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GEOCON PROJECT NO. S8875-06-67
TASK ORDER NO. 67
EA NO. 01-429300

JANUARY 2006

GEOCON
CONSULTANTS, INC.

G E O T E C H N I C A L ■ E N V I R O N M E N T A L ■ M A T E R I A L S

Project No. S8875-06-67
January 19, 2006

Mr. Dwayne Grandy
Environmental Engineering Office – District 3
703 B Street
P.O. Box 911
Marysville, California 95901

Subject: STATE ROUTE 101 LAYTONVILLE CURVE CORRECTION
CITY OF LAYTONVILLE, MENDOCINO COUNTY, CALIFORNIA
CONTRACT NO. 03A0937, TASK ORDER NO. 67, EA 01-429300
ADDITIONAL SITE INVESTIGATION REPORT

Dear Mr. Grandy:

In accordance with California Department of Transportation (Caltrans) Contract No. 03A0937 and Task Order (TO) No. 67, Geocon Consultants, Inc. has performed an additional site investigation for the State Route 101 (SR-101) vertical curve correction project between kilometer post 110.88 and 111.68 (post mile 69.3 and 69.8) at the intersection of the SR-101 and Branscomb Road in Laytonville, California (the Site). This study is a follow-up to the Preliminary Site Investigation performed under TO No. 47 and provides additional information regarding the distribution of diesel and motor oil contamination on the Site. The accompanying report summarizes the environmental engineering services performed including the advancement of 18 direct-push borings, two hand-auger borings, and laboratory testing to further assess the vertical extent of diesel and motor oil contamination within an area of proposed excavation at the Site.

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.

Please contact us if you have any questions concerning the contents of this report or if we may be of further service.

Sincerely,

GEOCON CONSULTANTS, INC.

David W. Bieber, RGP, CEG, CHG
Senior Geologist

James Winslow
James Winslow
Staff Scientist

DWB:JEW:jaj

(5 + 2 CDs) Addressee

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ADDITIONAL SITE INVESTIGATION REPORT

1.0 INTRODUCTION

This additional Site Investigation (SI) report for the State Route 101 (SR-101) Laytonville Curve Correction Project was prepared by Geocon Consultants, Inc. (Geocon) under the California Department of Transportation (Caltrans) Contract No. 03A0937 and Task Order (TO) No. 67. This study is a follow-up to a Preliminary Site Investigation (PSI) performed by Geocon under TO No. 47 and provides additional information regarding the distribution of total petroleum hydrocarbons in the diesel and motor oil ranges (TPHd and TPHmo) on the Site.

1.1 Project Description and Proposed Improvements

The Site consists of the roadway, shoulders and sidewalks within 3 meters (m) (10 feet [ft]) of and within the Caltrans right-of-way along SR-101 from Kilometer Post (KP) 110.88 to 111.68 (post mile [PM] 69.3 to 69.8) at the intersection of SR-101 and Branscomb Road in Laytonville, Mendocino County, California. The location of the Site and approximate project limits are depicted on the Vicinity Map, Figure 1. The boundaries of the Site are depicted on the Site Plan, Figure 2. Caltrans intends to lower the vertical curve on SR-101, improve shoulders and sidewalks, and make improvements to various utilities at the Site.

1.2 General Objectives

The purpose of the scope of services outlined in TO No. 67 was to provide additional information on the extent of TPH-d&mo contamination within the proposed area of excavation on the Site and to determine reuse or disposal options for impacted soils. The investigative results will be used by Caltrans to inform the construction contractor of the extent of petroleum-impacted soils present within the project boundaries for health and safety, soil management, and disposal evaluation purposes.

The scope of services requested by Caltrans included the performance of 18 direct-push and two hand-auger soil borings to facilitate the collection of depth stratified soil samples for analytical testing. The soil borings were advanced on the Site to vertically and laterally characterize the TPH-d&mo-impacted soils slated for excavation within the project boundaries.

2.0 BACKGROUND

The Site lies in the vicinity of several businesses that were former service stations, including Aragon's Muffler Shop and the Stewart Building, located northeast of the intersection of SR-101 and Branscomb Road. There are also two currently active service stations adjacent to the Site, Sala's Exxon on the northwest corner of the intersection of SR-101 and Branscomb Road, and a Chevron station on the east side of SR-101, south of Geiger's Market. Five underground storage tanks (USTs) were reportedly removed from the Aragon property in 2002. Caltrans reported that no records were available regarding the presence of USTs on the Stewart property.

A site investigation conducted after the Aragon tanks were removed indicated that contamination from total petroleum hydrocarbons as gasoline and diesel (TPHg and TPHd) were present in soil and groundwater deeper than 2.13 m (7 ft) below ground surface (bgs) within the Caltrans right-of-way. Caltrans personnel also reported the smell of hydrocarbons in excavated soil while potholing the Site to determine the depth of a drainage culvert under SR-101 at Geiger's Market on the east side of SR-101 south of the intersection with Branscomb Road.

At a Caltrans public meeting in early 2005, two Laytonville residents indicated that USTs were present "in the middle of Highway 101" servicing one of the businesses adjacent to the Site. Since USTs were removed from the Caltrans right-of-way when the "Aragon's Muffler" tanks were pulled, it was not known if the tanks referred to by the residents were among them, or if they were still present.

