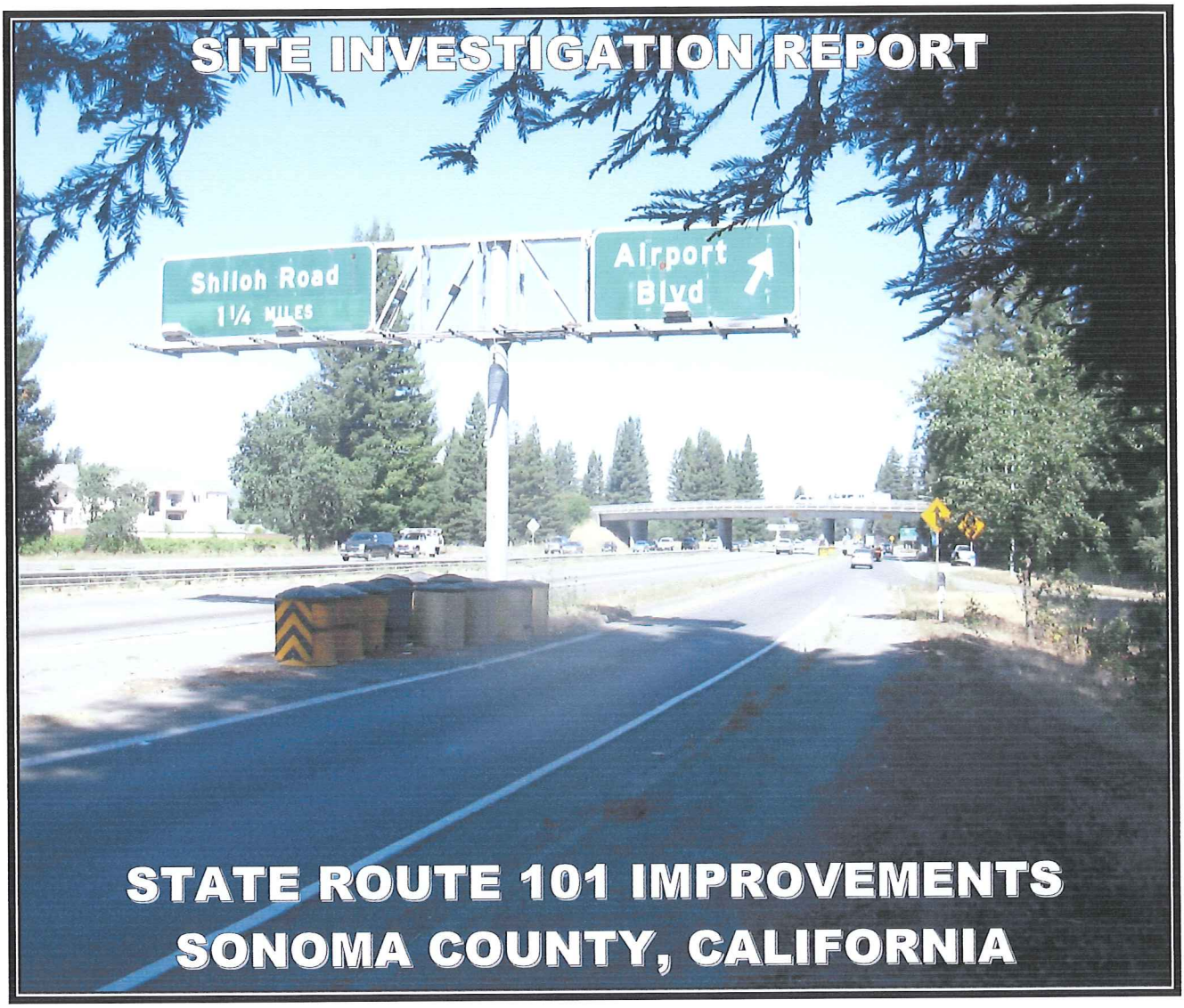
# SITE INVESTIGATION REPORT




# STATE ROUTE 101 IMPROVEMENTS
# SONOMA COUNTY, CALIFORNIA

*PREPARED FOR*:
CALIFORNIA DEPARTMENT OF TRANSPORTATION
DISTRICT 4
OFFICE OF ENVIRONMENTAL ENGINEERING
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Caltrans

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## REPORT LIMITATIONS

This report has been prepared exclusively for the State of California Department of Transportation (Caltrans) District 4. The information contained herein is only valid as of the date of the report, and will require an update to reflect additional information obtained.

This report is not a comprehensive site characterization and should not be construed as such. The findings as presented in this report are predicated on the results of the limited sampling and laboratory testing performed. In addition, the information obtained is not intended to address potential impacts related to sources other than those specified herein. Therefore, the report should be deemed conclusive with respect to only the information obtained. We make no warranty, express or implied, with respect to the content of this report or any subsequent reports, correspondence or consultation. Geocon strived to perform the services summarized herein in accordance with the local standard of care in the geographic region at the time the services were rendered.

The contents of this report reflect the views of the author who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

**GEOCON CONSULTANTS, INC**

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CALIFORNIA DEPARTMENT OF TRANSPORTATION – DISTRICT 4
OFFICE OF ENVIRONMENTAL ENGINEERING – HAZARDOUS WASTE BRANCH

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## EXECUTIVE SUMMARY

We prepared this Site Investigation Report for the State Route 101 Improvements Project. This report documents the investigation sampling methods and laboratory analytical data. The project consists of State Route (SR) 101 between Steele Lane and Windsor River Road in Sonoma County, California. The Site location is depicted on the Vicinity Map, Figure 1. We understand that Caltrans proposes various freeway and ramp improvements at the project location.

The primary objectives of our investigation were to 1) evaluate whether impacts due to metals, total petroleum hydrocarbons as gasoline, diesel, and motor oil (TPHg, TPHd, and TPHmo), benzene, toluene, ethylbenzene and total xylenes (BTEX), methyl tertiary butyl ether (MTBE), volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) exist in the soil within the project boundaries; and 2), evaluate for the presence of TPHg, TPHd, TPHmo, BTEX, MTBE, VOCs, and SVOCs in groundwater within the project boundaries. The information obtained from this investigation will be used by Caltrans to coordinate SR 101 improvement activities, determine soil and groundwater disposal costs, and identify health and safety concerns during improvements.

Our investigation also included an asbestos survey of six bridges associated with planned improvements at the Site. The results of the asbestos survey are reported under separate cover in the Geocon report entitled *Asbestos Survey, State Route 101 Improvements, Sonoma County, California,* dated September 30, 2007.

The field investigation was performed between August 15 and November 20, 2007. The following field activities were performed during sampling efforts.

- Advanced 222 soil borings to depths ranging from the surface to approximately 20 feet below ground surface (bgs) using hand auger and direct-push (DP) methods for the purpose of collecting soil and/or groundwater samples. (A copy of the drilling permit from Sonoma County is presented as Appendix A.)
- Collected groundwater samples at six locations.
- Collected soil samples in pre-cleaned containers and acetate liners.
- Collected groundwater samples in pre-cleaned, laboratory-supplied glass containers.
- Transported samples under standard chain-of-custody protocol to a California-certified environmental laboratory.

Soil samples were collected from 222 borings as shown on the Site Plans, Figures 2a through 2h; grab-groundwater samples were collected from six of the borings. The laboratory testing performed is summarized below:

- A total of 886 soil samples were analyzed for total lead using EPA Test Method 6010B.
- A total of five soil samples were analyzed for Title 22 (CAM 17) metals using EPA Test Methods 6010B/7471A.
- A total of 50 soil samples were analyzed for pH using EPA Test Method 9045C.
- A total of five soil samples were analyzed for TPHd, TPHmo, and TPHg using EPA Test Method 8015B.
- A total of five soil samples were analyzed for BTEX and MTBE using EPA Test Method 8020A.
- A total of five soil samples were analyzed for VOCs using EPA Test Method 8260B.
- A total of five soil samples were analyzed for SVOCs using EPA Test Method 8270C.
- A total of six groundwater samples were analyzed for TPHd, TPHmo, and TPHg using EPA Test Method 8015B.
- A total of six groundwater samples were analyzed for BTEX and MTBE using EPA Test Method 8020A.
- A total of six groundwater samples were analyzed for VOCs using EPA Test Method 8260B.
- A total of six groundwater samples were analyzed for SVOCs using EPA Test Method 8270C.

Soil Results

Summaries of the analytical laboratory test results for soil are presented on Tables 2 through 4. Reproductions of the laboratory reports and chain-of-custody documentation are presented in Appendix B.

The laboratory analyses indicated the following:

- Lead was the only metal detected with total concentrations greater than ten times its STLC value of 5.0 mg/l. Total lead concentrations ranged from less than the laboratory reporting limit (<) of 5 mg/kg to 940 mg/kg.
- Soil pH values ranged from 5.4 to 8.0.
- A total of 186 soil samples that had total lead concentrations greater than 50 mg/kg were further analyzed for soluble (WET) lead and had detected concentrations ranging from 0.85 mg/l to 76 mg/l. Soluble (WET) lead was not detected above the laboratory reporting limit of 1.0 mg/l in three of the 186 samples.
- A total of 127 soil samples were further analyzed for soluble (WET-DI) and had detected concentrations ranging from 0.25 mg/l to 1.8 mg/l. Thirteen of the samples had reported concentrations greater than 0.5 mg/l and soluble (WET-DI) lead was not detected above the laboratory reporting limit of 1.0 mg/l in 69 of the 127 samples.
- A total of 56 soil samples that were further analyzed for soluble lead using the TCLP exhibited concentrations ranging from 0.33 mg/l to 3.8 mg/l.
- TPHd was detected in two soil samples at 1.5 mg/kg and 4.5 mg/kg.
- TPHmo was detected in one soil sample at 2.4 mg/kg.

- TPHg, BTEX, MTBE, and VOCs were not detected in soil samples above laboratory reporting limits.
- Phenol was the only SVOC was detected in soil samples. Phenol was reported in two soil samples at concentrations of 1,000 micrograms per kilogram (ug/kg) and 1,400 ug/kg.

Grab-Groundwater Results

Summaries of the analytical laboratory test results for grab-groundwater are presented on Table 5. Reproductions of the laboratory reports and chain-of-custody documentation are presented in Appendix B.

The laboratory analyses indicated the following:

- BTEX, MTBE, VOCs, and SVOCs were not detected in groundwater samples.
- TPHd, TPHmo, and TPHg were detected at 0.054 mg/l, 0.082 mg/l, and 0.083 mg/l, respectively, in grab-groundwater sample B5-SW350-GW. These constituents were not detected above the laboratory reporting limits in the other grab-groundwater samples.

## CONCLUSIONS AND RECOMMENDATIONS

Median Shoulder (Borings B1-MS to B57-MS)

Soil generated from excavations to 1 ft would be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 1 foot of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 1 foot bgs) could be reused or disposed as non-hazardous with respect to lead content.

Soil generated from excavations to 3.5 ft or deeper where excavated as a whole should not be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is less than the lead STLC of 5.0 mg/l. Consequently, where soil is excavated to depths of at least 3.5 ft and managed as a whole, the soil should be suitable for onsite reuse or disposed as non-hazardous with respect to lead content.

Northbound Shoulder (Borings B1-NS to B57-NS)

Soil generated from excavations to 1 ft would be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.
Based on the soluble (TCLP) results, the top 1 foot of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 1 foot bgs) could be reused or disposed as non-hazardous with respect to lead content.

Soil generated from excavations to 3 ft or deeper where excavated as a whole should not be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is less than the lead STLC of 5.0 mg/l. Consequently, where soil is excavated to depths of at least 3 ft and managed as a whole, the soil should be suitable for onsite reuse or disposed as non-hazardous with respect to lead content.

Southbound Shoulder (Borings B1-SS to B58-SS)

Soil generated from excavations to 1 ft would be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 1 foot of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 1 foot bgs) could be reused or disposed as non-hazardous with respect to lead content.

Soil generated from excavations to 3 ft or deeper where excavated as a whole should not be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is less than the lead STLC of 5.0 mg/l. Consequently, where soil is excavated to depths of at least 3 ft and managed as a whole, the soil should be suitable for onsite reuse or disposed as non-hazardous with respect to lead content.

Retaining Wall 1 (Borings B1-RW1 to B4-RW1)

Soil generated from excavations to 3.0 ft would be classified as a California hazardous waste since the predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 3.0 feet of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 3.0 feet of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 3.0 feet of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 3.0 feet bgs) could be reused or disposed as non-hazardous with respect to lead content.

Retaining Wall 2 (Borings B1-RW2 to B4-RW2)

Soil generated from excavations to 1.0 foot would be classified as a California hazardous waste since the predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1.0 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 1.0 foot of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 1.0 ft bgs) could be reused or disposed as non-hazardous with respect to lead content.

Soil generated from excavations to 2 ft or deeper where excavated as a whole should not be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is less than the lead STLC of 5.0 mg/l. Consequently, where soil is excavated to depths of at least 2 ft and managed as a whole, the soil should be suitable for onsite reuse or disposed as non-hazardous with respect to lead content.

Sound Wall 252 (Borings B1-SW252 to B4-SW252)

Soil generated from excavations to 1.0 foot would be classified as a California hazardous waste since the predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1.0 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 1.0 foot of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 1.0 ft bgs) could be reused or disposed as non-hazardous with respect to lead content.

Sound Wall 342 (Borings B1-SW342 to B4-SW342)

Soil generated from excavations to 1.0 foot would be classified as a California hazardous waste since the predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1.0 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 1.0 foot of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 1.0 ft bgs) could be reused or disposed as non-hazardous with respect to lead content.

Sound Wall 343 (Borings B1-SW343 to B4-SW343)

Soil generated from excavations to 1.0 foot would be classified as a California hazardous waste since the predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1.0 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 1.0 foot of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 1.0 ft bgs) could be reused or disposed as non-hazardous with respect to lead content.

Soil generated from excavations to 3.5 ft or deeper where excavated as a whole should not be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is less than the lead STLC of 5.0 mg/l. Consequently, where soil is excavated to depths of at least 3.5 ft and managed as a whole, the soil should be suitable for onsite reuse or disposed as non-hazardous with respect to lead content.

Sound Wall 350 (Borings B1-SW350 to B5-SW350)

Soil generated from excavations to 1.0 foot would be classified as a California hazardous waste since the predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1.0 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 1.0 foot of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 1.0 ft bgs) could be reused or disposed as non-hazardous with respect to lead content.

Soil generated from excavations to 3 ft or deeper where excavated as a whole should not be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is less than the lead STLC of 5.0 mg/l. Consequently, where soil is excavated to depths of at least 3 ft

of at least 3 ft and managed as a whole, the soil should be suitable for onsite reuse or disposed as non-hazardous with respect to lead content.

Sound Wall 351 (Borings B1-SW351 to B4-SW351)

Soil generated from excavations to 1.0 foot would be classified as a California hazardous waste since the predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1.0 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 1.0 foot of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 1.0 ft bgs) could be reused or disposed as non-hazardous with respect to lead content.

Sound Wall 358 (Borings B1-SW358 to B3-SW358)

Soil generated from excavations to 1.0 foot would be classified as a California hazardous waste since the predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1.0 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 1.0 foot of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 1.0 ft bgs) could be reused or disposed as non-hazardous with respect to lead content.

Miscellaneous Borings (Borings B1- and B2-CLO, B1 and B2-FR, B1-LVR, B1- and B2-MWS, B1- and B2-RVR-OFF, B1 and B2-RVR-ON, B1 and B2-SHO, B1- and B2-SHR, and B1 and B2-WS)

Soil results for samples collected from the following borings had total lead concentrations that were less than ten times the STLC value of 50 mg/kg: B1-CLO, B2-CLO, B2-FR, B1-LVR, B1-MWS, B2-RVR-OFF, B2-RVR-ON, B2-SHR, B1-WS, and B2-WS. Therefore, soil generated from excavations would not be classified as a California hazardous waste. Consequently, excavated soil could be reused

reused or disposed as non-hazardous with respect to lead content.

Soil results for the following soil samples displayed total lead concentrations slightly greater than ten times the applicable STLC value of 5.0 mg/l: B1-FR-0, B1-RVR-ON-0, B1-SHO-0, and B2-SHR-0. However, the associated soluble (WET) lead concentrations are below the STLC. Therefore, soil generated from excavations to 1 ft would be not be classified as a California hazardous waste, and would not require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance. Consequently, excavated soil could be reused or disposed as non-hazardous with respect to lead content.

Soil results for the following boring locations displayed total lead concentrations greater than ten times the applicable STLC value of 5.0 mg/l, and soluble (WET) lead concentrations exceeding the STLC: B2-MWS and B1-RVR-OFF.

Therefore, soil generated from excavations to 2.0 feet in the vicinity of boring B2-MWS would be classified as a California hazardous waste since the predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 2.0 feet of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill. Based on the soluble (TCLP) results, the top 2.0 feet of soil would not be considered a RCRA hazardous waste. Underlying soil (i.e., deeper than 2.0 ft bgs) could be reused or disposed as non-hazardous with respect to lead content.

Soil generated from excavations to 1.0 foot in the vicinity of boring B1-RVR-OFF would be classified as a California hazardous waste since the predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1.0 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance. Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill. Based on the soluble (TCLP) results, the top 1.0 foot of soil would not be considered a RCRA hazardous waste. Underlying soil (i.e., deeper than 1.0 ft bgs) could be reused or disposed as non-hazardous with respect to lead content.

Other CAM17 Metals - Soil

The total CAM17 metal results for soil samples are summarized in Table 3. Based on the total CAM17 metals concentrations, with the exception of lead, soil excavated from the project site should not be considered a hazardous waste.

The CAM17 metals concentrations in soil were compared to environmental screening levels (ESLs) [SFRWQCB, Screening For Environmental Concerns At Sites With Contaminated Soil and Groundwater, November 2007, Table A]. Reported arsenic concentrations exceed the residential land use ESL of 0.38 mg/kg and the commercial/industrial land use ESL of 1.5 mg/kg. Reported vanadium concentrations exceed the residential land use ESL of 15 mg/kg. Accordingly, offsite disposal of soil may be restricted depending on proposed use.

Organics – Soil

The organic results for soil samples are summarized in Table 4.

TPHg, BTEX, MTBE, or VOCs were not detected above laboratory reporting limits.

TPHd was detected in sample B3-SW358-6 at 1.5 mg/kg. TPHd and TPHmo were detected in sample B5-SW350-8 at 4.5 mg/kg and 2.4 mg/kg, respectively. The detected TPHd and TPHmo concentrations are less than the residential land use ESLs for middle distillates and residual fuels of 83 mg/kg and 410 mg/kg, respectively (SFRWQCB, Table A).

Phenol was also detected in samples B3-SW358-6 and B5-SW350-8 and 1.0 mg/kg and 1.4 mg/kg, respectively. The detected phenol concentrations exceed the residential and commercial/industrial land use ESLs of 0.076 mg/kg (SFRWQCB, Table A). Accordingly, offsite disposal of soil may be restricted depending on proposed use.

Organics - Groundwater

Groundwater samples were collected and analyzed from six of the borings. The analytical laboratory test results for organics in groundwater are summarized in Table 5.

BTEX, MTBE, VOCs, or SVOCs were not detected above laboratory reporting limits in the groundwater samples.

In sample B5-SW350-GW, TPHd (0.054 mg/l), TPHmo (0.082 mg/l), and TPHg (0.083 mg/l) concentrations were less than the ESLs of 0.100 mg/l for gasolines, middle distillates, and residual fuels (SFRWQCB, Table F). Although the ESLs were not exceeded, treatment of groundwater prior to discharge to the storm sewer system or directly to the San Francisco Bay may be necessary.

Worker Protection

Per Caltrans requirements, contractor(s) should prepare a project-specific Lead Compliance Plan to prevent or minimize worker exposure to lead-impacted soil. The plan should include protocols for

environmental and personnel monitoring, requirements for personal protective equipment, and other appropriate health and safety protocols and procedures for the handling of lead-impacted soil.

# 1.0 INTRODUCTION

We prepared this Site Investigation Report for the State Route 101 Improvements Project. This report documents the investigation sampling methods and laboratory analytical data. The project consists of State Route (SR) 101 between Steele Lane and Windsor River Road in Sonoma County, California. The Site location is depicted on the Vicinity Map, Figure 1. We understand that Caltrans proposes various freeway and ramp improvements at the project location.

