. Wastes may also be classified as hazardous based on other criteria such as ignitability; however, for the purposes of this investigation, toxicity (i.e., lead concentrations) is the primary factor considered for waste classification since waste generated during the construction activities would not likely warrant testing for ignitability or other criteria. Waste that is classified as either California hazardous or RCRA hazardous requires management as a hazardous waste.

Potential hazards exist to workers who remove or cut through LCP coatings during demolition. Dust containing hazardous concentrations of lead may be generated during scraping or cutting materials coated with lead-containing paint. Torching of these materials may produce lead oxide fumes. Therefore, air monitoring and/or respiratory protection may be required during the demolition of materials coated with LCP. Guidelines regarding regulatory provisions for construction work where workers may be exposed to lead are presented in the Title 8, CCR, Section 1532.1.

2.3 Architectural Drawings and Previous Survey Activities

Architectural plans and copies of previous survey reports for the project location were not available for our review.

3.0 SCOPE OF SERVICES

Mr. Chris Giuntoli, a California-Certified Asbestos Consultant (CAC), certification No. 02-3163 (expiration June 19, 2011), and Certified Lead Paint Inspector/Assessor with the California Department of Public Health (DPH), certification number I-5511 (expiration June 14, 2011), performed the asbestos and LCP survey at the project location on April 6 and 12, 2010.

3.1 Asbestos

Suspect ACM were grouped into homogeneous areas with representative samples randomly collected from each. In addition, each potential ACM was evaluated for friability. A total of 35 bulk asbestos samples representing 20 suspect materials were collected.

Our procedures for inspection and sampling are discussed below:

- Collected bulk asbestos samples after first wetting the material with a light mist of water. The samples were then cut from the substrate and transferred to a labeled container. Note that when multiple samples were collected, the sampling locations were distributed throughout the homogeneous area (spaces where the material was observed).
- Relinquished bulk asbestos samples under chain-of-custody protocol to EMSL Analytical, Inc., a California-licensed laboratory, for asbestos analysis in accordance with United States Environmental Protection Agency (EPA) Test Method 600/R-93/116 using polarized light microscopy (PLM). EMSL Analytical, Inc. is a laboratory accredited by the National Institute of Standards and Technology National Voluntary Laboratory Accreditation Program (NIST-NVLAP) for bulk asbestos fiber analysis. The laboratory analyses were requested on a 5-workday turn-around-time.

Sample identification numbers, material descriptions, approximate quantities, friability assessments, and photo references are summarized on Table 1. Approximate sample locations are presented on Figures 2a and 2b. Materials represented by the samples collected are shown in the attached photographs.

3.2 Lead Paint

Five bulk paint samples were collected from suspect LCP observed on the bridge structures. Our procedures for inspection and sampling are discussed below:

- Collected bulk samples of suspect LCP using techniques presented in HUD guidelines. In addition, the painted areas were evaluated for evidence of deterioration such as flaking or cracking.
- Relinquished bulk LCP samples under chain-of-custody protocol to Advanced Technology Laboratories, a California-licensed laboratory, for lead analysis in accordance with EPA Test Method 6010B. Additionally, the samples were analyzed for WET soluble lead in accordance with EPA Test Methods 7420/6010, and TCLP soluble lead by EPA Test Methods 1311/7420. Advanced Technology Laboratories is accredited by the DPH for lead analysis. The laboratory analysis was requested on a 7-workday turn-around-time.

Paint sample identification numbers, paint description, and photo references are summarized on Table 2. The approximate sample locations are presented on Figure 2b. Material represented by the samples collected is shown in the attached photographs.

We observed no LCP on structural members of the North Livermore Avenue UC (33-0153), Tassajara Creek Bridges (33-0015R/L), Arroyo Seco Creek Box Culvert (33-0066), Arroyo Las Positas Creek

Bridge (33-0085), or the Dougherty UC (33-0150L) during our survey. Consequently, we collected no LCP samples at these structures.

4.0 INVESTIGATIVE RESULTS

4.1 Asbestos Analytical Results

North Livermore Avenue UC (33-0153)

Chrysotile asbestos at a concentration of 15% was detected in samples representing an undetermined amount of cementitious drain pipe within the bridge abutments.

Chrysotile asbestos at a concentration of 50% was detected in samples representing an undetermined amount of nonfriable asbestos sheet packing used as guard rail shims. We were not able to quantify the amount of guard rail shims due to safety concerns (i.e., traffic).

No asbestos was detected in samples of the remaining suspect materials collected at this structure.

Tassajara Creek Bridges (33-0015R/L)

Chrysotile asbestos at a concentration of 50% was detected in samples representing approximately 10 square feet of nonfriable asbestos sheet packing used as guard rail shims of both structures.

No asbestos was detected in samples of the remaining suspect materials collected at these structures.

Arroyo Seco Creek Box Culvert (33-0066)

Chrysotile asbestos at a concentration of 15% was detected in samples representing an undetermined amount of cementitious drain pipe within the culvert concrete aprons.

No asbestos was detected in samples of the remaining suspect materials collected at this structure.

Arroyo Las Positas Creek Bridge (33-0085)

Chrysotile asbestos at a concentration of 50% was detected in samples representing an undetermined amount of nonfriable asbestos sheet packing used as guard rail shims. We were not able to quantify the amount of guard rail shims due to safety concerns (i.e., traffic).

Chrysotile asbestos at a concentration of 15% was detected in samples representing an undetermined amount of cementitious drain pipe within the bridge abutments.

No asbestos was detected in samples of the remaining suspect materials collected at this structure.

Arroyo Las Positas Creek Bridge (33-0203)

Chrysotile asbestos at a concentration of 50% was detected in samples representing an undetermined amount of nonfriable asbestos sheet packing used as guard rail shims. We were not able to quantify the amount of guard rail shims due to safety concerns (i.e., traffic).

Chrysotile asbestos at a concentration of 15% was detected in samples representing an undetermined amount of cementitious drain pipe within the bridge abutments.

No asbestos was detected in samples of the remaining suspect materials collected at this structure.

Dougherty UC (33-0150L)

Asbestos was not detected in samples of the suspect materials collected at this structure.

A summary of the analytical laboratory test results for asbestos is presented on Table 1. Reproductions of the laboratory reports and chain-of-custody documentation are presented in Appendix A.

4.2 Paint Analytical Results

A sample representing intact multi-colored paint on the Arroyo Las Positas Creek Bridge (33-0203) west abutment exhibited a total lead concentration of 24 mg/kg.

Samples representing approximately 3,000 square feet of deteriorated light brown paint on the eastbound I-580 soundwall east of Santa Rita Road exhibited total lead concentrations of 73 mg/kg and 100 mg/kg. The WET lead concentrations were 11 mg/l and 13 mg/l, and the TCLP lead concentrations were 0.26 mg/l and 0.28 mg/l.

Samples representing approximately 3,000 square feet of deteriorated dark brown paint on the eastbound I-580 soundwall east of Santa Rita Road exhibited total lead concentrations of 76 mg/kg and 85 mg/kg. The WET lead concentrations were 9.8 mg/l and 10 mg/l, and the TCLP lead concentrations were <0.25 mg/l and 0.28 mg/l.

A summary of the analytical laboratory test results for paint is presented on Table 2. Reproductions of the laboratory reports and chain-of-custody documentation are presented in Appendix A.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Asbestos

NESHAP regulations require that asbestos cement drainpipe (a Category II nonfriable/nonhazardous material) on the North Livermore Avenue UC (33-00153), Arroyo Seco Creek Box Culvert (33-0066), Arroyo Las Positas Creek Bridge (33-0085), and Arroyo Las Positas Creek Bridge (33-0203) be removed and disposed of prior to demolition or other activities that would disturb the material. We recommend that a licensed contractor registered with Cal/OSHA for asbestos-related work (or trained in accordance with Cal/OSHA requirements for asbestos cement pipe disturbance activities) perform the asbestos cement pipe removal and disposal.

NESHAP regulations do not require that asbestos-containing sheet packing (a Category I nonfriable/nonhazardous material) used in barrier rail systems on the North Livermore Avenue UC (33-00153), Tassajara Creek Bridges (33-0015R/L), Arroyo Las Positas Creek Bridge (33-0085), and Arroyo Las Positas Creek Bridge (33-0203) identified during our survey be removed prior to demolition or treated as hazardous waste. However, the disturbance of this material is still covered by the Cal/OSHA asbestos standard (Title 8, CCR Section 1529). We recommend that a licensed contractor registered with Cal/OSHA for asbestos-related work perform activities that would disturb these asbestos-containing materials. Contractors are responsible for informing the landfill of the contractor's intent to dispose of asbestos-containing waste. Some landfills may require additional waste characterization. Contractors are responsible for segregating and characterizing waste streams prior to disposal.

We also recommend written notification to contractors that will be conducting related activities of the presence of asbestos (i.e., provide the contractor[s] with a copy of this report and a list of asbestos removed by a licensed contractor[s] during subsequent abatement activities). Contractors not trained for asbestos work should be instructed not to disturb asbestos.

In accordance with the Bay Area Air Quality Management District Regulation 11, Rule 2, written notification is required ten working days prior to commencement of *any* demolition activity (whether asbestos is present or not). In accordance with Title 8, CCR 341.9, written notification to the nearest Cal/OSHA district office is required at least 24 hours prior to certain asbestos-related work.

5.2 Lead Paint

Deteriorated light brown and dark brown paint identified on the eastbound I-580 soundwall east of Santa Rita Road during our survey would be classified as a California hazardous waste based on lead content.

Multi-colored paint identified on the Las Positas Creek Bridge (33-0203) during our survey would not be classified as California or Federal hazardous waste based on lead content if stripped, blasted, or otherwise separated from the substrate.