In June 2005, Geocon performed a PSI, including six direct-push soil borings (borings TO47-1 through TO47-6), two hand-auger soil borings (borings TO47-7 and TO47-8), soil sampling and analysis, and a geophysical investigation. The six direct-push borings ranged in depth from approximately 0.61 to 1.22 m (2.0 to 4.0 ft) and the two hand-auger borings ranged in depth from 0.43 to 0.61 m (1.4 to 2.0 ft). The findings of the PSI indicated diesel contamination in each of the soil samples collected in the TO 47 project limits. The samples collected were reported to contain TPHd at concentrations ranging from 180 to 840 milligrams per kilogram (mg/kg). The soil samples were also reported to contain oil and grease at concentrations ranging from 2,200 to 5,500 mg/kg. However, because the samples were collected as depth composite samples, Geocon was unable to determine whether the contamination was present throughout the soil profile or was restricted to a particular stratum. The geophysical survey conducted as part of the PSI did not detect USTs within the area surveyed. Geocon issued a report dated June 30, 2005, under Caltrans Contract No. 03A0937 and TO No. 47 with the results of the PSI. The TO 47 data table summary is presented on Table 1. The soil borings and geophysical survey are depicted on Figure 2.

3.0 SCOPE OF SERVICES

The following scope of services was performed as requested by Caltrans in TO No. 67.

3.1 Pre-field Activities

- The pre-work task order meeting was held by phone on September 27, 2005, to discuss the work areas. Caltrans representative Mr. Dwayne Grandy and Geocon representatives Mr. David Bieber and Mr. James Winslow were present on the pre-work call.
- Contacted the local public utilities via Underground Service Alert on October 2, 2005, to attempt to delineate subsurface public utilities and conduits in proximity to the proposed boring locations.
- Prepared a Health and Safety Plan dated October 5, 2005, to provide guidelines on the use of personal protective equipment during the field activities.
- Prepared a Workplan dated October 10, 2005, which describes the requested scope of services and quality assurance/quality control (QA/QC) sampling and laboratory procedures.
- Retained the services of Kiff Analytical, LLC (Kiff) (ELAP No. 2236), a Caltrans-approved and California-certified analytical laboratory, to perform the chemical analyses of soil samples.
- Retained the services of Vironex, a Caltrans-approved and California-certified subcontractor, to perform the direct-push sampling activities (C57 License No. 705927).
- Caltrans provided right-of-entry permission to access private properties identified as the Chung property and the Sala Exxon property.

3.2 Field Activities

The field activities conducted for TO No. 67 included the excavation of two hand-auger and 18 direct-push borings on the Site, and the collection of 60 soil samples for analysis. Due to permitting issues, Caltrans requested that the hand-auger boring activities be conducted in mid-October, even though a direct-push rig was not available until the second week in November. The hand-auger soil sampling activities were conducted on October 18, 2005. The direct-push soil sampling activities were conducted on November 10, 2005. The field sampling activities were performed under the supervision of David Bieber, Geocon's project manager and a California Certified Engineering Geologist.

3.2.1 Hand-Auger Soil Sampling

The hand-auger soil sampling activities consisted of asphalt coring and the excavation of two hand-auger borings along southbound SR-101 on either side of the intersection with Branscomb Road. A total of four soil samples were collected from the hand-auger borings, two from each of the two borings. Boring LV14 was excavated in the paved parking lot of the Chung Property located at the southwest corner of the intersection of Branscomb Road and SR-101. Boring LV15 was excavated in the gravel and asphalt paved parking lot of the Sala's Exxon property located on the northwest corner of the intersection of Branscomb Road and SR-101. The hand-auger borings were excavated to an

approximate depth of 0.71 m (2.3 ft) bgs. Soil samples were collected from each boring at depths from 0.36 to 0.51 m (1.2 to 1.7 ft) and 0.51 to 0.71 (1.7 to 2.3 ft) bgs. The approximate boring locations are depicted on Figure 2.

3.2.2 Direct-Push Soil Sampling

The direct-push soil sampling activities consisted of collecting a total of 56 soil samples from 18 borings advanced using a truck mounted direct-push rig. A total of 31 soil samples were collected from direct-push borings LV1 through LV10 spaced approximately 20 m (66 ft) apart along the paved northbound shoulder of SR-101 commencing in front of the Geiger's Market north to Boomers. An additional 25 soil samples were collected from direct-push borings LV11 through LV13 and LV16 through LV20 spaced approximately 20 m (66 ft) apart along the paved southbound shoulder of SR-101 and located approximately across the road from the borings advanced on the northbound shoulder of SR-101.

The direct-push borings were advanced to total depths ranging from 0.36 to 1.22 m (1.2 to 4.0 ft) bgs. Soil samples were collected from depth intervals determined from observation of the soil stratigraphy in each boring. The break between samples corresponded to an observed change in soil color, composition, or texture. Typical sample intervals included sampling from the base of the asphalt concrete (AC) pavement to 0.36 m (1.2 ft) bgs, 0.36 to 0.51 m (1.2 to 1.7 ft) bgs, and 0.51 to 0.71 m (1.7 to 2.3 ft) bgs. Six soil samples were collected at depths ranging from 0.71 m (2.3 ft) to either 0.91 m (3.0 ft), 1.12 m (3.7 ft), or 1.22 m (4.0 ft) bgs. The specific intervals sampled in each boring are presented in Table 2. The approximate boring locations are depicted on Figure 2.

4.0 INVESTIGATIVE METHODS

4.1 Boring Location Rationale

The soil boring locations were designated by Caltrans to assess the vertical and lateral extent of TPH-d&mo contamination within the Site boundaries. Soil samples were collected where access by the direct push rig was available within the Caltrans right-of-way and where access was allowed by the right-of-entry permits for the Chung and Sala's Exxon properties on the southbound lane of SR-101 (borings LV14 and LV15).

Each boring was located using a differential global positioning system (GPS). The GPS was utilized to locate the horizontal position of each boring with an error of no more than 1 m (3.3 ft). The location by latitude and longitude of each boring is summarized on Table 2. The approximate soil boring locations are depicted on Figure 2.

4.2 Sampling Procedures

4.2.1 Hand-Auger Sampling

The two hand-auger borings were excavated to approximately 0.71 m (2.3 ft) bgs. Soil samples from the hand-auger borings were obtained directly from the hand-auger bucket and transferred to 110-milliliter (4-ounce) laboratory-provided glass jars. After collection, the jars were labeled and placed in an ice chest pending delivery to Kiff under standard chain-of-custody (COC) procedures.