## 1.1 Purpose

The primary objectives of our investigation were to 1) evaluate whether impacts due to metals, total petroleum hydrocarbons as gasoline, diesel, and motor oil (TPHg, TPHd, and TPHmo), benzene, toluene, ethylbenzene and total xylenes (BTEX), methyl tertiary butyl ether (MTBE), volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) exist in the soil within the project boundaries; and 2), evaluate for the presence of TPHg, TPHd, TPHmo, BTEX, MTBE, VOCs, and SVOCs in groundwater within the project boundaries. The information obtained from this investigation will be used by Caltrans to coordinate SR 101 improvement activities, determine soil and groundwater disposal costs, and identify health and safety concerns during improvements.

The investigation also included an asbestos survey of six bridges associated with planned improvements at the Site. The results of the asbestos survey are reported under separate cover in the Geocon report entitled *Asbestos Survey, State Route 101 Improvements, Sonoma County, California,* dated September 30, 2007.

# 2.0 BACKGROUND

## 2.1 Potential ADL Impacts

Testing by Caltrans has indicated that ADL exists along major freeway routes due to past emissions from vehicles powered by leaded gasoline. Caltrans reports that total lead concentrations in soil adjacent to the freeways have typically ranged between 50 and 3,000 milligrams per kilogram (mg/kg). The ADL is generally limited to the upper 2 feet of soil material within the unpaved median and shoulder areas.

## 2.2 Hazardous Waste Determination Criteria

Regulatory criteria to classify a waste as California hazardous for handling and disposal purposes are contained in the CCR, Title 22, Division 4.5, Chapter 11, Article 3, §66261.24. Criteria to classify a waste as Resource, Conservation, and Recovery Act (RCRA) hazardous are contained in Chapter 40 of the Code of Federal Regulations (40 CFR), Section 261.

For waste containing metals, the waste is classified as California hazardous when: 1) the total metal content exceeds the respective Total Threshold Limit Concentration (TTLC); or 2) the soluble metal content exceeds the respective Soluble Threshold Limit Concentration (STLC) based on the standard Waste Extraction Test (WET). A waste has the potential of exceeding the STLC when the waste's total metal content is greater than or equal to ten times the respective STLC value since the WET uses a 1:10 dilution ratio. Hence, when a total metal is detected at a concentration greater than or equal to ten times the respective STLC, and assuming that 100 percent of the total metals are soluble, soluble metal analysis is required. A material is classified as RCRA hazardous, or Federal hazardous, when the soluble metal content exceeds the Federal regulatory level based on the Toxicity Characteristic Leaching Procedure (TCLP).

State and Federal regulatory levels have also been established for other compounds such as total petroleum hydrocarbons, chlorinated herbicides, and organochlorine pesticides. Currently, regulatory criteria for the classification of wastes based solely on total petroleum hydrocarbon concentrations have not yet been promulgated.

The above regulatory criteria are based on chemical concentrations. Wastes may also be classified as hazardous based on other criteria such as ignitability and corrosivity; however, for the purposes of this investigation, toxicity (i.e., lead concentrations) is the primary factor considered for waste classification since waste generated during the construction activities would not likely warrant testing for ignitability or other criteria. Waste that is classified as either California hazardous or RCRA hazardous requires management as a hazardous waste.

## 2.3 DTSC Variance

The DTSC issued a variance on September 22, 2000 for Caltrans District 4 regarding the disposition of ADL-impacted soils within Caltrans projects. Review of the variance, as modified by DTSC on December 13, 2002, indicates the following conditions regarding reuse and management of ADL-impacted soil as fill material for construction and maintenance operations in Caltrans right-of-way.

Category 1:

Soil exhibiting soluble lead concentrations less than or equal to 0.5 milligrams per liter (mg/l) [based on a modified waste extraction test using deionized water as the extractant (WET-DI)] and total lead concentrations of 1,411 mg/kg or less may be used as fill provided that the lead-impacted soil is placed a minimum of 5 feet above the maximum water table elevation and covered with at least 1 foot of clean soil.

Category 2:

Soil exhibiting soluble lead concentrations greater than 0.5 mg/l and less than 50 mg/l (based on the WET-DI) and total lead concentrations greater than 1,411 mg/kg and less than 3,397 mg/kg may be used as fill provided that the lead-impacted soil is placed a minimum of 5 feet above the maximum water table elevation and protected from infiltration by a pavement structure maintained by Caltrans.

Category 3:

Lead-impacted soil with a pH less than 5.0 shall only be used as fill material under the paved portion of the roadway.

If the excavated soil is not intended to be reused within the Caltrans right-of-way, then hazardous waste determination of the soil is based the criterion summarized in Section 2.2.

# 3.0 SCOPE OF SERVICES

The following scope of services was performed:

## 3.1 Pre-Field Activities

- Prepared the Workplan, dated September 11, 2007, to summarize the scope of services to be performed by Geocon.
- Prepared the Health and Safety Plan, dated September 11, 2007, to provide guidelines on the use of personal protective equipment (PPE) during the field activities. The Health and Safety Plan also provided guidelines on the use of onsite monitoring equipment and action levels for upgrades to higher PPE.
- Retained the services of Advanced Technology Laboratories (ATL), a California-licensed and Caltrans-approved laboratory, to perform the soil and groundwater analyses.
- Obtained Drilling Permit No. 05708-HMW from County of Sonoma Environmental Health Division. A copy of the permit is included as Appendix A.

## 3.2 Field Activities

The field investigation was performed between August 15 and November 20, 2007. The following field activities were performed during sampling efforts.

- Advanced 222 soil borings to depths ranging from the surface to approximately 20 feet below ground surface (bgs) using hand auger and direct-push (DP) methods for the purpose of collecting soil and groundwater samples. Grab-groundwater samples were able to be collected from six of the boring locations.
- Collected soil samples in pre-cleaned containers and acetate liners.
- Collected groundwater samples in pre-cleaned, laboratory-supplied glass containers.
- Transported samples under standard chain-of-custody protocol to a California-certified environmental laboratory.

# 4.0 INVESTIGATIVE METHODS

## 4.1 Sampling Procedures

Soil samples were collected from 222 borings as shown on the Site Plans, Figures 2a through 2h. Direct-push boreholes were backfilled to surface with the cement grout. Boring locations were surveyed using Differential Global Positioning System (DGPS) equipment. Boring coordinates are presented on Table 1. Refusal conditions were encountered in various borings at depths indicated on the chain-of-custody (COC) forms. The COC forms are included in Appendix B.

We provided quality assurance/quality control (QA/QC) procedures during the field activities. These procedures included washing the sampling equipment with a Liqui-Nox® solution followed by a double rinse with deionized water. Decontamination water was disposed to the ground surface within Caltrans right-of-way in a manner not to create runoff, away from drain inlets or potential water bodies.

Sample containers were sealed, labeled, and transported in chilled containers to a Caltrans-approved, certified environmental laboratory using standard chain-of-custody documentation. Laboratory analyses were requested under 7-day turn-around-times.

## 4.2 Laboratory Analyses

The laboratory testing performed is summarized below:

- A total of 886 soil samples were analyzed for total lead using EPA Test Method 6010B.
- A total of five soil samples were analyzed for Title 22 (CAM 17) metals using EPA Test Methods 6010B/7471A.
- A total of 50 soil samples were analyzed for pH using EPA Test Method 9045C.
- A total of five soil samples were analyzed for TPHd, TPHmo, and TPHg using EPA Test Method 8015B.
- A total of five soil samples were analyzed for BTEX and MTBE using EPA Test Method 8020A.
- A total of five soil samples were analyzed for VOCs using EPA Test Method 8260B.
- A total of five soil samples were analyzed for SVOCs using EPA Test Method 8270C.
- A total of six groundwater samples were analyzed for TPHd, TPHmo, and TPHg using EPA Test Method 8015B.
- A total of six groundwater samples were analyzed for BTEX and MTBE using EPA Test Method 8020A.
- A total of six groundwater samples were analyzed for VOCs using EPA Test Method 8260B.
- A total of six groundwater samples were analyzed for SVOCs using EPA Test Method 8270C.

## 4.3 Laboratory QA/QC

QA/QC procedures were performed for each method of analysis with specificity for each analyte listed in the test method's QA/QC. The laboratory QA/QC procedures included the following:

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

# 5.0 INVESTIGATIVE RESULTS

## 5.1 Soil Results

Summaries of the analytical laboratory test results for soil are presented on Tables 2 through 4. Reproductions of the laboratory reports and chain-of-custody documentation are presented in Appendix B.

The laboratory analyses indicated the following:

- Lead was the only metal detected with total concentrations greater than ten times its STLC value of 5.0 mg/l. Total lead concentrations ranged from less than the laboratory reporting limit (<) of 5 mg/kg to 940 mg/kg.
- Soil pH values ranged from 5.4 to 8.0.
- A total of 186 soil samples that had total lead concentrations greater than 50 mg/kg were further analyzed for soluble (WET) lead and had detected concentrations ranging from 0.85 mg/l to 76 mg/l. Soluble (WET) lead was not detected above the laboratory reporting limit of 1.0 mg/l in three of the 186 samples.
- A total of 127 soil samples were further analyzed for soluble (WET-DI) and had detected concentrations ranging from 0.25 mg/l to 1.8 mg/l. Thirteen of the samples had reported concentrations greater than 0.5 mg/l and soluble (WET-DI) lead was not detected above the laboratory reporting limit of 1.0 mg/l in 69 of the 127 samples.
- A total of 56 soil samples that were further analyzed for soluble lead using the TCLP exhibited concentrations ranging from 0.33 mg/l to 3.8 mg/l.
- TPHd was detected in two soil samples at 1.5 mg/kg and 4.5 mg/kg.
- TPHmo was detected in one soil sample at 2.4 mg/kg.
- TPHg, BTEX, MTBE, and VOCs were not detected in soil samples above laboratory reporting limits.
- Phenol was the only SVOC was detected in soil samples. Phenol was reported in two soil samples at concentrations of 1,000 micrograms per kilogram (ug/kg) and 1,400 ug/kg.

## 6.2 Grab-Groundwater Results

Summaries of the analytical laboratory test results for grab-groundwater are presented on Table 5. Reproductions of the laboratory reports and chain-of-custody documentation are presented in Appendix B.

The laboratory analyses indicated the following:

- BTEX, MTBE, VOCs, and SVOCs were not detected in groundwater samples.
- TPHd, TPHmo, and TPHg were detected at 0.054 mg/l, 0.082 mg/l, and 0.083 mg/l, respectively, in grab-groundwater sample B5-SW350-GW. These constituents were not detected above the laboratory reporting limits in the other grab-groundwater samples.

# 6.0 STATISTICAL EVALUATION FOR LEAD DETECTED IN SOIL SAMPLES

The lead data were separated into sample populations for statistical evaluation as follows:

| Sample Population | Location | Boring ID's |
|---|---|---|
| A | Median Shoulder | B1-MS to B57-MS |
| B | Northbound Shoulder | B1-NS to B57-NS |
| C | Southbound Shoulder | B1-SS to B58-NS |
| D | Retaining Wall 1 | B1-RW1 to B4-RW1 |
| E | Retaining Wall 2 | B1-RW2 to B4-RW2 |
| F | Sound Wall 252 | B1-SW252 to B4-SW252 |
| G | Sound Wall 342 | B1-SW342 to B4-SW342 |
| H | Sound Wall 343 | B1-SW343 to B4-SW343 |
| I | Sound Wall 350 | B1-SW350 to B5-SW350 and B2A-SW350 |
| J | Sound Wall 351 | B1-SW351 to B4-SW351 |
| K | Sound Wall 358 | B1-SW358 to B3-SW358 |

Statistical methods were applied to the total lead data to evaluate: 1) the upper confidence limits (UCLs) of the arithmetic means of the total lead concentrations for each sampling depth; and 2) if an acceptable correlation between total and soluble lead concentrations exists that would allow the prediction of soluble lead concentrations based on calculated UCLs. The statistical methods used are discussed in a book entitled *Statistical Methods for Environmental Pollution Monitoring,* by Richard Gilbert; in an EPA *Technology Support Center Issue* document entitled, *The Lognormal Distribution in Environmental Applications,* by Ashok Singh et. al., dated December 1997; and in a book entitled *An Introduction to the Bootstrap,* by Bradley Efron and Robert J. Tibshirani.

## 6.1 Total Lead Distribution

The presence of non-detects and/or low concentrations in total lead data sets can strongly skew sample data towards low values. In these cases, the data are often lognormally distributed or non-parametric and classical statistical methods do not work properly since they assume that the data exhibit an underlying normal distribution. Consequently, it is necessary to apply the appropriate method when determining the UCLs on the true total lead means.

## 6.2 Calculating the UCLs for the Arithmetic Mean

The upper one-sided 90% and 95% UCLs of the arithmetic mean are defined as the values that, when calculated repeatedly for randomly drawn subsets of site data, equal or exceed the true mean 90% and 95% of the time, respectively. Statistical confidence limits are the classical tool for addressing uncertainties of a distribution mean. The UCLs of the arithmetic mean concentration are used as the mean concentrations because it is not possible to know the true mean due to the essentially infinite number of soil samples that could be collected from a site. The UCLs therefore account for uncertainties due to limited sampling data. As data become less limited at a site, uncertainties decrease, and the UCLs move closer to the true mean.

Non-parametric bootstrap techniques used to calculate the UCLs are discussed in the previously referenced EPA document and in *An Introduction to the Bootstrap.* For those samples in which total lead was not detected at concentrations exceeding the laboratory MRL, a value equal to one-half of the detection limit was used in the UCL calculation. The bootstrap results are included in Appendix C.

The calculated UCLs and statistical results are summarized in the tables below:

**Sample Population A**

**Median Shoulder (Borings B1-MS to B57-MS)**

| SAMPLE INTERVAL (feet) | 90% TOTAL LEAD UCL (mg/kg) | 95% TOTAL LEAD UCL (mg/kg) | TOTAL LEAD MEAN (mg/kg) | MINIMUM VALUE (mg/kg) | MAXIMUM VALUE (mg/kg) |
|---|---|---|---|---|---|
| 0.0 to 0.5 | 219.8 | 227.3 | 192.7 | 5.7 | 740 |
| 1.0 to 1.5 | 9.2 | 9.7 | 7.5 | 2.5 | 57.0 |
| 2.0 to 2.5 | 5.1 | 5.3 | 4.5 | 2.5 | 25.0 |
| 3.0 to 3.5 | 6.3 | 6.5 | 5.5 | 2.5 | 24.0 |

## Sample Population B

## Northbound Shoulder (Borings B1-NS to B57-NS)

| SAMPLE INTERVAL (feet) | 90% TOTAL LEAD UCL (mg/kg) | 95% TOTAL LEAD UCL (mg/kg) | TOTAL LEAD MEAN (mg/kg) | MINIMUM VALUE (mg/kg) | MAXIMUM VALUE (mg/kg) |
|---|---|---|---|---|---|
| 0.0 to 0.5 | 245.0 | 254.1 | 214.2 | 10 | 850 |
| 1.0 to 1.5 | 44.5 | 51.2 | 24.3 | 2.5 | 940.0 |
| 2.0 to 2.5 | 6.9 | 7.2 | 6.1 | 2.5 | 36.0 |
| 3.0 to 3.5 | 5.7 | 5.8 | 5.2 | 2.5 | 14.0 |

## Sample Population C

## Southbound Shoulder (Borings B1-SS to B58-SS)

| SAMPLE INTERVAL (feet) | 90% TOTAL LEAD UCL (mg/kg) | 95% TOTAL LEAD UCL (mg/kg) | TOTAL LEAD MEAN (mg/kg) | MINIMUM VALUE (mg/kg) | MAXIMUM VALUE (mg/kg) |
|---|---|---|---|---|---|
| 0.0 to 0.5 | 219.8 | 228.1 | 187.8 | 2.5 | 920.0 |
| 1.0 to 1.5 | 28.6 | 30.8 | 19.3 | 2.5 | 420 |
| 2.0 to 2.5 | 9.2 | 9.7 | 7.3 | 2.5 | 89.0 |
| 3.0 to 3.5 | 6.9 | 7.1 | 6.3 | 2.5 | 16.0 |

## Sample Population D

## Retaining Wall 1 (Borings B1-RW1 to B4-RW1)

| SAMPLE INTERVAL (feet) | 90% TOTAL LEAD UCL (mg/kg) | 95% TOTAL LEAD UCL (mg/kg) | TOTAL LEAD MEAN (mg/kg) | MINIMUM VALUE (mg/kg) | MAXIMUM VALUE (mg/kg) |
|---|---|---|---|---|---|
| 0.0 to 0.5 | Not Calculated | Not Calculated | 61.3 | 14.0 | 130.0 |
| 1.0 to 1.5 | Not Calculated | Not Calculated | 36.6 | 2.5 | 80.0 |
| 2.0 to 2.5 | Not Calculated | Not Calculated | 40.9 | 2.5 | 100.0 |
| 3.0 to 3.5 | Not Calculated | Not Calculated | 21.4 | 2.5 | 53.0 |

## Sample Population E

## Retaining Wall 2 (Boring B1-RW2 to B4-RW2)

| SAMPLE INTERVAL (feet) | 90% TOTAL LEAD UCL (mg/kg) | 95% TOTAL LEAD UCL (mg/kg) | TOTAL LEAD MEAN (mg/kg) | MINIMUM VALUE (mg/kg) | MAXIMUM VALUE (mg/kg) |
|---|---|---|---|---|---|
| 0.0 to 0.5 | Not Calculated | Not Calculated | 69.9 | 8.4 | 100.0 |
| 1.0 to 1.5 | Not Calculated | Not Calculated | 7.3 | 2.5 | 10.0 |
| 2.0 to 2.5 | Not Calculated | Not Calculated | 2.5 | 2.5 | 2.5 |
| 3.0 to 3.5 | Not Calculated | Not Calculated | 3.2 | 2.5 | 5.1 |

## Sample Population F

### Sound Wall 252 (Borings B1-SW252 to B4-SW252)

| SAMPLE INTERVAL (feet) | 90% TOTAL LEAD UCL (mg/kg) | 95% TOTAL LEAD UCL (mg/kg) | TOTAL LEAD MEAN (mg/kg) | MINIMUM VALUE (mg/kg) | MAXIMUM VALUE (mg/kg) |
|---|---|---|---|---|---|
| 0.0 to 0.5 | Not Calculated | Not Calculated | 145.3 | 18.0 | 310.0 |
| 1.0 to 1.5 | Not Calculated | Not Calculated | 22.9 | 2.5 | 44.0 |
| 2.0 to 2.5 | Not Calculated | Not Calculated | 4.8 | 2.5 | 8.7 |
| 3.0 to 3.5 | Not Calculated | Not Calculated | 4.3 | 2.5 | 7.1 |

## Sample Population G

### Sound Wall 342 (Borings B1-SW342 to B4-SW342)

| SAMPLE INTERVAL (feet) | 90% TOTAL LEAD UCL (mg/kg) | 95% TOTAL LEAD UCL (mg/kg) | TOTAL LEAD MEAN (mg/kg) | MINIMUM VALUE (mg/kg) | MAXIMUM VALUE (mg/kg) |
|---|---|---|---|---|---|
| 0.0 to 0.5 | Not Calculated | Not Calculated | 212.5 | 120.0 | 350.0 |
| 1.0 to 1.5 | Not Calculated | Not Calculated | 13.6 | 2.5 | 23.0 |
| 2.0 to 2.5 | Not Calculated | Not Calculated | 10.0 | 2.5 | 21.0 |
| 3.0 to 3.5 | Not Calculated | Not Calculated | 12.3 | 9.1 | 15.0 |

## Sample Population H

### Sound Wall 343 (Borings B1-SW343 to B4-SW343)

| SAMPLE INTERVAL (feet) | 90% TOTAL LEAD UCL (mg/kg) | 95% TOTAL LEAD UCL (mg/kg) | TOTAL LEAD MEAN (mg/kg) | MINIMUM VALUE (mg/kg) | MAXIMUM VALUE (mg/kg) |
|---|---|---|---|---|---|
| 0.0 to 0.5 | Not Calculated | Not Calculated | 136.3 | 19.0 | 230.0 |
| 1.0 to 1.5 | Not Calculated | Not Calculated | 7.2 | 6.6 | 7.9 |
| 2.0 to 2.5 | Not Calculated | Not Calculated | 2.5 | 2.5 | 2.5 |
| 3.0 to 3.5 | Not Calculated | Not Calculated | 7.8 | 5.1 | 11.0 |

## Sample Population I

### Sound Wall 350 (Borings B1-SW350 to B5-SW350 and B2A-SW350)

| SAMPLE INTERVAL (feet) | 90% TOTAL LEAD UCL (mg/kg) | 95% TOTAL LEAD UCL (mg/kg) | TOTAL LEAD MEAN (mg/kg) | MINIMUM VALUE (mg/kg) | MAXIMUM VALUE (mg/kg) |
|---|---|---|---|---|---|
| 0.0 to 0.5 | 168.7 | 185.6 | 102.2 | 26.0 | 380.0 |
| 1.0 to 1.5 | Not Calculated | Not Calculated | 10.8 | 2.5 | 30.0 |
| 2.0 to 2.5 | Not Calculated | Not Calculated | 5.9 | 2.5 | 18.0 |
| 3.0 to 3.5 | Not Calculated | Not Calculated | 7.4 | 2.5 | 27.0 |

**Sample Population J**

**Sound Wall 351 (Borings B1-SW351 to B4-SW351)**

| SAMPLE INTERVAL (feet) | 90% TOTAL LEAD UCL (mg/kg) | 95% TOTAL LEAD UCL (mg/kg) | TOTAL LEAD MEAN (mg/kg) | MINIMUM VALUE (mg/kg) | MAXIMUM VALUE (mg/kg) |
|---|---|---|---|---|---|
| 0.0 to 0.5 | Not Calculated | Not Calculated | 111.0 | 14.0 | 260.0 |
| 1.0 to 1.5 | Not Calculated | Not Calculated | 8.3 | 5.4 | 13.0 |
| 2.0 to 2.5 | Not Calculated | Not Calculated | 3.2 | 2.5 | 5.2 |
| 3.0 to 3.5 | Not Calculated | Not Calculated | 3.6 | 2.5 | 6.8 |

**Sample Population K**

**Sound Wall 358 (Borings B1-SW358 to B3-SW358)**

| SAMPLE INTERVAL (feet) | 90% TOTAL LEAD UCL (mg/kg) | 95% TOTAL LEAD UCL (mg/kg) | TOTAL LEAD MEAN (mg/kg) | MINIMUM VALUE (mg/kg) | MAXIMUM VALUE (mg/kg) |
|---|---|---|---|---|---|
| 0.0 to 0.5 | Not Calculated | Not Calculated | 253.3 | 180.0 | 290.0 |
| 1.0 to 1.5 | Not Calculated | Not Calculated | 7.0 | 2.5 | 16.0 |
| 2.0 to 2.5 | Not Calculated | Not Calculated | 5.1 | 2.5 | 6.5 |
| 3.0 to 3.5 | Not Calculated | Not Calculated | 11.3 | 2.5 | 23.0 |

Note: UCLs could not be calculated for some sample populations and intervals due to limited sample size.