Deteriorated paints classified as RCRA and/or California hazardous must be removed and disposed of prior to renovation, demolition, or other activities that would disturb the paint. The contractor should be required to use personnel who have lead-related construction certification as supervisors or workers, as appropriate, from the California DPH for LCP removal work. Loose and peeling/flaking paints with hazardous lead levels require removal prior to demolition for waste segregation purposes: to separate potentially hazardous waste (Category III concentrated lead such as loose paint, paint sludge, vacuum debris, and vacuum filters) from non-hazardous demolition debris (Category II intact lead-painted architectural components such as doors, windows, framework, cladding, and trim). Category I waste is low lead waste (typically non-hazardous) such as construction materials, filtered wash water, and plastic sheeting. Contractors are responsible for informing the landfill of the contractor's intent to dispose of RCRA waste, California hazardous waste, and/or architectural components containing intact LCP. Some landfills may require additional waste characterization. Contractors are responsible for segregating and characterizing waste streams prior to disposal.

Geocon recommends that all paints at the project location (graffiti, graffiti abatement, signage, traffic striping, etc.) be treated as lead-containing for purposes of determining the applicability of the Cal/OSHA lead standard during any future maintenance, renovation, and demolition activities. This recommendation is based on LCP sample results and the fact that lead was a common ingredient of paints manufactured before 1978 and is still an ingredient of some paints. In accordance with Title 8, CCR, Section 1532.1(p), written notification to the nearest Cal/OSHA district office is required at least 24 hours prior to certain lead-related work.

6.0 REPORT LIMITATIONS

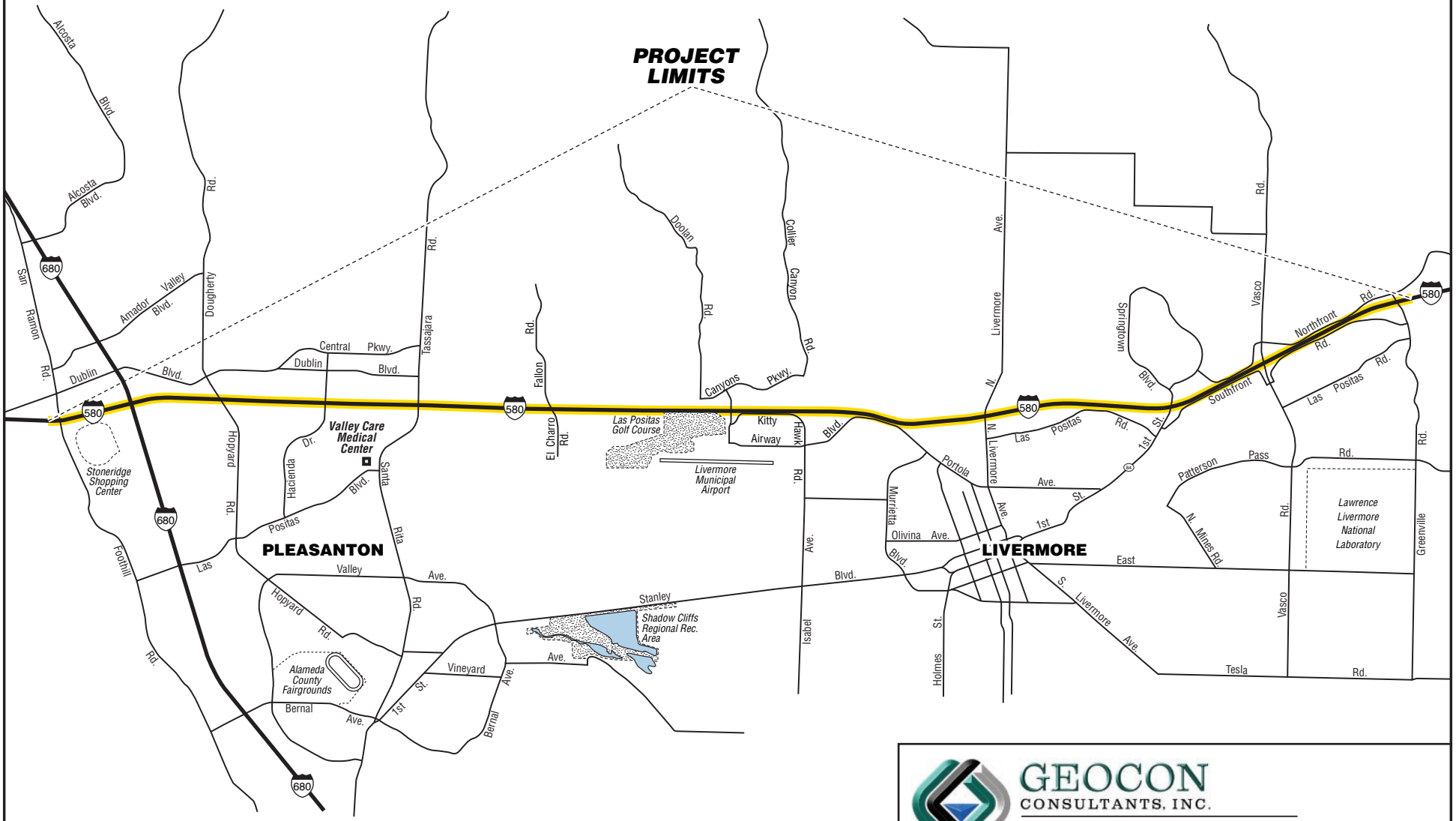
This asbestos and LCP survey was conducted in conformance with generally accepted standards of practice for identifying and evaluating asbestos and LCP in structures. The survey addressed only those structures identified in Section 1.1. Due to the nature of structure surveys, asbestos and LCP use, and laboratory analytical limitations, some ACM or LCP at the project location may not have been identified. Spaces such as cavities, voids, crawlspaces, and pipe chases may have been concealed to our investigator. Previous renovation work may have concealed or covered spaces or materials or may have partially demolished materials and left debris in inaccessible areas. Additionally, renovation activities may have partially replaced ACM with indistinguishable non-ACM. Asbestos and/or LCP may exist in areas of the structures that were not accessible or sampled in conjunction with our scope of services.

During renovation or demolition operations, suspect materials may be uncovered which are different from those accessible for sampling during this assessment. Personnel in charge of renovation/demolition should be alerted to note materials uncovered during such activities that differ substantially from those included in this or previous assessment reports. If suspect ACM and/or LCP are found, additional sampling and analysis should be performed to determine if the materials contain asbestos or lead.

This report has been prepared exclusively for BKF Engineers. The information contained herein is only valid as of the date of the report and will require an update to reflect additional information obtained.

This report is not a comprehensive site characterization and should not be construed as such. The findings as presented in this report are predicated on the results of the limited sampling and laboratory testing performed. In addition, the information obtained is not intended to address potential impacts related to sources other than those specified herein. Therefore, the report should be deemed conclusive with respect to only the information obtained. We make no warranty, express or implied, with respect to the content of this report or any subsequent reports, correspondence or consultation. Geocon strived to perform the services summarized herein in accordance with the local standard of care in the geographic region at the time the services were rendered.

The contents of this report reflect the views of the author who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California. This report does not constitute a standard, specification, or regulation.



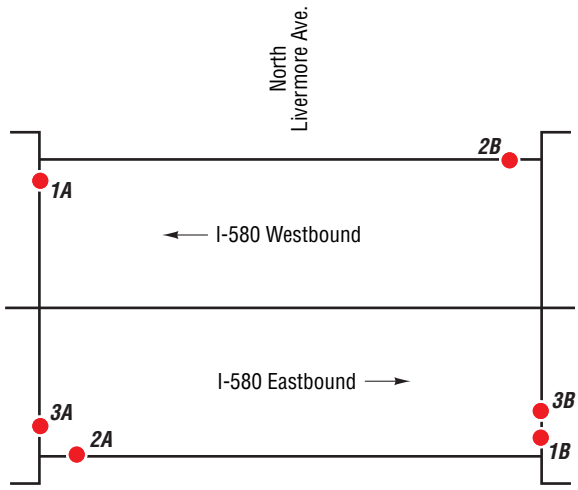
GEOCON CONSULTANTS, INC.
6671 BRISA STREET – LIVERMORE, CA 94550
PHONE 925.371.5900 – FAX 925.371.5915

