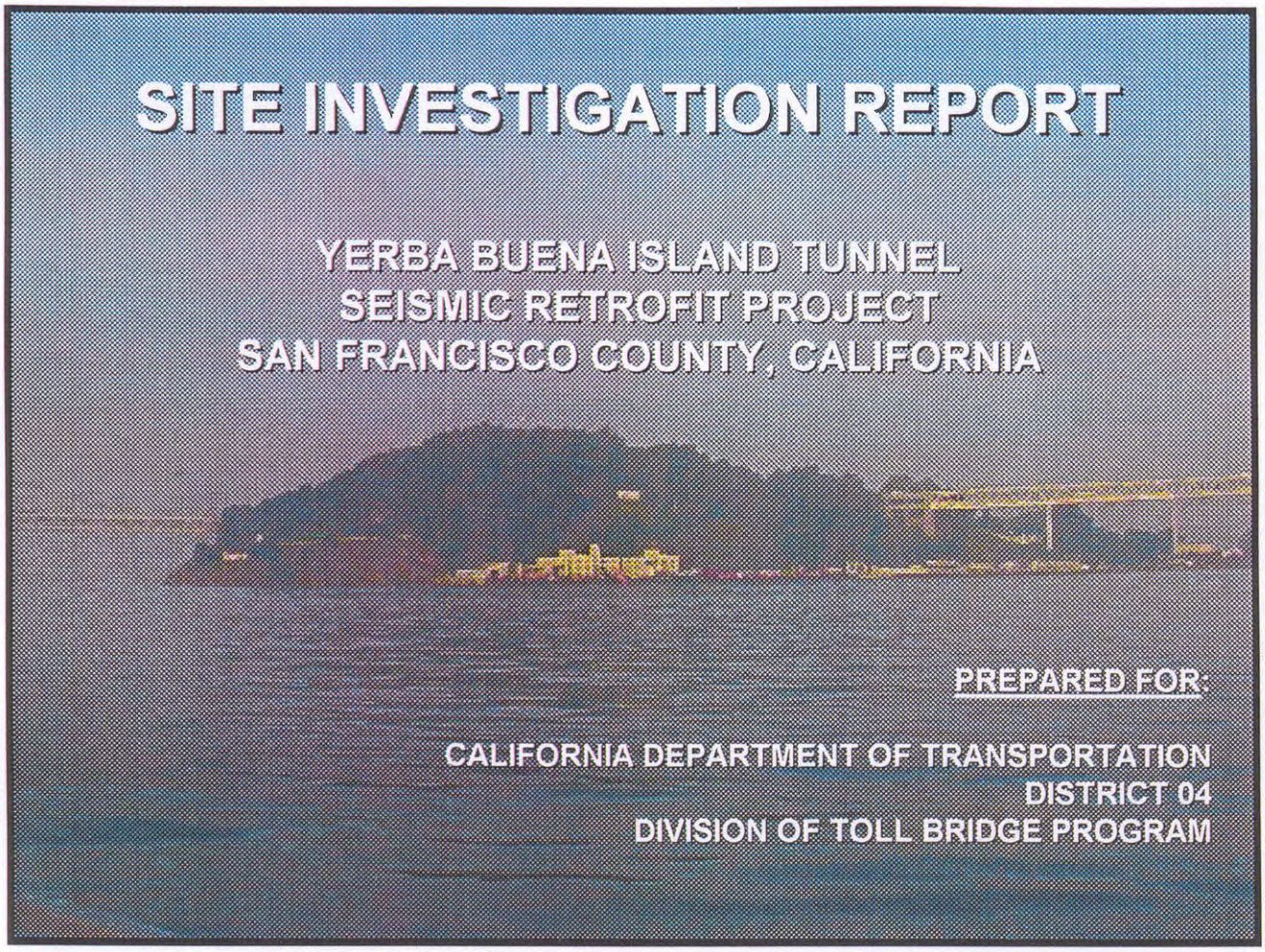
SITE INVESTIGATION REPORT

YERBA BUENA ISLAND TUNNEL
SEISMIC RETROFIT PROJECT
SAN FRANCISCO COUNTY, CALIFORNIA



PREPARED FOR:

CALIFORNIA DEPARTMENT OF TRANSPORTATION
DISTRICT 04
DIVISION OF TOLL BRIDGE PROGRAM

PREPARED BY:

CALIFORNIA DEPARTMENT OF TRANSPORTATION
DISTRICT 04
DIVISION OF TOLL BRIDGE PROGRAM
ENVIRONMENTAL ENGINEERING BRANCH
111 GRAND AVENUE
OAKLAND, CALIFORNIA

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REPORT LIMITATIONS

This report has been prepared exclusively for Caltrans. The information herein is only valid as of the date of the report, and will require an update to reflect additional information obtained. The conclusions presented are based on the current regulatory climate and may require revision if future regulatory changes occur.

The findings and conclusions as presented in this report are predicted 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. The report should only be deemed conclusive with respect to the information obtained.

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 or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

CALIFORNIA DEPARTMENT OF TRANSPORTATION
DIVISION OF TOLL BRIDGE PROGRAM - ENVIRONMENTAL ENGINEERING BRANCH

Prepared by:

Ricky Teczon Jr. 4/22/99
Signature Date

Ricky Teczon Jr.
Civil and Environmental Engineer

Reviewed by:

Michael Flake 4/22/99
Signature Date

Mike Flake, PE
Civil and Environmental Engineer

Charles D. Smith 4/22/99
Signature Date

Charles Smith
Environmental Engineer

Approved by:

Allen Baradar 4/22/99
Signature Date

Allen Baradar, PE, REA
District Branch Chief

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LIST OF ACRONYMS

Caltrans	State of California – Department of Transportation
CCR	California Code of Regulations
CFR	Code of Federal Regulations
DUP	Duplicate
EPA	Environmental Protection Agency
LCS	Laboratory Control Spike
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NA	Not Analyzed
ppm	parts per million
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity Characteristic Leaching Procedure
TTLC	Total Threshold Limit Concentration
WET	Waste Extraction Test
yd^3	cubic yard
<	below detection limit

PROJECT TEAM

Contact	Affiliation	Responsibility
Allen Baradar, PE, REA (510) 286-5636 (510) 286-5650 fax Ricky Teczon Jr. Michael Flake, PE Charles Smith	Caltrans – District 4 Division of Toll Bridge Program Environmental Engineering Branch 111 Grand Avenue, 14th Floor Oakland, CA 94623	Contract Manager Assistant Contract Managers Project Planning and Coordination, Fieldwork, Site Investigation Report
Ross White (925) 469-9750 (925)469-9749 fax	Geocon Environmental Consultants, Inc. 5673 W. Las Positas Blvd., Suite. 205 Pleasanton, CA 94588 (*Caltrans Contractor*)	Fieldwork, Sample Collection, Laboratory Assignments
Cheryl De Los Reyes (562) 989-4045 (562) 989-4040 fax	Advanced Technology Laboratories, Inc. 1510 East 33rd Street Signal Hill, CA 90807 (*Geocon Subcontractor*)	Sample Holding Laboratory Preparation Laboratory Analyses Laboratory QA/QC

EXECUTIVE SUMMARY

This Site Investigation Report presents the results of a limited soil investigation performed at the Yerba Buena Island Tunnel (YBI Tunnel) on the San Francisco-Oakland Bay Bridge (SFOBB). The areas investigated include the soils above and adjacent to the west and east portals of the YBI Tunnel.

The fieldwork for this project was performed under the direct supervision of a Caltrans assistant contract manager. The basic field procedures of this Site Investigation were to collect surficial soil samples and perform laboratory analyses to determine if soils to be excavated are impacted by aerially deposited lead from vehicle exhaust emissions and paint sandblast residue. Surficial soil samples were collected rather than depth samples because of the minor quantity of soil excavation associated with the retrofit project.

Fourteen surficial soil samples were collected on November 23, 1998. Eight surficial soil samples were collected above and adjacent to the west portal (WP1 through WP8) and six surficial soil samples were collected above and adjacent to the east portal (EP1 through EP6).

Twelve soil samples exhibited total lead concentrations greater than ten times the Soluble Threshold Limit Concentration (STLC) value. These samples were subsequently analyzed for soluble lead via the Waste Extraction Test (WET) method. Ten of these samples exhibited soluble lead concentrations greater than the STLC of 5.0 mg/L. These ten soil samples were further analyzed for soluble lead via the Toxicity Characteristic Leaching Potential (TCLP) method and exhibited soluble lead concentrations less than the regulatory threshold of 5.0 mg/L. Other total California Code of Regulations (CCR) Title 22 metals were not detected at concentrations greater than the respective TTLC values or greater than ten times the respective STLC values.

The presence of elevated total and soluble lead levels in surficial soil within the project limits will likely require the management, treatment, and/or disposal of soil generated from excavations during the construction activities as a California hazardous waste.

SITE INVESTIGATION

1.0 INTRODUCTION

This Site Investigation Report presents the results of a limited soil investigation performed at the Yerba Buena Island Tunnel (YBI Tunnel) on the San Francisco-Oakland Bay Bridge (SFOBB). The areas investigated include the soils above and adjacent to the west and east portals of the YBI Tunnel.

1.1 Project Description and Proposed Improvements

The project is located on Route I-80, on the San Francisco-Oakland Bay Bridge, at the Yerba Buena Island Tunnel. The project limits cover the west and east portals of the YBI Tunnel (04-SF-80-7.7/7.8, Bridge No. 34-0004).

Proposed seismic retrofit work at the west portal consists of installing tieback anchors at the face of the portal wall, installing rock bolts at the rock slope of the small wedge at the left shoulder of the portal, retrofit of the portal wall counterforts, and the addition of stiffener beams to the portal wall. The installation of the stiffener beams will necessitate structural excavation and backfill of soil, and the installation of tiebacks and rock bolts will generate residues and debris during drilling of anchorage holes.

Proposed seismic retrofit work at the East Portal consists of installing tieback anchors at the face of the portal wall, retrofit of the portal wall counterforts, addition of stiffener beams to the portal wall, and installation of tieback anchors at the portal retaining walls. The installation of the stiffener beams will necessitate structural excavation and backfill of soil, and the installation of tiebacks will generate residues and debris during drilling of anchorage holes.