## 6.3 Correlation of Total and Soluble Lead

Total and corresponding soluble (WET) lead concentrations are bivariate data with a linear structure. This linear structure should allow for the prediction of soluble lead (WET) concentrations based on the UCLs calculated above in Section 6.2.

To estimate the degree of interrelation between total and corresponding soluble (WET) lead values ($x$ and $y$, respectively), the *correlation coefficient [r]* is used. The correlation coefficient is a ratio that ranges from +1 to –1. A *correlation coefficient* of +1 indicates a perfect direct relationship between two variables; a *correlation coefficient* of –1 indicates that one variable changes inversely with relation to the other. Between the two extremes is a spectrum of less-than-perfect relationships, including zero, which indicates the lack of any sort of linear relationship at all. A *correlation coefficient* greater than or equal to 0.8 is an acceptable indicator that a correlation exists.

*Correlation coefficients* were calculated for the following three groups of soil sample results: 1) median shoulder borings, 2) southbound and northbound shoulder borings, and 3) retaining and sound wall borings. The *correlation coefficient* for the 53 median shoulder samples analyzed for total and soluble (WET) lead equaled 0.81. To achieve an acceptable correlation for the median shoulder samples, data points B18-MS-0, B20-MS-0, B31-MS-0, B32-MS-0, B33-MS-0, B43-MS-0, and B51-MS-0 were eliminated from the regression analysis. The *correlation coefficient* for the 98

northbound and southbound shoulder samples analyzed for total and soluble (WET) lead equaled 0.80. To achieve an acceptable correlation for the northbound and southbound shoulder samples, data points B7-NS-1 and B36-NS-0 were eliminated from the regression analysis. The *correlation coefficient* for the 27 retaining wall and sound wall samples analyzed for total and soluble (WET) lead equaled 0.89.

For the *correlation coefficient* that indicates a linear relationship between total and soluble (WET) lead concentrations, it is possible to compute the line of dependence or a best-fit line between the two variables. A least squares method was used to find the equation of a best-fit line (regression line) by forcing the y-intercept equal to zero since that is a known point. The equation of the regression lines for the three data sets were determined as follows:

- Median Shoulder: $y = 0.0645(x)$,
- Northbound and Southbound Shoulder: : $y = 0.0491(x)$, and
- Retaining and Sound Wall: $y = 0.0649(x)$,

where $x$ represents total lead concentrations and $y$ represents predicted soluble (WET) lead concentrations.

These equations were used to estimate the expected WET soluble lead concentrations for the UCLs calculated in Section 6.2. Regression analysis results and scatter plots depicting the ($x$, $y$) data points along with the regression lines are included in Appendix C.

## 7.0 CONCLUSIONS AND RECOMMENDATIONS

Geocon understands that some of the project areas may be covered with imported fill. Caltrans has confirmed on other projects that impacted soil may be scarified and cut into to develop keys. According to Caltrans, the Department of Toxic Substances Control (DTSC) allows for this under the "Area of Contamination Policy." Caltrans also confirmed on similar projects that fill material may be placed over impacted soil. If impacted soil will not be reused onsite, the soil may be classified as a California hazardous waste and will require disposal at a Class I landfill.

Waste classifications are evaluated based on the 90% UCL of the lead content for the relevant excavation depths; this has historically been considered sufficient to satisfy a good faith effort by the EPA as discussed in SW-846. Risk assessment characterization is based on the 95% UCL of the lead content in the waste for the relevant depths; this is in accordance with the Risk Assessment Guidance for Superfund (RAGS) Volume 1 Documentation for Exposure Assessment.

### 7.1 Median Shoulder (Borings B1-MS to B57-MS)

The following table summarizes the predicted soluble (WET) lead concentrations and the waste classification for excavated soil based on the calculated total lead UCLs and the relationship between total and soluble (WET) lead. The soluble (WET) lead calculations are summarized in Table 6a.

| Excavation Depth | 90% UCL Total Lead (mg/kg) | 90% UCL Predicted WET Lead (mg/l) | 95% UCL Total Lead (mg/kg) | Waste Classification |
|---|---|---|---|---|
| | | | | |
| 0 to 1 ft | 220 | **14** | 227 | **Hazardous** |
| *Underlying soil (1 to 3.5 ft)* | *7.0* | *0.4* | *7.3* | *Non-hazardous* |
| | | | | |
| 0 to 3.5 ft | 68 | 4.4 | 70 | Non-hazardous |

90% UCL applicable for waste classification; 95% UCL applicable for risk assessment

Based on the above table, soil generated from excavations to 1 ft would be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 1 foot of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 1 foot bgs) could be reused or disposed as non-hazardous with respect to lead content.

Soil generated from excavations to 3.5 ft or deeper where excavated as a whole should not be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is less than the lead STLC of 5.0 mg/l. Consequently, where soil is excavated to depths of at least 3.5 ft and managed as a whole, the soil should be suitable for onsite reuse or disposed as non-hazardous with respect to lead content.

## 7.2 Northbound Shoulder (Borings B1-NS to B57-NS)

The following table summarizes the predicted soluble (WET) lead concentrations and the waste classification for excavated soil based on the calculated total lead UCLs and the relationship between total and soluble (WET) lead. The soluble (WET) lead calculations are summarized in Table 6b.

| Excavation Depth | 90% UCL Total Lead (mg/kg) | 90% UCL Predicted WET Lead (mg/l) | 95% UCL Total Lead (mg/kg) | Waste Classification |
|---|---|---|---|---|
| | | | | |
| 0 to 1 ft | 245 | **12** | 254 | **Hazardous** |
| *Underlying soil (1 to 3.5 ft)* | *22* | *1.1* | *25* | *Non-hazardous* |
| | | | | |
| 0 to 3 ft | 99 | 4.9 | 104 | Non-hazardous |

90% UCL applicable for waste classification; 95% UCL applicable for risk assessment

Based on the above table, soil generated from excavations to 1 ft would be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 1 foot of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 1 foot bgs) could be reused or disposed as non-hazardous with respect to lead content.

Soil generated from excavations to 3 ft or deeper where excavated as a whole should not be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is less than the lead STLC of 5.0 mg/l. Consequently, where soil is excavated to depths of at least 3 ft and managed as a whole, the soil should be suitable for onsite reuse or disposed as non-hazardous with respect to lead content.

### 7.3 Southbound Shoulder (Borings B1-SS to B58-SS)

The following table summarizes the predicted soluble (WET) lead concentrations and the waste classification for excavated soil based on the calculated total lead UCLs and the relationship between total and soluble (WET) lead. The soluble (WET) lead calculations are summarized in Table 6c.

| Excavation Depth | 90% UCL Total Lead (mg/kg) | 90% UCL Predicted WET Lead (mg/l) | 95% UCL Total Lead (mg/kg) | Waste Classification |
|---|---|---|---|---|
| | | | | |
| 0 to 1 ft | 220 | 11 | 228 | **Hazardous** |
| *Underlying soil (1 to 3.5 ft)* | *17* | *0.8* | *18* | *Non-hazardous* |
| | | | | |
| 0 to 3 ft | 86 | 4.2 | 90 | Non-hazardous |

90% UCL applicable for waste classification; 95% UCL applicable for risk assessment

Based on the above table, soil generated from excavations to 1 ft would be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 1 foot of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 1 foot bgs) could be reused or disposed as non-hazardous with respect to lead content.

Soil generated from excavations to 3 ft or deeper where excavated as a whole should not be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is less than the lead STLC of 5.0 mg/l. Consequently, where soil is excavated to depths of at least 3 ft and managed as a whole, the soil should be suitable for onsite reuse or disposed as non-hazardous with respect to lead content.

## 7.4 Retaining Wall 1 (Borings B1-RW1 to B4-RW1)

The following table summarizes the predicted soluble (WET) lead concentrations and the waste classification for excavated soil based on the maximum total lead concentrations and the relationship between total and soluble (WET) lead. The soluble (WET) lead calculations are summarized in Table 6d.

| Excavation Depth | Total Lead (mg/kg) Maximum | Predicted WET Lead (mg/l) | Waste Classification |
|---|---|---|---|
| | | | |
| 0 to 3.0 ft | 103 | **6.7** | **Hazardous** |
| *Underlying soil (3.0 to 3.5 ft)* | *53* | *3.4* | *Non-hazardous* |

Based on the above table, soil generated from excavations to 3.0 ft would be classified as a California hazardous waste since the predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 3.0 feet of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 3.0 feet of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 3.0 feet of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 3.0 feet bgs) could be reused or disposed as non-hazardous with respect to lead content.

## 7.5 Retaining Wall 2 (Borings B1-RW2 to B4-RW2)

The following table summarizes the predicted soluble (WET) lead concentrations and the waste classification for excavated soil based on the maximum total lead concentrations and the relationship between total and soluble (WET) lead. The soluble (WET) lead calculations are summarized in Table 6e.

| Excavation Depth | Total Lead (mg/kg) Maximum | Predicted WET Lead (mg/l) | Waste Classification |
|---|---|---|---|
| | | | |
| 0 to 1.0 ft | 100 | **6.5** | **Hazardous** |
| *Underlying soil (1.0 to 3.5 ft)* | *6.0* | *0.4* | *Non-hazardous* |
| | | | |
| *0 to 2.0 ft* | *55* | *3.6* | Non-hazardous |

Based on the above table, soil generated from excavations to 1.0 foot would be classified as a California hazardous waste since the predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1.0 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 1.0 foot of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 1.0 ft bgs) could be reused or disposed as non-hazardous with respect to lead content.

Soil generated from excavations to 2 ft or deeper where excavated as a whole should not be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is less than the lead STLC of 5.0 mg/l. Consequently, where soil is excavated to depths of at least 2 ft and managed as a whole, the soil should be suitable for onsite reuse or disposed as non-hazardous with respect to lead content.

### 7.6 Sound Wall 252 (Borings B1-SW252 to B4-SW252)

The following table summarizes the predicted soluble (WET) lead concentrations and the waste classification for excavated soil based on the maximum total lead concentrations and the relationship between total and soluble (WET) lead. The soluble (WET) lead calculations are summarized in Table 6f.

| Excavation Depth | Total Lead (mg/kg) Maximum | Predicted WET Lead (mg/l) | Waste Classification |
|---|---|---|---|
| | | | |
| 0 to 1.0 ft | 310 | **20** | **Hazardous** |
| *Underlying soil (1.0 to 3.5 ft)* | *23* | *1.5* | *Non-hazardous* |

Based on the above table, soil generated from excavations to 1.0 foot would be classified as a California hazardous waste since the predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1.0 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 1.0 foot of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 1.0 ft bgs) could be reused or disposed as non-hazardous with respect to lead content.

## 7.7 Sound Wall 342 (Borings B1-SW342 to B4-SW342)

The following table summarizes the predicted soluble (WET) lead concentrations and the waste classification for excavated soil based on the maximum total lead concentrations and the relationship between total and soluble (WET) lead. The soluble (WET) lead calculations are summarized in Table 6g.

| Excavation Depth | Total Lead (mg/kg) Maximum | Predicted WET Lead (mg/l) | Waste Classification |
|---|---|---|---|
| | | | |
| 0 to 1.0 ft | 350 | 23 | **Hazardous** |
| *Underlying soil (1.0 to 3.5 ft)* | *21* | *1.3* | *Non-hazardous* |

Based on the above table, soil generated from excavations to 1.0 foot would be classified as a California hazardous waste since the predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1.0 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 1.0 foot of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 1.0 ft bgs) could be reused or disposed as non-hazardous with respect to lead content.

## 7.8 Sound Wall 343 (Borings B1-SW343 to B4-SW343)

The following table summarizes the predicted soluble (WET) lead concentrations and the waste classification for excavated soil based on the maximum total lead concentrations and the relationship between total and soluble (WET) lead. The soluble (WET) lead calculations are summarized in Table 6h.

| Excavation Depth | Total Lead (mg/kg) Maximum | Predicted WET Lead (mg/l) | Waste Classification |
|---|---|---|---|
| | | | |
| 0 to 1.0 ft | 230 | **15** | **Hazardous** |
| *Underlying soil (1.0 to 3.5 ft)* | *6.4* | *0.4* | *Non-hazardous* |
| | | | |
| 0 to 3.5 ft | 70 | 4.6 | Non-Hazardous |

Based on the above table, soil generated from excavations to 1.0 foot would be classified as a California hazardous waste since the predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1.0 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 1.0 foot of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 1.0 ft bgs) could be reused or disposed as non-hazardous with respect to lead content.

Soil generated from excavations to 3.5 ft or deeper where excavated as a whole should not be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is less than the lead STLC of 5.0 mg/l. Consequently, where soil is excavated to depths of at least 3.5 ft and managed as a whole, the soil should be suitable for onsite reuse or disposed as non-hazardous with respect to lead content.

## 7.9 Sound Wall 350 (Borings B1-SW350 to B5-SW350)

The following table summarizes the predicted soluble (WET) lead concentrations and the waste classification for excavated soil based on the maximum total lead concentrations and the relationship between total and soluble (WET) lead. The soluble (WET) lead calculations are summarized in Table 6i.

| Excavation Depth | Total Lead (mg/kg) Maximum | Predicted WET Lead (mg/l) | Waste Classification |
|---|---|---|---|
| | | | |
| 0 to 1.0 ft | 169 | **11** | **Hazardous** |
| *Underlying soil (1.0 to 3.5 ft)* | *25* | *1.6* | *Non-hazardous* |
| | | | |
| 0 to 3.0 ft | 72 | 4.7 | Non-Hazardous |

Based on the above table, soil generated from excavations to 1.0 foot would be classified as a California hazardous waste since the predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1.0 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 1.0 foot of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 1.0 ft bgs) could be reused or disposed as non-hazardous with respect to lead content.

Soil generated from excavations to 3 ft or deeper where excavated as a whole should not be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is less than the lead STLC of 5.0 mg/l. Consequently, where soil is excavated to depths of at least 3 ft and managed as a whole, the soil should be suitable for onsite reuse or disposed as non-hazardous with respect to lead content.

### 7.10 Sound Wall 351 (Borings B1-SW351 to B4-SW351)

The following table summarizes the predicted soluble (WET) lead concentrations and the waste classification for excavated soil based on the maximum total lead concentrations and the relationship between total and soluble (WET) lead. The soluble (WET) lead calculations are summarized in Table 6j.

| Excavation Depth | Total Lead (mg/kg) Maximum | Predicted WET Lead (mg/l) | Waste Classification |
|---|---|---|---|
| | | | |
| 0 to 1.0 ft | 260 | 17 | **Hazardous** |
| *Underlying soil (1.0 to 3.5 ft)* | *8.6* | *0.6* | *Non-hazardous* |

Based on the above table, soil generated from excavations to 1.0 foot would be classified as a California hazardous waste since the predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1.0 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 1.0 foot of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 1.0 ft bgs) could be reused or disposed as non-hazardous with respect to lead content.

### 7.11 Sound Wall 358 (Borings B1-SW358 to B3-SW358)

The following table summarizes the predicted soluble (WET) lead concentrations and the waste classification for excavated soil based on the maximum total lead concentrations and the relationship between total and soluble (WET) lead. The soluble (WET) lead calculations are summarized in Table 6j.

| Excavation Depth | Total Lead (mg/kg) Maximum | Predicted WET Lead (mg/l) | Waste Classification |
|---|---|---|---|
| | | | |
| 0 to 1.0 ft | 260.0 | **16.9** | **Hazardous** |
| *Underlying soil (1.0 to 3.5 ft)* | *8.6* | *0.6* | *Non-hazardous* |

Based on the above table, soil generated from excavations to 1.0 foot would be classified as a California hazardous waste since the predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1.0 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill.

Based on the soluble (TCLP) results, the top 1.0 foot of soil would not be considered a RCRA hazardous waste.

Underlying soil (i.e., deeper than 1.0 ft bgs) could be reused or disposed as non-hazardous with respect to lead content.

### 7.12 Miscellaneous Borings (Borings B1- and B2-CLO, B1 and B2-FR, B1-LVR, B1- and B2-MWS, B1- and B2-RVR-OFF, B1 and B2-RVR-ON, B1 and B2-SHO, B1- and B2-SHR, and B1 and B2-WS)

Soil results for samples collected from the following borings had total lead concentrations that were less than ten times the STLC value of 50 mg/kg: B1-CLO, B2-CLO, B2-FR, B1-LVR, B1-MWS, B2-RVR-OFF, B2-RVR-ON, B2-SHR, B1-WS, and B2-WS. Therefore, soil generated from excavations would not be classified as a California hazardous waste. Consequently, excavated soil could be reused or disposed as non-hazardous with respect to lead content.

Soil results for the following soil samples displayed total lead concentrations slightly greater than ten times the applicable STLC value of 5.0 mg/l: B1-FR-0, B1-RVR-ON-0, B1-SHO-0, and B2-SHR-0. However, the associated soluble (WET) lead concentrations are below the STLC. Therefore, soil

generated from excavations to 1 ft would be not be classified as a California hazardous waste, and would not require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance. Consequently, excavated soil could be reused or disposed as non-hazardous with respect to lead content.

Soil results for the following boring locations displayed total lead concentrations greater than ten times the applicable STLC value of 5.0 mg/l, and soluble (WET) lead concentrations exceeding the STLC: B2-MWS and B1-RVR-OFF.

Therefore, soil generated from excavations to 2.0 feet in the vicinity of boring B2-MWS would be classified as a California hazardous waste since the predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 2.0 feet of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance.

Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill. Based on the soluble (TCLP) results, the top 2.0 feet of soil would not be considered a RCRA hazardous waste. Underlying soil (i.e., deeper than 2.0 ft bgs) could be reused or disposed as non-hazardous with respect to lead content.