I-580 Westbound HOV Lane Widening Project

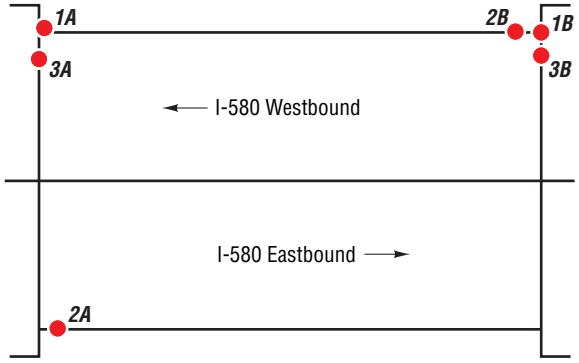
Alameda County, California

VICINITY MAP

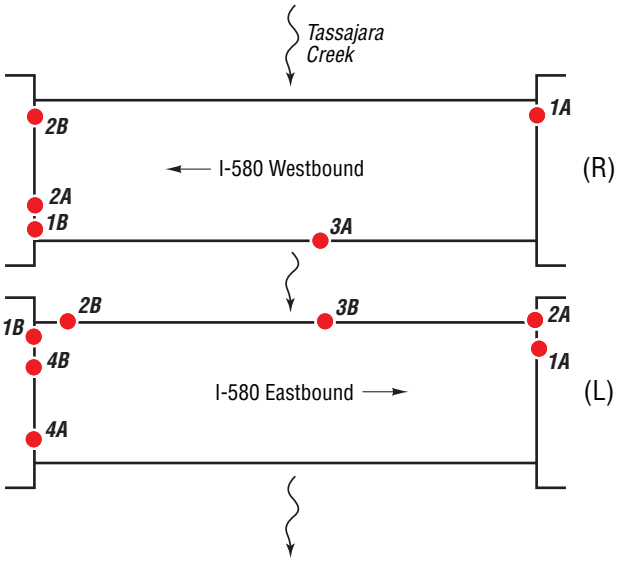
E8474-06-01	November 2010	Figure 1



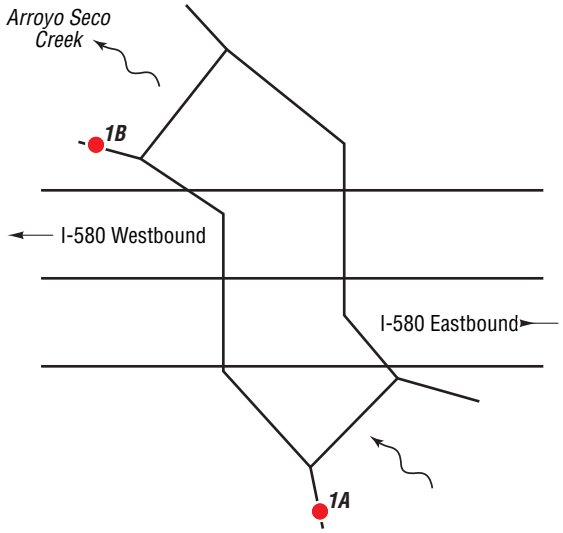
NORTH LIVERMORE AVENUE UC
(BRIDGE 33-0153)



ARROYO LAS POSITAS CREEK BRIDGE
(BRIDGE 33-0085)



TASSAJARA CREEK BRIDGE
(BRIDGES 33-0015 R/L)



ARROYO SECO CREEK BOX CULVERT
(BRIDGE 33-0066)

N

NOT TO SCALE

LEGEND:

- Approximate Asbestos Sample Location

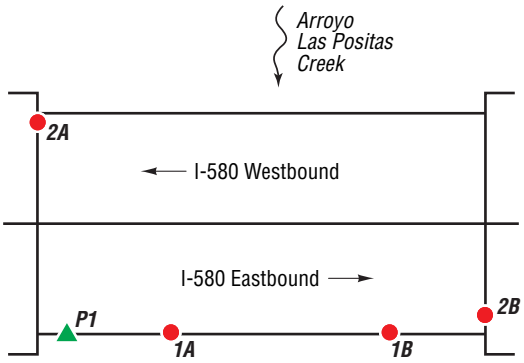
GEOCON
CONSULTANTS, INC.
6671 BRISA STREET – LIVERMORE, CA 94550
PHONE 925.371.5900 – FAX 925.371.5915

I-580 Westbound HOV Lane Widening Project

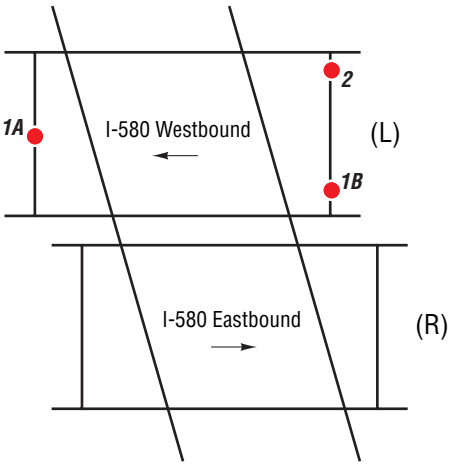
Alameda County,
California

SITE PLAN

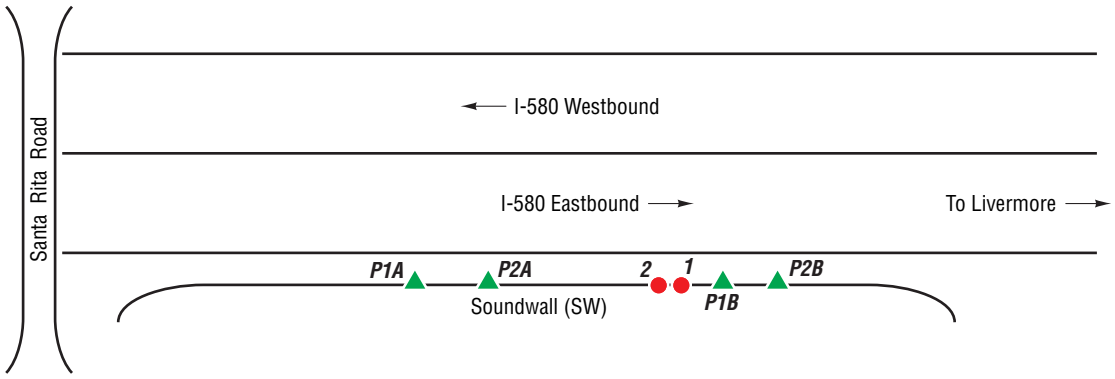
E8474-06-01	November 2010	Figure 2a



ARROYO LAS POSITAS CREEK BRIDGE
(BRIDGE 33-0203)



DOUGHERTY UC (BART STATION)
(BRIDGE 33-150L)



N

NOT TO SCALE

LEGEND:

- ● Approximate Asbestos Sample Location
- ▲ Approximate Paint Sample Location

GEOCON CONSULTANTS, INC.
6671 BRISA STREET – LIVERMORE, CA 94550
PHONE 925.371.5900 – FAX 925.371.5915

I-580 Westbound HOV Lane Widening Project

Alameda County,
California

SITE PLAN

E8474-06-01	November 2010	Figure 2b

Photo 1 – North Livermore Avenue Undercrossing (33-0153)

Photo 2 – North Livermore Avenue Undercrossing (33-0153) deck

Photo 3 – North Livermore Avenue Undercrossing (33-0153) asbestos-containing abutment drain pipe

GEOCON
CONSULTANTS, INC.
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PHOTOGRAPHS 1, 2, & 3		
I-580 Westbound HOV Lane Widening Project Alameda County, California		
E8474-06-01		November 2010

Photo 4 – North Livermore Avenue Undercrossing (33-0153) asbestos-containing guard rail shim

Photo 5 – North Livermore Avenue Undercrossing (33-0153) typical deck joint material

Photo 6 – Tassajara Creek Bridge (33-0015R)

Photo 7 – Tassajara Creek Bridge (33-0015R) underside

Photo 8 – Tassajara Creek Bridge (33-0015R) typical deck joint, no suspect material

Photo 9 – Tassajara Creek Bridge (33-0015R) abutment drain pipe

GEOCON
CONSULTANTS, INC.
6671 BRISA STREET – LIVERMORE, CA 94550
PHONE 925.371.5900 – FAX 925.371.5915

PHOTOGRAPHS 7, 8, & 9		
I-580 Westbound HOV Lane Widening Project Alameda County, California		
E8474-06-01		November 2010

Photo 10 – Tassajara Creek Bridge (33-0015R) brown fiberboard

Photo 11 – Tassajara Creek Bridge (33-0015R) asbestos-containing guard rail shim

Photo 12 – Tassajara Creek Bridge (33-0015L)

Photo 13 – Tassajara Creek Bridge (33-0015L) east deck joint, no suspect materials

Photo 14 – Tassajara Creek Bridge (33-0015L) abutment drain pipe

Photo 15 – Tassajara Creek Bridge (33-0015L) west deck joint material

Photo 16 – Tassajara Creek Bridge (33-0015L) asbestos-containing guard rail shim

Photo 17 – Tassajara Creek Bridge (33-0015L) brown fiberboard

Photo 18 – Arroyo Seco Creek Box Culvert (33-0066) deck

Photo 19 – Arroyo Seco Creek Box Culvert (33-0066) interior

Photo 20 – Arroyo Seco Creek Box Culvert (33-0066) concrete apron, typical of upstream and downstream

Photo 21 – Arroyo Seco Creek Box Culvert (33-0066) asbestos-containing drain pipe in concrete apron

Photo 22 – Arroyo Las Positas Creek Bridge (33-0085)

Photo 23 – Arroyo Las Positas Creek Bridge (33-0085) underside

Photo 24 – Arroyo Las Positas Creek Bridge (33-0085) typical deck joint material

Photo 25 – Arroyo Las Positas Creek Bridge (33-0085) asbestos-containing guard rail shim

Photo 26 – Arroyo Las Positas Creek Bridge (33-0085) asbestos-containing abutment drain pipe

Photo 27 – Arroyo Las Positas Creek Bridge (33-0203)

Photo 28 – Arroyo Las Positas Creek Bridge (33-0203) typical deck joint, no suspect material

Photo 29 – Arroyo Las Positas Creek Bridge (33-0203) asbestos-containing guard rail shim

Photo 30 – Arroyo Las Positas Creek Bridge (33-0203) asbestos-containing abutment drain pipe

Photo 31 – Dougherty Undercrossing (33-0150L)

Photo 32 – Dougherty Undercrossing (33-0150L) deck

Photo 33 – Dougherty Undercrossing (33-0150L) black fiberboard

Photo 34 – Dougherty Undercrossing (33-0150L) typical deck joint material

Photo 35 – Soundwall, eastbound I-580 east of Santa Rita Road, deteriorated paint