1.2 Purpose

Documented sources of metal impacts near the tunnel portals include sandblasting residues of lead paint and aerially deposited lead from vehicle emissions. The objective of this investigation is to determine if contaminated or hazardous materials are present within the soils, due to aerially deposited lead and paint sandblast residue. The location of the structure is depicted on Figure 1 – Vicinity Map. The general site plans for the Yerba Buena Island Tunnel are depicted in Figure 2 – Site Plan. This work was accomplished by collecting surficial soil samples and performing laboratory analyses. The results of this investigation will be used to evaluate health and safety issues; soil re-use options; and appropriate soil disposal requirements.

2.0 BACKGROUND

The existing YBI Tunnel was constructed in the mid-1930s and was modified in the early 1960s. Studies have determined that the arch head walls spanning the tunnel liner at the portals, in addition to the catchment walls on each side of the tunnel are susceptible to failure during a major earthquake event. Additionally, the retaining walls appurtenant to the east portal may be subject to failure, and must be retrofit. To ensure the continuous use of the tunnel, with repairable damage, following a Safety Evaluation Earthquake (Maximum Credible Earthquake) or immediate use with minimal damage following a Functional Evaluation Earthquake, it has been determined that the following strategy will be implemented:

- A grid of rock bolting is necessary to strengthen the arch headwalls at the portals and catchment walls at each side of the tunnel. Rock bolting will be drilled through the walls and lean concrete fill and anchored into the bedrock beyond the fill, with the largest amount of bolting occurring over and beyond tunnel walls where wall height is the greatest. A similar rock bolting strategy will be implemented at the retaining walls appurtenant to the east portal.

- To stabilize the rock slope described above, approximately 15-foot long rock bolts will be drilled into the slope, and will be anchored.

Potential contaminants of concern at the site include heavy metals resulting from aerially deposited lead due to vehicle emissions and paint sandblast residue.

2.1 Hazardous Waste Determination Criteria

Regulatory criteria to classify a waste as "California hazardous" for handling and disposal purposes are contained in the *California Code of Regulations* (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 a waste containing metals, the waste is classified as "California hazardous" when its: 1) total metal content exceeds the Total Threshold Limit Concentration (TTLC); or 2) soluble metal content exceeds the Soluble Threshold Limit Concentration (STLC) based on the Waste Extraction Test (WET) analysis. A material is classified as "RCRA hazardous" when its soluble metal content exceeds the Federal Regulatory Level based on Toxicity Characteristic Leaching Procedure (TCLP) testing.

The above regulatory criteria are based on toxicity. Wastes may also be classified as hazardous based on other criteria such as corrosivity and ignitability. However, for the purpose of this investigation, toxicity (i.e., concentration) is the primary factor considered for waste classification.

Waste that is classified as either "California hazardous" or "RCRA hazardous" requires management as a hazardous waste and disposal to an approved disposal facility.

3.0 SCOPE OF SERVICES

The scope of services for this project includes site meetings, on-site fieldwork, laboratory analyses, and preparation of this Site Investigation Report as described below.

3.1 Pre-Field Activities

- Conducted a pre-work site visit on November 16, 1998 to locate and inspect the work areas and determine the feasibility of proposed sample locations.

- Retained the services of Geocon Environmental Consultants, Inc. to perform sample collection and laboratory assignments.

3.2 Field Activities

The fieldwork for this project was performed under the direct supervision of a Caltrans assistant contract manager. The basic field procedures of this Site Investigation were to collect surficial soil samples and perform laboratory analyses to determine if soils to be excavated are impacted by aerially deposited lead from vehicle exhaust emissions and paint sandblast residue. Surficial soil samples were collected rather than depth samples because of the minor quantity of soil excavation associated with the retrofit project. The site of the investigation is located in Figure 1 – Vicinity Map and depicted in Figure 2 – Site Plan.

Fourteen surficial soil samples were collected on November 23, 1998. Eight surficial soil samples were collected above and adjacent to the west portal (WP1 through WP8) and six surficial soil samples were collected above and adjacent to the east portal (EP1 through EP6). The approximate sampling locations for the west portal and the east portal are depicted on Figure 3 and Figure 4 respectively.

Surficial soil samples were collected at WP-1 and WP-2 to characterized residues and debris resulting from drilling of anchorage holes for the center faced wedge-shaped feature located in the sandstone rock above the right side of the west portal centerline. Seismic retrofit at this location has since been removed from the scope of work for this project. Surficial soil samples were also collected at WP-3, WP-7, and WP-8 to characterize residues and debris resulting from drilling of anchorage holes for the siltstone outcrops at the right shoulder of the portal. Due to the severe slope at this outcrop, samples were collected at the top (WP-3) and toe (WP-7 and WP-8) of the slope. Seismic retrofit at this location has also been removed from the scope of work for this project. Surficial soil samples were collected at WP-3 and WP-4 to characterized soils to be excavated during installation of stiffener beams to the portal wall. Surficial soil samples were collected at WP-4, WP-5, and WP-6 to characterize residues and debris resulting from drilling of anchorage holes for the rock outcrop at the left shoulder of the portal.

Surficial soil samples were collected at EP-1, EP-2, EP-3, EP-4, EP-5, and EP-6 to characterize soils to be excavated during installation of stiffener beams for the portal wall. The installation of tieback anchors at the portal retaining walls will generate residue and debris, thus soil samples

were proposed to be obtained at locations behind each retaining wall. However, due to the severe slopes leading to the portal retaining walls, soil samples were not obtained at these locations. Samples collected adjacent to the retaining walls, EP-1 and EP-6, can be used to determine the disposal requirements for soils and wastes resulting from construction operations at the retaining walls.

Samples were collected directly with the glass jar sample containers to eliminate cross-contamination of samples. This method of sample collection eliminated both the need to carry sample collection equipment and the need to decontaminate sample collection equipment. Soil samples were analyzed for metals due to paint removal activities and vehicle-generated aerially deposited lead.

4.0 INVESTIGATIVE METHODS

The rationale and method of investigation for the sampling procedures and protocols and laboratory analyses are discussed below.

4.1 Soil Sampling

Soil samples were obtained above and adjacent to the Yerba Buena Island Tunnel west and east portals at locations to be excavated during construction and at locations where rock bolts will be installed. Surficial soil samples were collected rather than depth samples because of the minor quantity of soil excavation associated with the retrofit project.

The samples from locations WP1 through WP8 and EP1 through EP6 were collected utilizing a 4-ounce glass jar, labeled, placed in a cooler chilled with ice, and transported to Advanced Technology Laboratories (ATL) under standard chain-of-custody procedures. Soil samples were analyzed for metals accordance with CCR Title 22 using United States Environmental Protection Agency (EPA) Test Method 6010 and EPA Test Method 7471.

4.2 Laboratory Analyses

Soil Samples were submitted to the laboratory for the analysis of CCR Title 22 metals following EPA Test Method 6010 under 48-hour turn-around-time. Soil samples that exhibited a total metal concentration greater than ten times a respective STLC value were subsequently analyzed for the appropriate soluble metal via the TCLP and/or WET.

The Quality Assurance/Quality Control (QA/QC) procedures were performed with specificity for each analyte listed in the test method's QA/QC. The laboratory QA/QC procedures include the following:

- One method blank for every ten samples, batch of samples, or type of matrix, whichever is more frequent.
- One sample analyzed in duplicate for every ten samples, batch of samples, or type of matrix, whichever is more frequent.

- One spiked sample for every ten samples, batch of samples or type of matrix, whichever if more frequent, with spike made at ten times the detection limit or at the analyte level.

Prior to submitting the soil and groundwater samples to the laboratory, the chain-of-custody documentation was reviewed for accuracy and completeness. All samples were preserved at 4° C within sealed ice chests and submitted to the laboratory within proper holding times. The laboratory reports were also reviewed for accuracy and consistency with the chain-of-custody documentation. In addition, the laboratory QA/QC summary reports were reviewed to determine if the laboratory results are within tolerance control limits. Based upon this review process, the data quality appears to be adequate. The results of the QA/QC analyses conducted are presented in Appendix A.

5.0 INVESTIGATION RESULTS AND FIELD OBSERVATIONS

The investigation results from the soil sampling are discussed below along with observations made in the field. A summary of the analytical laboratory test results for total and soluble CCR Title 22 metals is presented in Table 1 and Table 2 for the west and east portals respectively. Copies of the laboratory reports and chain-of-custody documentation for the soil samples are included in Appendix A.

5.1 West Portal

Seven soil samples exhibited total lead concentrations greater than ten times the STLC value. These samples were subsequently analyzed for soluble lead via the WET method. Six of these samples exhibited soluble lead concentrations greater than the STLC of 5.0 mg/L. These six soil samples were further analyzed for soluble lead via the TCLP and exhibited soluble lead concentrations less than the regulatory threshold of 5.0 mg/L. Other total Title 22 metals were not detected at concentrations greater than the respective TTLC values or greater than ten times the respective STLC values. The summary of the analytical laboratory results is presented in Table 1.

5.2 East Portal

Five soil samples exhibited total lead concentrations greater than ten times the STLC value. These samples were subsequently analyzed for soluble lead via the WET method. Four of these samples exhibited soluble lead concentrations greater than the STLC of 5.0 mg/L. These four soil samples were further analyzed for soluble lead via the TCLP and exhibited soluble lead concentrations less than the regulatory threshold of 5.0 mg/L. Other total Title 22 metals were not detected at concentrations greater than the respective TTLC values or greater than ten times the respective STLC values. The summary of the analytical laboratory results is presented in Table 2.

5.3 Quality Assurance / Quality Control

The results of the QA/QC spike recovery and Relative Percent Difference (RPD) analyses for total metals, WET, and TCLP were within the normal parameters specified by the laboratory for all constituents of concern. However, the results of the QA/QC spike recovery and RPD analyses for sample ID 30941-014 of quality control batch number 981201S-2 were within the normal parameters specified by the laboratory for all constituents of concern except lead. The percent matrix spike duplicate recovery for lead (144 %) exceeded the limits specified by the laboratory (68 – 106 %) due to the relatively high sample concentration. The laboratory attributed this to the heterogeneous nature of the sample and confirmed that the laboratory results were indeed reliable since the LCS percent recovery of 97 % for lead was within the specified range of 68 – 106 %, as was the case for each of the constituents.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The presence of elevated total and soluble lead levels in surficial soil within the project limits will likely require the management, treatment, and/or disposal of soil generated from excavations during the construction activities as a California hazardous waste.