Soil generated from excavations to 1.0 foot in the vicinity of boring B1-RVR-OFF would be classified as a California hazardous waste since the predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1.0 foot of excavated soil would require offsite disposal as a hazardous waste or onsite reuse under the DTSC variance. Based on the soluble (WET-DI) lead results, the top 1 foot of soil may be reused in accordance with the DTSC variance by placing the lead-impacted soil under a pavement structure or clean fill. Based on the soluble (TCLP) results, the top 1.0 foot of soil would not be considered a RCRA hazardous waste. Underlying soil (i.e., deeper than 1.0 ft bgs) could be reused or disposed as non-hazardous with respect to lead content.

### 7.13 CAM17 Metals - Soil

The total CAM17 metal results for soil samples are summarized in Table 3. Based on the total CAM17 metals concentrations, with the exception of lead, soil excavated from the project site should not be considered a hazardous waste.

The CAM17 metals concentrations in soil were compared to environmental screening levels (ESLs) [SFRWQCB, Screening For Environmental Concerns At Sites With Contaminated Soil and Groundwater, November 2007, Table A]. Reported arsenic concentrations exceed the residential land use ESL of 0.38 mg/kg and the commercial/industrial land use ESL of 1.5 mg/kg. Reported vanadium concentrations exceed the residential land use ESL of 15 mg/kg. Accordingly, offsite disposal of soil may be restricted depending on proposed use.

### 7.14 Organics – Soil

The organic results for soil samples are summarized in Table 4.

TPHg, BTEX, MTBE, or VOCs were not detected above laboratory reporting limits.

TPHd was detected in sample B3-SW358-6 at 1.5 mg/kg. TPHd and TPHmo were detected in sample B5-SW350-8 at 4.5 mg/kg and 2.4 mg/kg, respectively. The detected TPHd and TPHmo concentrations are less than the residential land use ESLs for middle distillates and residual fuels of 83 mg/kg and 410 mg/kg, respectively (SFRWQCB, Table A).

Phenol was also detected in samples B3-SW358-6 and B5-SW350-8 and 1.0 mg/kg and 1.4 mg/kg, respectively. The detected phenol concentrations exceed the residential and commercial/industrial land use ESLs of 0.076 mg/kg (SFRWQCB, Table A). Accordingly, offsite disposal of soil may be restricted depending on proposed use.

### 7.15 Organics - Groundwater

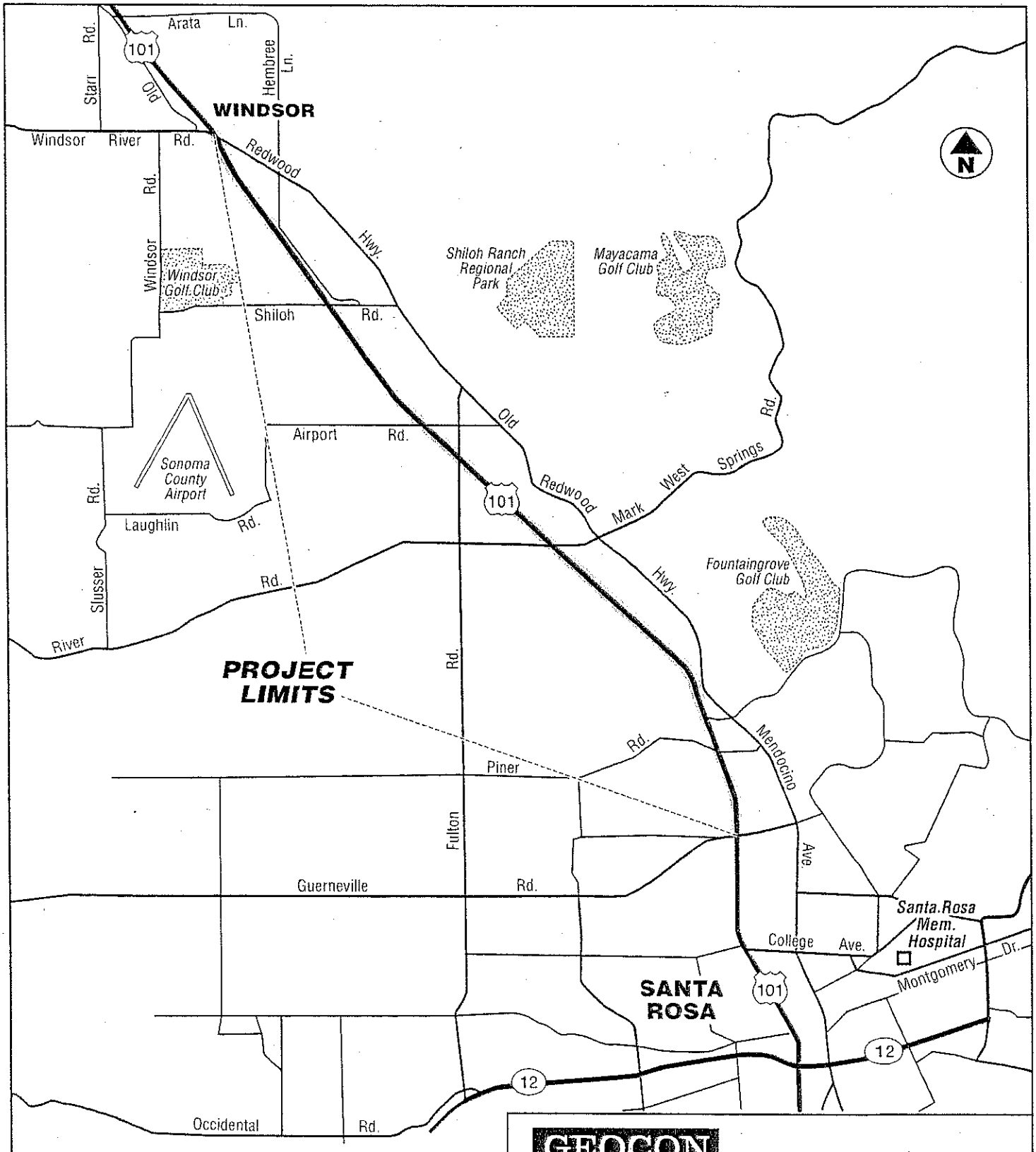
Groundwater samples were collected and analyzed from six of the borings. The analytical laboratory test results for organics in groundwater are summarized in Table 5.

BTEX, MTBE, VOCs, or SVOCs were not detected above laboratory reporting limits in the groundwater samples.

In sample B5-SW350-GW, TPHd (0.054 mg/l), TPHmo (0.082 mg/l), and TPHg (0.083 mg/l) concentrations were less than the ESLs of 0.100 mg/l for gasolines, middle distillates, and residual fuels (SFRWQCB, Table F). Although the ESLs were not exceeded, treatment of groundwater prior to discharge to the storm sewer system or directly to the San Francisco Bay may be necessary.

### 7.16 Worker Protection

Per Caltrans requirements, contractor(s) should prepare a project-specific Lead Compliance Plan to prevent or minimize worker exposure to lead-impacted soil. The plan should include protocols for environmental and personnel monitoring, requirements for personal protective equipment, and other appropriate health and safety protocols and procedures for the handling of lead-impacted soil.

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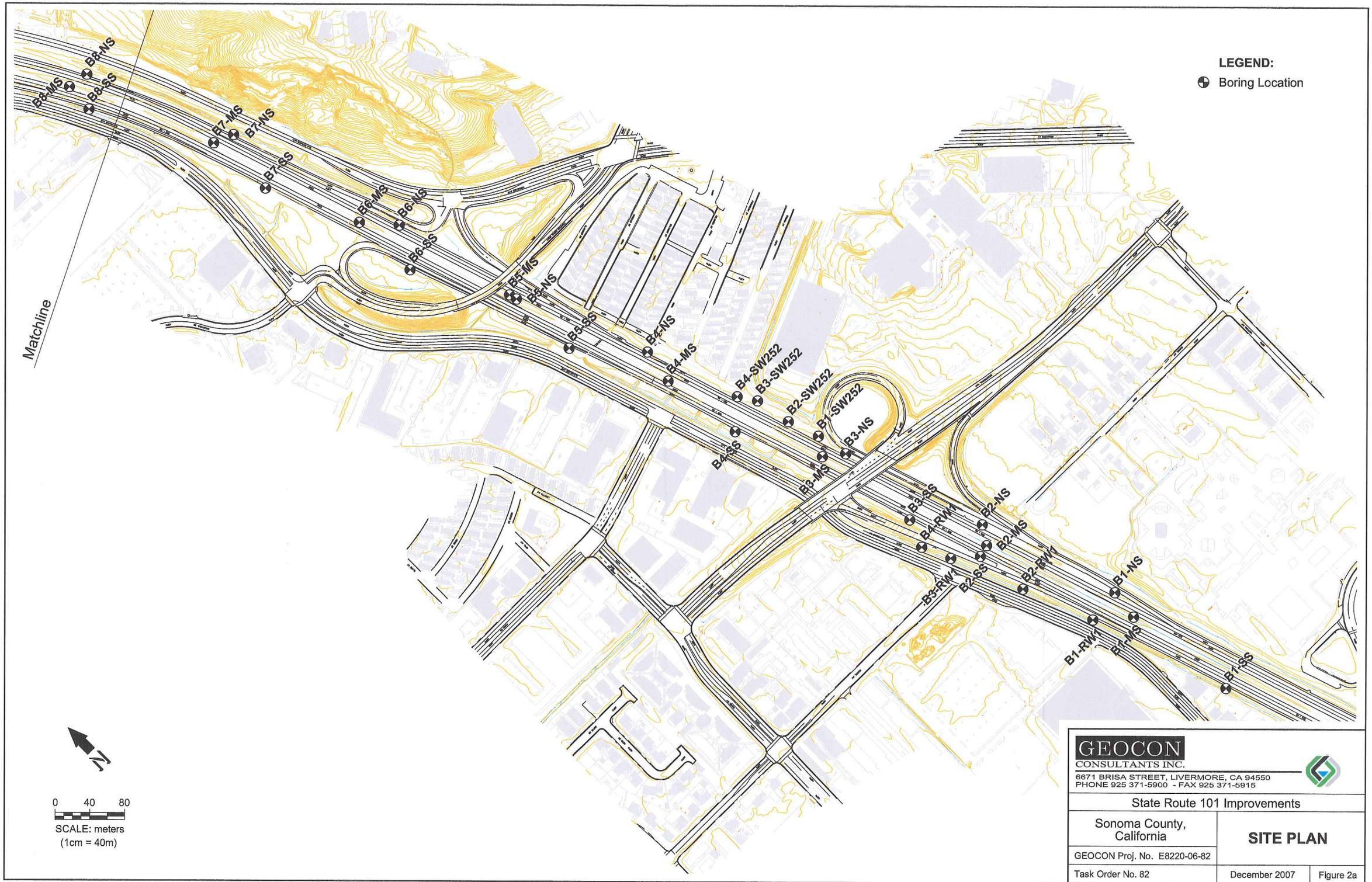
State Route 101 Santa Rosa/Windsor

Sonoma County, California

**VICINITY MAP**

GEOCON Proj. No. E8220-06-82

Task Order No. 82 | December 2007 | Figure 1

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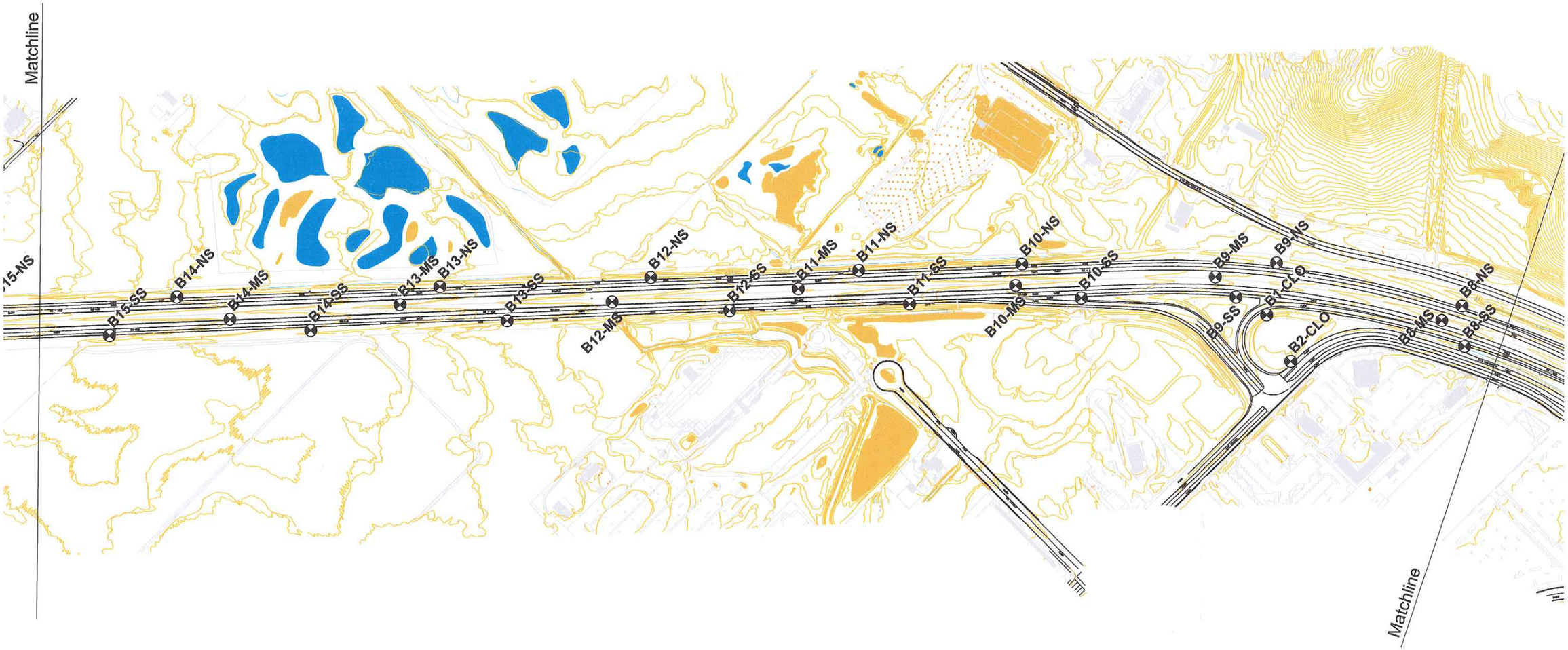
| | |
|---|---|
| Sonoma County, California | **SITE PLAN** |
| GEOCON Proj. No. E8220-06-82 | |
| Task Order No. 82 | December 2007 — Figure 2a |

SITE1107.DWG

**LEGEND:**

⊕ Boring Location




N

0 40 80

SCALE: meters
(1cm = 40m)

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**SITE PLAN**

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Task Order No. 82 | December 2007 | Figure 2b

SITE1107.DWG

**LEGEND:**

Boring Location

Matchline

Matchline

B1-LVR
B22-MS
B22-NS
B22-SS
B2-MWS
B2-RVR-ON
B2-RVR-OFF
B21-MS
B21-NS
B21-SS
B1-RVR-ON
B20-NS
B1-RVR-OFF
B20-MS
B20-SS
B19-MS
B19-NS
B19-SS
B18-MS
B18-NS
B18-SS
B17-NS
B17-MS
B17-SS
B16-NS
B16-MS
B16-SS
B15-NS
B15-MS

N

0 40 80

SCALE: meters
(1cm = 40m)

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GEOCON Proj. No. E8220-06-82

Task Order No. 82 | December 2007 | Figure 2c

SITE1107.DWG

**LEGEND:**

Boring Location

Matchline

Matchline

B29-NS
B1-FR
B29-MS
B29-SS
B28-NS
B28-MS
B28-SS
B27-NS
B27-MS
B27-SS
B26-MS
B26-NS
B26-SS
B25-MS
B25-NS
B25-SS
B24-NS
B24-MS
B23-MS
B24-SS
B23-NS
B23-SS
B1-LVR
B22-MS
B1-MWS
B2-MWS
B2-RVR-ON

0 40 80

SCALE: meters
(1cm = 40m)

N

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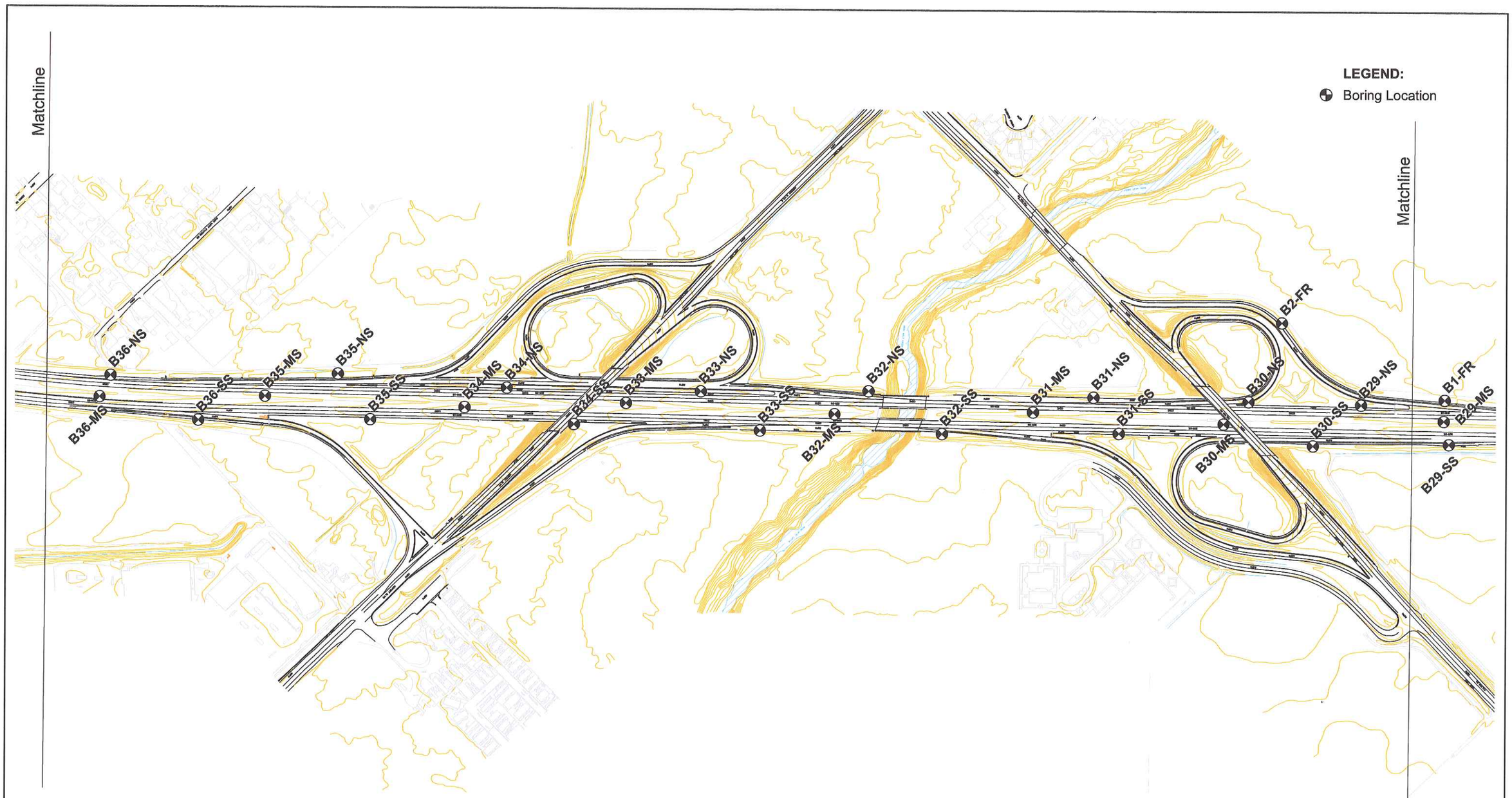
Task Order No. 82 | December 2007 | Figure 2d

SITE1107.DWG




0 40 80

SCALE: meters
(1cm = 40m)

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GEOCON Proj. No. E8220-06-82