The sampling equipment was cleansed prior to the collection of each soil sample by washing the equipment with an Alconox® solution followed by a double rinse with deionized water. After the sample collection was complete, the hand-auger borings were backfilled to the surface with excess soil cuttings.

Traffic control procedures including the use of "Shoulder Work Ahead" signs, orange cones, and truck mounted warning flashers, were used to enhance personnel safety while the services were being performed.

4.2.2 Direct-Push Sampling

The 18 direct-push borings ranged in depth from 0.51 to 1.22 m (1.7 to 4.0 ft) bgs. Soil samples obtained from the direct-push borings were collected in acetate liners driven by the direct-push rig. After collection, the soil sample liner was split into samples for the depth intervals indicated on Table 2 and each section of the tube was fitted on each end with a Teflon™ sheet, capped, labeled and placed in an ice chest pending delivery to the Kiff under standard COC procedures.

The remaining soil in each acetate liner was transferred to a re-sealable Ziploc® plastic bag and evaluated in the field for odor and soil discoloration. The soil in the bags was then field-screened using a photo ionization detector (PID). After the sample collection was complete, the direct-push borings were grouted to the surface with neat cement.

The equipment decontamination water and the excess soil from the direct-push samples was placed into a Department of Transportation (DOT)-approved, 55-gallon drum that was labeled, transported back to the Geocon office, and temporarily stored pending disposal at the KR Environmental facility in Sacramento, California following regulatory protocol. Copies of the disposal manifest are included in Appendix B.

Traffic control procedures including the use of “Shoulder Work Ahead” signs, orange cones, and truck mounted warning flashers, were used to enhance personnel safety while the services were being performed.

4.3 Laboratory Analyses

The glass jars and capped acetate liners containing the soil samples collected within the project boundaries were submitted to Kiff for analyses on a one week turn-around time for the hand-auger samples and a 48-hour turn-around-time for the direct-push samples. A total of 60 soil samples were analyzed for TPHd&mo using Environmental Protection Agency (EPA) Test Method 8015(M).

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 the spike made at ten times the detection limit or at the analyte level.

Prior to submitting the soil samples to the laboratory, the chain-of-custody documentation was reviewed for accuracy and completeness. Reproductions of the laboratory reports and chain-of- custody documentation are presented in Appendix A.

5.0 FIELD OBSERVATIONS AND INVESTIGATIVE RESULTS

5.1 Site Soil and Groundwater Conditions

The surface material at most of the boring locations was approximately 0.1 to 0.15 m (0.3 to 0.5 ft) of AC pavement over approximately 0.3 m (1.0 ft) of hard, silty sandy gravel aggregate base fill (AB). In borings LV7 and LV8, the surface material consisted of approximately 0.51 m (1.7 ft) of dark yellowish brown (10YR 2/2) silty sand and gravel fill material and AB fill. In borings LV1 and LV20, the soils underlying the AB were dusky yellowish brown (10YR 2/2) fine sandy silt (ML) to the maximum depth sampled. In borings LV2 through LV8 and LV13, the soils underlying the AB were light brown (5YR 5/6) to dark yellowish brown (10YR 4/2), silt sand and gravel (GP) to the maximum depth sampled. A thin black to greenish black layer was noted in borings LV2 through LV4 at a depth of approximately 0.36m (1.2 ft) bgs. In borings LV9 through LV12 and LV14 through LV19, the soils underlying the AB were alluvium consisting of dark yellowish orange (10YR 6/6) to moderate brown (5YR 3/4) silts (ML) to the maximum depth sampled. Some hydrocarbon staining and a slight hydrocarbon odor were noted in borings LV2 through LV4; however, elevated PID readings were not observed in the field for the samples from these borings. A PID reading of 4.2 parts per million was recorded for sample number LV6-20. Groundwater was not encountered in the soil borings.

5.2 Soil Analytical Results

Sixty soil samples were collected from 18 direct-push and two hand-auger soil borings from within the project boundaries. TPHd was reported in each of the samples at concentrations ranging from 1.7 to 4,300 mg/kg. TPHmo was reported above the method reporting limit of 10 mg/kg in 56 of the soil samples collected at concentrations ranging from 14 to 13,000 mg/kg. The laboratory noted that the hydrocarbons reported as diesel did not exhibit a typical diesel chromatographic pattern and that the hydrocarbons had a higher boiling point than typical diesel.

The reported concentrations of TPHd in the 18 samples from the AB section underlying the AC to an approximate average depth of 0.36 m (1.2 ft) bgs range from 42 to 4,300 mg/kg with an average concentration of 1,045 mg/kg. The 20 samples collected from the 0.36 to 0.51 m (1.2 to 1.7 ft) interval were reported to contain TPHd at concentrations ranging from 1.7 to 1,400 mg/kg with an average concentration of 334 mg/kg. TPHd was reported in the 16 soil samples collected from 0.51 to 0.71 m (1.7 to 2.3 ft) bgs at concentrations ranging from 2.4 to 260 mg/kg with an average concentration of 49 mg/kg. TPHd was reported in the soil samples collected from 0.71 (2.3 ft) bgs and deeper at concentrations ranging from 2.4 to 230 mg/kg with an average concentration of 74 mg/kg.