Photo 36 – Arroyo Las Positas Creek Bridge (33-0203) multi-colored paint

TABLE 1
SUMMARY OF ANALYTICAL LABORATORY TEST RESULTS - ASBESTOS
INTERSTATE 580 WESTBOUND HOV LANE WIDENING PROJECT
ALAMEDA COUNTY, CALIFORNIA

Polarized Light Microscopy (PLM) - EPA Test Method 600/R-93/116

Structure Number	Structure Name	Sample Group No.	Description of Material	Approximate Quantity	Friable	Site Photo	Asbestos Content
33-0153	North Livermore Avenue Undercrossing	**153-1**	**Cementitious pipe**	**Unable to quantify**	**No**	**3**	**15%**
		153-2	**Barrier rail shims**	**Unable to safely quantify**	**No**	**4**	**50%**
		153-3	Deck joint material	NA	NA	5	ND
33-0015R	Tassajara Creek Bridge	15R-1	Black drain pipe	NA	NA	9	ND
		15R-2	Brown fiberboard	NA	NA	10	ND
		15R-3	**Barrier rail shims**	**10 square feet**	**No**	**11**	**50%**
33-0015L	Tassajara Creek Bridge	15L-1	Black drain pipe	NA	NA	14	ND
		15L-2	Deck joint material	NA	NA	15	ND
		15L-3	**Barrier rail shims**	**10 square feet**	**No**	**16**	**60%**
		15L-4	Brown fiberboard	NA	NA	17	ND
33-0066	Arroyo Seco Creek Box Culvert	**66-1**	**Cementitious pipe**	**Unable to quantify**	**No**	**21**	**15%**
33-0085	Arroyo Las Positas Creek Bridge	85-1	Deck joint material	NA	NA	24	ND
		85-2	**Barrier rail shims**	**Unable to safely quantify**	**No**	**25**	**50%**
		85-3	**Cementitious pipe**	**Unable to quantify**	**No**	**26**	**15%**
33-0203	Arroyo Las Positas Creek Bridge	**203-1**	**Barrier rail shims**	**Unable to safely quantify**	**No**	**29**	**50%**
		203-2	**Cementitious pipe**	**Unable to quantify**	**No**	**30**	**15%**
33-0150L	Dougherty Undercrossing	150L-1	Black fiberboard	NA	NA	33	ND
		150L-2	Deck joint material	NA	NA	34	ND
---	Soundwall, eastbound I-580 east of Santa Rita Road	SW-1	Light brown paint	NA	NA	35	ND
		SW-2	Dark brown paint	NA	NA		ND

Notes:
NA = Not applicable (no asbestos detected)
ND = No asbestos fibers detected
Identified asbestos is of the chrysotile variety unless otherwise indicated
--- = No structure number

TABLE 2
SUMMARY OF ANALYTICAL LABORATORY TEST RESULTS - PAINT
INTERSTATE 580 WESTBOUND HOV LANE WIDENING PROJECT
ALAMEDA COUNTY, CALIFORNIA

Total and Soluble Lead

Structure Number	Structure Name	Sample ID	Paint Description	Approximate Quantity Peeling and Flaking	Site Photos	Total Lead (mg/kg)	WET Lead (mg/l)	TCLP Lead (mg/l)
33-0203	Arroyo Las Positas Creek Bridge	203-P1	Multi-colored graffiti	Intact	36	24	---	---
NA	Soundwall, eastbound I-580 east of Santa Rita Road	SW-P1A	Light brown paint	3,000 square-feet	35	73	11	0.28
		SW-P1B				100	13	0.26
		SW-P2A	Dark brown paint	3,000 square-feet		76	10	<0.25
		SW-P2B				85	9.8	0.28

Notes:
mg/kg = milligrams per kilogram (EPA Test Method 6010)
mg/l = milligrams per liter
WET = Waste Extraction Test (EPA Method 7420)
TCLP = Toxicity Characteristic Leaching Procedure (EPA Test Method 1311)
--- = Not analyzed
NA = Not applicable

APPENDIX A

091003224 1 OF 2

EMSL – San Leandro • 2235 Polvorosa Ave, Suite 230, San Leandro, CA 94577

(888) 455-3675 • Phone (510) 895-3675 • Fax (510) 895-3680 • sanleandrolab@emsl.com

EMSL Rep:	TERRI LANSING	*Third Party Billing*	**requires written authorization from third party*
Company:	GEOCON	EMSL-Bill to:	
Contact:	CHRIS GIUNTOLI	Contact:	
Address:	6671 BRISA ST	Address:	
City & State:	LIVERMORE, CA Zip 94550	City & State:	Zip
Phone:	925-371-5900	Fax:	
☒ Email Results	GIUNTOLI@GEOCONINC.COM	☐ Fax results	
Project Name or Number:	EBA74-06-01	Purchase Order Number:	

TURNAROUND TIME

☐ 3 Hours ☐ 6 Hours ☐ 24 Hours ☐ 48 Hours ☐ 72 Hours ☒ 5 Days ☐ 10 Days

SAMPLE MATRIX

☐ Air ☒ Bulk ☐ Soil ☐ Wipe ☐ Micro-Vac ☐ Drinking Water ☐ Wastewater ☐ Chips ☐ Other

ASBESTOS ANALYSIS

PCM - Air
- ☐ NIOSH 7400 (A) Issue 2: August 1994
- ☐ OSHA w/ Time Weighted Average

TEM AIR
- ☐ AHERA 40 CFR, Part 763 Subpart E
- ☐ NIOSH 7402 Issue 2
- ☐ EPA Level II

PLM - Bulk
- ☒ EPA 600/R-93/116
- ☐ + Add Gravimetric Reduction (EPA NOB)
- PLM CARB 435 Level: ☐ A (0.25%) ☐ B (0.1%)
- ☐ NIOSH 9002
- ☐ EPA Point Count (400 Points)
- ☐ + Add Gravimetric Reduction (EPA NOB)
- ☐ EPA Point Count (1,000 Points)
- ☐ + Add Gravimetric Reduction (EPA NOB)
- ☐ Standard Addition Point Count

SOILS

PLM CARB 435 Level: ☐ A (0.25%) ☐ B (0.1%)
TEM CARB 435 Level: ☐ B (0.1%) ☐ C (0.01%) ☐ D (0.001%) ☐ E (0.0005%) ☐ F (0.0001%)
- ☐ EMSL MSD 9000 Method fibers/gram
- ☐ Superfund EPA 540-R097-028 (dust generation)

EPA Protocol ☐ Qualitative ☐ Quantitative

TEM BULK
- ☐ TEM EPA NOB, EPA 600/R-93/116 Section 2.5.5.1 (TEM % by VAE)
- ☐ Chatfield SOP-1988-02
- ☐ TEM EPA 600/R-93/116 Section 2.5.5.2 (TEM % by Mass)

TEM MICROVAC
- ☐ ASTM D 5755 (Quantitative)

TEM WIPE
- ☐ ASTM D-6480 (Quantitative)

TEM WATER
- ☐ EPA 100.2 (≥ 10 microns)
- ☐ Modified EPA 100.2 (≥ 0.5 microns)

OTHER:

LEAD ANALYSIS

Flame Atomic Absorption
- ☐ Wipe, SW846-7420 ☐ ASTM ☐ non ASTM
- ☐ Soil, SW846-7420
- ☐ Air, NIOSH 7082
- ☐ Chips, SW846-7420 or AOAC 5.009 (974.02)
- ☐ Wastewater, SW 846-7420

☐ TCLP LEAD SW846-1311/7420

Graphite Furnace Atomic Absorption
- ☐ Air, NIOSH 7105
- ☐ Wastewater, SW846-7421
- ☐ Soil, SW846-7421
- ☐ Drinking Water, EPA 239.2

ICP – Inductively Coupled Plasma
- ☐ Wipe, SW846-6010 ☐ ASTM ☐ non ASTM
- ☐ Soil, SW846-6010
- ☐ Air, NIOSH 7300

MATERIALS ANALYSIS
- ☐ Particle Identification
- ☐ Full Particle Identification
- ☐ Dust Mites and Insect Fragments
- ☐ Particle Size & Distribution
- ☐ Product Comparison
- ☐ Paint Characterization
- ☐ Failure Analysis
- ☐ Corrosion Analysis
- ☐ Glove Box Containment Study
- ☐ Petrographic Examination of Concrete
- ☐ Portland Cement in Workplace Atmospheres (OSHA ID-143)
- ☐ Man Made Vitrous Fibers – MMVF's
- ☐ Synthetic Fiber Identification
- ☐ Other:

MICROBIAL ANALYSIS

Air Samples
- ☐ Mold & Fungi by Air O Cell
- ☐ Mold & Fungi by Agar Plate count & id
- ☐ Bacterial Count and Gram Stain
- ☐ Bacterial Count and Identification

Water Samples
- ☐ Total Coliforms, Fecal Coliforms
- ☐ Escherichia Coli, Fecal Streptococcus
- ☐ Legionella
- ☐ Salmonella
- ☐ Giardia and Cryptosporidium

Wipe and Bulk Samples
- ☐ Mold & Fungi – Direct Examination
- ☐ Mold & Fungi – (Culture follow up to direct examination if necessary)
- ☐ Mold & Fungi – Culture (Count & ID)
- ☐ Mold & Fungi – Culture (Count only)
- ☐ Bacterial Count & Gram Stain
- ☐ Bacterial Count & Identification (3 most prominent types)
- ☐ Other:

IAQ ANALYSIS
- ☐ Nuisance Dust (NIOSH 0500 & 0600)
- ☐ Airborne Dust (PM10, TSP)
- ☐ Silica Analysis by XRD ☐ NIOSH 7500
- ☐ HVAC Efficiency
- ☐ Carbon Black
- ☐ Airborne Oil Mist
- ☐ Other:

Relinquished:	[signature]	Date:	4/6/10	Time:	1310
Received:	Sylvia Moreno	Date:	4/6/10	Time:	1300 PM DO
Relinquished:		Date:		Time:	
Received:		Date:		Time:	

0910003224

EMSL ANALYTICAL, INC.