Task Order No. 82 | December 2007 | Figure 2e

SITE1107.DWG

**LEGEND:**

⊕ Boring Location

B44-MS B44-NS B44-SS B43-MS B43-NS B1-SHR B2-SHR B42-NS B42-SS B41-MS B41-NS B41-SS B40-NS B40-SS B39-MS B39-NS B39-SS B38-NS B38-SS B38-MS B37-MS B37-NS B37-SS B4-RW2 B3-RW2 B1-RW2 B2-RW2 B43-SS B42-MS B40-MS

Matchline

Matchline

N

0 40 80

SCALE: meters
(1cm = 40m)

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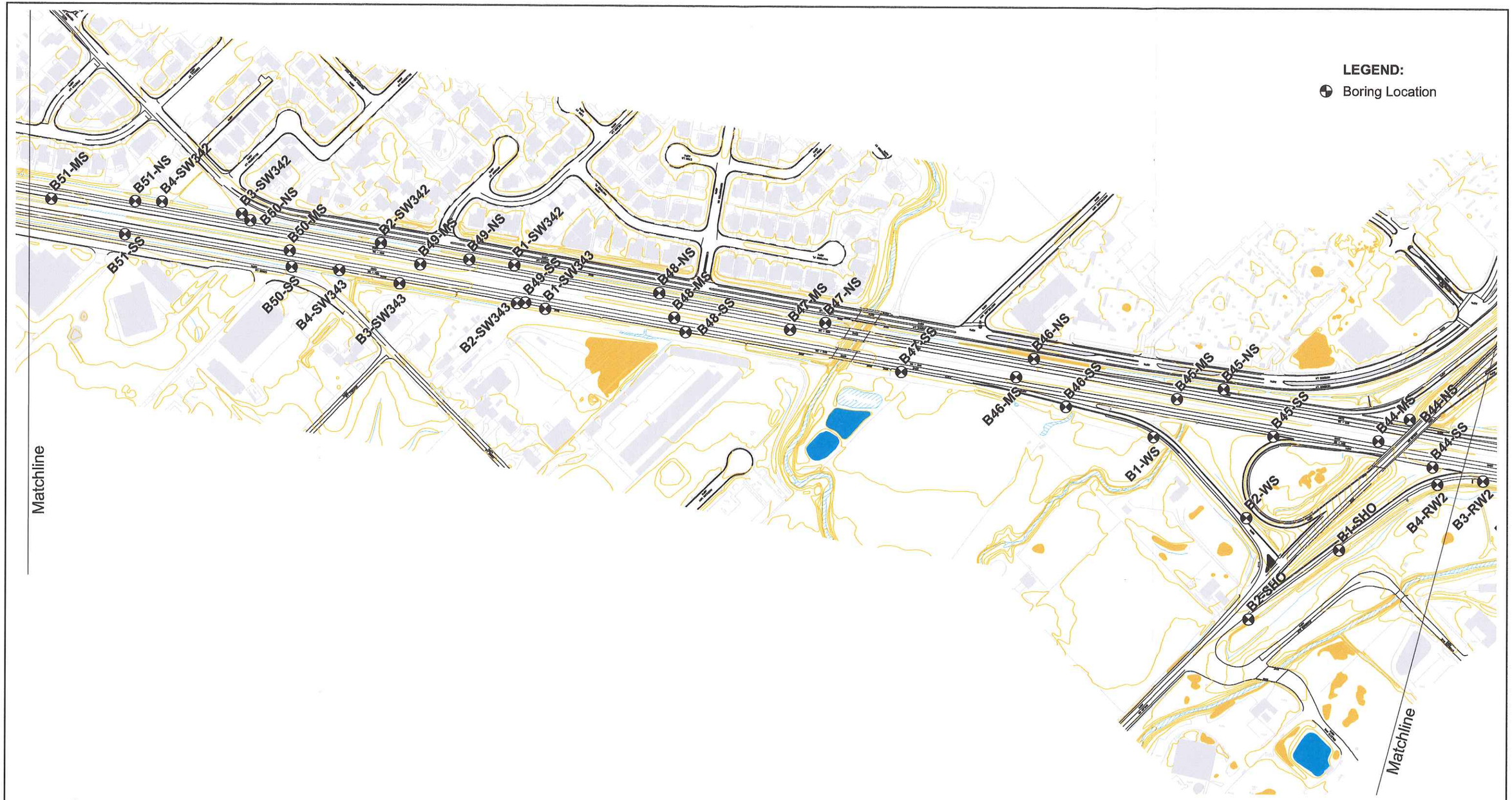
GEOCON Proj. No. E8220-06-82

Task Order No. 82 | December 2007 | Figure 2f

SITE1107.DWG

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GEOCON Proj. No. E8220-06-82

Task Order No. 82 | December 2007 | Figure 2g

SITE1107.DWG

**LEGEND:**

⊕ Boring Location

B3-SW358 B2-SW358 B4-SW351 B1-SW358 B57-NS B58-SS B57-MS B5-SW350 B57-SS B4-SW350 B56-MS B56-NS B3-SW350 B3-SW351 B56-SS B55-MS B55-NS B55-SS B54-NS B2-SW351 B54-MS B2-SW350 B54-SS B53-NS B1-SW351 B53-MS B53-SS B1-SW350 B52-NS B52-SS B52-MS B2A-SW350

Matchline

N

0 40 80

SCALE: meters
(1cm = 40m)

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**SITE PLAN**

GEOCON Proj. No. E8220-06-82

Task Order No. 82 | December 2007 | Figure 2h

SITE1107.DWG

**TABLE 1**
**BORING COORDINATES**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Boring | Easting | Northing |
|---|---|---|
| B1-MS | 6,353,223.280 | 1,932,933.318 |
| B2-MS | 6,353,019.864 | 1,933,514.412 |
| B3-MS | 6,352,816.856 | 1,934,187.334 |
| B4-MS | 6,352,603.830 | 1,934,799.550 |
| B5-MS | 6,352,409.148 | 1,935,449.027 |
| B6-MS | 6,352,199.533 | 1,936,041.058 |
| B7-MS | 6,352,022.401 | 1,936,638.965 |
| B8-MS | 6,351,786.292 | 1,937,171.713 |
| B9-MS | 6,351,365.763 | 1,937,789.235 |
| B10-MS | 6,350,886.191 | 1,938,227.559 |
| B11-MS | 6,350,379.210 | 1,938,717.059 |
| B12-MS | 6,349,919.837 | 1,939,113.602 |
| B13-MS | 6,349,424.970 | 1,939,591.885 |
| B14-MS | 6,349,000.865 | 1,939,947.472 |
| B15-MS | 6,348,385.916 | 1,940,551.635 |
| B16-MS | 6,348,080.596 | 1,940,807.128 |
| B17-MS | 6,347,438.745 | 1,941,418.918 |
| B18-MS | 6,346,985.134 | 1,941,810.467 |
| B19-MS | 6,346,431.205 | 1,942,346.706 |
| B20-MS | 6,346,052.000 | 1,942,665.227 |
| B21-MS | 6,345,551.505 | 1,943,152.601 |
| B22-MS | 6,345,097.542 | 1,943,546.466 |
| B23-MS | 6,344,431.249 | 1,944,191.211 |
| B24-MS | 6,344,212.187 | 1,944,355.951 |
| B25-MS | 6,343,633.363 | 1,944,977.064 |
| B26-MS | 6,343,213.375 | 1,945,369.281 |
| B27-MS | 6,342,759.282 | 1,945,879.956 |
| B28-MS | 6,342,319.350 | 1,946,304.668 |
| B29-MS | 6,341,880.246 | 1,946,786.428 |
| B30-MS | 6,341,338.188 | 1,947,309.859 |
| B31-MS | 6,340,903.575 | 1,947,798.011 |
| B32-MS | 6,340,417.292 | 1,948,270.625 |
| B33-MS | 6,339,936.570 | 1,948,799.015 |
| B34-MS | 6,339,534.392 | 1,949,176.321 |
| B35-MS | 6,339,076.960 | 1,949,683.411 |
| B36-MS | 6,338,674.855 | 1,950,079.695 |
| B37-MS | 6,338,232.139 | 1,950,678.047 |
| B38-MS | 6,338,003.769 | 1,950,960.160 |
| B39-MS | 6,337,443.793 | 1,951,788.682 |
| B40-MS | 6,337,188.290 | 1,952,109.988 |
| B41-MS | 6,336,641.283 | 1,952,924.880 |
| B42-MS | 6,336,246.770 | 1,953,442.572 |

**TABLE 1**
**BORING COORDINATES**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Boring | Easting | Northing |
|---|---|---|
| B43-MS | 6,335,958.349 | 1,953,891.769 |
| B44-MS | 6,335,594.934 | 1,954,363.222 |
| B45-MS | 6,335,207.486 | 1,954,951.264 |
| B46-MS | 6,334,869.189 | 1,955,392.146 |
| B47-MS | 6,334,435.974 | 1,956,049.184 |
| B48-MS | 6,334,181.784 | 1,956,357.519 |
| B49-MS | 6,333,693.702 | 1,957,097.210 |
| B50-MS | 6,333,410.246 | 1,957,444.323 |
| B51-MS | 6,332,956.526 | 1,958,143.591 |
| B52-MS | 6,332,624.487 | 1,958,563.722 |
| B53-MS | 6,332,194.944 | 1,959,220.807 |
| B54-MS | 6,331,942.405 | 1,959,534.035 |
| B55-MS | 6,331,369.867 | 1,960,437.288 |
| B56-MS | 6,331,117.181 | 1,960,896.626 |
| B57-MS | 6,330,884.597 | 1,961,452.776 |
| B1-NS | 6,353,238.041 | 1,933,048.104 |
| B2-NS | 6,353,063.431 | 1,933,581.596 |
| B3-NS | 6,352,886.885 | 1,934,133.871 |
| B4-NS | 6,352,625.282 | 1,934,932.293 |
| B5-NS | 6,352,416.731 | 1,935,419.760 |
| B6-NS | 6,352,298.573 | 1,935,927.758 |
| B7-NS | 6,352,097.271 | 1,936,608.145 |
| B8-NS | 6,351,866.230 | 1,937,158.217 |
| B9-NS | 6,351,538.420 | 1,937,681.348 |
| B10-NS | 6,350,949.446 | 1,938,262.460 |
| B11-NS | 6,350,560.142 | 1,938,620.741 |
| B12-NS | 6,350,064.378 | 1,939,080.746 |
| B13-NS | 6,349,557.855 | 1,939,541.928 |
| B14-NS | 6,348,929.493 | 1,940,120.395 |
| B15-NS | 6,348,500.705 | 1,940,518.662 |
| B16-NS | 6,348,051.383 | 1,940,924.826 |
| B17-NS | 6,347,535.454 | 1,941,403.203 |
| B18-NS | 6,347,162.225 | 1,941,745.646 |
| B19-NS | 6,346,689.911 | 1,942,184.794 |
| B20-NS | 6,345,989.769 | 1,942,813.101 |
| B21-NS | 6,345,693.572 | 1,943,091.171 |
| B22-NS | 6,345,268.796 | 1,943,496.987 |
| B23-NS | 6,344,781.487 | 1,943,943.959 |
| B24-NS | 6,344,341.214 | 1,944,343.214 |
| B25-NS | 6,343,785.107 | 1,944,886.986 |
| B26-NS | 6,343,390.495 | 1,945,301.204 |
| B27-NS | 6,342,764.581 | 1,945,939.705 |

**TABLE 1**
**BORING COORDINATES**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Boring | Easting | Northing |
|---|---|---|
| B28-NS | 6,342,446.764 | 1,946,270.059 |
| B29-NS | 6,341,718.565 | 1,947,024.219 |
| B30-NS | 6,341,453.038 | 1,947,303.264 |
| B31-NS | 6,341,086.138 | 1,947,688.080 |
| B32-NS | 6,340,555.174 | 1,948,244.288 |
| B33-NS | 6,340,147.005 | 1,948,646.734 |
| B34-NS | 6,339,683.814 | 1,949,121.822 |
| B35-NS | 6,339,307.073 | 1,949,561.878 |
| B36-NS | 6,338,753.298 | 1,950,105.211 |
| B37-NS | 6,338,360.028 | 1,950,581.371 |
| B38-NS | 6,337,959.162 | 1,951,146.869 |
| B39-NS | 6,337,590.151 | 1,951,644.342 |
| B40-NS | 6,337,235.250 | 1,952,171.260 |
| B41-NS | 6,336,781.701 | 1,952,814.019 |
| B42-NS | 6,336,533.369 | 1,953,173.071 |
| B43-NS | 6,336,056.395 | 1,953,834.477 |
| B44-NS | 6,335,722.717 | 1,954,339.842 |
| B45-NS | 6,335,344.338 | 1,954,862.298 |
| B46-NS | 6,334,956.380 | 1,955,393.218 |
| B47-NS | 6,334,537.592 | 1,955,981.218 |
| B48-NS | 6,334,205.061 | 1,956,453.409 |
| B49-NS | 6,333,824.547 | 1,956,990.763 |
| B50-NS | 6,333,387.499 | 1,957,612.020 |
| B51-NS | 6,333,153.996 | 1,957,935.840 |
| B52-NS | 6,332,686.193 | 1,958,620.742 |
| B53-NS | 6,332,255.138 | 1,959,215.487 |
| B54-NS | 6,331,771.885 | 1,959,894.816 |
| B55-NS | 6,331,459.144 | 1,960,389.170 |
| B56-NS | 6,331,238.733 | 1,960,799.031 |
| B57-NS | 6,330,995.625 | 1,961,329.902 |
| B1-SS | 6,353,281.806 | 1,932,497.061 |
| B2-SS | 6,352,974.404 | 1,933,502.276 |
| B3-SS | 6,352,881.775 | 1,933,787.838 |
| B4-SS | 6,352,650.392 | 1,934,485.628 |
| B5-SS | 6,352,426.616 | 1,935,149.219 |
| B6-SS | 6,352,209.046 | 1,935,780.248 |
| B7-SS | 6,352,040.589 | 1,936,380.679 |
| B8-SS | 6,351,778.982 | 1,937,059.449 |
| B9-SS | 6,351,367.140 | 1,937,695.972 |
| B10-SS | 6,351,007.581 | 1,938,049.144 |
| B11-SS | 6,350,599.951 | 1,938,427.301 |
| B12-SS | 6,350,169.723 | 1,938,825.080 |

**TABLE 1**
**BORING COORDINATES**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Boring | Easting | Northing |
|---|---|---|
| B13-SS | 6,349,634.835 | 1,939,310.297 |
| B14-SS | 6,349,161.269 | 1,939,736.757 |
| B15-SS | 6,348,686.626 | 1,940,186.145 |
| B16-SS | 6,348,148.013 | 1,940,676.151 |
| B17-SS | 6,347,684.781 | 1,941,108.122 |
| B18-SS | 6,347,224.680 | 1,941,514.531 |
| B19-SS | 6,346,760.588 | 1,941,954.323 |
| B20-SS | 6,346,221.130 | 1,942,454.853 |
| B21-SS | 6,345,702.911 | 1,942,904.803 |
| B22-SS | 6,345,236.535 | 1,943,332.945 |
| B23-SS | 6,344,750.033 | 1,943,798.551 |
| B24-SS | 6,344,470.481 | 1,944,059.198 |
| B25-SS | 6,343,816.074 | 1,944,680.950 |
| B26-SS | 6,343,342.477 | 1,945,176.955 |
| B27-SS | 6,343,001.459 | 1,945,488.745 |
| B28-SS | 6,342,481.665 | 1,946,067.085 |
| B29-SS | 6,341,836.790 | 1,946,717.905 |
| B30-SS | 6,341,503.519 | 1,947,041.589 |
| B31-SS | 6,341,060.476 | 1,947,539.981 |
| B32-SS | 6,340,630.493 | 1,947,964.363 |
| B33-SS | 6,340,196.723 | 1,948,410.053 |
| B34-SS | 6,339,759.293 | 1,948,872.511 |
| B35-SS | 6,339,276.119 | 1,949,373.271 |
| B36-SS | 6,338,856.973 | 1,949,786.353 |
| B37-SS | 6,338,374.051 | 1,950,366.152 |
| B38-SS | 6,337,878.371 | 1,951,053.735 |
| B39-SS | 6,337,621.789 | 1,951,411.103 |
| B40-SS | 6,337,263.132 | 1,951,925.622 |
| B41-SS | 6,336,788.538 | 1,952,601.225 |
| B42-SS | 6,336,468.995 | 1,953,042.459 |
| B43-SS | 6,336,016.895 | 1,953,668.366 |
| B44-SS | 6,335,663.057 | 1,954,169.857 |
| B45-SS | 6,335,350.944 | 1,954,628.410 |
| B46-SS | 6,334,918.511 | 1,955,200.025 |
| B47-SS | 6,334,603.919 | 1,955,680.411 |
| B48-SS | 6,334,174.921 | 1,956,295.866 |
| B49-SS | 6,333,856.773 | 1,956,752.144 |
| B50-SS | 6,333,376.086 | 1,957,400.417 |
| B51-SS | 6,333,049.047 | 1,957,880.553 |
| B52-SS | 6,332,685.475 | 1,958,390.618 |
| B53-SS | 6,332,288.347 | 1,958,957.270 |
| B54-SS | 6,331,962.527 | 1,959,422.050 |

**TABLE 1**
**BORING COORDINATES**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Boring | Easting | Northing |
|---|---|---|
| B55-SS | 6,331,586.273 | 1,959,960.529 |
| B56-SS | 6,331,236.263 | 1,960,511.314 |
| B57-SS | 6,330,832.692 | 1,961,382.045 |
| B58-SS | 6,330,538.630 | 1,961,829.084 |
| B1-LVR | 6,345,012.139 | 1,943,748.173 |
| B1-CLO | 6,351,396.792 | 1,937,584.665 |
| B2-CLO | 6,351,345.889 | 1,937,423.074 |
| B1-FR | 6,341,933.490 | 1,946,835.245 |
| B2-FR | 6,341,724.036 | 1,947,413.939 |
| B1-MWS | 6,344,643.205 | 1,943,757.712 |
| B2-MWS | 6,344,751.904 | 1,943,487.042 |
| B1-RVR-OFF | 6,346,147.656 | 1,942,711.394 |
| B2-RVR-OFF | 6,345,959.290 | 1,943,178.869 |
| B1-RVR-ON | 6,345,310.164 | 1,943,200.557 |
| B2-RVR-ON | 6,344,731.200 | 1,943,322.996 |
| B1-SHO | 6,335,236.838 | 1,954,194.020 |
| B2-SHO | 6,334,850.254 | 1,954,245.258 |
| B1-SHR | 6,336,253.266 | 1,953,702.822 |
| B2-SHR | 6,336,228.421 | 1,953,998.196 |
| B1-WS | 6,335,058.254 | 1,954,915.809 |
| B2-WS | 6,335,089.365 | 1,954,495.907 |
| B1-RW1 | 6,353,107.368 | 1,933,033.354 |
| B2-RW1 | 6,353,001.053 | 1,933,301.551 |
| B3-RW1 | 6,352,889.718 | 1,933,575.879 |
| B4-RW1 | 6,352,841.342 | 1,933,683.196 |
| B1-RW2 | 6,335,860.064 | 1,953,866.722 |
| B2-RW2 | 6,335,876.947 | 1,953,846.149 |
| B3-RW2 | 6,335,752.298 | 1,954,014.110 |
| B4-RW2 | 6,335,633.532 | 1,954,116.558 |
| B1-SW252 | 6,352,860.720 | 1,934,252.507 |
| B2-SW252 | 6,352,818.855 | 1,934,370.973 |
| B3-SW252 | 6,352,792.164 | 1,934,507.786 |
| B4-SW252 | 6,352,748.760 | 1,934,573.147 |
| B1-SW342 | 6,333,920.499 | 1,956,868.772 |
| B2-SW342 | 6,333,649.524 | 1,957,243.663 |
| B3-SW342 | 6,333,382.874 | 1,957,648.499 |
| B4-SW342 | 6,333,218.253 | 1,957,869.637 |
| B1-SW343 | 6,333,890.126 | 1,956,689.228 |
| B2-SW343 | 6,333,835.021 | 1,956,770.232 |
| B3-SW343 | 6,333,597.811 | 1,957,100.984 |
| B4-SW343 | 6,333,483.490 | 1,957,277.807 |
| B1-SW350 | 6,332,301.234 | 1,958,911.766 |