Note that depth samples were not collected because of the minor quantities of structural excavation and backfill (25 yd^3 and 13 yd^3 respectively) involved in this retrofit project. Rather than attempt to segregate materials into hazardous and non-hazardous quantities, those areas of excavation with samples constituting hazardous waste shall be treated as containing hazardous soils. Consequently, soil excavated during the installation of stiffener beams and residue and debris generated during drilling for anchorage holes should be considered hazardous. Based upon the data collected from the above locations and CCR Title 22 criteria the material resulting from excavation and drilling operations are assumed hazardous and suitable only for disposal at a Class I Landfill.

The areas behind the retaining walls on either side of the east portal wall were inaccessible due to vegetative cover and extreme slopes, thus samples were not collected. However, based upon the data collected from adjacent sample locations the material should be assumed hazardous and suitable only for disposal at a Class I Landfill.

The excavation contractor(s) should prepare a comprehensive health and safety plan for construction activities scheduled to occur within the project boundaries defined in this Site Investigation Report which includes discussion of the constituents of concern, routes of exposure, permissible exposure limits, and personal protective measures. The health and safety plan should be reviewed and signed by the on-site construction workers prior to any field activities.

FIGURE 1

VICINITY MAP

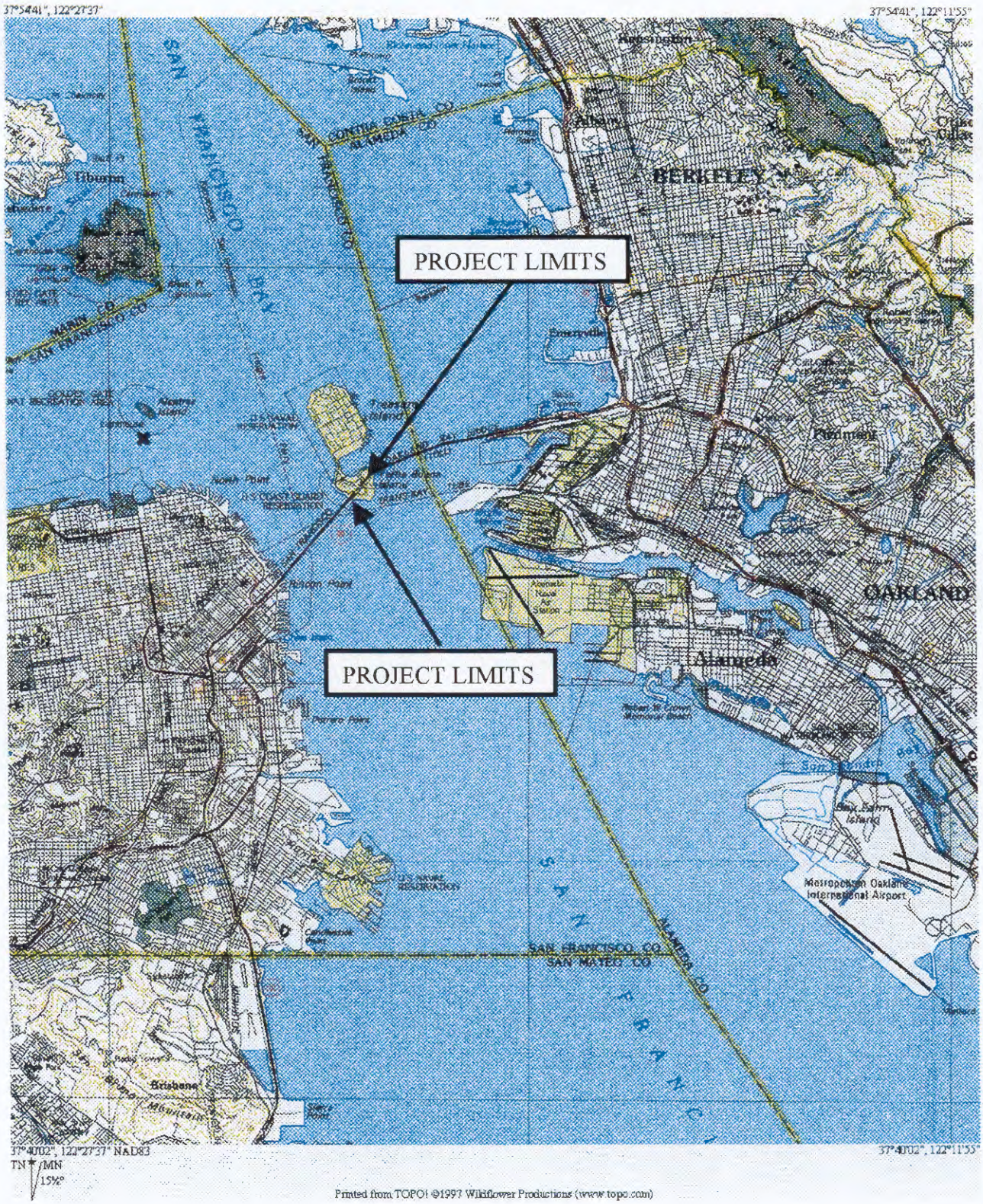

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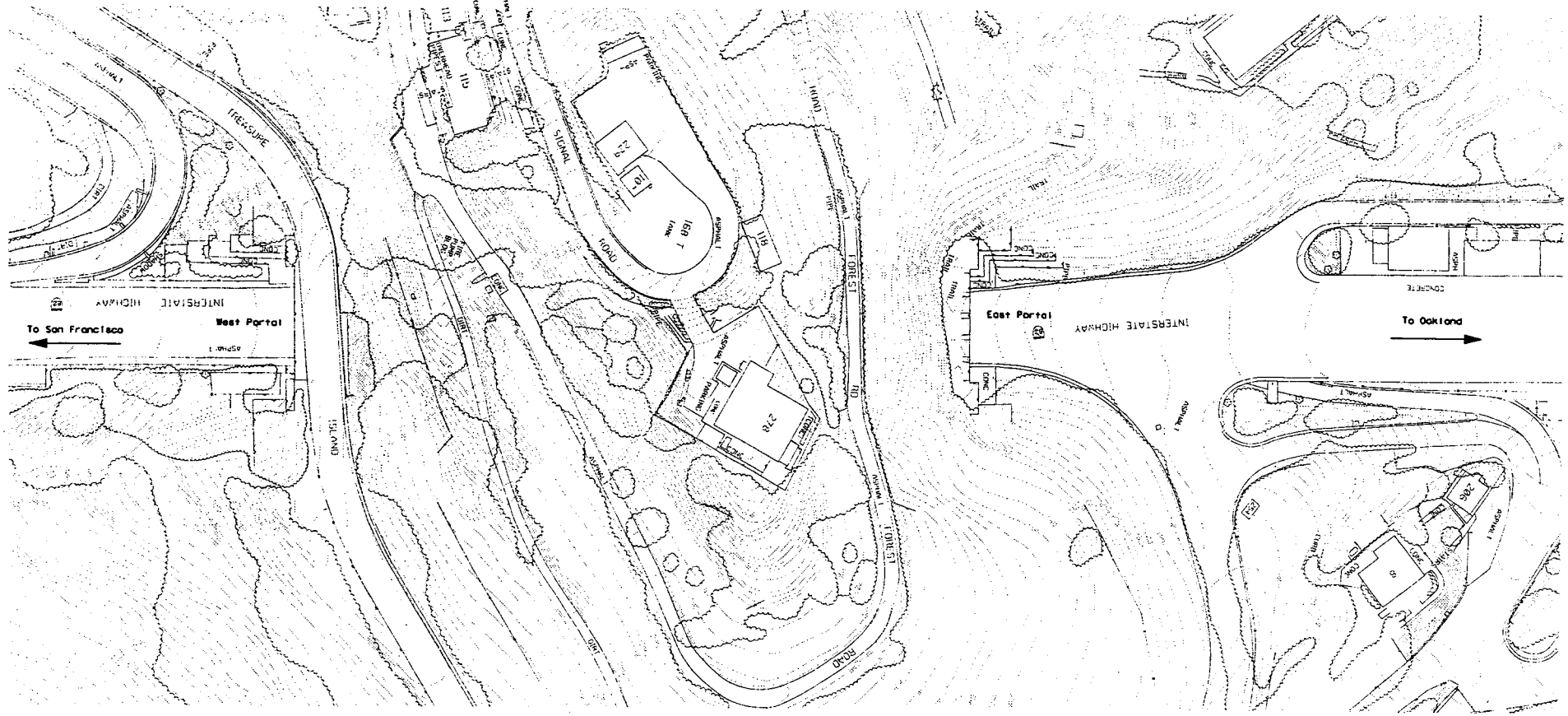
FIGURE 2