EMSL – San Leandro • 2235 Polvorosa Ave, Suite 230, San Leandro, CA 94577

	SAMPLE NUMBER	SAMPLE DESCRIPTION	LOCATION	VOLUME Air (L) Area (Inches sq.)
1	153-1A	CEMENTITIOUS PIPE		
2	153-1B	↓		
3	153-2A	GUARD RAIL SHIM		
4	153-2B	↓		
5	153-3A	DECK JOINT MATERIAL		
6	153-3B	↓		
7	15R-1A	BLACK PIPE		
8	15R-1B	↓		
9	15R-2A	BROWN FIBERBOARD		
10	15R-2B	↓		
11	15R-3A	GUARD RAIL SHIM		
12	15L-1A	BLACK PIPE		
13	15L-1B	↓		
14	15L-2A	DECK JOINT MATERIAL		
15	15L-2B	↓		
16	15L-3A	GUARD RAIL SHIM		
17	15L-4A	BROWN FIBERBOARD		
18	15L-4B	↓		
19	66-1A	CEMENTITIOUS PIPE		
20	66-1B	↓		
21	203-1A	GUARD RAIL SHIM		
22	203-1B	↓		
23	203-2A	CEMENTITIOUS PIPE		
24	203-2B	↓		
25				

Client Sample # (S)

TOTAL SAMPLE #

Relinquished: Date: Time:

Received: Date: 4/6/10 Time: 1300 PM DO

Relinquished: Date: Time:

Received: Date: Time:

0910003224

EMSL ANALYTICAL, INC.

EMSL – San Leandro • 2235 Polvorosa Ave, Suite 230, San Leandro, CA 94577

(888) 455-3675 • Phone (510) 895-3675 • Fax (510) 895-3680 • sanleandrolab@emsl.com

EMSL Rep:	TERRI LANSING	*Third Party Billing*	**requires written authorization from third party*
Company:	GEOCON	EMSL-Bill to:	
Contact:	CHRIS GIUNTOLI	Contact:	
Address:	6671 BRISA ST	Address:	
City & State:	LIVERMORE, CA Zip 94550	City & State:	Zip
Phone:	925-371-5900	Fax:	
☒ Email Results	GIUNTOLI@GEOCONINC.COM	☐ Fax results	
Project Name or Number:	E8474-06-01	Purchase Order Number:	

TURNAROUND TIME

☐ 3 Hours	☐ 6 Hours	☐ 24 Hours	☐ 48 Hours	☐ 72 Hours	☒ 5 Days	☐ 10 Days

SAMPLE MATRIX

☐ Air	☒ Bulk	☐ Soil	☐ Wipe	☐ Micro-Vac	☐ Drinking Water	☐ Wastewater	☐ Chips	☐ Other

ASBESTOS ANALYSIS

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- ☐ NIOSH 7402 Issue 2
- ☐ EPA Level II

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- ☒ EPA 600/R-93/116
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- ☐ ASTM D-6480 (Quantitative)

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OTHER: _____

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- ☐ Air, NIOSH 7082
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☐ TCLP LEAD SW846-1311/7420

Graphite Furnace Atomic Absorption
- ☐ Air, NIOSH 7105
- ☐ Wastewater, SW846-7421
- ☐ Soil, SW846-7421
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- ☐ Wipe, SW846-6010 ☐ ASTM ☐ non ASTM
- ☐ Soil, SW846-6010
- ☐ Air, NIOSH 7300

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- ☐ Full Particle Identification
- ☐ Dust Mites and Insect Fragments
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- ☐ Paint Characterization
- ☐ Failure Analysis
- ☐ Corrosion Analysis
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- ☐ Petrographic Examination of Concrete
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- ☐ Man Made Vitrous Fibers – MMVF's
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- ☐ Airborne Dust (PM10, TSP)
- ☐ Silica Analysis by XRD ☐ NIOSH 7500
- ☐ HVAC Efficiency
- ☐ Carbon Black
- ☐ Airborne Oil Mist
- ☐ Other: _____

Relinquished:	Chris Giuntoli	Date:	4/6/10	Time:	1300
Received:	Sylvia Nosek	Date:	4/6/10	Time:	1300 PM 00
Relinquished:		Date:		Time:	
Received:		Date:		Time:	

0910003224

EMSL – San Leandro ♦ 2235 Polvorosa Ave, Suite 230, San Leandro, CA 94577

	SAMPLE NUMBER	SAMPLE DESCRIPTION	LOCATION	VOLUME Air (L) Area (Inches sq.)
1.	85-1A	DECK JOINT MATERIAL		
2.	85-1B	↓		
3.	85-2A	GUARD RAIL SHIM		
4.	85-2B	↓		
5.	85-3A	CEMENTITIOUS PIPE		
6.	85-3B	↓		
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Client Sample # (S) _____ TOTAL SAMPLE # _____

Relinquished:	Date:		Time:
Received:	Date:	4/6/10	Time: 1300 PM PO
Relinquished:	Date:		Time:
Received:	Date:		Time:

EMSL Analytical, Inc
2235 Polvorosa Ave , Suite 230, San Leandro, CA 94577
Phone: (510) 895-3675 Fax: (510) 895-3680 Email: milpitaslab@emsl.com

Attn: **Chris Giuntoli**
Geocon Consultants
6671 Brisa Street
Livermore, CA 94550

Fax: (925) 371-5915 Phone: (925) 371-5900
Project: **E8474-06-01**

Customer ID: GECN21
Customer PO: E8474-06-01
Received: 04/06/10 1:00 PM
EMSL Order: 091003224

EMSL Proj:
Analysis Date: 4/12/2010

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
153-1A-Cementitious Pipe *091003224-0001*		Gray Fibrous Homogeneous		85% Non-fibrous (other)	**15% Chrysotile**
153-1B-Cementitious Pipe *091003224-0002*		Gray Fibrous Homogeneous		85% Non-fibrous (other)	**15% Chrysotile**
153-2A-Guard Rail Shim *091003224-0003*		Gray Fibrous Homogeneous		50% Non-fibrous (other)	**50% Chrysotile**
153-2B-Guard Rail Shim *091003224-0004*		Gray Fibrous Homogeneous		50% Non-fibrous (other)	**50% Chrysotile**
153-3A-Deck Joint Material *091003224-0005*		Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
153-3B-Deck Joint Material *091003224-0006*		Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**

Analyst(s)

Grant Mays (30)

Baojia Ke, Laboratory Manager
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client.Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Analytical, Inc 2235 Polvorosa Ave , Suite 230, San LeandroCA NVLAP Lab Code 101048-3, MA AA000201, WA C2007

EMSL Analytical, Inc
2235 Polvorosa Ave , Suite 230, San Leandro, CA 94577
Phone: (510) 895-3675 Fax: (510) 895-3680 Email: milpitaslab@emsl.com

Attn: **Chris Giuntoli**
Geocon Consultants
6671 Brisa Street
Livermore, CA 94550

Fax: (925) 371-5915 Phone: (925) 371-5900
Project: **E8474-06-01**

Customer ID: GECN21
Customer PO: E8474-06-01
Received: 04/06/10 1:00 PM
EMSL Order: 091003224

EMSL Proj:
Analysis Date: 4/12/2010

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos			Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**		**% Non-Fibrous**	**% Type**
15R-1A-Pipe *091003224-0007*		Black Fibrous Homogeneous	15%	Cellulose	85% Non-fibrous (other)	**None Detected**
15R-1B-Pipe *091003224-0008*		Black Fibrous Homogeneous	15%	Cellulose	85% Non-fibrous (other)	**None Detected**
15R-2A-Fiberboard *091003224-0009*		Brown Fibrous Homogeneous	95%	Cellulose	5% Non-fibrous (other)	**None Detected**
15R-2B-Fiberboard *091003224-0010*		Brown Fibrous Homogeneous	95%	Cellulose	5% Non-fibrous (other)	**None Detected**
15R-3A-Guard Rail Shim *091003224-0011*		Gray Fibrous Homogeneous			50% Non-fibrous (other)	**50% Chrysotile**
15L-1A-Pipe *091003224-0012*		Black Fibrous Homogeneous	15%	Cellulose	85% Non-fibrous (other)	**None Detected**
15L-1B-Pipe *091003224-0013*		Black Fibrous Homogeneous	15%	Cellulose	85% Non-fibrous (other)	**None Detected**

Analyst(s)

Grant Mays (30)

Baojia Ke, Laboratory Manager
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client.Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Analytical, Inc 2235 Polvorosa Ave , Suite 230, San LeandroCA NVLAP Lab Code 101048-3, MA AA000201, WA C2007

EMSL Analytical, Inc
2235 Polvorosa Ave , Suite 230, San Leandro, CA 94577
Phone: (510) 895-3675 Fax: (510) 895-3680 Email: milpitaslab@emsl.com

Attn: **Chris Giuntoli**
Geocon Consultants
6671 Brisa Street
Livermore, CA 94550

Fax: (925) 371-5915 Phone: (925) 371-5900
Project: **E8474-06-01**

Customer ID: GECN21
Customer PO: E8474-06-01
Received: 04/06/10 1:00 PM
EMSL Order: 091003224