**TABLE 1**
**BORING COORDINATES**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Boring | Easting | Northing |
|---|---|---|
| B2-SW350 | 6,331,930.359 | 1,959,456.510 |
| B2A-SW350 | 6,331,555.285 | 1,959,989.169 |
| B3-SW350 | 6,331,141.406 | 1,960,697.648 |
| B4-SW350 | 6,330,888.902 | 1,961,177.006 |
| B5-SW350 | 6,330,585.693 | 1,961,662.274 |
| B1-SW351 | 6,332,355.717 | 1,959,087.130 |
| B2-SW351 | 6,331,924.771 | 1,959,702.521 |
| B3-SW351 | 6,331,335.791 | 1,960,602.492 |
| B4-SW351 | 6,330,986.012 | 1,961,495.545 |
| B1-SW358 | 6,330,959.519 | 1,961,401.406 |
| B2-SW358 | 6,330,892.472 | 1,961,588.568 |
| B3-SW358 | 6,330,810.359 | 1,961,733.192 |

*Notes:*

*Easting and Northing shown in feet, NAD 83 (Zone 2)*

**TABLE 2a**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Median Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B1-MS-0 | 0 | 93 | 6.2 | <0.25 | --- | --- |
| B1-MS-1 | 1 | 5.2 | --- | --- | --- | --- |
| B1-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B1-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B2-MS-0 | 0 | 9.8 | --- | --- | --- | --- |
| B2-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B2-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B2-MS-3 | 3 | 7.3 | --- | --- | --- | --- |
| B3-MS-0 | 0 | 5.7 | --- | --- | --- | --- |
| B3-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B3-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B3-MS-3 | 3 | 7.2 | --- | --- | --- | --- |
| B4-MS-0 | 0 | 96 | 4.7 | --- | --- | --- |
| B4-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B4-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B4-MS-3 | 3 | 5.3 | --- | --- | --- | --- |
| B5-MS-0 | 0 | 18 | --- | --- | --- | --- |
| B5-MS-1 | 1 | 5.4 | --- | --- | --- | 6.9 |
| B5-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B5-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B6-MS-0 | 0 | 170 | 13 | <0.25 | --- | --- |
| B6-MS-1 | 1 | 25 | --- | --- | --- | 7.8 |
| B6-MS-2 | 2 | 6.9 | --- | --- | --- | --- |
| B6-MS-3 | 3 | 7.4 | --- | --- | --- | --- |
| B7-MS-0 | 0 | 310 | 24 | <0.25 | --- | --- |
| B7-MS-1 | 1 | 18 | --- | --- | --- | --- |
| B7-MS-2 | 2 | 11 | --- | --- | --- | --- |
| B7-MS-3 | 3 | 11 | --- | --- | --- | --- |

**TABLE 2a**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Median Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B8-MS-0 | 0 | 55 | 8.5 | <0.25 | --- | --- |
| B8-MS-1 | 1 | 5.5 | --- | --- | --- | --- |
| B8-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B8-MS-3 | 3 | 5.2 | --- | --- | --- | --- |
| B9-MS-0 | 0 | 95 | 5.0 | --- | --- | --- |
| B9-MS-1 | 1 | 5.4 | --- | --- | --- | --- |
| B9-MS-2 | 2 | 6.2 | --- | --- | --- | --- |
| B9-MS-3 | 3 | 9.0 | --- | --- | --- | --- |
| B10-MS-0 | 0 | 250 | 16 | <0.25 | --- | --- |
| B10-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B10-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B10-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B11-MS-0 | 0 | 190 | 1.1 | --- | --- | --- |
| B11-MS-1 | 1 | 5.9 | --- | --- | --- | --- |
| B11-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B11-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B12-MS-0 | 0 | 49 | --- | --- | --- | --- |
| B12-MS-1 | 1 | 6.5 | --- | --- | --- | --- |
| B12-MS-2 | 2 | 6.2 | --- | --- | --- | --- |
| B12-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B13-MS-0 | 0 | 99 | 1.9 | --- | --- | --- |
| B13-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B13-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B13-MS-3 | 3 | 7.7 | --- | --- | --- | --- |
| B14-MS-0 | 0 | 290 | 12 | <0.25 | --- | --- |
| B14-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B14-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B14-MS-3 | 3 | <5.0 | --- | --- | --- | --- |

**TABLE 2a**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Median Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B15-MS-0 | 0 | 11 | --- | --- | --- | --- |
| B15-MS-1 | 1 | 6.0 | --- | --- | --- | 6.2 |
| B15-MS-2 | 2 | 5.5 | --- | --- | --- | --- |
| B15-MS-3 | 3 | 5.7 | --- | --- | --- | --- |
| B16-MS-0 | 0 | 69 | 12 | <0.25 | --- | --- |
| B16-MS-1 | 1 | 11 | --- | --- | --- | 6.6 |
| B16-MS-2 | 2 | 7.2 | --- | --- | --- | --- |
| B16-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B17-MS-0 | 0 | 130 | 1.1 | --- | --- | --- |
| B17-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B17-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B17-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B18-MS-0 | 0 | 270 | <1.0 | --- | --- | --- |
| B18-MS-1 | 1 | 8.5 | --- | --- | --- | --- |
| B18-MS-2 | 2 | 6.0 | --- | --- | --- | --- |
| B18-MS-3 | 3 | 5.9 | --- | --- | --- | --- |
| B19-MS-0 | 0 | 55 | 1.1 | --- | --- | --- |
| B19-MS-1 | 1 | 6.2 | --- | --- | --- | --- |
| B19-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B19-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B20-MS-0 | 0 | 680 | 23 | <0.25 | 0.63 | --- |
| B20-MS-1 | 1 | 5.1 | --- | --- | --- | --- |
| B20-MS-2 | 2 | 6.9 | --- | --- | --- | --- |
| B20-MS-3 | 3 | 12 | --- | --- | --- | --- |
| B21-MS-0 | 0 | 90 | 21 | <0.25 | --- | --- |
| B21-MS-1 | 1 | 9.5 | --- | --- | --- | --- |
| B21-MS-2 | 2 | 6.9 | --- | --- | --- | --- |
| B21-MS-3 | 3 | 5.6 | --- | --- | --- | --- |

**TABLE 2a**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Median Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B22-MS-0 | 0 | 170 | 16 | <0.25 | --- | --- |
| B22-MS-1 | 1 | 54 | 2.7 | --- | --- | --- |
| B22-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B22-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B23-MS-0 | 0 | 160 | 3.8 | --- | --- | --- |
| B23-MS-1 | 1 | 5.6 | --- | --- | --- | --- |
| B23-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B23-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B24-MS-0 | 0 | 270 | 20 | <0.25 | --- | --- |
| B24-MS-1 | 1 | 8.5 | --- | --- | --- | --- |
| B24-MS-2 | 2 | 5.3 | --- | --- | --- | --- |
| B24-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B25-MS-0 | 0 | 140 | 5.0 | --- | --- | --- |
| B25-MS-1 | 1 | <5.0 | --- | --- | --- | 7.3 |
| B25-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B25-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B26-MS-0 | 0 | 280 | 14 | <0.25 | --- | --- |
| B26-MS-1 | 1 | <5.0 | --- | --- | --- | 6.9 |
| B26-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B26-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B27-MS-0 | 0 | 51 | 1.1 | --- | --- | --- |
| B27-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B27-MS-2 | 2 | 6.1 | --- | --- | --- | --- |
| B27-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B28-MS-0 | 0 | 71 | 4.8 | --- | --- | --- |
| B28-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B28-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B28-MS-3 | 3 | <5.0 | --- | --- | --- | --- |

**TABLE 2a**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Median Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B29-MS-0 | 0 | 120 | 14 | <0.25 | --- | --- |
| B29-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B29-MS-2 | 2 | 6.9 | --- | --- | --- | --- |
| B29-MS-3 | 3 | 5.9 | --- | --- | --- | --- |
| B30-MS-0 | 0 | 270 | 15 | <0.25 | --- | --- |
| B30-MS-1 | 1 | 7.1 | --- | --- | --- | --- |
| B30-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B30-MS-3 | 3 | 16 | --- | --- | --- | --- |
| B31-MS-0 | 0 | 310 | 1.5 | --- | --- | --- |
| B31-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B31-MS-2 | 2 | 7.6 | --- | --- | --- | --- |
| B31-MS-3 | 3 | 5.4 | --- | --- | --- | --- |
| B32-MS-0 | 0 | 390 | 14 | <0.25 | --- | --- |
| B32-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B32-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B32-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B33-MS-0 | 0 | 340 | 1.3 | --- | --- | --- |
| B33-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B33-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B33-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B34-MS-0 | 0 | 160 | 10 | 0.40 | --- | --- |
| B34-MS-1 | 1 | 15 | --- | --- | --- | --- |
| B34-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B34-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B35-MS-0 | 0 | 73 | 1.4 | --- | --- | --- |
| B35-MS-1 | 1 | 7.5 | --- | --- | --- | 6.1 |
| B35-MS-2 | 2 | 6.7 | --- | --- | --- | --- |
| B35-MS-3 | 3 | <5.0 | --- | --- | --- | --- |

**TABLE 2a**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Median Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B36-MS-0 | 0 | 320 | 12 | 0.35 | --- | --- |
| B36-MS-1 | 1 | <5.0 | --- | --- | --- | 6.7 |
| B36-MS-2 | 2 | 6.0 | --- | --- | --- | --- |
| B36-MS-3 | 3 | 5.3 | --- | --- | --- | --- |
| B37-MS-0 | 0 | 150 | 4.8 | --- | --- | --- |
| B37-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B37-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B37-MS-3 | 3 | 6.7 | --- | --- | --- | --- |
| B38-MS-0 | 0 | 83 | 4.6 | --- | --- | --- |
| B38-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B38-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B38-MS-3 | 3 | 5.2 | --- | --- | --- | --- |
| B39-MS-0 | 0 | 130 | 13 | <0.25 | --- | --- |
| B39-MS-1 | 1 | 5.4 | --- | --- | --- | --- |
| B39-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B39-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B40-MS-0 | 0 | 190 | 7.9 | 0.29 | --- | --- |
| B40-MS-1 | 1 | 8.1 | --- | --- | --- | --- |
| B40-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B40-MS-3 | 3 | 5.4 | --- | --- | --- | --- |
| B41-MS-0 | 0 | 87 | <1.0 | --- | --- | --- |
| B41-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B41-MS-2 | 2 | 6.1 | --- | --- | --- | --- |
| B41-MS-3 | 3 | 6.5 | --- | --- | --- | --- |
| B42-MS-0 | 0 | 67 | 4.9 | --- | --- | --- |
| B42-MS-1 | 1 | 10 | --- | --- | --- | --- |
| B42-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B42-MS-3 | 3 | <5.0 | --- | --- | --- | --- |

**TABLE 2a**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Median Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B43-MS-0 | 0 | 250 | 1.1 | --- | --- | --- |
| B43-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B43-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B43-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B44-MS-0 | 0 | 390 | 24 | 0.28 | --- | --- |
| B44-MS-1 | 1 | 8.3 | --- | --- | --- | --- |
| B44-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B44-MS-3 | 3 | 6.0 | --- | --- | --- | --- |
| B45-MS-0 | 0 | 110 | 11 | <0.25 | --- | --- |
| B45-MS-1 | 1 | <5.0 | --- | --- | --- | 6.7 |
| B45-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B45-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B46-MS-0 | 0 | 210 | 20 | 0.34 | --- | --- |
| B46-MS-1 | 1 | 15 | --- | --- | --- | 6.3 |
| B46-MS-2 | 2 | 25 | --- | --- | --- | --- |
| B46-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B47-MS-0 | 0 | 200 | 5.3 | <0.25 | --- | --- |
| B47-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B47-MS-2 | 2 | 6.1 | --- | --- | --- | --- |
| B47-MS-3 | 3 | 6.7 | --- | --- | --- | --- |
| B48-MS-0 | 0 | 280 | 11 | 0.38 | --- | --- |
| B48-MS-1 | 1 | 57 | 1.8 | --- | --- | --- |
| B49-MS-0 | 0 | 84 | <1.0 | --- | --- | --- |
| B49-MS-1 | 1 | 5.1 | --- | --- | --- | --- |
| B49-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B49-MS-3 | 3 | 6.8 | --- | --- | --- | --- |

**TABLE 2a**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Median Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B50-MS-0 | 0 | 410 | 20 | 0.45 | --- | --- |
| B50-MS-1 | 1 | 8.8 | --- | --- | --- | --- |
| B50-MS-2 | 2 | 7.2 | --- | --- | --- | --- |
| B50-MS-3 | 3 | 14 | --- | --- | --- | --- |
| B51-MS-0 | 0 | 740 | 6.4 | <0.25 | 0.37 | --- |
| B51-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B51-MS-2 | 2 | 9.0 | --- | --- | --- | --- |
| B51-MS-3 | 3 | 5.2 | --- | --- | --- | --- |
| B52-MS-0 | 0 | 450 | 36 | 0.41 | --- | --- |
| B52-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B52-MS-2 | 2 | 6.6 | --- | --- | --- | --- |
| B52-MS-3 | 3 | 5.9 | --- | --- | --- | --- |
| B53-MS-0 | 0 | 100 | 11 | <0.25 | --- | --- |
| B53-MS-1 | 1 | 7.2 | --- | --- | --- | --- |
| B53-MS-2 | 2 | 5.2 | --- | --- | --- | --- |
| B53-MS-3 | 3 | 6.4 | --- | --- | --- | --- |
| B54-MS-0 | 0 | 560 | 47 | 1.1 | 1.1 | --- |
| B54-MS-1 | 1 | 7.8 | --- | --- | --- | --- |
| B54-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B54-MS-3 | 3 | 20 | --- | --- | --- | --- |
| B55-MS-0 | 0 | 28 | --- | --- | --- | --- |
| B55-MS-1 | 1 | <5.0 | --- | --- | --- | 6.4 |
| B55-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B55-MS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B56-MS-0 | 0 | 250 | 29 | 0.56 | --- | 6.6 |
| B56-MS-1 | 1 | 6.8 | --- | --- | --- | --- |
| B56-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B56-MS-3 | 3 | 24 | --- | --- | --- | --- |

**TABLE 2a**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Median Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B57-MS-0 | 0 | 55 | 6.8 | <0.25 | --- | --- |
| B57-MS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B57-MS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B27-MS-3 | 3 | <5.0 | --- | --- | --- | --- |

Notes:

WET = Waste Extraction Test using citric acid as the extraction fluid
WET-DI = Waste Extraction Test using deionized water as the extraction fluid
TCLP = Toxicity Characteristic Leaching Procedure
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
< = Analyte was not detected above the laboratory reporting limit
--- = Not analyzed

**TABLE 2b**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Northbound Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B1-NS-0 | 0 | 390 | 59 | 0.48 | --- | --- |
| B1-NS-1 | 1 | <5.0 | --- | --- | --- | 7.3 |
| B1-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B1-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B2-NS-0 | 0 | 320 | 24 | <0.25 | 0.67 | --- |
| B2-NS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B2-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B2-NS-3 | 3 | 5.8 | --- | --- | --- | --- |
| B3-NS-0 | 0 | 310 | 19 | 1.0 | 1.0 | --- |
| B3-NS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B3-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B3-NS-3 | 3 | 6.5 | --- | --- | --- | --- |
| B4-NS-0 | 0 | 170 | 12 | <0.25 | 0.91 | --- |
| B4-NS-1 | 1 | 30 | --- | --- | --- | --- |
| B4-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B4-NS-3 | 3 | 6.7 | --- | --- | --- | --- |
| B5-NS-0 | 0 | 320 | 33 | 0.26 | --- | --- |
| B5-NS-1 | 1 | 5.7 | --- | --- | --- | --- |
| B5-NS-2 | 2 | 5.2 | --- | --- | --- | --- |
| B5-NS-3 | 3 | 7.9 | --- | --- | --- | --- |
| B6-NS-0 | 0 | 680 | 34 | 0.63 | 1.7 | --- |
| B6-NS-1 | 1 | 17 | --- | --- | --- | --- |
| B6-NS-2 | 2 | 15 | --- | --- | --- | --- |
| B6-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B7-NS-0 | 0 | 480 | 76 | <0.25 | 1.4 | --- |
| B7-NS-1 | 1 | 940 | 9.5 | 1.8 | 1.5 | --- |
| B7-NS-2 | 2 | 36 | --- | --- | --- | --- |
| B7-NS-3 | 3 | 5.2 | --- | --- | --- | 7.6 |

**TABLE 2b**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Northbound Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B8-NS-0 | 0 | 420 | 13 | 0.66 | 1.2 | --- |
| B8-NS-1 | 1 | 5.1 | --- | --- | --- | --- |
| B8-NS-2 | 2 | 5.2 | --- | --- | --- | --- |
| B8-NS-3 | 3 | 5.0 | --- | --- | --- | --- |
| B9-NS-0 | 0 | 310 | 21 | <0.25 | --- | --- |
| B9-NS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B9-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B9-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B10-NS-0 | 0 | 170 | 9.1 | <0.25 | 0.34 | --- |
| B10-NS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B10-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B10-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B11-NS-0 | 0 | 190 | 15 | 0.38 | --- | --- |
| B11-NS-1 | 1 | 15 | --- | --- | --- | --- |
| B11-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B11-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B12-NS-0 | 0 | 110 | 7.3 | <0.25 | 0.44 | --- |
| B12-NS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B12-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B12-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B13-NS-0 | 0 | 150 | 15 | 0.27 | 0.43 | --- |
| B13-NS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B13-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B13-NS-3 | 3 | 9.9 | --- | --- | --- | --- |
| B14-NS-0 | 0 | 430 | 22 | 0.35 | 1.3 | --- |
| B14-NS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B14-NS-2 | 2 | 8.3 | --- | --- | --- | --- |
| B14-NS-3 | 3 | 5.6 | --- | --- | --- | 6.5 |

**TABLE 2b**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Northbound Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B15-NS-0 | 0 | 160 | 6.1 | 0.28 | --- | --- |
| B15-NS-1 | 1 | 6.0 | --- | --- | --- | --- |
| B15-NS-2 | 2 | 7.5 | --- | --- | --- | --- |
| B15-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B16-NS-0 | 0 | 88 | 11 | 0.38 | 0.41 | --- |
| B16-NS-1 | 1 | 7.6 | --- | --- | --- | --- |
| B16-NS-2 | 2 | 6.0 | --- | --- | --- | --- |
| B16-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B17-NS-0 | 0 | 27 | --- | --- | --- | --- |
| B17-NS-1 | 1 | 11 | --- | --- | --- | --- |
| B17-NS-2 | 2 | 6.1 | --- | --- | --- | --- |
| B17-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B18-NS-0 | 0 | 470 | 25 | 0.33 | 0.96 | --- |
| B18-NS-1 | 1 | 5.4 | --- | --- | --- | --- |
| B18-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B18-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B19-NS-0 | 0 | 80 | 3.2 | --- | --- | --- |
| B19-NS-1 | 1 | 5.8 | --- | --- | --- | --- |
| B19-NS-2 | 2 | 6.6 | --- | --- | --- | 7.2 |
| B19-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B20-NS-0 | 0 | 210 | 7.3 | 0.37 | 0.38 | --- |
| B20-NS-1 | 1 | 31 | --- | --- | --- | --- |
| B20-NS-2 | 2 | 7.2 | --- | --- | --- | --- |
| B20-NS-3 | 3 | 7.5 | --- | --- | --- | --- |
| B21-NS-0 | 0 | 30 | --- | --- | --- | --- |
| B21-NS-1 | 1 | 18 | --- | --- | --- | --- |
| B21-NS-2 | 2 | 7.1 | --- | --- | --- | --- |
| B21-NS-3 | 3 | 6.8 | --- | --- | --- | 6.1 |