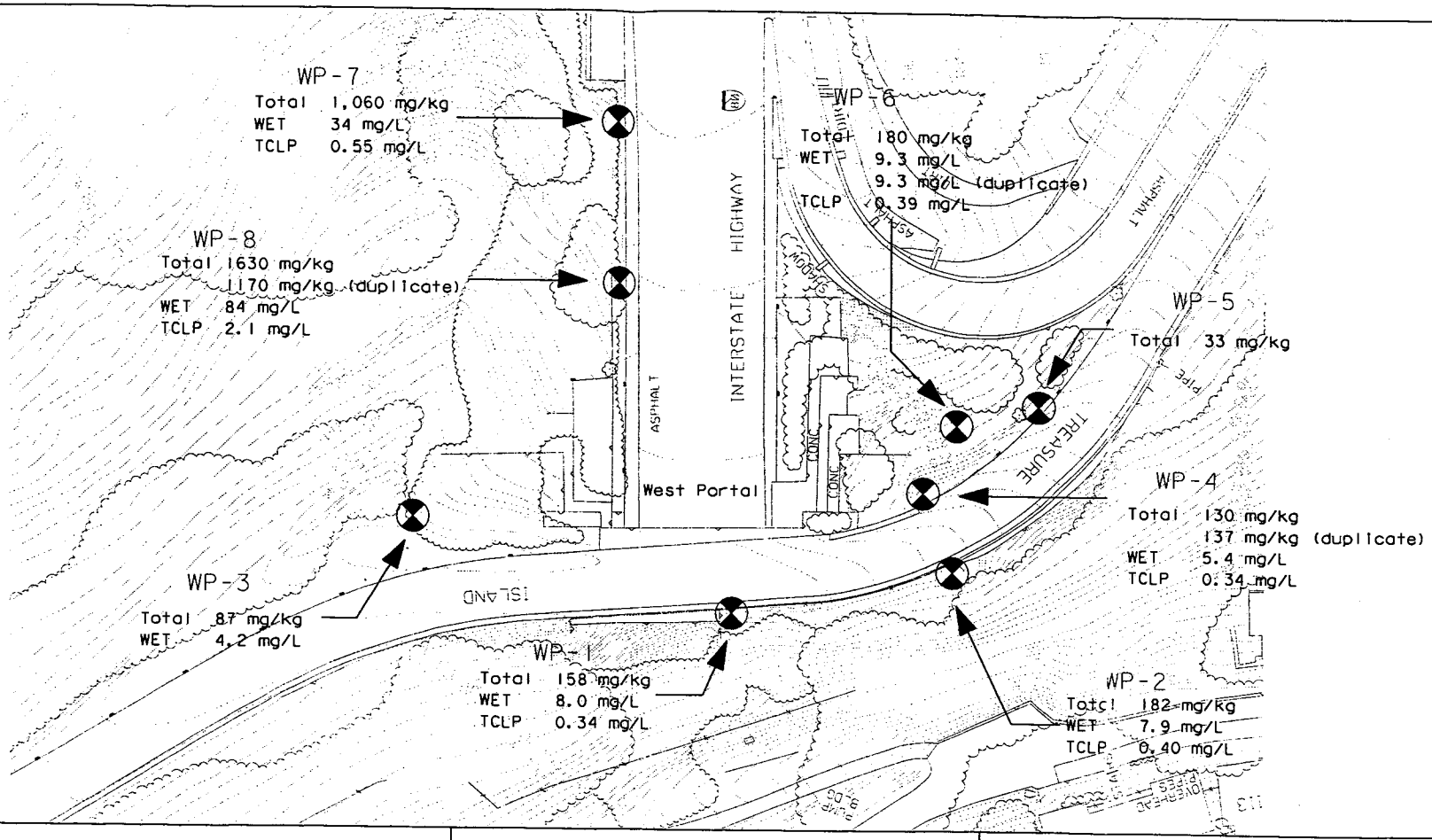
SITE PLAN



CA Dept of Transportation District 04 Environmental Engineering Toll Bridge Section	Hazardous Waste Site Investigation of Soils Yerba Buena Tunnel Retrofit Project	FIGURE 2 SITE PLAN

FIGURE 3

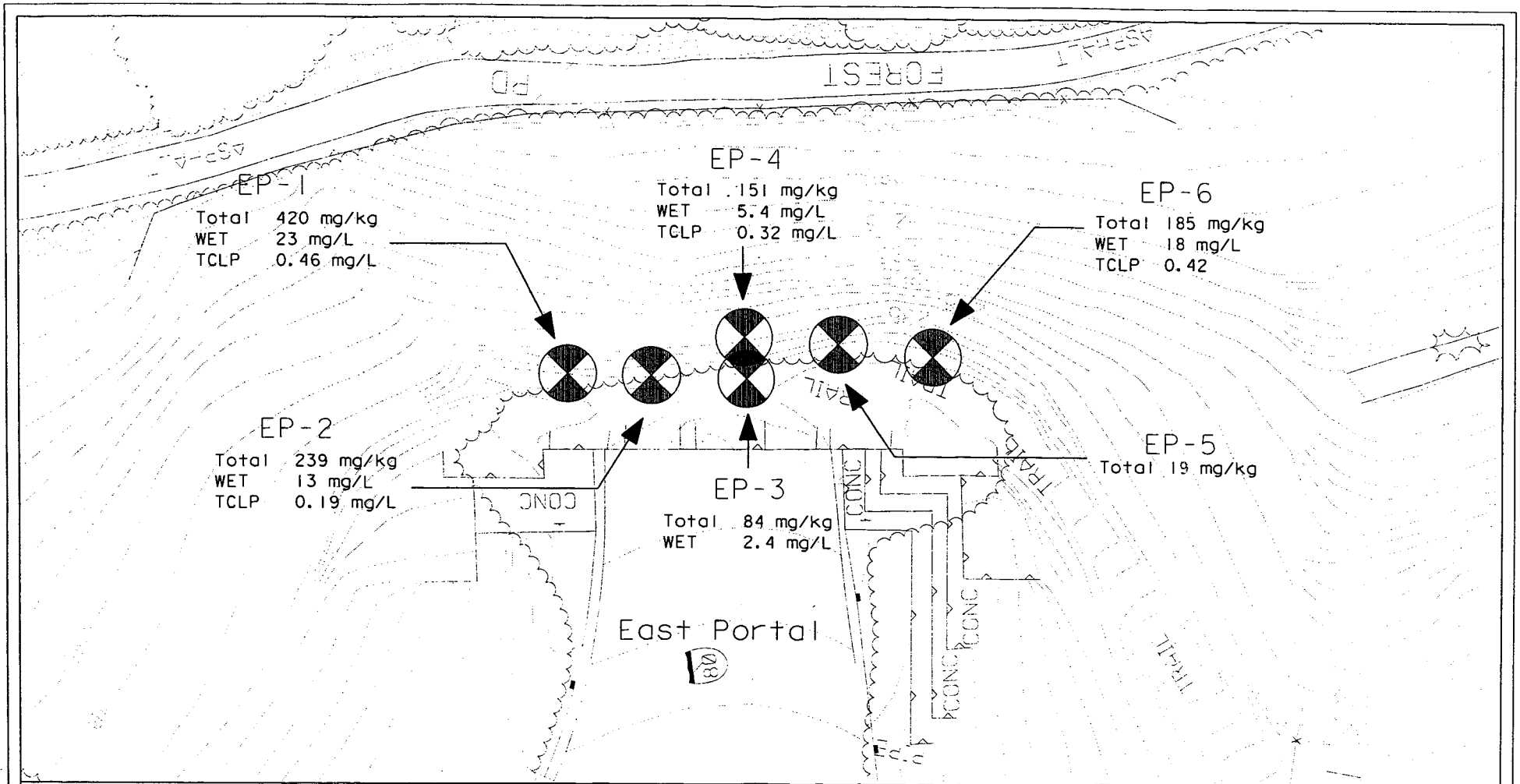
SAMPLE LOCATION PLANS WITH LEAD RESULTS
WEST PORTAL



CA Dept of Transportation District 04 Environmental Engineering Toll Bridge Section	Hazardous Waste Site Investigation of Soils Yerba Buena Tunnel Retrofit Project	FIGURE 3 SAMPLE LOCATION PLANS WITH LEAD RESULTS WEST PORTAL

FIGURE 4

SAMPLE LOCATION PLANS WITH LEAD RESULTS
EAST PORTAL



CA Dept of Transportation District 04 Environmental Engineering Toll Bridge Section	Hazardous Waste Site Investigation of Soils Yerba Buena Tunnel Retrofit Project	FIGURE 4 SAMPLE LOCATION PLANS WITH LEAD RESULTS EAST PORTAL

Tables

TABLE 1. WEST PORTAL SAMPLE RESULTS

TOTAL METALS

Constituent	Detection Limit	TTLC	10×STLC	SAMPLE RESULTS									
				WP-1	WP-2	WP-3	WP-4	WP-4 (DUP)	WP-5	WP-6	WP-7	WP-8	WP-8 (DUP)
	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	0.25	500	150	0.40	0.76	0.66	0.80	0.66	<0.25	<0.25	<0.25	<0.25	<0.25
Arsenic	0.25	500	50	5.6	6.5	5.9	8.8	9.4	5.2	4.5	5.2	8.5	11
Barium	0.050	10,000	1,000	135	147	38	133	146	57	62	309	223	228
Beryllium	0.050	75	7.5	<0.050	<0.050	<0.050	0.18	0.19	<0.050	<0.050	<0.050	<0.050	<0.050
Cadmium	0.15	100	10	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	0.21	<0.15	<0.15
Chromium	0.15	500	50	22	24	41	41	45	21	49	33	40	39
Cobalt	0.15	8,000	800	9.1	8.3	7.9	8.0	9.1	5.2	5.1	5.0	12	14
Copper	0.15	2,500	250	16	20	12	39	42	8.6	15	28	64	62
Lead	0.25	1,000	50	158	182	87	130	137	33	180	1,060	1,630	1,170
Mercury*	0.10	20	2	<0.10	<0.10	<0.10	0.13	NA	0.25	0.20	<0.10	0.21	0.20
Molybdenum	0.25	3,500	3,500	0.84	1.1	1.0	1.5	1.7	0.93	0.71	1.9	2.2	2.2
Nickel	0.15	2,000	200	38	30	32	27	28	26	29	42	49	52
Selenium	0.25	100	10	<0.25	<0.25	<0.25	0.31	0.50	0.40	<0.25	0.30	0.40	<0.25
Silver	0.050	500	50	<0.050	<0.050	<0.050	0.36	0.56	0.071	0.60	0.72	0.54	0.24
Thallium	0.25	700	70	1.1	0.96	0.68	1.4	1.7	0.72	0.41	0.30	1.7	1.6
Vanadium	0.15	2,400	240	21	23	29	29	31	16	17	16	27	30
Zinc	0.50	5,000	2,500	64	127	41	126	131	35	129	117	201	171