EMSL Proj:
Analysis Date: 4/12/2010

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos			Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**		**% Non-Fibrous**	**% Type**
15L-2A-Deck Joint Material *091003224-0014*		White/Black Non-Fibrous Heterogeneous			100% Non-fibrous (other)	**None Detected**
15L-2B-Deck Joint Material *091003224-0015*		White/Black Non-Fibrous Heterogeneous			100% Non-fibrous (other)	**None Detected**
15L-3A-Guard Rail Shim *091003224-0016*		Gray Fibrous Homogeneous			50% Non-fibrous (other)	**50% Chrysotile**
15L-4A-Fiberboard *091003224-0017*		Brown Fibrous Homogeneous	95%	Cellulose	5% Non-fibrous (other)	**None Detected**
15L-4B-Fiberboard *091003224-0018*		Brown Fibrous Homogeneous	95%	Cellulose	5% Non-fibrous (other)	**None Detected**
66-1A-Cementitious Pipe *091003224-0019*		Gray Fibrous Homogeneous			85% Non-fibrous (other)	**15% Chrysotile**

Analyst(s)

Grant Mays (30)

Baojia Ke, Laboratory Manager
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client.Samples received in good condition unless otherwise noted.
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Attn: **Chris Giuntoli**
Geocon Consultants
6671 Brisa Street
Livermore, CA 94550

Fax: (925) 371-5915 Phone: (925) 371-5900
Project: **E8474-06-01**

Customer ID: GECN21
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Received: 04/06/10 1:00 PM
EMSL Order: 091003224

EMSL Proj:
Analysis Date: 4/12/2010

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
66-1B-Cementitious Pipe *091003224-0020*		Gray Fibrous Homogeneous		85% Non-fibrous (other)	**15% Chrysotile**
203-1A-Guard Rail Shim *091003224-0021*		Gray Fibrous Homogeneous		50% Non-fibrous (other)	**50% Chrysotile**
203-1B-Guard Rail Shim *091003224-0022*		Gray Fibrous Homogeneous		50% Non-fibrous (other)	**50% Chrysotile**
203-2A-Cementitious Pipe *091003224-0023*		Gray Fibrous Homogeneous		85% Non-fibrous (other)	**15% Chrysotile**
203-2B-Cementitious Pipe *091003224-0024*		Gray Fibrous Homogeneous		85% Non-fibrous (other)	**15% Chrysotile**
85-1A-Deck Joint Material *091003224-0025*		Gray Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**

Analyst(s)

Grant Mays (30)

Baojia Ke, Laboratory Manager
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client.Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Analytical, Inc 2235 Polvorosa Ave , Suite 230, San LeandroCA NVLAP Lab Code 101048-3, MA AA000201, WA C2007

EMSL Analytical, Inc
2235 Polvorosa Ave , Suite 230, San Leandro, CA 94577
Phone: (510) 895-3675 Fax: (510) 895-3680 Email: milpitaslab@emsl.com

Attn: **Chris Giuntoli**
Geocon Consultants
6671 Brisa Street
Livermore, CA 94550

Fax: (925) 371-5915 Phone: (925) 371-5900
Project: **E8474-06-01**

Customer ID: GECN21
Customer PO: E8474-06-01
Received: 04/06/10 1:00 PM
EMSL Order: 091003224

EMSL Proj:
Analysis Date: 4/12/2010

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
85-1B-Deck Joint Material *091003224-0026*		Gray Non-Fibrous Heterogeneous		100% Non-fibrous (other)	**None Detected**
85-2A-Guard Rail Shim *091003224-0027*		Gray Fibrous Homogeneous		50% Non-fibrous (other)	**50% Chrysotile**
85-2B-Guard Rail Shim *091003224-0028*		Gray Fibrous Homogeneous		50% Non-fibrous (other)	**50% Chrysotile**
85-3A-Cementitious Pipe *091003224-0029*		Gray Fibrous Homogeneous		85% Non-fibrous (other)	**15% Chrysotile**
85-3B-Cementitious Pipe *091003224-0030*		Gray Fibrous Homogeneous		85% Non-fibrous (other)	**15% Chrysotile**

Analyst(s)

Grant Mays (30)

Baojia Ke, Laboratory Manager
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client.Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Analytical, Inc 2235 Polvorosa Ave , Suite 230, San LeandroCA NVLAP Lab Code 101048-3, MA AA000201, WA C2007

THIS IS THE LAST PAGE OF THE REPORT.

091083287

EMSL – San Leandro • 2235 Polvorosa Ave, Suite 230, San Leandro, CA 94577

(888) 455-3675 • Phone (510) 895-3675 • Fax (510) 895-3680 • sanleandrolab@emsl.com

EMSL Rep:	TERRI LANZING	*Third Party Billing*	**requires written authorization from third party*
Company:	GEOCON	EMSL-Bill to:	
Contact:	CHRIS GIUNTOLI	Contact:	
Address:	6671 BRISA ST	Address:	
City & State:	LIVERMORE, CA Zip 94550	City & State:	Zip
Phone:	925-371-5900	Fax:	
☒ Email Results	GIUNTOLI@GEOCONINC.COM	☐ Fax results	
Project Name or Number:	E8474-06-01	Purchase Order Number:	

TURNAROUND TIME

☐ 3 Hours ☐ 6 Hours ☐ 24 Hours ☐ 48 Hours ☐ 72 Hours ☒ 5 Days ☐ 10 Days

SAMPLE MATRIX

☐ Air ☒ Bulk ☐ Soil ☐ Wipe ☐ Micro-Vac ☐ Drinking Water ☐ Wastewater ☐ Chips ☐ Other

ASBESTOS ANALYSIS

PCM - Air
- ☐ NIOSH 7400 (A) Issue 2: August 1994
- ☐ OSHA w/ Time Weighted Average

TEM AIR
- ☐ AHERA 40 CFR, Part 763 Subpart E
- ☐ NIOSH 7402 Issue 2
- ☐ EPA Level II

PLM - Bulk
- ☒ EPA 600/R-93/116
- ☐ + Add Gravimetric Reduction (EPA NOB)
- PLM CARB 435 Level: ☐ A (0.25%) ☐ B (0.1%)
- ☐ NIOSH 9002
- ☐ EPA Point Count (400 Points)
- ☐ + Add Gravimetric Reduction (EPA NOB)
- ☐ EPA Point Count (1,000 Points)
- ☐ + Add Gravimetric Reduction (EPA NOB)
- ☐ Standard Addition Point Count

SOILS
- PLM CARB 435 Level: ☐ A (0.25%) ☐ B (0.1%)
- TEM CARB 435 Level: ☐ B (0.1%) ☐ C (0.01%) ☐ D (0.001%) ☐ E (0.0005%) ☐ F (0.0001%)
- ☐ EMSL MSD 9000 Method fibers/gram
- ☐ Superfund EPA 540-R097-028 (dust generation)
- EPA Protocol ☐ Qualitative ☐ Quantitative

TEM BULK
- ☐ TEM EPA NOB, EPA 600/R-93/116 Section 2.5.5.1 (TEM % by VAE)
- ☐ Chatfield SOP-1988-02
- ☐ TEM EPA 600/R-93/116 Section 2.5.5.2 (TEM % by Mass)

TEM MICROVAC
- ☐ ASTM D 5755 (Quantitative)

TEM WIPE
- ☐ ASTM D-6480 (Quantitative)

TEM WATER
- ☐ EPA 100.2 (≥ 10 microns)
- ☐ Modified EPA 100.2 (≥ 0.5 microns)

OTHER:

LEAD ANALYSIS

Flame Atomic Absorption
- ☐ Wipe, SW846-7420 ☐ ASTM ☐ non ASTM
- ☐ Soil, SW846-7420
- ☐ Air, NIOSH 7082
- ☐ Chips, SW846-7420 or AOAC 5.009 (974.02)
- ☐ Wastewater, SW 846-7420

☐ TCLP LEAD SW846-1311/7420

Graphite Furnace Atomic Absorption
- ☐ Air, NIOSH 7105
- ☐ Wastewater, SW846-7421
- ☐ Soil, SW846-7421
- ☐ Drinking Water, EPA 239.2

ICP – Inductively Coupled Plasma
- ☐ Wipe, SW846-6010 ☐ ASTM ☐ non ASTM
- ☐ Soil, SW846-6010
- ☐ Air, NIOSH 7300

MATERIALS ANALYSIS

- ☐ Particle Identification
- ☐ Full Particle Identification
- ☐ Dust Mites and Insect Fragments
- ☐ Particle Size & Distribution
- ☐ Product Comparison
- ☐ Paint Characterization
- ☐ Failure Analysis
- ☐ Corrosion Analysis
- ☐ Glove Box Containment Study
- ☐ Petrographic Examination of Concrete
- ☐ Portland Cement in Workplace Atmospheres (OSHA ID-143)
- ☐ Man Made Vitrous Fibers – MMVF's
- ☐ Synthetic Fiber Identification
- ☐ Other:

MICROBIAL ANALYSIS

Air Samples
- ☐ Mold & Fungi by Air O Cell
- ☐ Mold & Fungi by Agar Plate count & id
- ☐ Bacterial Count and Gram Stain
- ☐ Bacterial Count and Identification

Water Samples
- ☐ Total Coliforms, Fecal Coliforms
- ☐ Escherichia Coli, Fecal Streptococcus
- ☐ Legionella
- ☐ Salmonella
- ☐ Giardia and Cryptosporidium

Wipe and Bulk Samples
- ☐ Mold & Fungi – Direct Examination
- ☐ Mold & Fungi – (Culture follow up to direct examination if necessary)
- ☐ Mold & Fungi – Culture (Count & ID)
- ☐ Mold & Fungi – Culture (Count only)
- ☐ Bacterial Count & Gram Stain
- ☐ Bacterial Count & Identification (3 most prominent types)
- ☐ Other:

IAQ ANALYSIS

- ☐ Nuisance Dust (NIOSH 0500 & 0600)
- ☐ Airborne Dust (PM10, TSP)
- ☐ Silica Analysis by XRD ☐ NIOSH 7500
- ☐ HVAC Efficiency
- ☐ Carbon Black
- ☐ Airborne Oil Mist
- ☐ Other:

Relinquished:	Chris Giuntoli	Date:	4/12/10	Time:	1715
Received:	[signature]	Date:	4/13/10	Time:	0900 LQ
Relinquished:		Date:		Time:	
Received:		Date:		Time:	

EMSL ANALYTICAL, INC.