**TABLE 2b**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Northbound Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B22-NS-0 | 0 | 13 | --- | --- | --- | --- |
| B22-NS-1 | 1 | 11 | --- | --- | --- | --- |
| B22-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B22-NS-3 | 3 | 5.3 | --- | --- | --- | --- |
| B23-NS-0 | 0 | 260 | 16 | 0.78 | --- | --- |
| B23-NS-1 | 1 | 12 | --- | --- | --- | --- |
| B23-NS-2 | 2 | 7.1 | --- | --- | --- | --- |
| B23-NS-3 | 3 | 5.5 | --- | --- | --- | --- |
| B24-NS-0 | 0 | 140 | 22 | 0.3 | 0.74 | --- |
| B24-NS-1 | 1 | 5.7 | --- | --- | --- | --- |
| B24-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B24-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B25-NS-0 | 0 | 200 | 30 | <0.25 | 1.7 | --- |
| B25-NS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B25-NS-2 | 2 | 5.7 | --- | --- | --- | --- |
| B25-NS-3 | 3 | 8.0 | --- | --- | --- | --- |
| B26-NS-0 | 0 | 280 | 12 | 0.63 | 1.1 | --- |
| B26-NS-1 | 1 | 19 | --- | --- | --- | --- |
| B26-NS-2 | 2 | 7.0 | --- | --- | --- | --- |
| B26-NS-3 | 3 | 8.7 | --- | --- | --- | --- |
| B27-NS-0 | 0 | 160 | 11 | <0.25 | --- | --- |
| B27-NS-1 | 1 | 6.9 | --- | --- | --- | --- |
| B27-NS-2 | 2 | 5.4 | --- | --- | --- | --- |
| B27-NS-3 | 3 | 5.6 | --- | --- | --- | --- |
| B28-NS-0 | 0 | 110 | 2.7 | --- | --- | --- |
| B28-NS-1 | 1 | 8.3 | --- | --- | --- | --- |
| B28-NS-2 | 2 | 6.4 | --- | --- | --- | --- |
| B28-NS-3 | 3 | 5.8 | --- | --- | --- | 6.6 |

**TABLE 2b**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Northbound Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B29-NS-0 | 0 | 170 | 7.1 | 0.33 | 0.90 | --- |
| B29-NS-1 | 1 | 8.7 | --- | --- | --- | --- |
| B29-NS-2 | 2 | 9.0 | --- | --- | --- | --- |
| B29-NS-3 | 3 | 7.4 | --- | --- | --- | --- |
| B30-NS-0 | 0 | 320 | 12 | <0.25 | 0.39 | --- |
| B30-NS-1 | 1 | 6.0 | --- | --- | --- | --- |
| B30-NS-2 | 2 | 5.3 | --- | --- | --- | --- |
| B30-NS-3 | 3 | 5.6 | --- | --- | --- | --- |
| B31-NS-0 | 0 | 51 | 20 | <0.25 | --- | --- |
| B31-NS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B31-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B31-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B32-NS-0 | 0 | 790 | 35 | 0.49 | 1.4 | --- |
| B32-NS-1 | 1 | 6.3 | --- | --- | --- | --- |
| B32-NS-2 | 2 | 6.2 | --- | --- | --- | --- |
| B32-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B33-NS-0 | 0 | 17 | --- | --- | --- | --- |
| B33-NS-1 | 1 | 9.1 | --- | --- | --- | --- |
| B33-NS-2 | 2 | 5.5 | --- | --- | --- | --- |
| B33-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B34-NS-0 | 0 | 450 | 8.6 | 0.35 | 1.9 | --- |
| B34-NS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B34-NS-2 | 2 | 6.4 | --- | --- | --- | --- |
| B34-NS-3 | 3 | 9.8 | --- | --- | --- | 6.8 |
| B35-NS-0 | 0 | 160 | 8.9 | 0.30 | --- | --- |
| B35-NS-1 | 1 | 53 | 1.7 | --- | --- | --- |
| B35-NS-2 | 2 | 8.9 | --- | --- | --- | --- |
| B35-NS-3 | 3 | <5.0 | --- | --- | --- | --- |

**TABLE 2b**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Northbound Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B36-NS-0 | 0 | 850 | 16 | 0.29 | 0.72 | --- |
| B36-NS-1 | 1 | 11 | --- | --- | --- | --- |
| B36-NS-2 | 2 | 7.4 | --- | --- | --- | --- |
| B36-NS-3 | 3 | 5.1 | --- | --- | --- | --- |
| B37-NS-0 | 0 | 340 | 6.6 | 0.35 | 1.1 | --- |
| B37-NS-1 | 1 | 8.9 | --- | --- | --- | --- |
| B37-NS-2 | 2 | 9.3 | --- | --- | --- | --- |
| B37-NS-3 | 3 | 7.6 | --- | --- | --- | --- |
| B38-NS-0 | 0 | 64 | 2.3 | --- | --- | --- |
| B38-NS-1 | 1 | 8.4 | --- | --- | --- | --- |
| B38-NS-2 | 2 | 7.8 | --- | --- | --- | --- |
| B38-NS-3 | 3 | 8.0 | --- | --- | --- | --- |
| B39-NS-0 | 0 | 110 | 5.6 | 0.27 | --- | --- |
| B39-NS-1 | 1 | 5.9 | --- | --- | --- | --- |
| B39-NS-2 | 2 | <5.0 | --- | --- | --- | 5.8 |
| B39-NS-3 | 3 | 7.2 | --- | --- | --- | --- |
| B40-NS-0 | 0 | 150 | 5.4 | 0.40 | 0.73 | --- |
| B40-NS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B40-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B40-NS-3 | 3 | 8.4 | --- | --- | --- | --- |
| B41-NS-0 | 0 | 160 | 11 | 0.39 | 0.71 | --- |
| B41-NS-1 | 1 | 5.6 | --- | --- | --- | --- |
| B41-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B41-NS-3 | 3 | 6.6 | --- | --- | --- | 6.3 |
| B42-NS-0 | 0 | 98 | 3.7 | --- | --- | --- |
| B42-NS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B42-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B42-NS-3 | 3 | <5.0 | --- | --- | --- | --- |

**TABLE 2b**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Northbound Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B43-NS-0 | 0 | 140 | 5.6 | 0.25 | --- | --- |
| B43-NS-1 | 1 | 14 | --- | --- | --- | --- |
| B43-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B43-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B44-NS-0 | 0 | 17 | --- | --- | --- | --- |
| B44-NS-1 | 1 | 5.9 | --- | --- | --- | --- |
| B44-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B44-NS-3 | 3 | 6.1 | --- | --- | --- | --- |
| B45-NS-0 | 0 | 43 | --- | --- | --- | --- |
| B45-NS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B45-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B45-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B46-NS-0 | 0 | 350 | 6.3 | 0.35 | 0.33 | --- |
| B46-NS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B46-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B46-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B47-NS-0 | 0 | 50 | 2.8 | --- | --- | --- |
| B47-NS-1 | 1 | 6.5 | --- | --- | --- | --- |
| B47-NS-2 | 2 | 6.4 | --- | --- | --- | --- |
| B47-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B48-NS-0 | 0 | 55 | 8.5 | 0.38 | 0.97 | --- |
| B48-NS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B48-NS-2 | 2 | 6.5 | --- | --- | --- | --- |
| B48-NS-3 | 3 | 8.0 | --- | --- | --- | 6.2 |
| B49-NS-0 | 0 | 450 | 22 | 0.47 | 1.2 | --- |
| B49-NS-1 | 1 | 5.5 | --- | --- | --- | --- |
| B49-NS-2 | 2 | 14 | --- | --- | --- | --- |
| B49-NS-3 | 3 | 6.0 | --- | --- | --- | --- |

**TABLE 2b**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Northbound Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B50-NS-0 | 0 | 180 | 6.2 | 0.41 | 0.57 | --- |
| B50-NS-1 | 1 | 14 | --- | --- | --- | --- |
| B50-NS-2 | 2 | 7.2 | --- | --- | --- | --- |
| B50-NS-3 | 3 | 8.1 | --- | --- | --- | --- |
| B51-NS-0 | 0 | 210 | 11 | 0.30 | --- | --- |
| B51-NS-1 | 1 | 15 | --- | --- | --- | --- |
| B51-NS-2 | 2 | 7.2 | --- | --- | --- | --- |
| B51-NS-3 | 3 | 6.4 | --- | --- | --- | --- |
| B52-NS-0 | 0 | 35 | --- | --- | --- | --- |
| B52-NS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B52-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B52-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B53-NS-0 | 0 | 28 | --- | --- | --- | --- |
| B53-NS-1 | 1 | 6.1 | --- | --- | --- | --- |
| B53-NS-2 | 2 | 6.4 | --- | --- | --- | --- |
| B53-NS-3 | 3 | 14 | --- | --- | --- | --- |
| B54-NS-0 | 0 | 10 | --- | --- | --- | --- |
| B54-NS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B54-NS-2 | 2 | 8.4 | --- | --- | --- | --- |
| B54-NS-3 | 3 | 6.4 | --- | --- | --- | 5.4 |
| B55-NS-0 | 0 | 57 | 1.1 | --- | --- | --- |
| B55-NS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B55-NS-2 | 2 | 7.4 | --- | --- | --- | --- |
| B55-NS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B56-NS-0 | 0 | 10 | --- | --- | --- | --- |
| B56-NS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B56-NS-2 | 2 | 13 | --- | --- | --- | --- |
| B56-NS-3 | 3 | 6.9 | --- | --- | --- | --- |

**TABLE 2b**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Northbound Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B57-NS-0 | 0 | 270 | 9.7 | 0.46 | 0.46 | --- |
| B57-NS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B57-NS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B57-NS-3 | 3 | <5.0 | --- | --- | --- | --- |

Notes:
WET = Waste Extraction Test using citric acid as the extraction fluid
WET-DI = Waste Extraction Test using deionized water as the extraction fluid
TCLP = Toxicity Characteristic Leaching Procedure
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
< = Analyte was not detected above the laboratory reporting limit
--- = Not analyzed

**TABLE 2c**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Southbound Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B1-SS-0 | 0 | 20 | --- | --- | --- | --- |
| B1-SS-1 | 1 | 48 | --- | --- | --- | --- |
| B1-SS-2 | 2 | 7.3 | --- | --- | --- | --- |
| B1-SS-3 | 3 | 6.1 | --- | --- | --- | 6.9 |
| B2-SS-0 | 0 | 84 | 5.9 | <0.25 | --- | --- |
| B2-SS-1 | 1 | 52 | 3.8 | --- | --- | --- |
| B2-SS-2 | 2 | 5.7 | --- | --- | --- | --- |
| B2-SS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B3-SS-0 | 0 | 99 | 4.1 | --- | --- | --- |
| B3-SS-1 | 1 | 51 | 0.85 | --- | --- | --- |
| B3-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B3-SS-3 | 3 | <5.0 | --- | --- | --- | 6.5 |
| B4-SS-0 | 0 | 290 | 12 | 0.29 | 0.99 | --- |
| B4-SS-1 | 1 | 16 | --- | --- | --- | --- |
| B4-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B4-SS-3 | 3 | 7.5 | --- | --- | --- | --- |
| B5-SS-0 | 0 | 920 | 35 | <0.25 | 1.1 | --- |
| B5-SS-1 | 1 | 35 | --- | --- | --- | --- |
| B5-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B5-SS-3 | 3 | 12 | --- | --- | --- | --- |
| B6-SS-0 | 0 | 410 | 33 | 0.30 | --- | --- |
| B6-SS-1 | 1 | 22 | --- | --- | --- | --- |
| B6-SS-2 | 2 | 5.9 | --- | --- | --- | --- |
| B6-SS-3 | 3 | 11 | --- | --- | --- | --- |
| B7-SS-0 | 0 | 160 | 4.9 | --- | --- | --- |
| B7-SS-1 | 1 | 420 | 5.6 | <0.25 | 0.56 | --- |
| B7-SS-2 | 2 | 89 | 2.7 | --- | --- | --- |
| B7-SS-3 | 3 | 16 | --- | --- | --- | --- |

**TABLE 2c**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Southbound Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B8-SS-0 | 0 | 73 | 2.7 | --- | --- | --- |
| B8-SS-1 | 1 | 6.0 | --- | --- | --- | --- |
| B8-SS-2 | 2 | 7.8 | --- | --- | --- | --- |
| B8-SS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B9-SS-0 | 0 | 14 | --- | --- | --- | --- |
| B9-SS-1 | 1 | 13 | --- | --- | --- | --- |
| B9-SS-2 | 2 | 6.5 | --- | --- | --- | --- |
| B9-SS-3 | 3 | <5.0 | --- | --- | --- | 6.6 |
| B10-SS-0 | 0 | 59 | 10 | <0.25 | --- | --- |
| B10-SS-1 | 1 | 38 | --- | --- | --- | 6.8 |
| B10-SS-2 | 2 | 5.0 | --- | --- | --- | --- |
| B10-SS-3 | 3 | 5.9 | --- | --- | --- | --- |
| B11-SS-0 | 0 | 24 | --- | --- | --- | --- |
| B11-SS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B11-SS-2 | 2 | 5.5 | --- | --- | --- | --- |
| B11-SS-3 | 3 | 7.0 | --- | --- | --- | --- |
| B12-SS-0 | 0 | 150 | 2.5 | --- | --- | --- |
| B12-SS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B12-SS-2 | 2 | 5.5 | --- | --- | --- | --- |
| B12-SS-3 | 3 | 9.2 | --- | --- | --- | --- |
| B13-SS-0 | 0 | 78 | 4.8 | --- | --- | --- |
| B13-SS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B13-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B13-SS-3 | 3 | 6.4 | --- | --- | --- | --- |
| B14-SS-0 | 0 | 68 | 12 | <0.25 | --- | --- |
| B14-SS-1 | 1 | 5.9 | --- | --- | --- | --- |
| B14-SS-2 | 2 | 7.9 | --- | --- | --- | --- |
| B14-SS-3 | 3 | <5.0 | --- | --- | --- | --- |

**TABLE 2c**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Southbound Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B15-SS-0 | 0 | 44 | --- | --- | --- | --- |
| B15-SS-1 | 1 | 5.9 | --- | --- | --- | --- |
| B15-SS-2 | 2 | 6.3 | --- | --- | --- | --- |
| B15-SS-3 | 3 | 6.8 | --- | --- | --- | --- |
| B16-SS-0 | 0 | 220 | 13 | <0.25 | 1.3 | --- |
| B16-SS-1 | 1 | 6.8 | --- | --- | --- | --- |
| B16-SS-2 | 2 | 5.4 | --- | --- | --- | --- |
| B16-SS-3 | 3 | <5.0 | --- | --- | --- | 6.3 |
| B17-SS-0 | 0 | 98 | 8.0 | <0.25 | 0.63 | --- |
| B17-SS-1 | 1 | 6.7 | --- | --- | --- | --- |
| B17-SS-2 | 2 | 7.0 | --- | --- | --- | --- |
| B17-SS-3 | 3 | 6.0 | --- | --- | --- | --- |
| B18-SS-0 | 0 | 280 | 15 | 0.29 | --- | --- |
| B18-SS-1 | 1 | 5.4 | --- | --- | --- | --- |
| B18-SS-2 | 2 | 5.6 | --- | --- | --- | --- |
| B18-SS-3 | 3 | 9.7 | --- | --- | --- | --- |
| B19-SS-0 | 0 | 43 | --- | --- | --- | --- |
| B19-SS-1 | 1 | 5.2 | --- | --- | --- | --- |
| B19-SS-2 | 2 | 5.8 | --- | --- | --- | --- |
| B19-SS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B20-SS-0 | 0 | 220 | 11 | <0.25 | 0.82 | --- |
| B20-SS-1 | 1 | 14 | --- | --- | --- | --- |
| B20-SS-2 | 2 | 7.9 | --- | --- | --- | --- |
| B20-SS-3 | 3 | 5.5 | --- | --- | --- | --- |
| B21-SS-0 | 0 | 230 | 6.8 | <0.25 | 2.2 | --- |
| B21-SS-1 | 1 | 9.6 | --- | --- | --- | --- |
| B21-SS-2 | 2 | 14 | --- | --- | --- | --- |
| B21-SS-3 | 3 | 6.9 | --- | --- | --- | --- |

**TABLE 2c**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Southbound Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B22-SS-0 | 0 | 440 | 29 | 0.51 | --- | --- |
| B22-SS-1 | 1 | 11 | --- | --- | --- | --- |
| B22-SS-2 | 2 | 16 | --- | --- | --- | --- |
| B22-SS-3 | 3 | 12 | --- | --- | --- | --- |
| B23-SS-0 | 0 | 460 | 17 | <0.25 | 1.5 | --- |
| B23-SS-1 | 1 | 6.9 | --- | --- | --- | --- |
| B23-SS-2 | 2 | 7.1 | --- | --- | --- | --- |
| B23-SS-3 | 3 | 7.3 | --- | --- | --- | 6.6 |
| B24-SS-0 | 0 | 150 | 5.0 | --- | --- | --- |
| B24-SS-1 | 1 | 11 | --- | --- | --- | --- |
| B24-SS-2 | 2 | 7.8 | --- | --- | --- | --- |
| B24-SS-3 | 3 | 5.8 | --- | --- | --- | --- |
| B25-SS-0 | 0 | 260 | 10 | <0.25 | 0.98 | --- |
| B25-SS-1 | 1 | 6.2 | --- | --- | --- | --- |
| B25-SS-2 | 2 | 6.4 | --- | --- | --- | --- |
| B25-SS-3 | 3 | 5.4 | --- | --- | --- | --- |
| B26-SS-0 | 0 | 110 | 8.0 | <0.25 | --- | --- |
| B26-SS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B26-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B26-SS-3 | 3 | 8.7 | --- | --- | --- | --- |
| B27-SS-0 | 0 | 32 | --- | --- | --- | --- |
| B27-SS-1 | 1 | 7.2 | --- | --- | --- | --- |
| B27-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B27-SS-3 | 3 | 9.6 | --- | --- | --- | --- |
| B28-SS-0 | 0 | 310 | 12 | <0.25 | 0.69 | --- |
| B28-SS-1 | 1 | 6.3 | --- | --- | --- | --- |
| B28-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B28-SS-3 | 3 | 8.3 | --- | --- | --- | --- |

**TABLE 2c**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Southbound Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B29-SS-0 | 0 | 340 | 19 | <0.25 | 0.96 | --- |
| B29-SS-1 | 1 | 11 | --- | --- | --- | --- |
| B29-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B29-SS-3 | 3 | 9.8 | --- | --- | --- | 5.9 |
| B30-SS-0 | 0 | 340 | 12 | 0.29 | --- | --- |
| B30-SS-1 | 1 | <5.0 | --- | --- | --- | 6.4 |
| B30-SS-2 | 2 | 8.4 | --- | --- | --- | --- |
| B30-SS-3 | 3 | 15 | --- | --- | --- | --- |
| B31-SS-0 | 0 | 140 | 6.3 | <0.25 | 0.55 | --- |
| B31-SS-1 | 1 | 5.2 | --- | --- | --- | --- |
| B31-SS-2 | 2 | 6.0 | --- | --- | --- | --- |
| B31-SS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B32-SS-0 | 0 | 450 | 24 | <0.25 | 1.2 | --- |
| B32-SS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B32-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B32-SS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B33-SS-0 | 0 | 55 | 20 | <0.25 | 1.4 | --- |
| B33-SS-1 | 1 | 5.8 | --- | --- | --- | --- |
| B33-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B33-SS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B34-SS-0 | 0 | 210 | 7.8 | 0.51 | --- | --- |
| B34-SS-1 | 1 | 7.7 | --- | --- | --- | --- |
| B34-SS-2 | 2 | 5.7 | --- | --- | --- | --- |
| B34-SS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B35-SS-0 | 0 | 150 | 5.8 | <0.25 | 0.55 | --- |
| B35-SS-1 | 1 | 6.6 | --- | --- | --- | --- |
| B35-SS-2 | 2 | 5.1 | --- | --- | --- | --- |
| B35-SS-3 | 3 | <5.0 | --- | --- | --- | --- |

**TABLE 2c**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Southbound Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B36-SS-0 | 0 | 44 | --- | --- | --- | --- |
| B36-SS-1 | 1 | 5.5 | --- | --- | --- | --- |
| B36-SS-2 | 2 | 25 | --- | --- | --- | --- |
| B36-SS-3 | 3 | 8.0 | --- | --- | --- | 6.6 |
| B37-SS-0 | 0 | 9.8 | --- | --- | --- | --- |
| B37-SS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B37-SS-2 | 2 | 7.3 | --- | --- | --- | --- |
| B37-SS-3 | 3 | 8.1 | --- | --- | --- | --- |
| B38-SS-0 | 0 | 110 | 5.2 | 0.31 | --- | --- |
| B38-SS-1 | 1 | 11 | --- | --- | --- | --- |
| B38-SS-2 | 2 | 12 | --- | --- | --- | --- |
| B38-SS-3 | 3 | 6.4 | --- | --- | --- | --- |
| B39-SS-0 | 0 | 410 | 12 | <0.25 | 0.96 | --- |
| B39-SS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B39-SS-2 | 2 | 9.6 | --- | --- | --- | --- |
| B39-SS-3 | 3 | 10 | --- | --- | --- | --- |
| B40-SS-0 | 0 | 100 | 2.9 | --- | --- | --- |
| B40-SS-1 | 1 | 5.4 | --- | --- | --- | --- |
| B40-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B40-SS-3 | 3 | 6.3 | --- | --- | --- | --- |
| B41-SS-0 | 0 | 530 | 14 | <0.25 | 2.3 | --- |
| B41-SS-1 | 1 | 7.2 | --- | --- | --- | --- |
| B41-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B41-SS-3 | 3 | 7.5 | --- | --- | --- | --- |
| B42-SS-0 | 0 | 410 | 30 | 0.26 | --- | --- |
| B42-SS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B42-SS-2 | 2 | 7.8 | --- | --- | --- | --- |
| B42-SS-3 | 3 | 5.4 | --- | --- | --- | --- |