SOLUBLE METALS

Sampling Point	TTLC	10×STLC	Detection Limit			Lead Result			Disposal Classification
			Total	WET	TCLP	Total	WET	TCLP	
	mg/kg	mg/L	mg/kg	mg/L	mg/L	mg/kg	mg/L	mg/L	
WP-1	1,000	50	0.25	0.15	0.10	158	8.0	0.34	Hazardous
WP-2	1,000	50	0.25	0.15	0.10	182	7.9	0.40	Hazardous
WP-3	1,000	50	0.25	0.15	0.10	87	4.2	NA	
WP-4	1,000	50	0.25	0.15	0.10	130/137	5.4	0.34	Hazardous
WP-5	1,000	50	0.25	0.15	0.10	33	NA	NA	
WP-6	1,000	50	0.25	0.15	0.10	180	9.3/9.3	0.39	Hazardous
WP-7	1,000	50	0.25	0.15	0.10	1,060	34	0.55	Hazardous
WP-8	1,000	50	0.25	0.15	0.10	1630/1170	84	2.1	Hazardous

Notes:
* = Analysis by EPA Method 7471
NA = Not Analyzed
< = Less than the detection limit

TABLE 2. EAST PORTAL SAMPLE RESULTS

TOTAL METALS

Constituent	Detection Limit	TTLC	10×STLC	SAMPLE RESULTS					
				EP-1	EP-2	EP-3	EP-4	EP-5	EP-6
	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	0.25	500	150	0.91	0.55	0.61	0.54	<0.25	0.54
Arsenic	0.25	500	50	7.6	6.3	8.4	8.2	2.7	7.6
Barium	0.050	10,000	1,000	155	215	138	371	65	227
Beryllium	0.050	75	7.5	<0.050	0.10	0.091	0.15	0.093	<0.050
Cadmium	0.15	100	10	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Chromium	0.15	500	50	21	16	31	17	5.3	20
Cobalt	0.15	8,000	800	6.9	9.6	10	11	3.1	7.1
Copper	0.15	2,500	250	25	24	22	30	7.0	21
Lead	0.25	1,000	50	420	239	84	151	19	185
Mercury	0.10	20	2	<0.10	0.23	0.11	0.2	<0.10	0.20
Molybdenum	0.25	3,500	3,500	1.9	1.1	1.5	1.2	0.37	2.6
Nickel	0.15	2,000	200	23	23	37	33	6.9	23
Selenium	0.25	100	10	0.40	0.44	0.53	1.0	<0.25	<0.25
Silver	0.050	500	50	0.51	0.12	<0.050	0.13	<0.050	<0.050
Thallium	0.25	700	70	1.7	1.2	1.6	1.4	0.59	1.1
Vanadium	0.15	2,400	240	24	24	34	27	10	23
Zinc	0.50	5,000	2,500	81	69	116	81	25	87

SOLUBLE METALS

Sampling Point	TTLC	10×STLC	Detection Limit			Lead Result			Disposal Classification
			Total	WET	TCLP	Total	WET	TCLP	
	mg/kg	mg/L	mg/kg	mg/L	mg/L	mg/kg	mg/L	mg/L	
EP-1	1,000	50	0.25	0.15	0.10	420	23	0.46	Hazardous
EP-2	1,000	50	0.25	0.15	0.10	239	13	0.19	Hazardous
EP-3	1,000	50	0.25	0.15	0.10	84	2.4	NA	
EP-4	1,000	50	0.25	0.15	0.10	151	5.4	0.32	Hazardous
EP-5	1,000	50	0.25	0.15	0.10	19	NA	NA	
EP-6	1,000	50	0.25	0.15	0.10	185	18.0	0.42	Hazardous

Notes:
* = Analysis by EPA Method 7471
NA = Not Analyzed
< = Less than the detection limit

Appendix A

LABORATORY RESULTS

Advanced Technology Laboratories

December 2, 1998

ELAP No.: 1838

Geocon Environmental
3478 Buskirk Ave., Suite 1042
Pleasant Hill, CA 94523

ATTN: Mr. Ross White

Client's Project: SFOBB I-80, S8130-06-99
Lab No.: 30941-001/014

Gentlemen:

Enclosed are the results for sample(s) received by Advanced Technology Laboratories and tested for the parameters indicated in the enclosed chain of custody.

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,

Cheryl De Los Reyes
Technical Operations Manager
CDR/ra

Enclosures

This cover letter is an integral part of this analytical report.

This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purpose without authorization is prohibited.

Mailing Address: P.O. Box 92797 Long Beach, CA 90809-2797
1510 E. 33rd Street Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

ient: Geocon Environmental
tn: Mr. Ross White

lient's Project: SFOBB I-80, S8130-06-99
ate Received: 11/24/98
Matrix: Soil
nits: mg/kg
gestion Method: EPA 3050

EPA 6010 (CCR Metals)									
Lab No.:		30941-009	30941-010	30941-010Dup	30941-011	30941-012	30941-013	30941-014	30941-014Dup
Client Sample I.D.:		WP-3	WP-4	WP-4	WP-5	WP-6	WP-7	WP-8	WP-8
Date Sampled:		11/23/98	11/23/98	11/23/98	11/23/98	11/23/98	11/23/98	11/23/98	11/23/98
Date Digested:		11/25-12/01/98	11/25-12/01/98	11/25-12/01/98	11/25-12/01/98	11/25-12/01/98	11/25-12/01/98	11/25-12/01/98	11/25-12/01/98
Date Analyzed:		12/01/98	12/01/98	12/01/98	12/01/98	12/01/98	12/01/98	12/01/98	12/01/98
Analyst Initials:		LP/DJ	LP/DJ	LP/DJ	LP/DJ	LP/DJ	LP/DJ	LP/DJ	LP/DJ
Dilution Factor:		1	1	1	1	1	1	1	1
ANALYTE*	DLR	RESULTS							
Antimony	0.25	0.66	0.80	0.66	ND	ND	ND	ND	ND
rsenic	0.25	5.9	8.8	9.4	5.2	4.5	5.2	8.5	11
Barium	0.050	38	133	146	57	62	309	223	228
Beryllium	0.050	ND	0.18	0.19	ND	ND	ND	ND	ND
adnium	0.15	ND	ND	ND	ND	ND	0.21	ND	ND
hromium	0.15	41	41	45	21	49	33	40	39
Cobalt	0.15	7.9	8.0	9.1	5.2	5.1	5.0	12	14
opper	0.15	12	39	42	8.6	15	28	64	62
ead	0.25	87	130	137	33	180	1060	1630	1170
Mercury **	0.10	ND	0.13	NA	0.25	0.20	ND	0.21	0.20
Molybdenum	0.25	1.0	1.5	1.7	0.93	0.71	1.9	2.2	2.2
ickel	0.15	32	27	28	26	29	42	49	52
Selenium	0.25	ND	0.31	0.50	0.40	ND	0.30	0.40	ND
Silver	0.050	ND	0.36	0.56	0.071	0.60	0.72	0.54	0.24
hallium	0.25	0.68	1.4	1.7	0.72	0.41	0.30	1.7	1.6
anadium	0.15	29	29	31	16	17	16	27	30
Zinc	0.50	41	126	131	35	129	117	201	171

DL = Method Detection Limit
ND = Not Detected (Below DLR).
LR = MDL X Dilution Factor
= Only listed constituents designated with TTLC and STLC under CCR Title 22
** = Analysis by EPA Method 7471

Reviewed/Approved By: [signature]
Cheryl De Los Reyes
Technical Operations Manager

Date: 12-2-98

e cover letter is an integral part of this analytical report.

Advanced Technology Laboratories
1510 E. 33rd Street Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Client: Geocon Environmental
Attn: Mr. Ross White

Client's Project: SFOBB I-80, S8130-06-99
Date Received: 11/24/98
Matrix: Soil
Units: mg/kg
Digestion Method: EPA 3050

EPA 6010 (CCR Metals)									
Lab No.:		30941-001	30941-002	30941-003	30941-004	30941-005	30941-006	30941-007	30941-008
Client Sample I.D.:		EP-1	EP-2	EP-3	EP-4	EP-5	EP-6	WP-1	WP-2
Date Sampled:		11/23/98	11/23/98	11/23/98	11/23/98	11/23/98	11/23/98	11/23/98	11/23/98
Date Digested:		11/25-12/01/98	11/25-12/01/98	11/25-12/01/98	11/25-12/01/98	11/25-12/01/98	11/25-12/01/98	11/25-12/01/98	11/25-12/01/98
Date Analyzed:		12/01/98	12/01/98	12/01/98	12/01/98	12/01/98	12/01/98	12/01/98	12/01/98
Analyst Initials:		LP/DJ	LP/DJ	LP/DJ	LP/DJ	LP/DJ	LP/DJ	LP/DJ	LP/DJ
Dilution Factor:		1	1	1	1	1	1	1	1
ANALYTE*	DLR	RESULTS							
Antimony	0.25	0.91	0.55	0.61	0.54	ND	0.54	0.40	0.76
Arsenic	0.25	7.6	6.3	8.4	8.2	2.7	7.6	5.6	6.5
Barium	0.050	155	215	138	371	65	227	135	147
Beryllium	0.050	ND	0.10	0.091	0.15	0.093	ND	ND	ND
Cadmium	0.15	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	0.15	21	16	31	17	5.3	20	22	24
Cobalt	0.15	6.9	9.6	10	11	3.1	7.1	9.1	8.3
Copper	0.15	25	24	22	30	7.0	21	16	20
Lead	0.25	420	239	84	151	19	185	158	182
Mercury **	0.10	ND	0.23	0.11	0.20	ND	0.20	ND	ND
Molybdenum	0.25	1.9	1.1	1.5	1.2	0.37	2.6	0.84	1.1
Nickel	0.15	23	23	37	33	6.9	23	38	30
Selenium	0.25	0.40	0.44	0.53	1.0	ND	ND	ND	ND
Silver	0.050	0.51	0.12	ND	0.13	ND	ND	ND	ND
Thallium	0.25	1.7	1.2	1.6	1.4	0.59	1.1	1.1	0.96
Vanadium	0.15	24	24	34	27	10	23	21	23
Zinc	0.50	81	69	116	81	25	87	64	127

MDL = Method Detection Limit
ND = Not Detected (Below DLR).
DLR = MDL X Dilution Factor
* = Only listed constituents designated with TTLC and STLC under CCR Title 22
** = Analysis by EPA Method 7471

Reviewed/Approved By: [signature]
Cheryl De Los Reyes
Technical Operations Manager

Date: 12-2-98

The cover letter is an integral part of this analytical report.