EMSL – San Leandro • 2235 Polvorosa Ave, Suite 230, San Leandro, CA 94577

	SAMPLE NUMBER	SAMPLE DESCRIPTION	LOCATION	VOLUME Air (L) Area (Inches sq.)
1	150L-1A	BLACK FIBER BOARD		
2	150L-1B	↓		
3	150L-2	DECK JOINT MATERIAL		
4	SW-1	TAN PAINT		
5	SW-2	BROWN PAINT		
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

Client Sample # (S) _____ TOTAL SAMPLE # _____

Relinquished: _____ Date: _____ Time: _____
Received: Meaney Date: 4/18/10 Time: 0900 PT
Relinquished: _____ Date: _____ Time: _____
Received: _____ Date: _____ Time: _____

EMSL Analytical, Inc
2235 Polvorosa Ave , Suite 230, San Leandro, CA 94577
Phone: (510) 895-3675 Fax: (510) 895-3680 Email: milpitaslab@emsl.com

Attn: **Geocon Consultants**
6671 Brisa Street
Livermore, CA 94550

Fax: (925) 371-5915 Phone: (925) 371-5900
Project: **E8474-06-01**

Customer ID: GECN21
Customer PO: E8474-06-01
Received: 04/13/10 9:00 AM
EMSL Order: 091003287
EMSL Proj:
Analysis Date: 4/19/2010

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
150L-1A-Fiberboard *091003287-0001*		Black Fibrous Homogeneous	60%	Cellulose	40%	Non-fibrous (other)	**None Detected**
150L-1B-Fiberboard *091003287-0002*		Black Fibrous Homogeneous	60%	Cellulose	40%	Non-fibrous (other)	**None Detected**
150L-2-Deck Joint Material *091003287-0003*		Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
SW-1-Paint *091003287-0004*		Tan Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
SW-2-Paint *091003287-0005*		Brown Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**

Analyst(s)

Grant Mays (5)

Baojia Ke, Laboratory Manager
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc 2235 Polvorosa Ave , Suite 230, San LeandroCA NVLAP Lab Code 101048-3, MA AA000201, WA C2007

THIS IS THE LAST PAGE OF THE REPORT.

April 15, 2010

Chris Giuntoli
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 371-5900
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111133

RE: I-580 WB, E8474-06-01

Attention: Chris Giuntoli

Enclosed are the results for sample(s) received on April 08, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

Advanced Technology Laboratories
3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

CLIENT:	Geocon Consultants, Inc.	**Client Sample ID:**	203-P1
Lab Order:	111133	**Collection Date:**	4/2/2010
Project:	I-580 WB, E8474-06-01	**Matrix:**	PAINT
Lab ID:	111133-001A		

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP10_100414F	QC Batch: 63359			PrepDate: 4/14/2010		Analyst: **SRB**
Lead	24	4.0		mg/Kg	1	4/14/2010 02:45 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111133
Project: I-580 WB, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63359**	SampType: **MBLK**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/14/2010**	RunNo: **120144**
Client ID: **PBS**	Batch ID: **63359**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/14/2010**	SeqNo: **1915380**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	1.0									

Sample ID: **LCS-63359**	SampType: **LCS**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/14/2010**	RunNo: **120144**
Client ID: **LCSS**	Batch ID: **63359**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/14/2010**	SeqNo: **1915381**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	43.968	1.0	50.00	0	87.9	80	120				

Sample ID: **MB-63359-MS**	SampType: **MS**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/14/2010**	RunNo: **120144**
Client ID: **ZZZZZZ**	Batch ID: **63359**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/14/2010**	SeqNo: **1915382**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	114.970	1.0	125.0	0	92.0	34	126				

Sample ID: **MB-63359-MSD**	SampType: **MSD**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/14/2010**	RunNo: **120144**
Client ID: **ZZZZZZ**	Batch ID: **63359**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/14/2010**	SeqNo: **1915383**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	118.822	1.0	125.0	0	95.1	34	126	115.0	3.30	20	

Sample ID: **111133-001A-DUP**	SampType: **DUP**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/14/2010**	RunNo: **120144**
Client ID: **203-P1**	Batch ID: **63359**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/14/2010**	SeqNo: **1915385**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	23.834	4.0						24.40	2.33	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CHAIN OF CUSTODY RECORD

Pg 1 of 1

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____

Logged By: _____ Date: 4/8/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: GSO

Sample Condition Upon Receipt: 5.0

1. CHILLED Y ☑ N ☐ 4. SEALED Y ☐ N ☐
2. HEADSPACE (VOA) n/a Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☑ N ☐
3. CONTAINER INTACT Y ☑ N ☐ 6. PRESERVED Y ☐ N ☑

Client: GEOCON CONSULTANTS, INC.	Address: 6671 Brisa Street	TEL: (925) 371-5900
Attn: CHRIS GIUNTOLI	City Livermore State CA Zip Code 94550	FAX: (925) 371-5915

Project Name: I-580 WB Project #: E8474-06-01 Sampler: (Printed Name) CGIUNTOLI (Signature)

Relinquished by: (Signature and Printed Name) Date: 4/7/10 Time: 1645 Received by: (Signature and Printed Name) Date: 4/8/10 Time: 935

Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
CGIUNTOLI
Print Name Date
Signature

Send Report To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State _____ Zip _____

Bill To:
Attn: _____
Co: SAME AS ABOVE
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:
SOLUBLE LEAD MAY BE REQUESTED BASED ON TOTAL LEAD RESULTS

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX

PRESERVATION

Q A / Q C
RTNE ☐
CT ☒
SWRCB ☐
Logcode ____
OTHER ____

ITEM	LAB USE ONLY: Batch # / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / BTEX	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000)	TOTAL LEAD	SOIL	WATER	GROUND WATER	WASTEWATER	PAINT	TAT	Container(s) #	Container(s) Type	REMARKS
	111133-01A	203-P1	4/2/10											X				X		E	1	P B	

- TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

April 19, 2010

Chris Giuntoli
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 371-5900
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111179

RE: I-580 WB HOV LANE, E8474-06-01

Attention: Chris Giuntoli

Enclosed are the results for sample(s) received on April 10, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

CLIENT: Geocon Consultants, Inc.
Project: I-580 WB HOV LANE, E8474-06-01
Lab Order: 111179

CASE NARRATIVE

Analytical Comments for Method 6010

Dilution was necessary for samples 111179-001A, 111179-002A, 111179-003A and 111179-004A, due to sample matrix.

RPD for Duplicate (DUP) is outside criteria for sample 111179-002ADUP; however, the Laboratory Control Sample (LCS) validated the analytical batch.

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CLIENT: Geocon Consultants, Inc. **Lab Order:** 111179
Project: I-580 WB HOV LANE, E8474-06-01

Lab ID: 111179-001 **Collection Date:** 4/9/2010
Client Sample ID: SW-P1A **Matrix:** PAINT

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100416D	QC Batch: 63444			PrepDate: 4/16/2010	Analyst: **SRB**	
Lead	73	10		mg/Kg	5	4/16/2010 04:17 PM

Lab ID: 111179-002 **Collection Date:** 4/9/2010
Client Sample ID: SW-P1B **Matrix:** PAINT

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100416D	QC Batch: 63444			PrepDate: 4/16/2010	Analyst: **SRB**	
Lead	100	10		mg/Kg	5	4/16/2010 04:21 PM

Lab ID: 111179-003 **Collection Date:** 4/9/2010
Client Sample ID: SW-P2A **Matrix:** PAINT

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100416D	QC Batch: 63444			PrepDate: 4/16/2010	Analyst: **SRB**	
Lead	76	10		mg/Kg	5	4/16/2010 04:29 PM

Lab ID: 111179-004 **Collection Date:** 4/9/2010
Client Sample ID: SW-P2B **Matrix:** PAINT

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS						
	EPA 3050B			**EPA 6010B**		
RunID: ICP8_100416D	QC Batch: 63444			PrepDate: 4/16/2010	Analyst: **SRB**	
Lead	85	10		mg/Kg	5	4/16/2010 04:43 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111179
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID: **MB-63444**	SampType: **MBLK**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120279**
Client ID: **PBS**	Batch ID: **63444**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/16/2010**	SeqNo: **1918028**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	1.0									

Sample ID: **LCS-63444**	SampType: **LCS**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120279**
Client ID: **LCSS**	Batch ID: **63444**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/16/2010**	SeqNo: **1918029**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	48.291	1.0	50.00	0	96.6	80	120				

Sample ID: **111179-002A-DUP**	SampType: **DUP**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120279**
Client ID: **SW-P1B**	Batch ID: **63444**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/16/2010**	SeqNo: **1918032**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	75.032	10						100.2	28.7	20	R

Sample ID: **111179-003A-MS**	SampType: **MS**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120279**
Client ID: **SW-P2A**	Batch ID: **63444**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/16/2010**	SeqNo: **1918034**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	286.861	10	250.0	76.14	84.3	34	126				