The reported concentrations of TPHmo in the 18 samples from the AB section underlying the AC to an approximate average depth of 0.36 m (1.2 ft) bgs range from 170 to 13,000 mg/kg with an average

concentration of 5,768 mg/kg for the 18 samples analyzed. TPHmo was reported above the method reporting limit of 10 mg/kg in 19 of the 20 soil samples collected from 0.36 to 0.51 m (1.2 to 1.7 ft) interval at concentrations ranging from 34 to 2,900 mg/kg with an average concentration of 884 mg/kg. TPHmo was reported above the method reporting limit of 10 mg/kg in 14 of the 16 soil samples collected from 0.51 to 0.71 m (1.7 to 2.3 ft) bgs at concentrations ranging from 14 to 700 mg/kg with an average concentration of 142 mg/kg. TPHmo was reported in five of the six soil samples collected from 0.71 (2.3 ft) bgs and deeper at concentrations ranging from 20 to 1,100 mg/kg with an average concentration of 270 mg/kg.

The laboratory results are summarized on Table 2. Laboratory reports and chain-of-custody documentation are presented in Appendix A.

5.3 Laboratory QA/QC

Geocon reviewed the analytical laboratory QA/QC provided with the laboratory report. The laboratory Case Narrative for the four hand auger samples collected states "Hydrocarbons reported as TPH as Diesel do not exhibit a typical Diesel chromatographic pattern for samples LV14-14, LV14-20, LV15-14 and LV15-20. Matrix Spike/Matrix Spike Duplicate Results associated with the samples LV15-20, LV14-14, LV15-14, LV14-20 for the analyte TPH as Diesel were affected by the analyte concentrations already present in the un-spiked sample."

The laboratory Case Narrative for the 56 soil samples collected by direct-push states "Hydrocarbons reported as TPH as Diesel do not exhibit a typical Diesel chromatographic pattern for most of the samples" (Appendix A). The lab stated that "Matrix Spike/Matrix Spike Duplicate Results associated with samples LV11-0, LV11-14 for the analyte TPH as Diesel were affected by the analyte concentrations already present in the un-spiked sample. Matrix Spike/Matrix Spike Duplicate Results associated with samples LV7-14, LV6-14 for the analyte TPH as Diesel were outside of control limits. This may indicate a bias for the sample that was spiked. Since the LCS [Laboratory Control Samples] recoveries were within control limits, no data are flagged."

Based on this case narrative, the reported TPHd results for these samples must be considered estimated with the potential to be less than or greater than the reported value. The data show acceptable surrogate recoveries and non-detect results for the method blanks and acceptable recoveries for the LCS. Based on this limited data review, no additional qualifications of the data presented herein are necessary, and the data are of sufficient quality for the purposes of this report.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Results of the PSI conducted in June of 2005 under TO No. 47 indicated the presence of TPHd to TPHmo range hydrocarbons in the area of the Site investigated. However, due to sample collection methods, vertical delineation of the contamination was not possible. TPHd contamination was reported in each of the 60 TO No. 67 samples, and TPHmo contamination was reported in 56 of the 60 samples. The samples in which TPHmo was not reported are LV7-20, LV10-14, LV15-20 and LV18-28.

Based on the additional soil sampling and analysis conducted for TO No. 67, there is vertical stratification of diesel and motor oil contamination at the Site. The reported contaminant levels were generally highest in the samples collected from the AB section underlying the AC to an approximate average depth of 0.36 m (1.2 ft) bgs, ranging from 42 to 4,300 mg/kg TPHd and 34 to 13,000 mg/kg TPHmo. The reported concentrations for TPHd and TPHmo typically drop by one to two orders of magnitude from the AB to the underlying silt alluvium at approximately 0.51 m (1.7 ft) bgs. Reported concentrations for TPHd were also higher for the surface samples collected north of Branscomb Road, while reported concentrations for TPHmo were higher in the surface samples collected south of Branscomb Road. The application of hydrocarbon-based oil to the surface of the AB to enhance adhesion with the AC pavement when placed is a possible source of TPHd to TPHmo range hydrocarbons in the area of the Site investigated.

Due to the elevated levels of TPHd and TPHmo identified on the Site, soils excavated in the areas sampled will need to be handled and disposed of as contaminated material. The reported TPHd and TPHmo concentrations are such that the soils will have to be handled and disposed of in a Class II landfill as a designated waste. However, facility-specific disposal criteria will need to be identified prior to disposal to confirm where and how the soil can be disposed.

We have discussed reuse of some of the contaminated material on the Site with the California Department of Toxic Substances Control (DTSC), the Mendocino County Department of Environmental Health (MCDEH), and the North Coast Regional Water Quality Control Board (NCRWQCB). According to DTSC and the MCDEH, they do not have regulatory jurisdiction for the hydrocarbon-contaminated soils on the Site. Beth Lamb at the NCRWQCB indicated that there might be a memorandum of understanding (mou) between Caltrans and the NCRWQCB that allows for contaminated soil reuse in the site vicinity. However, the existence of the mou could not be confirmed.

We understand that Caltrans anticipates generating excess soil from the proposed improvements, but that the reconstruction of the roadway section will require the importation and placement of AB to establish the grade on which to place the AC. If the material is suitable and it is allowable from a regulatory standpoint, it is recommended that Caltrans evaluate the costs for selectively excavating and

reusing the existing AB under the new AC section verses the costs for disposing of the existing AB and importing new AB.