Advanced Technology Laboratories
1510 E. 33rd Street Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Spike Recovery and RPD Summary Report

Method: EPA 6010
Analyst: LP/OL
Data File: ICAP81201-1
QA File: 8335-1GC

Date Analyzed: 12/01/98
Date Digested: 12/01/98
Sample ID: 30941-010
Matrix: Soil
QC Batch NO:ICAP 981201S-1

SAMPLE ID	UNITS	LCS Conc	LCS Res	% Rec	METH BLANK	SPL CONC	SPL DUP	% Dev	SPK ADDED	MS RESULT	MSD RESULT	%MS REC	%MSD REC	% REC Limit	RPD	RPD Limit	MDL
Antimony	mg/kg	1.0	0.97	97	ND	0.80	0.66	19	125	68	79	54	63	32-110	15	20	0.25
Arsenic	mg/kg	1.0	0.99	99	ND	8.8	9.4	7	125	116	116	86	86	68-105	0	20	0.25
Barium	mg/kg	1.0	0.98	98	ND	133	146	9	125	279	259	117	101	22-170	7	20	0.05
Beryllium	mg/kg	1.0	1.0	100	ND	0.18	0.19	5	125	122	122	97	97	47-134	0	20	0.05
Cadmium	mg/kg	1.0	0.95	95	ND	ND	ND	0	125	108	107	86	86	65-106	1	20	0.15
Chromium	mg/kg	1.0	0.96	96	ND	41	45	9	125	153	158	90	94	61-128	3	20	0.15
Cobalt	mg/kg	1.0	0.90	90	ND	8.0	9.1	13	125	115	111	86	82	68-112	4	20	0.15
Copper	mg/kg	1.0	0.97	97	ND	39	42	7	125	177	177	110	110	60-133	0	20	0.15
Lead	mg/kg	1.0	0.97	97	ND	130	137	5	125	239	227	87	78	68-106	5	20	0.25
Molybdenum	mg/kg	1.0	0.99	99	ND	1.5	1.7	13	125	112	114	88	90	67-107	2	20	0.25
Nickel	mg/kg	1.0	0.92	92	ND	27	28	4	125	137	134	88	86	29-155	2	20	0.15
Selenium	mg/kg	1.0	0.92	92	ND	0.31	0.50	47	125	104	103	83	82	51-114	1	20	0.25
Silver	mg/kg	1.0	0.91	91	ND	0.36	0.56	43	125	106	106	85	85	45-111	0	20	0.05
Thallium	mg/kg	1.0	0.97	97	ND	1.4	1.7	19	125	113	113	89	89	60-111	0	20	0.25
Vanadium	mg/kg	1.0	0.99	99	ND	29	31	7	125	141	146	90	94	71-116	3	20	0.15
Zinc	mg/kg	1.0	0.92	92	ND	126	131	4	125	232	227	85	81	47-128	2	20	0.50

Approved by: MSK
David J. Kern
Inorganics Supervisor

Date: 12-2-98

Advanced Technology Laboratories

Spike Recovery and RPD Summary Report

Method: EPA 6010
Analyst: LP/OL
Data File: ICAP81201-2
QA File: 8335-2GC

Date Analyzed: 12/01/98
Date Digested: 12/01/98
Sample ID: 30941-014
Matrix: Soil
QC Batch NO:ICAP 981201S-2

SAMPLE ID	UNITS	LCS Conc	LCS Rec	% Rec	METH BLANK	SPL CONC	SPL DUP	% Dev	SPK ADDED	MS RESULT	MSD RESULT	%MS REC	%MSD REC	% REC Limit	RPD	RPD Limit	MDL
Antimony	mg/kg	1.0	1.0	100	ND	ND	ND	0	125	83	91	66	73	32-110	9	20	0.25
Arsenic	mg/kg	1.0	1.0	100	ND	8.5	11	26	125	115	114	85	84	68-105	1	20	0.25
Barium	mg/kg	1.0	1.0	100	ND	223	228	2	125	396	364	138	113	22-170	8	20	0.05
Beryllium	mg/kg	1.0	1.0	100	ND	ND	ND	0	125	120	120	96	96	47-134	0	20	0.05
Cadmium	mg/kg	1.0	0.96	96	ND	ND	ND	0	125	104	105	83	84	65-106	1	20	0.15
Chromium	mg/kg	1.0	0.97	97	ND	40	39	3	125	156	154	93	91	61-128	1	20	0.15
Cobalt	mg/kg	1.0	0.90	90	ND	12	14	15	125	118	121	85	87	68-112	3	20	0.15
Copper	mg/kg	1.0	0.99	99	ND	64	62	3	125	193	177	103	90	60-133	9	20	0.15
Lead*	mg/kg	1.0	0.99	99	ND	1730	1290	29	125	1850	1550	96	144	68-106	18	20	0.25
Molybdenum	mg/kg	1.0	1.0	100	ND	2.2	2.2	0	125	111	113	87	89	67-107	2	20	0.25
Nickel	mg/kg	1.0	0.93	93	ND	49	52	6	125	164	160	92	89	29-155	2	20	0.15
Selenium	mg/kg	1.0	0.93	93	ND	0.40	ND	200	125	95	95	76	76	51-114	0	20	0.25
Silver	mg/kg	1.0	0.93	93	ND	0.54	0.24	77	125	104	105	83	84	45-111	1	20	0.05
Thallium	mg/kg	1.0	0.98	98	ND	1.7	1.6	6	125	111	112	87	88	60-111	1	20	0.25
Vanadium	mg/kg	1.0	1.0	100	ND	27	30	11	125	147	144	96	94	71-116	2	20	0.15
Zinc	mg/kg	1.0	0.93	93	ND	201	171	16	125	298	270	78	55	47-128	10	20	0.50

* REC out of the limit is due to the relatively high sample concentration

Approved by: DJK
David J. Kern
Inorganics Supervisor

Date: 12-2-98

Advanced Technology Laboratories

Spike Recovery and RPD Summary Report

Method: EPA7471
Analyst: DJ
Data File: 81125-3
QA File: 8329-3

Date Analyzed: 11-25-98
Date Digested: 11-25-98
Sample ID: see below
Matrix: SOIL/SOLID/LIQUID
QC Batch NO.: HG981125S-2

SPL ID	UNITS	LCS Conc	LCS Res	% Rec	METH BLANK	SPL CONC	SPL DUP	% Dev	SPK ADDED	MS RESULT	MSD RESULT	%MS REC	%MSD REC	% REC Limit	RPD	RPD Limit	MDL
30941-001	mg/kg	0.015	0.015	100	ND	ND	0.10	*	0.83	1.10	1.10	133	133	63-139	0	30	0.10
30941-014	mg/kg	0.015	0.016	107	ND	0.21	0.20	5	0.83	0.89	0.90	82	83	63-139	1	30	0.10

Sample result is at/near the detection limit

Approved by: David J. Kern
Inorganics Supervisor

Date: 12-2-98

Advanced Technology Laboratories

CHAIN OF CUSTODY REPORT

LABORATORY USE ONLY

Advanced Technology Laboratories
1510 E. 33rd Street
Signal Hill, CA 90807
(562) 989-4045 • FAX (562) 989-4040

Batch #: _____ D.O. # _____
P.O.#: _____
Logged By: RB Date: 11-24 Time: 1225

Method of Transport: Walk-in ☐ Courier ☑ UPS ☐ FED. EXP. ☐ ATL ☐

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: ROSS WHITE
Address: 3437 Buskirk Avenue, Suite 1042
City: Pleasant Hill State: CA Zip Code: 94523
TEL: (925) 746-7141
FAX: (925) 746-7144

Project Name: SFOBB I-80 Project #: S8130-06-99 Sampler: (Printed Name) Ross White (Signature)

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Ross White	11/23/98	1500	Dave Galvan	11-24-98	0900

SHIP TO LAB: (SUB CONTRACT) _____
TEST: _____
ATL # _____
DATE _____
CLIENT ID _____

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter: Ross White Date: 11/23/98
Print Name
Signature

Send Report To:
Attn: _____
Co: _____
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:
NEED RESULTS FAXED NO LATER THAN 5:00pm Tuesday (12/1/98)!

Unless otherwise requested, all samples will be disposed 45 days after receipt.

Sample Archive/Disposal:
☐ Laboratory Standard
☐ Other _____
☐ Return To: _____
* $10.00 FEE PER HAZARDOUS SAMPLE DISPOSAL.

Circle or Add Analysis(es) Requested: 601/8010 (Halogenated Volatiles-GC); 602/8020/BTEX (Aromatic Volatiles-GC); 608/8080 (Pesticides/PCB-GC); 624/8240 (Volatiles-GC/MS); 8260 (Volatiles-GC/MS); 625/8270 (BNA-GC/MS); 8015M TPH/GBTEX(COMBINATION); 8015M TPH/D (Diesel-GC); 418.1 (TPH-IR); Metals-Total (CAC-6010/7000) Tl Zn Ni Pb

CIRCLE APPROPRIATE MATRIX: SOLID (SOIL) • SLUDGE; OIL • SOLVENT • LIQUID; WATER • WASTEWATER; DRINKING WATER; AIR; WIPE • FILTER; OTHER

QA/QC: RTNE ☐ RWQCB ☐ WIP ☐ NAVY ☐ CT ☑ OTHER _____

ITEM	LAB USE ONLY: Batch #: Lab No.	Sample Description: Sample I.D.	Date	Time	Tl	Zn	Ni	Pb	SOLID (SOIL)	TAT	Container(s) #	Type	PRESERVATION	REMARKS
	30941-001	EP-1	11/23	1008	X	X	X	X	X	E	1	J G		
	002	EP-2		1010	X	X	X	X						
	003	EP-3		1012	X	X	X	X						
	004	EP-4		1013	X	X	X	X						
	005	EP-5		1014	X	X	X	X						
	006	EP-6		1016	X	X	X	X						
	007	WP-1		1026	X	X	X	X						
	008	WP-2		1027	X	X	X	X						
	009	WP-3		1025	X	X	X	X						
	010	WP-4		1030	X	X	X	X						

• TAT starts 8 a.m. following day if samples received after 5 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
1510 E. 33rd Street
Signal Hill, CA 90807
(562) 989-4045 • FAX (562) 989-4040

Batch #: _____ D.O. # _____
P.O.#: _____
Logged By: DR Date: 11-24 Time: 1225

Method of Transport: Walk-in ☐ Courier ☑ UPS ☐ FED. EXP. ☐ ATL ☐

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: ROSS WHITE
Address: ~~GEOCON~~ 3437 Buskirk Ave, Ste 1042
City: Pleasant Hill State: CA Zip Code: 94523
TEL: (925) 746-7141
FAX: (925) 746-7144

Project Name: SFOBB I-80 Project #: S8130-06-99 Sampler: (Printed Name) Ross White (Signature)

Relinquished by: (Signature and Printed Name) Ross White Date: 11/23/98 Time: 1500 Received by: (Signature and Printed Name) Diane Galvan Date: 11-24-98 Time: 0900
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:

SHIP TO LAB: (SUB CONTRACT) _____
TEST: _____
ATL #: _____
DATE: _____
CLIENT I.D. _____

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter: Ross White Date: 11/23/98
Print Name
Signature

Send Report To:
Attn: _____
Co: _____
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:
NEED RESULTS FAXED NO LATER THAN 5:00pm Tuesday (12/1/98)

Unless otherwise requested, all samples will be disposed 45 days after receipt.