Sample ID: **111179-003A-MSD**	SampType: **MSD**	TestCode: **6010_S**	Units: **mg/Kg**	Prep Date: **4/16/2010**	RunNo: **120279**
Client ID: **SW-P2A**	Batch ID: **63444**	TestNo: **EPA 6010B**	**EPA 3050B**	Analysis Date: **4/16/2010**	SeqNo: **1918035**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	306.167	10	250.0	76.14	92.0	34	126	286.9	6.51	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CHAIN OF CUSTODY RECORD

Pg 1 of 1

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____

Logged By: _____ Date: 4/10/10

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FEDEX ☐ Other: GSO

Sample Condition Upon Receipt
1. CHILLED 7.3 Y☒ N☐ 4. SEALED Y☐ N☒
2. HEADSPACE (VOA) N/A Y☐ N☐ 5. # OF SPLS MATCH COC Y☒ N☐
3. CONTAINER INTACT Y☒ N☐ 6. PRESERVED Y☐ N☒

Client: GEOCON
Attn: CHRIS GIUNTOLI
Address: 6671 BRISA ST
City LIVERMORE State CA Zip Code 94550
TEL: (925) 371-5900
FAX: (925) 371-5915

Project Name: I-580 WB HOV LANE Project #: E8474-06-01 Sampler: (Printed Name) CGIUNTOLI (Signature)

Relinquished by: (Signature and Printed Name)	Date: 4/9/10	Time: 1645	Received by: (Signature and Printed Name) FP DOWN	Date: 4/13/10	Time: 0805
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
CGIUNTOLI 4/9/10
Print Name Date
Signature

Send Report To:
Attn: SAME
Co: _____
Address _____
City _____ State _____ Zip _____

Bill To:
Attn: SAME
Co: _____
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:
*SOLUBLE LEAD MAY BE REQUESTED BASED ON TOTAL LEAD RESULTS

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX

PRESERVATION

Q A / Q C
RTNE ☐
CT ☒
SWRCB ☐
Logcode ____
OTHER ____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D. / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles)	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / 8020 (BTEX)	8015B (DRO)	8021 (BTEX)	TITLE 22 / CAM 17 (6010 / 7000) TOTAL LEAD	SOIL	WATER	GROUND WATER	WASTEWATER PAINT	TAT	Container(s) #	Container(s) Type	REMARKS
	111179-001	SW-P1A	4/9/10										X				X	E	1	PT	
	-2	SW-P1B																			
	-3	SW-PZA																			
	-4	SW-PZB																			

- TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives:
H=Hcl $N=HNO_3$ $S=H_2SO_4$ C=4°C
$Z=Zn(AC)_2$ O=NaOH $T=Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

April 27, 2010

Chris Giuntoli
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 371-5900
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111179

RE: I-580 WB HOV LANE, E8474-06-01

Attention: Chris Giuntoli

Enclosed are the results for sample(s) received on April 10, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

Advanced Technology Laboratories

Date: 4/27/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (STLC)
WET/ EPA 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111179
Project:	I-580 WB HOV LANE, E8474-06-01	**Date Received**	4/10/2010 8:05:00 AM
Project No:		**Matrix:**	Paint
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111179-001A	SW-P1A	11	mg/L	63543	0.25	1	4/9/2010	4/23/2010
111179-002A	SW-P1B	13	mg/L	63543	0.25	1	4/9/2010	4/23/2010
111179-003A	SW-P2A	10	mg/L	63544	0.25	1	4/9/2010	4/23/2010
111179-004A	SW-P2B	9.8	mg/L	63544	0.25	1	4/9/2010	4/23/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111179
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-63543A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120479**
Client ID: **PBS**	Batch ID: **63543**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922506**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63543**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120479**
Client ID: **LCSS**	Batch ID: **63543**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922507**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.930	0.25	5.000	0	98.6	80	120				

Sample ID: **111162-089A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120479**
Client ID: **ZZZZZZ**	Batch ID: **63543**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922518**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	6.795	0.25						6.831	0.529	20	

Sample ID: **111162-089A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120479**
Client ID: **ZZZZZZ**	Batch ID: **63543**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922519**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	12.116	0.50	5.000	6.831	106	80	120				

Sample ID: **MB-63543B**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120479**
Client ID: **PBS**	Batch ID: **63543**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922520**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111179
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **111162-257A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120479**
Client ID: **ZZZZZZ**	Batch ID: **63543**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922531**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	7.810	0.25						7.840	0.389	20	

Sample ID: **111162-257A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120479**
Client ID: **ZZZZZZ**	Batch ID: **63543**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922532**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	13.498	0.50	5.000	7.840	113	80	120				

Sample ID: **111162-257A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120479**
Client ID: **ZZZZZZ**	Batch ID: **63543**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922533**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	13.026	0.50	5.000	7.840	104	80	120	13.50	3.56	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111179
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_ST

Sample ID: **MB-63544A**	SampType: **MBLK**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120480**
Client ID: **PBS**	Batch ID: **63544**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922534**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63544**	SampType: **LCS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120480**
Client ID: **LCSS**	Batch ID: **63544**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922535**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.056	0.25	5.000	0	101	80	120				

Sample ID: **111180-047A-DUP**	SampType: **DUP**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120480**
Client ID: **ZZZZZZ**	Batch ID: **63544**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922539**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.808	0.25						2.829	0.747	20	

Sample ID: **111180-047A-MS**	SampType: **MS**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120480**
Client ID: **ZZZZZZ**	Batch ID: **63544**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922540**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	7.761	0.25	5.000	2.829	98.6	80	120				

Sample ID: **111180-047A-MSD**	SampType: **MSD**	TestCode: **7420_ST**	Units: **mg/L**	Prep Date: **4/21/2010**	RunNo: **120480**
Client ID: **ZZZZZZ**	Batch ID: **63544**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **4/23/2010**	SeqNo: **1922541**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	7.742	0.25	5.000	2.829	98.3	80	120	7.761	0.246	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Chris Giuntoli [giuntoli@geoconinc.com]
Sent: Tuesday, April 20, 2010 10:25 AM
To: Diane Galvan
Subject: RE: Results - I-580 WB HOV LANE (111179)

Hi Diane,

For Workorder No. 111179, please run WET leads for the four samples on a standard TAT.

Thanks,
Chris

May 04, 2010

Chris Giuntoli
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
TEL: (925) 371-5900
FAX: (925) 371-5915

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 111179

RE: I-580 WB HOV LANE, E8474-06-01

Attention: Chris Giuntoli

Enclosed are the results for sample(s) received on April 10, 2010 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

This is an addendum report. Please incorporate with documentation previously submitted.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories.

Advanced Technology Laboratories

Date: 5/4/2010

ANALYTICAL RESULTS

LEAD BY ATOMIC ABSORPTION (TCLP)
EPA 1311/ 7420

CLIENT:	Geocon Consultants, Inc.	**Lab Order:**	111179
Project:	I-580 WB HOV LANE, E8474-06-01	**Date Received**	4/10/2010 8:05:00 AM
Project No:		**Matrix:**	Paint
Analyte:	Lead	**Analyst:**	IL

Laboratory ID	Client Sample ID	Results	Units	QC Batch	PQL	DF	Date Collected	Date Analyzed
111179-001A	SW-P1A	0.28	mg/L	63810	0.25	1	4/9/2010	5/3/2010
111179-002A	SW-P1B	0.26	mg/L	63810	0.25	1	4/9/2010	5/3/2010
111179-003A	SW-P2A	ND	mg/L	63810	0.25	1	4/9/2010	5/3/2010
111179-004A	SW-P2B	0.28	mg/L	63810	0.25	1	4/9/2010	5/3/2010

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Geocon Consultants, Inc.
Work Order: 111179
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **MB-63810A**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120787**
Client ID: **PBS**	Batch ID: **63810**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927995**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-63785A TCLP**	SampType: **MBLK**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120787**
Client ID: **PBS**	Batch ID: **63810**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927996**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-63810**	SampType: **LCS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120787**
Client ID: **LCSS**	Batch ID: **63810**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1927997**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	1.070	0.25	1.000	0	107	80	120				

Sample ID: **111139-098A-DUP**	SampType: **DUP**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120787**
Client ID: **ZZZZZZ**	Batch ID: **63810**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1928003**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.211	0.25						0.2185	0	20	

Sample ID: **111139-098A-MS**	SampType: **MS**	TestCode: **7420_TC**	Units: **mg/L**	Prep Date: **4/30/2010**	RunNo: **120787**
Client ID: **ZZZZZZ**	Batch ID: **63810**	TestNo: **EPA 1311/ 74**	**EPA3010A**	Analysis Date: **5/3/2010**	SeqNo: **1928004**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.702	0.25	2.500	0.2185	99.3	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: Geocon Consultants, Inc.
Work Order: 111179
Project: I-580 WB HOV LANE, E8474-06-01

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420_TC

Sample ID: **111139-098A-MSD** SampType: **MSD** TestCode: **7420_TC** Units: **mg/L** Prep Date: **4/30/2010** RunNo: **120787**
Client ID: **ZZZZZZ** Batch ID: **63810** TestNo: **EPA 1311/ 74 EPA3010A** Analysis Date: **5/3/2010** SeqNo: **1928005**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.651	0.25	2.500	0.2185	97.3	70	130	2.702	1.91	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out		Calculations are based on raw values		

Diane Galvan

From: Chris Giuntoli [giuntoli@geoconinc.com]
Sent: Tuesday, April 27, 2010 2:16 PM
To: Diane Galvan
Subject: RE: Additional Results/EDD - I-580 WB HOV LANE (111179)

Hi Diane,

Please run TCLPs for lead on the four samples on a standard TAT.

Thanks.