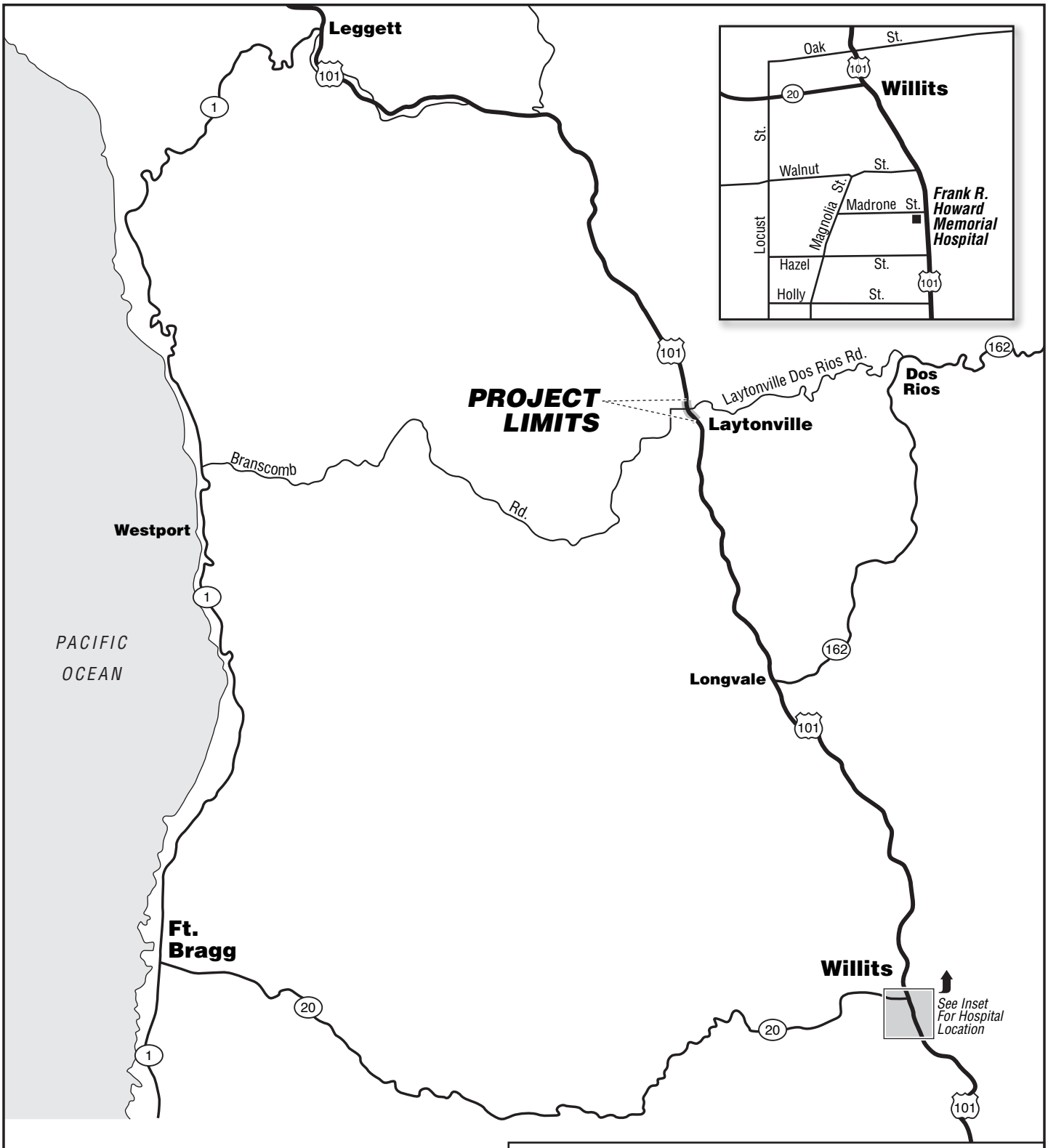
Based on the information provided in the TO and the results of our investigation, we have prepared an estimate of costs for soil disposal on the Site. The cost estimate is for preliminary planning purposes only. Actual costs will vary based on when the work is performed and the volume of material requiring disposal. Estimated costs are based on disposal of 1,000 metric tons of Class II hydrocarbon-containing soil. We spoke with Ron Hurst with Norcal Waste Systems to get estimated disposal costs. The disposal costs are based on disposal of Class II hydrocarbon-contaminated soil at Ostrum Landfill in Wheatland. Based on estimated trucking costs of $665.00 per 11 cubic meter (m^3) (15 cubic yard [yd^3]) load for transfers and an estimated landfill tipping fee of $45.50 per m^3 ($35.00 per yd^3), the estimated soil transportation and disposal costs would be approximately $106.00 per m^3 ($90.00 yd^3) for Class II disposal.

The closest Class III disposal facility to the Site that we could locate is the Redwood Landfill near Santa Rosa, California. If the soil could be disposed of in the Redwood Class III landfill in Santa Rosa, the estimated cost for disposal would be reduced to approximately $90.00 per m^3 ($74.00 yd^3) because of the lower transportation costs. However, in order to dispose of the material as a Class III waste at the Redwood landfill, the average TPHd and TPHmo concentrations need to be 100 mg/kg or less. Caltrans would need to stockpile and reanalyze the soil prior to transporting it off site to determine whether it would qualify for possible disposal as a class III waste verses disposal as a class II waste. Due to the extra handling costs to stockpile, reanalyze, and then load the soil, it does not appear that there would be a significant savings in disposal costs if the soil could go to a Class III disposal facility.

7.0 REPORT LIMITATIONS

This report has been prepared exclusively for Caltrans. 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.