Sample Archive/Disposal:
☐ Laboratory Standard
☐ Other _____
☐ Return To: _____
* $10.00 FEE PER HAZARDOUS SAMPLE DISPOSAL.

Circle or Add Analysis(es) Requested: 601/8010 (Halogenated Volatiles-GC); 602/8020/BTEX (Aromatic Volatiles-GC); 608/8080 (Pesticides/PCB-GC); 624/8240 (Volatiles-GC/MS); 8260 (Volatiles-GC/MS); 625/8270 (BNA-GC/MS); 8015M TPHG/BTEX(COMBINATION); 8015M TPH/D (Diesel-GC); 418.1 (TPH-IR); Metals-Total (CAC-6010/7000) Title 22 Metals (6010)

CIRCLE APPROPRIATE MATRIX: SOLID • SOIL; SLUDGE; OIL • SOLVENT • LIQUID; WATER • WASTEWATER; DRINKING WATER; AIR; WIPE • FILTER; OTHER

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D.	Date	Time	601/8010	602/8020/BTEX	608/8080	624/8240	8260	625/8270	8015M TPHG/BTEX	8015M TPH/D	418.1	Metals-Total (CAC-6010/7000)	Title 22 Metals (6010)	SOLID • SOIL	SLUDGE	OIL • SOLVENT • LIQUID	WATER • WASTEWATER	DRINKING WATER	AIR	WIPE • FILTER	OTHER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	30941-011	WP-5	11/23	1032										X		X								E	1	J G		
	012	WP-6	↓	1034										X		↓								↓		↓		
	013	WP-7		0950										X														
	014	WP-8		0952										X														

QA/QC: RTNE ☐ RWQCB ☐ WIP ☐ NAVY ☐ CT ☑ OTHER _____

• TAT starts 8 a.m. following day if samples received after 5 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.

Advanced Technology Laboratories

December 4, 1998

ELAP No.: 1838

Geocon Environmental
3478 Buskirk Ave., Suite 1042
Pleasant Hill, CA 94523

ATTN: Mr. Ross White

Client's Project: SFOBBI-80, S8130-06-99
Lab No.: 31114-001/012

Gentlemen:

Enclosed are the results for sample(s) received by Advanced Technology Laboratories and tested for the parameters indicated in the enclosed chain of custody.

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,

Cheryl De Los Reyes
Technical Operations Manager
CDR/ra

Enclosures

This cover letter is an integral part of this analytical report.

This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purpose without authorization is prohibited

Mailing Address: P.O. Box 92797 Long Beach, CA 90809-2797
1510 E. 33rd Street Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

ient: Geocon Environmental
tn: Mr. Ross White

ient's Project: SFOBBI-80, S8130-06-99

Date Received: 11/24/98
Date Sampled: 11/23/98
ate Extracted: 12/02/98
xtraction Method: WET (Title 22, CCR 66261.100, Appendix II)
**Date Extracted: 12/02/98
**Extraction Method: WET (Title 22, CCR 66261.100, Appendix II) Modified

Lab No.	Sample I.D.	Analysis	Date Analyzed	Results	Matrix, Units	MDL	DLR	Analyst
31114-001	EP-1	EPA 7420 (Lead)*	12/04/98	23	STLC Extract, mg/L	0.15	0.60	DJ
114-002	EP-2	EPA 7420 (Lead)*	12/04/98	13	STLC Extract, mg/L	0.15	0.30	DJ
31114-003	EP-3	EPA 7420 (Lead)*	12/04/98	2.4	STLC Extract, mg/L	0.15	0.15	DJ
114-004	EP-4	EPA 7420 (Lead)*	12/04/98	5.4	STLC Extract, mg/L	0.15	0.15	DJ
31114-005	EP-6	EPA 7420 (Lead)*	12/04/98	18	STLC Extract, mg/L	0.15	0.45	DJ
114-006	WP-1	EPA 7420 (Lead)*	12/04/98	8.0	STLC Extract, mg/L	0.15	0.15	DJ
31114-007	WP-2	EPA 7420 (Lead)*	12/04/98	7.9	STLC Extract, mg/L	0.15	0.15	DJ
114-008	WP-3	EPA 7420 (Lead)*	12/04/98	4.2	STLC Extract, mg/L	0.15	0.15	DJ
114-009	WP-4	EPA 7420 (Lead)*	12/04/98	5.4	STLC Extract, mg/L	0.15	0.15	DJ
31114-010	WP-6	EPA 7420 (Lead)*	12/04/98	9.3	STLC Extract, mg/L	0.15	0.15	DJ
114-010Dup	WP-6	EPA 7420 (Lead)*	12/04/98	9.3	STLC Extract, mg/L	0.15	0.15	DJ
31114-011	WP-7	EPA 7420 (Lead)*	12/04/98	34	STLC Extract, mg/L	0.15	0.75	DJ
114-012	WP-8	EPA 7420 (Lead)*	12/04/98	84	STLC Extract, mg/L	0.15	2.6	DJ
31114-011	WP-7	EPA 6010 (Lead)**	12/03/98	0.55	TCLP Extract, mg/L	0.10	0.10	LP
114-012	WP-8	EPA 6010 (Lead)**	12/03/98	2.1	TCLP Extract, mg/L	0.10	0.10	LP

DL = Method Detection Limit
D = Not Detected (Below DLR)
DF = Dilution Factor (DLR/MDL)

eviewed/Approved By: [signature]
Cheryl de los Reyes
Technical Operations Manager

Date: 12-4-98

e cover letter is an integral part of this analytical report

Advanced Technology Laboratories
1510 E. 33rd Street Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Spike Recovery and RPD Summary Report

Method: EPA7420(Lead)
Analyst: DJ OL
Data File: AA81204-1
QA File: 8338-1

Date Analyzed: 12-04-98
Date Extracted: 12-02-98
Sample ID: see below
Matrix: STLC EXTRACT
QC Batch Number PBF981204ST-1

SPL ID	UNITS	LCS Conc	LCS Res	% Rec	METH BLANK	SPL CONC	SPL DUP	% Dev	SPK ADDED	MS RESULT	MSD RESULT	%MS REC	%MSD REC	% REC Limit	RPD	RPD Limit	MDL
31114-010	mg/L	5.0	4.6	92	ND	9.3	9.3	0	10	19	19	93	95	50-150	2	50	0.15
30760-032	mg/L	5.0	4.8	96	ND	30	32	6	10	40	41	100	110	50-150	10	50	0.15

Approved by: MSF
David J. Kern
Inorganics Supervisor

Date: 12-4-98

Advanced Technology Laboratories

Spike Recovery and RPD Summary Report

Method: 6010
Analyst: LP/OL
QA File: 8337-4T
Data File: ICAP 61203-4

Date Analyzed: 12/03/98
Date Extracted: 12/02/98
Sample ID: 30736-001
Matrix: TCLP Extract
QC Batch No:ICAP 981203T-1

ANALYTE	UNITS	METH BLANK	LCS Conc.	LCS Rec.	% Rec.	SPL CONC	SPK ADDED	MS RESULT	MSD RESULT	%MS REC	%MSD REC	% REC Limit	RPD	RPD Limit	MDL
Arsenic	mg/L	ND	1.0	0.95	95	ND	5.0	4.0	3.8	80	76	67 - 126	5	12	0.1
Barium	mg/L	ND	1.0	0.99	99	ND	5.0	4.5	4.3	90	86	58 - 124	5	19	0.1
Cadmium	mg/L	ND	1.0	0.93	93	ND	5.0	3.9	3.8	78	76	55 - 122	3	11	0.1
Chromium	mg/L	ND	1.0	0.96	96	ND	5.0	4.2	4.0	84	80	59 - 123	5	12	0.1
Lead	mg/L	ND	1.0	0.95	95	ND	5.0	3.9	3.8	78	76	67 - 119	3	9	0.1
Selenium	mg/L	ND	1.0	0.88	88	ND	5.0	3.5	3.4	70	68	41 - 136	3	16	0.1
Silver	mg/L	ND	1.0	0.88	88	ND	5.0	3.4	3.3	68	66	24 - 155	3	25	0.1

Approved by: D.J.K
David J. Kern
Inorganics Supervisor

Date: 12-4-98

Advanced Technology Laboratories

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Advanced Technology Laboratories

1510 E. 33rd Street
Signal Hill, CA 90807
(562) 989-4045 • FAX (562) 989-4040

Batch #: _____ D.O. # _____

P.O.#: _____

Logged By: (R) Date: 12-2 Time: _____

Method of Transport

- Walk-in ☐
- Courier ☒
- UPS ☐
- FED. EXP. ☐
- ATL ☐

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: GECCON
Attn: Ross White

Address: 3478 Buskirk Ave, Suite 1042
City: Pleasant Hill State: CA Zip Code: 94523

TEL: (925) 746-7141
FAX: (925) 746-7144

Project Name: SFOBB I-80 Project #: S3130-06-99 Sampler: (Printed Name) (Signature)

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
			Marie Walvan	11-24-98	
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:

SHIP TO LAB: (SUB CONTRACT) _____
TEST: _____
ATL #: _____
DATE: _____
CLIENT I.D. _____

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter: _____ Date: ___/___/___
Print Name
Signature

Send Report To:
Attn: _____
Co: _____
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:

Unless otherwise requested, all samples will be disposed 45 days after receipt.

Sample Archive/Disposal:
- ☐ Laboratory Standard
- ☐ Other _____
- ☐ Return To: _____

* $10.00 FEE PER HAZARDOUS SAMPLE DISPOSAL.

Circle or Add Analysis(es) Requested

CIRCLE APPROPRIATE MATRIX

QA/QC: RTNE ☐ RWQCB ☐ WIP ☐ NAVY ☐ CT ☐ OTHER _____

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D.	Date	Time	601/8010 (Halogenated Volatiles-GC)	602/8020/BTEX (Aromatic Volatiles-GC)	608/8080 (Pesticides/PCB-GC)	624/8240 (Volatiles-GC/MS)	8260 (Volatiles-GC/MS)	625/8270 (BNA-GC/MS)	8015M TPHG/BTEX(COMBINATION)	8015M TPHD (Diesel-GC)	418.1 (TPH-IR)	Metals-Total (CAC-5010/7000)	WET Lead			SOLID • SOIL • SLUDGE	OIL • SOLVENT • LIQUID	WATER • WASTEWATER	DRINKING WATER	AIR	WIPE • FILTER	OTHER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	31114-001	30941-001/EP-1	11/23												X			X											
	002	002/EP-2																											
	003	003/EP-3																											
	004	004/EP-4																											
	005	006/EP-6																											
	006	007/WP-1																											
	007	008/WP-2																											
	008	009/WP-3																											
	009	010/WP-4																											
	010	012/WP-6																											

• TAT starts 8 a.m. following day if samples received after 5 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
1510 E. 33rd Street
Signal Hill, CA 90807
(562) 989-4045 • FAX (562) 989-4040

FOR LABORATORY USE ONLY:

Batch #: _____ D.O. # _____
P.O.#: _____
Logged By: (a) Date: 12-2 Time: _____

Method of Transport: Walk-in ☐ Courier ☑ UPS ☐ FED. EXP. ☐ ATL ☐

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: ROSS White
Address: See page 1
City: _____ State: _____ Zip Code: _____
TEL: ( )
FAX: ( )

Project Name: _____ Project #: _____ Sampler: (Printed Name) _____ (Signature) _____

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
			Diane Kelvan	11-24-98	
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:

SHIP TO LAB:
(SUB CONTRACT) _____
TEST: _____
ATL #: _____
DATE: _____
CLIENT I D _____

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter: _____ Date: / /
Print Name
Signature

Send Report To:
Attn: _____
Co: _____
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:

Unless otherwise requested, all samples will be disposed 45 days after receipt.

Sample Archive/Disposal:
☐ Laboratory Standard
☐ Other _____
☐ Return To: _____
* $10.00 FEE PER HAZARDOUS SAMPLE DISPOSAL.

Circle or Add Analysis(es) Requested: 601/8010 (Halogenated Volatiles-GC); 602/8020/BTEX (Aromatic Volatiles-GC); 608/8080 (Pesticides/PCB-GC); 624/8240 (Volatiles-GC/MS); 8260 (Volatiles-GC/MS); 625/8270 (BNA-GC/MS); 8015M TPHG/BTEX(COMBINATION); 8015M TPH/D (Diesel-GC); 418.1 (TPH-IR); Metals-Total (CAC-6010/7000); WET lead; TCLP lead

CIRCLE APPROPRIATE MATRIX: SOLID • SOIL • SLUDGE; OIL • SOLVENT • LIQUID; WATER • WASTEWATER; DRINKING WATER; AIR; WIPE • FILTER; OTHER

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D.	Date	Time	601/8010	602/8020/BTEX	608/8080	624/8240	8260	625/8270	8015M TPHG/BTEX	8015M TPH/D	418.1	Metals-Total	WET lead	TCLP lead		SOLID • SOIL • SLUDGE	OIL • SOLVENT • LIQUID	WATER • WASTEWATER	DRINKING WATER	AIR	WIPE • FILTER	OTHER	TAT	Container(s) #	Type	PRESERVATION	REMARKS
	31114-011	30141-013 / WP-7	11/23												X	X		X											
	012	↓ 014 / WP-8	↓												↓	↓		↓											

QA/QC: RTNE ☐ RWQCB ☐ WIP ☐ NAVY ☐ CT ☐ OTHER _____

• TAT starts 8 a.m. following day if samples received after 5 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.

January 27, 1999

ELAP No.: 1838

Geocon Environmental
3478 Buskirk Avenue, Suite 1042
Pleasant Hill, CA 94523

ATTN: Ross White
SUBJECT: AMENDED REPORT

Client's Project: S8130-06-99
Lab No.: 32066-001/008

The report was amended for the following:

The sample I.D. For 32066-003 was corrected.

Please disregard all previous documentation that corresponds to the pages(s) enclosed.

Sincerely,

Cheryl De Los Reyes
Technical Operations Manager
CDR/jh

Enclosures

This cover letter is an integral part of this analytical report.

This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purpose without authorization is prohibited.

Advanced Technology Laboratories

1510 E. 33rd Street Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Client: Geocon Environmental Consultants
Attn: Mr. Ross White

Client's Project: S8130-06-99

Date Received: 12/02/98
Date Sampled: 11/23/98
Date Extracted: 01/05/99
Extraction Method: EPA 1311
Date Amended: 01/22/99

Lab No.	Sample I.D.	Analysis	Date Analyzed	Results	Matrix, Units	MDL	DLR	Analyst
32066-001	EP-1	EPA 7420 (Lead)	01/06/99	0.46	TCLP Extract, mg/L	0.15	0.15	DJ
32066-002	EP-2	EPA 7420 (Lead)	01/06/99	0.19	TCLP Extract, mg/L	0.15	0.15	DJ
32066-003	EP-4	EPA 7420 (Lead)	01/06/99	0.32	TCLP Extract, mg/L	0.15	0.15	DJ
32066-004	EP-6	EPA 7420 (Lead)	01/06/99	0.42	TCLP Extract, mg/L	0.15	0.15	DJ
32066-005	WP-1	EPA 7420 (Lead)	01/06/99	0.34	TCLP Extract, mg/L	0.15	0.15	DJ
32066-006	WP-2	EPA 7420 (Lead)	01/06/99	0.40	TCLP Extract, mg/L	0.15	0.15	DJ
32066-007	WP-4	EPA 7420 (Lead)	01/06/99	0.34	TCLP Extract, mg/L	0.15	0.15	DJ
32066-008	WP-6	EPA 7420 (Lead)	01/06/99	0.39	TCLP Extract, mg/L	0.15	0.15	DJ

MDL = Method Detection Limit
ND = Not Detected (Below DLR)
DF = Dilution Factor (DLR/MDL)

Reviewed/Approved By: _____ Date: 1/22/99
Cheryl de los Reyes
Technical Operations Manager

The cover letter is an integral part of this analytical report.

Advanced Technology Laboratories
1510 E. 33rd Street Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
1510 E. 33rd Street
Signal Hill, CA 90807
(562) 989-4045 • FAX (562) 989-4040

FOR LABORATORY USE ONLY:

Batch #: _____ D.O. # _____
P.O.#: _____
Logged By: (R) Date: 1-4 Time: 1740

Method of Transport: Walk-in ☐ Courier ☑ UPS ☐ FED. EXP. ☐ ATL ☐

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: GECCON
Attn: Ross White
Address: 3175 Bishop Ave, Ste 1042
City State Zip Code
TEL: ( )
FAX: ( )

Project Name:
Project #: S8130-06-99
Sampler: (Printed Name) (Signature)

Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: 12-2-98 Time:
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:

SHIP TO LAB:
(SUB CONTRACT) _____
TEST _____
ATL #. _____
DATE: _____
CLIENT I.D. _____

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter: _____ Date: / /
Print Name
Signature

Send Report To:
Attn: _____
Co: _____
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:

Unless otherwise requested, all samples will be disposed 45 days after receipt.

Sample Archive/Disposal:
☐ Laboratory Standard
☐ Other _____
☐ Return To: _____
* $10.00 FEE PER HAZARDOUS SAMPLE DISPOSAL.

Circle or Add Analysis(es) Requested: 601/8010 (Halogenated Volatiles-GC); 602/8020/BTEX (Aromatic Volatiles-GC); 608/8080 (Pesticides/PCB-GC); 624/8240 (Volatiles-GC/MS); 8260 (Volatiles-GC/MS); 625/8270 (BNA-GC/MS); 8015M TPH/G/BTEX(COMBINATION); 8015M TPH/D (Diesel-GC); 418.1 (TPH-IR); Metals-Total (CAC-6010/7000); TCLP Lead

CIRCLE APPROPRIATE MATRIX: SOLID • SOIL • SLUDGE; OIL • SOLVENT • LIQUID; WATER • WASTEWATER; DRINKING WATER; AIR; WIPE • FILTER; OTHER

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D.	Date	Time	601/8010	602/8020/BTEX	608/8080	624/8240	8260	625/8270	8015M TPH/G/BTEX	8015M TPH/D	418.1	Metals-Total	TCLP Lead			SOLID • SOIL • SLUDGE	OIL • SOLVENT • LIQUID	WATER • WASTEWATER	DRINKING WATER	AIR	WIPE • FILTER	OTHER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	56066-001	31114-001/EP-1	11/23												X			X											
	002	002/EP-2																											
	003	004/EP-4																											
	004	005/EP-6																											
	005	006/WP-1																											
	006	007/WP-2																											
	007	009/WP-4																											
	008	010/WP-6																											

QA/QC: RTNE ☐ RWQCB ☐ WIP ☐ NAVY ☐ CT ☑ OTHER _____

* TAT starts 8 a.m. following day if samples received after 5 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.