0 5 10 15

Scale in Kilometers

GEOCON

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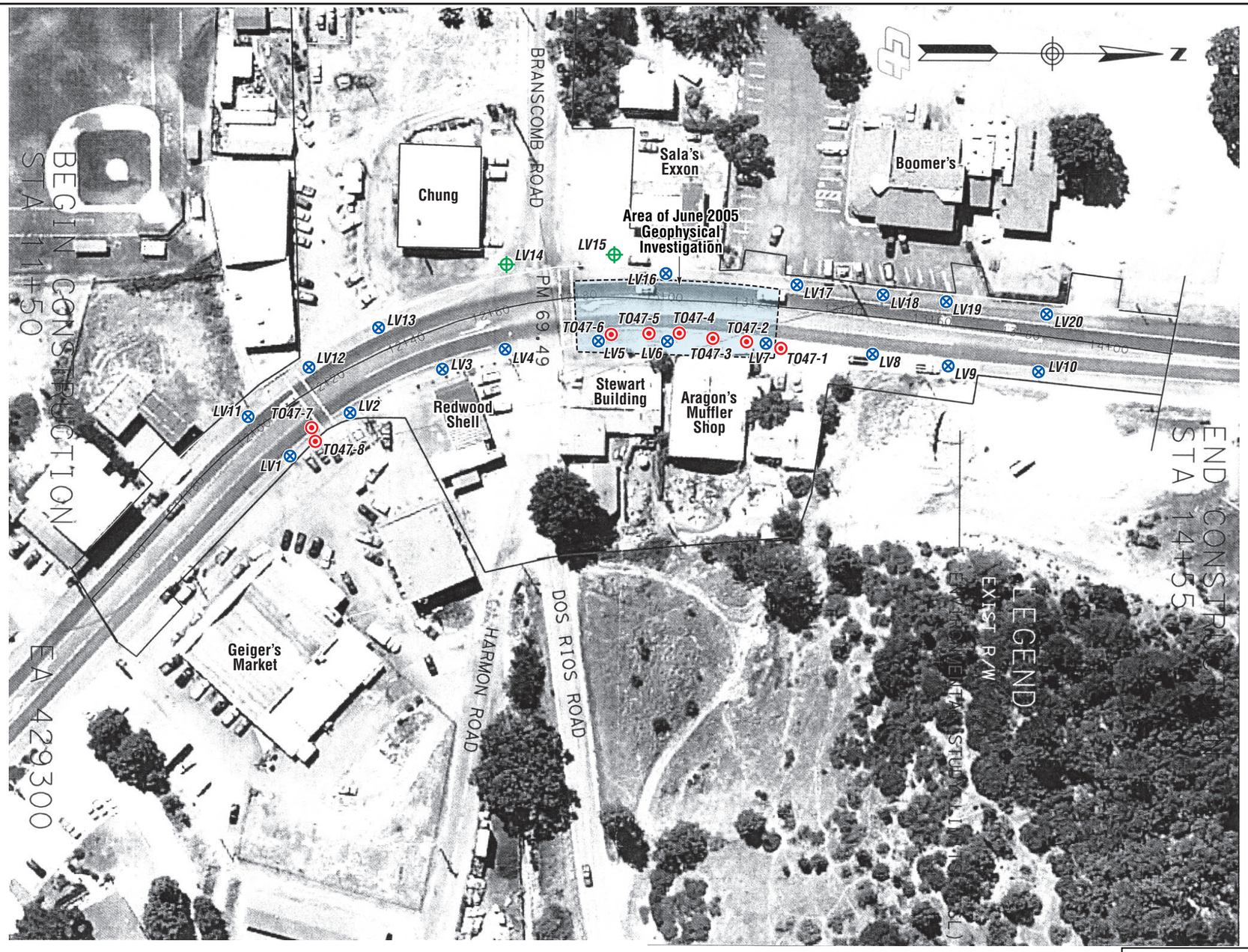
SR 101 Laytonville Curve Correction

Mendocino County, California

GEOCON Proj. No. S8875-06-67

VICINITY MAP

Task Order No. 67 | January 2006 | Figure 1



LEGEND:

- TO47-1 Approximate Direct-Push Boring Location (June 2005)
- LV1 Approximate Direct-Push Boring Location (November 2005)
- LV14 Approximate Hand-Auger Boring Location (November 2005)

0 10 20m

Scale: 1:1,000

0 100 Ft.

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SR 101 Laytonville Curve Correction

Mendocino County, California

SITE PLAN

GEOCON Proj. No. S8875-06-67

Task Order No. 67 | January 2006 | Figure 2

TABLE 1
SUMMARY OF BORING COORDINATES AND ANALYTICAL RESULTS – TO 47
CALTRANS TASK ORDER NO. 47, EA 01-429300
SR-101, LAYTONVILLE CURVE CORRECTION
MENDOCINO COUNTY, CALIFORNIA

Boring I.D.	Location	Boring Depth meters (feet)	Sample Date	GPS Coordinates		TPHg (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	TPHd (mg/kg)	O&G (mg/kg)
				North Latitude	West Longitude							
TO47-1	Aragon's Muffler	1.06 (3.5)	06/07/05	39.688270909	123.483027813	<1.0	<0.005	<0.005	<0.005	<0.005	270	2,200
TO47-2	Aragon's Muffler	1.22 (4.0)	06/07/05	39.688202563	123.483037986	<1.0	<0.005	<0.005	<0.005	<0.005	800	5,500
TO47-3	Aragon's Muffler	1.06 (3.5)	06/07/05	39.688134201	123.483042193	<1.0	<0.005	<0.005	<0.005	<0.005	840	5,300
TO47-4	Stewart Building	0.91 (3.0)	06/07/05	39.688065923	123.483049151	<1.0	<0.005	<0.005	<0.005	<0.005	320	5,300
TO47-5	Stewart Building	0.76 (2.5)	06/07/05	39.688004850	123.483042972	<1.0	<0.005	<0.005	<0.005	<0.005	180	3,700
TO47-6	Stewart Building	0.61 (2.0)	06/07/05	39.687929112	123.483032863	<1.0	<0.005	<0.005	<0.005	<0.005	640	4,700
TO47-7	Geiger's Market	0.61 (2.0)	06/07/05	39.687347896	123.482710479	<1.0	<0.005	<0.005	<0.005	<0.005	2.6	460
TO47-8	Geiger's Market	0.43 (1.4)	06/07/05	39.687342973	123.482734303	- -	- -	- -	- -	- -	- -	- -

Notes:
TPHg = Total Petroleum Hydrocarbons as gasoline
B = Benzene
T = Toluene
E = Ethylbenzene
X = Total Xylenes
TPHd = Total Petroleum Hydrocarbons as diesel
O&G = Total Petroleum Hydrocarbons as oil and grease
mg/kg = milligrams per kilogram
< = Less than the laboratory test method detection limits
- - = No data available

TABLE 2
SUMMARY OF BORING COORDINATES AND ANALYTICAL RESULTS
CALTRANS TASK ORDER NO. 67, EA 01-429300
SR-101, LAYTONVILLE CURVE CORRECTION
MENDOCINO COUNTY, CALIFORNIA

								Depth Intervals in Meters (ft)							
								0.10[1] - 0.36 (0.33[1] - 1.2)		0.36 - 0.51 (1.2 - 1.7)		0.51 - 0.71 (1.7 - 2.3)		>0.71 (>2.3)	
Boring I.D.	Location	Sample Interval meters (feet)	Sample Date	GPS Coordinates North Latitude	GPS Coordinates West Longitude	TPHd (mg/kg)	TPHmo (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)
LV1-0	STA 12+00	0.10[1] - 0.36 (0.33[1] - 1.2)	11/10/05	39.687256246	-123.482642293	1,300 [2]	13,000	1,300	13,000						
LV1-14		0.36 - 0.51 (1.2 - 1.7)	11/10/05			220 [2]	900			220	900				
LV2-0	STA 12+20	0.10[1] - 0.36 (0.33[1] - 1.2)	11/10/05	39.687405926	-123.482811113	880 [2]	11,000	880	11,000						
LV2-14		0.36 - 0.51 (1.2 - 1.7)	11/10/05			540 [2]	2,900			540	2,900				
LV2-20		0.51 - 0.71 (1.7 - 2.3)	11/10/05			62 [2]	190					62	190		
LV3-0	STA 12+40	0.10[1] - 0.36 (0.33[1] - 1.2)	11/10/05	39.687540121	-123.482925925	780 [2]	10,000	780	10,000						
LV3-14		0.36 - 0.51 (1.2 - 1.7)	11/10/05			440 [2]	1,300			440	1,300				
LV3-20		0.51 - 0.71 (1.7 - 2.3)	11/10/05			120 [2]	210					120	210		
LV4-0	STA 12+60	0.10[1] - 0.36 (0.33[1] - 1.2)	11/10/05	39.687688943	-123.482999391	560 [2]	8,100	560	8,100						
LV4-14		0.36 - 0.51 (1.2 - 1.7)	11/10/05			20 [2]	78			20	78				
LV4-20		0.51 - 0.71 (1.7 - 2.3)	11/10/05			5.5 [2]	14					5.5	14		
LV5-0	STA 12+80	0.10[1] - 0.36 (0.33[1] - 1.2)	11/10/05	39.687879478	-123.483013133	670 [2]	3,000	670	3,000						
LV5-14		0.36 - 0.51 (1.2 - 1.7)	11/10/05			330 [2]	880			330	880				
LV5-20		0.51 - 0.71 (1.7 - 2.3)	11/10/05			19 [2]	34					19	34		
LV6-0	STA 13+00	0.10[1] - 0.36 (0.33[1] - 1.2)	11/10/05	39.688038090	-123.483027540	1,200 [2]	6,500	1,200	6,500						
LV6-14		0.36 - 0.51 (1.2 - 1.7)	11/10/05			260 [2]	630			260	630				
LV6-20		0.51 - 0.71 (1.7 - 2.3)	11/10/05			20 [2]	93					20	93		
LV6-28		0.71 - 0.91 (2.3 - 3.0)	11/10/05			230 [2]	1,100							230	1,100
LV7-0	STA 13+20	0.10[1] - 0.36 (0.33[1] - 1.2)	11/10/05	39.688307788	-123.483016662	1,700 [2]	8,600	1,700	8,600						
LV7-14		0.36 - 0.51 (1.2 - 1.7)	11/10/05			790 [2]	960			790	960				
LV7-20		0.51 - 0.71 (1.7 - 2.3)	11/10/05			3.3 [2]	<10					3.3	**0.0**		
LV7-28		0.71 - 1.22 (2.3 - 4.0)	11/10/05			11 [2]	20							11	20
LV8-0	STA 13+40	0.10[1] - 0.36 (0.33[1] - 1.2)	11/10/05	39.688466880	-123.482994444	210 [2]	990	210	990						
LV8-14		0.36 - 0.51 (1.2 - 1.7)	11/10/05			50 [2]	140			50	140				
LV8-20		0.51 - 0.71 (1.7 - 2.3)	11/10/05			4.8 [2]	30					4.8	30		

TABLE 2
SUMMARY OF BORING COORDINATES AND ANALYTICAL RESULTS
CALTRANS TASK ORDER NO. 67, EA 01-429300
SR-101, LAYTONVILLE CURVE CORRECTION
MENDOCINO COUNTY, CALIFORNIA

								Depth Intervals in Meters (ft)							
								0.10[1] - 0.36 (0.33[1] - 1.2)		0.36 - 0.51 (1.2 - 1.7)		0.51 - 0.71 (1.7 - 2.3)		>0.71 (>2.3)	
Boring I.D.	Location	Sample Interval meters (feet)	Sample Date	GPS Coordinates North Latitude	GPS Coordinates West Longitude	TPHd (mg/kg)	TPHmo (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)
LV8-28		0.71 - 1.12 (2.3 - 3.7)	11/10/05			69 [2]	170							69	170
LV9-0	STA 13+60	0.10[1] - 0.36 (0.33[1] - 1.2)	11/10/05	39.688618815	-123.482976728	51 [2]	170	51	170						
LV9-14		0.36 - 0.51 (1.2 - 1.7)	11/10/05			16 [2]	42			16	42				
LV9-20		0.51 - 0.71 (1.7 - 2.3)	11/10/05			96 [2]	370					96	370		
LV10-0	STA 13+80	0.10[1] - 0.36 (0.33[1] - 1.2)	11/10/05	39.688759670	-123.482949706	410 [2]	2,800	410	2,800						
LV10-14		0.36 - 0.51 (1.2 - 1.7)	11/10/05			1.7 [2]	<10			1.7	**0.0**				
LV11-0	STA 12+00	0.10[1] - 0.36 (0.33[1] - 1.2)	11/10/05	39.687197872	-123.482799524	230 [2]	540	230	540						
LV11-14		0.36 - 0.51 (1.2 - 1.7)	11/10/05			260 [2]	1,800			260	1,800				
LV12-0	STA 12+20	0.10[1] - 0.36 (0.33[1] - 1.2)	11/10/05	39.687357604	-123.482970175	42 [2]	320	42	320						
LV12-14		0.36 - 0.51 (1.2 - 1.7)	11/10/05			25 [2]	110			25	110				
LV12-20		0.51 - 0.71 (1.7 - 2.3)	11/10/05			140 [2]	700					140	700		
LV13-0	STA 12+40	0.10[1] - 0.36 (0.33[1] - 1.2)	11/10/05	39.687462347	-123.483058086	4,300 [2]	5,300	4,300	5,300						
LV13-14		0.36 - 0.51 (1.2 - 1.7)	11/10/05			370 [2]	890			370	890				
LV13-20		0.51 - 0.71 (1.7 - 2.3)	11/10/05			21 [2]	45					21	45		
LV14-14	STA 12+60	0.36 - 0.51 (1.2 - 1.7)	10/18/05	39.687706314	-123.483274946	490 [3]	840			490	840				
LV14-20		0.51 - 0.71 (1.7 - 2.3)	10/18/05			87 [3]	160					87	160		
LV15-14	STA 12+80	0.36 - 0.51 (1.2 - 1.7)	10/18/05	39.687874380	-123.483277017	45 [3]	34			45	34				
LV15-20		0.51 - 0.71 (1.7 - 2.3)	10/18/05			9.6 [3]	<10					9.6	**0.0**		
LV16-0	STA 13+00	0.10[1] - 0.36 (0.33[1] - 1.2)	11/10/05	39.688038986	-123.483212308	2,100 [2]	10,000	2,100	10,000						
LV16-14		0.36 - 0.51 (1.2 - 1.7)	11/10/05			770 [2]	1,600			770	1,600				
LV16-20		0.51 - 0.71 (1.7 - 2.3)	11/10/05			140 [2]	210					140	210		
LV16-28		0.71 - 0.91 (2.3 - 3.0)	11/10/05			120 [2]	250							120	250

TABLE 2
SUMMARY OF BORING COORDINATES AND ANALYTICAL RESULTS
CALTRANS TASK ORDER NO. 67, EA 01-429300
SR-101, LAYTONVILLE CURVE CORRECTION
MENDOCINO COUNTY, CALIFORNIA

								Depth Intervals in Meters (ft)							
								0.10[1] - 0.36 (0.33[1] - 1.2)		0.36 - 0.51 (1.2 - 1.7)		0.51 - 0.71 (1.7 - 2.3)		>0.71 (>2.3)	
Boring I.D.	Location	Sample Interval meters (feet)	Sample Date	GPS Coordinates North Latitude	GPS Coordinates West Longitude	TPHd (mg/kg)	TPHmo (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)
LV17-0	STA 13+20	0.10[1] - 0.36 (0.33[1] - 1.2)	11/10/05	39.688381228	-123.483171745	610 [2]	5,500	610	5,500						
LV17-14		0.36 - 0.51 (1.2 - 1.7)	11/10/05			270 [2]	430			270	430				
LV17-20		0.51 - 0.71 (1.7 - 2.3)	11/10/05			12 [2]	98					12	98		
LV17-28		0.71 - 1.22 (2.3 - 4.0)	11/10/05			14 [2]	81							14	81
LV18-0	STA 13+40	0.10[1] - 0.36 (0.33[1] - 1.2)	11/10/05	39.688521615	-123.483154749	820 [2]	2,700	820	2,700						
LV18-14		0.36 - 0.51 (1.2 - 1.7)	11/10/05			1,400 [2]	2,400			1,400	2,400				
LV18-20		0.51 - 0.71 (1.7 - 2.3)	11/10/05			17 [2]	28					17	28		
LV18-28		0.71 - 1.12 (2.3 - 3.7)	11/10/05			2.4 [2]	<10							2.4	**0.0**
LV19-0	STA 13+60	0.10[1] - 0.36 (0.33[1] - 1.2)	11/10/05	39.688625417	-123.483144383	2,400 [2]	12,000	2,400	12,000						
LV19-14		0.36 - 0.51 (1.2 - 1.7)	11/10/05			160 [2]	740			160	740				
LV19-20		0.51 - 0.71 (1.7 - 2.3)	11/10/05			27 [2]	91					27	91		
LV20-0	STA 13+80	0.10[1] - 0.36 (0.33[1] - 1.2)	11/10/05	39.688798203	-123.483128528	550 [2]	3,300	550	3,300						
LV20-14		0.36 - 0.51 (1.2 - 1.7)	11/10/05			220 [2]	1,000			220	1,000				
							Average =	1,045.2	5,767.8	333.9	883.7	49.0	142.1	74.4	270.2

Notes: LV1-14
│ └────Top of sample depth in inches below surface grade
└──────Boring identification
STA 12+00 = distance along SR-101 in meters
TPHd = Total Petroleum Hydrocarbons as diesel
TPHmo = Total Petroleum Hydrocarbons as motor oil
mg/kg = milligrams per kilogram
< = Less than the laboratory test method detection limits
[1] = Approximate base of the asphalt.
[2] = Laboratory Case Narrative stated " Hydrocarbons reported as TPH as diesel do not exhibit a typical Diesel chromatographic pattern …These hydrocarbons are higher boiling than typical diesel fuel."
[3] = Laboratory Case Narrative stated " Hydrocarbons reported as TPH as diesel do not exhibit a typical Diesel chromatographic pattern …"