**TABLE 2c**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Southbound Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B43-SS-0 | 0 | 81 | 14 | <0.25 | 1.3 | --- |
| B43-SS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B43-SS-2 | 2 | 5.4 | --- | --- | --- | --- |
| B43-SS-3 | 3 | <5.0 | --- | --- | --- | 6.8 |
| B44-SS-0 | 0 | 400 | 16 | <0.25 | 1.6 | --- |
| B44-SS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B44-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B44-SS-3 | 3 | 6.2 | --- | --- | --- | --- |
| B45-SS-0 | 0 | 230 | 6.8 | <0.25 | 0.49 | --- |
| B45-SS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B45-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B45-SS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B46-SS-0 | 0 | <5.0 | --- | --- | --- | --- |
| B46-SS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B46-SS-2 | 2 | 6.1 | --- | --- | --- | --- |
| B46-SS-3 | 3 | 6.5 | --- | --- | --- | --- |
| B47-SS-0 | 0 | 96 | 4.4 | --- | --- | --- |
| B47-SS-1 | 1 | 8.5 | --- | --- | --- | --- |
| B47-SS-2 | 2 | 7.1 | --- | --- | --- | --- |
| B47-SS-3 | 3 | 6.6 | --- | --- | --- | --- |
| B48-SS-0 | 0 | 190 | 6.9 | <0.25 | 0.46 | --- |
| B48-SS-1 | 1 | 44 | --- | --- | --- | --- |
| B48-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B48-SS-3 | 3 | 8.1 | --- | --- | --- | --- |
| B49-SS-0 | 0 | 160 | 8.7 | <0.25 | 0.73 | --- |
| B49-SS-1 | 1 | 22 | --- | --- | --- | --- |
| B49-SS-2 | 2 | 7.3 | --- | --- | --- | --- |
| B49-SS-3 | 3 | 8.1 | --- | --- | --- | 5.6 |

**TABLE 2c**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Southbound Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B50-SS-0 | 0 | 91 | 4.6 | --- | --- | --- |
| B50-SS-1 | 1 | 5.9 | --- | --- | --- | --- |
| B50-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B50-SS-3 | 3 | 8.2 | --- | --- | --- | --- |
| B51-SS-0 | 0 | 6.3 | --- | --- | --- | --- |
| B51-SS-1 | 1 | 12 | --- | --- | --- | --- |
| B51-SS-2 | 2 | 9.1 | --- | --- | --- | --- |
| B51-SS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B52-SS-0 | 0 | <5.0 | --- | --- | --- | --- |
| B52-SS-1 | 1 | 5.2 | --- | --- | --- | --- |
| B52-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B52-SS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B53-SS-0 | 0 | <5.0 | --- | --- | --- | --- |
| B53-SS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B53-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B53-SS-3 | 3 | 5.6 | --- | --- | --- | --- |
| B54-SS-0 | 0 | 62 | 3.9 | --- | --- | 6.7 |
| B54-SS-1 | 1 | 88 | 2.9 | --- | --- | --- |
| B54-SS-2 | 2 | 5.6 | --- | --- | --- | --- |
| B54-SS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B55-SS-0 | 0 | 730 | 44 | 0.74 | 3.8 | --- |
| B55-SS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B55-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B55-SS-3 | 3 | <5.0 | --- | --- | --- | --- |
| B56-SS-0 | 0 | 130 | 2.2 | --- | --- | --- |
| B56-SS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B56-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B56-SS-3 | 3 | <5.0 | --- | --- | --- | 6.8 |

**TABLE 2c**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Southbound Shoulder Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B57-SS-0 | 0 | 26 | --- | --- | --- | --- |
| B57-SS-1 | 1 | 10 | --- | --- | --- | --- |
| B57-SS-2 | 2 | 8.4 | --- | --- | --- | --- |
| B57-SS-3 | 3 | 6.2 | --- | --- | --- | --- |
| B58-SS-0 | 0 | 35 | --- | --- | --- | --- |
| B58-SS-1 | 1 | 7.1 | --- | --- | --- | 6.4 |
| B58-SS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B58-SS-3 | 3 | 15 | --- | --- | --- | --- |

Notes:
WET = Waste Extraction Test using citric acid as the extraction fluid
WET-DI = Waste Extraction Test using deionized water as the extraction fluid
TCLP = Toxicity Characteristic Leaching Procedure
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
< = Analyte was not detected above the laboratory reporting limit
--- = Not analyzed

**TABLE 2d**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Retaining Wall and Sound Wall Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B1-RW1-0 | 0 | 130 | 5.2 | <0.25 | --- | 6.8 |
| B1-RW1-1 | 1 | 49 | --- | --- | --- | --- |
| B1-RW1-2 | 2 | 55 | 3.2 | --- | --- | --- |
| B1-RW1-3 | 3 | 53 | 2.9 | --- | --- | --- |
| B1-RW2-0 | 0 | 85 | 7.6 | --- | --- | --- |
| B1-RW2-1 | 1 | 9.0 | --- | --- | --- | --- |
| B1-RW2-2 | 2 | <5.0 | --- | --- | --- | 7.5 |
| B1-RW2-3 | 3 | <5.0 | --- | --- | --- | --- |
| B2-RW1-0 | 0 | 49 | --- | --- | --- | --- |
| B2-RW1-1 | 1 | 80 | 2.8 | --- | --- | --- |
| B2-RW1-2 | 2 | 100 | 2.4 | --- | --- | --- |
| B2-RW1-3 | 3 | 24 | --- | --- | --- | --- |
| B2-RW2-0 | 0 | 86 | 7.6 | <0.25 | --- | --- |
| B2-RW2-1 | 1 | 10 | --- | --- | --- | --- |
| B2-RW2-2 | 2 | <5.0 | --- | --- | --- | --- |
| B2-RW2-3 | 3 | <5.0 | --- | --- | --- | --- |
| B3-RW1-0 | 0 | 14 | --- | --- | --- | --- |
| B3-RW1-1 | 1 | <5.0 | --- | --- | --- | --- |
| B3-RW1-2 | 2 | <5.0 | --- | --- | --- | --- |
| B3-RW1-3 | 3 | <5.0 | --- | --- | --- | --- |
| B3-RW2-0 | 0 | 100 | 5.2 | <0.25 | --- | --- |
| B3-RW2-1 | 1 | 7.6 | --- | --- | --- | --- |
| B3-RW2-2 | 2 | <5.0 | --- | --- | --- | --- |
| B3-RW2-3 | 3 | 5.1 | --- | --- | --- | --- |
| B4-RW1-0 | 0 | 52 | --- | --- | --- | --- |
| B4-RW1-1 | 1 | 15 | --- | --- | --- | --- |
| B4-RW1-2 | 2 | 6.2 | --- | --- | --- | --- |
| B4-RW1-3 | 3 | 6.0 | --- | --- | --- | --- |

**TABLE 2d**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Retaining Wall and Sound Wall Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B4-RW2-0 | 0 | 8.4 | --- | --- | --- | --- |
| B4-RW2-1 | 1 | <5.0 | --- | --- | --- | --- |
| B4-RW2-2 | 2 | <5.0 | --- | --- | --- | --- |
| B4-RW2-3 | 3 | <5.0 | --- | --- | --- | --- |
| B1-SW252-0 | 0 | 83 | 2.3 | --- | --- | --- |
| B1-SW252-1 | 1 | 35 | --- | --- | --- | --- |
| B1-SW252-2 | 2 | <5.0 | --- | --- | --- | 6.3 |
| B1-SW252-3 | 3 | 5.2 | --- | --- | --- | --- |
| B1-SW342-0 | 0 | 190 | 15 | 0.44 | --- | --- |
| B1-SW342-1 | 1 | <5.0 | --- | --- | --- | --- |
| B1-SW342-2 | 2 | <5.0 | --- | --- | --- | --- |
| B1-SW342-3 | 3 | 9.1 | --- | --- | --- | --- |
| B1-SW343-0 | 0 | 220 | 19 | 0.73 | --- | --- |
| B1-SW343-1 | 1 | 7.9 | --- | --- | --- | 6.0 |
| B1-SW343-2 | 2 | <5.0 | --- | --- | --- | --- |
| B1-SW343-3 | 3 | 5.1 | --- | --- | --- | --- |
| B1-SW350-0 | 0 | 29 | --- | --- | --- | --- |
| B1-SW350-1 | 1 | <5.0 | --- | --- | --- | --- |
| B1-SW350-2 | 2 | <5.0 | --- | --- | --- | --- |
| B1-SW350-3 | 3 | 7.3 | --- | --- | --- | --- |
| B1-SW351-0 | 0 | 60 | 3.1 | --- | --- | --- |
| B1-SW351-1 | 1 | 5.4 | --- | --- | --- | --- |
| B1-SW351-2 | 2 | 5.2 | --- | --- | --- | --- |
| B1-SW351-3 | 3 | <5.0 | --- | --- | --- | --- |
| B1-SW358-0 | 0 | 290 | 17 | <0.25 | --- | --- |
| B1-SW358-1 | 1 | <5.0 | --- | --- | --- | --- |
| B1-SW358-2 | 2 | <5.0 | --- | --- | --- | 8.0 |
| B1-SW358-3 | 3 | <5.0 | --- | --- | --- | --- |

**TABLE 2d**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Retaining Wall and Sound Wall Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B2-SW252-0 | 0 | 310 | 18 | <0.25 | --- | --- |
| B2-SW252-1 | 1 | <5.0 | --- | --- | --- | --- |
| B2-SW252-2 | 2 | <5.0 | --- | --- | --- | --- |
| B2-SW252-3 | 3 | <5.0 | --- | --- | --- | --- |
| B2-SW342-0 | 0 | 190 | 17 | <0.25 | --- | --- |
| B2-SW342-1 | 1 | 23 | --- | --- | --- | --- |
| B2-SW342-2 | 2 | 21 | --- | --- | --- | --- |
| B2-SW342-3 | 3 | 13 | --- | --- | --- | --- |
| B2-SW343-0 | 0 | 76 | 5.0 | --- | --- | --- |
| B2-SW343-1 | 1 | 6.6 | --- | --- | --- | --- |
| B2-SW343-2 | 2 | <5.0 | --- | --- | --- | --- |
| B2-SW343-3 | 3 | 10 | --- | --- | --- | 6.8 |
| B2-SW350-0 | 0 | 65 | 4.2 | --- | --- | --- |
| B2-SW350-1 | 1 | <5.0 | --- | --- | --- | --- |
| B2-SW350-2 | 2 | <5.0 | --- | --- | --- | --- |
| B2-SW350-3 | 3 | <5.0 | --- | --- | --- | --- |
| B2A-SW350-0 | 0 | 380 | 22 | <0.25 | --- | --- |
| B2A-SW350-1 | 1 | <5.0 | --- | --- | --- | --- |
| B2A-SW350-2 | 2 | <5.0 | --- | --- | --- | --- |
| B2A-SW350-3 | 3 | <5.0 | --- | --- | --- | --- |
| B2-SW351-0 | 0 | 110 | 12 | <0.25 | --- | --- |
| B2-SW351-1 | 1 | 6.8 | --- | --- | --- | --- |
| B2-SW351-2 | 2 | <5.0 | --- | --- | --- | --- |
| B2-SW351-3 | 3 | 6.8 | --- | --- | --- | 6.3 |
| B2-SW358-0 | 0 | 180 | 11 | 0.31 | --- | --- |
| B2-SW358-1 | 1 | 16 | --- | --- | --- | --- |
| B2-SW358-2 | 2 | 6.5 | --- | --- | --- | --- |
| B2-SW358-3 | 3 | 23 | --- | --- | --- | 6.2 |

**TABLE 2d**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Retaining Wall and Sound Wall Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B3-SW252-0 | 0 | 18 | --- | --- | --- | --- |
| B3-SW252-1 | 1 | 10 | --- | --- | --- | --- |
| B3-SW252-2 | 2 | 8.7 | --- | --- | --- | --- |
| B3-SW252-3 | 3 | 7.1 | --- | --- | --- | --- |
| B3-SW342-0 | 0 | 120 | 5.0 | --- | --- | --- |
| B3-SW342-1 | 1 | 11 | --- | --- | --- | --- |
| B3-SW342-2 | 2 | 11 | --- | --- | --- | --- |
| B3-SW342-3 | 3 | 12 | --- | --- | --- | --- |
| B3-SW343-0 | 0 | 19 | --- | --- | --- | --- |
| B3-SW343-1 | 1 | 7.0 | --- | --- | --- | --- |
| B3-SW343-2 | 2 | <5.0 | --- | --- | --- | --- |
| B3-SW343-3 | 3 | 11 | --- | --- | --- | --- |
| B3-SW350-0 | 0 | 83 | 2.8 | --- | --- | --- |
| B3-SW350-1 | 1 | 25 | --- | --- | --- | --- |
| B3-SW350-2 | 2 | <5.0 | --- | --- | --- | --- |
| B3-SW350-3 | 3 | <5.0 | --- | --- | --- | --- |
| B3-SW351-0 | 0 | 260 | 28 | 0.30 | --- | --- |
| B3-SW351-1 | 1 | 13 | --- | --- | --- | --- |
| B3-SW351-2 | 2 | <5.0 | --- | --- | --- | --- |
| B3-SW351-3 | 3 | <5.0 | --- | --- | --- | --- |
| B3-SW358-0 | 0 | 290 | 17 | <0.25 | --- | --- |
| B3-SW358-1 | 1 | <5.0 | --- | --- | --- | --- |
| B3-SW358-2 | 2 | 6.4 | --- | --- | --- | --- |
| B3-SW358-3 | 3 | 8.3 | --- | --- | --- | --- |
| B4-SW252-0 | 0 | 170 | 9.0 | <0.25 | --- | --- |
| B4-SW252-1 | 1 | 44 | --- | --- | --- | --- |
| B4-SW252-2 | 2 | 5.6 | --- | --- | --- | --- |
| B4-SW252-3 | 3 | <5.0 | --- | --- | --- | 6.0 |

**TABLE 2d**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Retaining Wall and Sound Wall Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B4-SW342-0 | 0 | 350 | 22 | 0.30 | --- | 7.6 |
| B4-SW342-1 | 1 | 18 | --- | --- | --- | --- |
| B4-SW342-2 | 2 | 5.4 | --- | --- | --- | --- |
| B4-SW342-3 | 3 | 15 | --- | --- | --- | --- |
| B4-SW343-0 | 0 | 230 | 12 | <0.25 | --- | --- |
| B4-SW343-1 | 1 | 7.3 | --- | --- | --- | --- |
| B4-SW343-2 | 2 | <5.0 | --- | --- | --- | --- |
| B4-SW343-3 | 3 | 5.2 | --- | --- | --- | --- |
| B4-SW350-0 | 0 | 26 | --- | --- | --- | --- |
| B4-SW350-1 | 1 | 30 | --- | --- | --- | --- |
| B4-SW350-2 | 2 | 7.5 | --- | --- | --- | --- |
| B4-SW350-3 | 3 | 27 | --- | --- | --- | --- |
| B4-SW351-0 | 0 | 14 | --- | --- | --- | --- |
| B4-SW351-1 | 1 | 8.1 | --- | --- | --- | --- |
| B4-SW351-2 | 2 | <5.0 | --- | --- | --- | --- |
| B4-SW351-3 | 3 | <5.0 | --- | --- | --- | --- |
| B5-SW350-0 | 0 | 30 | --- | --- | --- | --- |
| B5-SW350-1 | 1 | <5.0 | --- | --- | --- | --- |
| B5-SW350-2 | 2 | 18 | --- | --- | --- | --- |
| B5-SW350-3 | 3 | <5.0 | --- | --- | --- | --- |

Notes:

WET = Waste Extraction Test using citric acid as the extraction fluid
WET-DI = Waste Extraction Test using deionized water as the extraction fluid
TCLP = Toxicity Characteristic Leaching Procedure
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
< = Analyte was not detected above the laboratory reporting limit
--- = Not analyzed

**TABLE 2e**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Miscellaneous Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B1-CLO-0 | 0 | 7.0 | --- | --- | --- | --- |
| B1-CLO-1 | 1 | <5.0 | --- | --- | --- | --- |
| B1-CLO-2 | 2 | 5.4 | --- | --- | --- | --- |
| B1-CLO-3 | 3 | <5.0 | --- | --- | --- | --- |
| B2-CLO-0 | 0 | 16 | --- | --- | --- | --- |
| B2-CLO-1 | 1 | <5.0 | --- | --- | --- | --- |
| B2-CLO-2 | 2 | <5.0 | --- | --- | --- | --- |
| B2-CLO-3 | 3 | <5.0 | --- | --- | --- | --- |
| B1-FR-0 | 0 | 120 | 4.6 | --- | --- | --- |
| B1-FR-1 | 1 | 11 | --- | --- | --- | --- |
| B1-FR-2 | 2 | 13 | --- | --- | --- | --- |
| B1-FR-3 | 3 | 8.0 | --- | --- | --- | --- |
| B2-FR-0 | 0 | 5.6 | --- | --- | --- | --- |
| B2-FR-1 | 1 | <5.0 | --- | --- | --- | 7.2 |
| B2-FR-2 | 2 | 9.3 | --- | --- | --- | --- |
| B2-FR-3 | 3 | 5.2 | --- | --- | --- | --- |
| B1-LVR-0 | 0 | 33 | --- | --- | --- | --- |
| B1-LVR-1 | 1 | 13 | --- | --- | --- | --- |
| B1-LVR-2 | 2 | 16 | --- | --- | --- | --- |
| B1-LVR-3 | 3 | 15 | --- | --- | --- | 6.8 |
| B1-MWS-0 | 0 | 16 | --- | --- | --- | --- |
| B1-MWS-1 | 1 | 5.7 | --- | --- | --- | --- |
| B1-MWS-2 | 2 | 5.1 | --- | --- | --- | --- |
| B1-MWS-3 | 3 | 8.6 | --- | --- | --- | --- |
| B2-MWS-0 | 0 | 95 | 10 | 0.53 | --- | --- |
| B2-MWS-1 | 1 | 200 | 7.2 | 0.28 | --- | --- |
| B2-MWS-2 | 2 | 22 | --- | --- | --- | --- |
| B2-MWS-3 | 3 | <5.0 | --- | --- | --- | --- |

**TABLE 2e**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Miscellaneous Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B1-RVR-OFF-0 | 0 | 110 | 8.4 | <0.25 | --- | --- |
| B1-RVR-OFF-1 | 1 | 5.6 | --- | --- | --- | --- |
| B1-RVR-OFF-2 | 2 | 10 | --- | --- | --- | --- |
| B1-RVR-OFF-3 | 3 | 9.0 | --- | --- | --- | --- |
| B1-RVR-ON-0 | 0 | 61 | 1.4 | --- | --- | --- |
| B1-RVR-ON-1 | 1 | 12 | --- | --- | --- | --- |
| B1-RVR-ON-2 | 2 | 6.7 | --- | --- | --- | --- |
| B1-RVR-ON-3 | 3 | 7.1 | --- | --- | --- | 6.5 |
| B2-RVR-OFF-0 | 0 | 18 | --- | --- | --- | --- |
| B2-RVR-OFF-1 | 1 | 5.9 | --- | --- | --- | --- |
| B2-RVR-OFF-2 | 2 | 9.2 | --- | --- | --- | --- |
| B2-RVR-OFF-3 | 3 | 5.7 | --- | --- | --- | --- |
| B2-RVR-ON-0 | 0 | 38 | --- | --- | --- | --- |
| B2-RVR-ON-1 | 1 | 6.8 | --- | --- | --- | --- |
| B2-RVR-ON-2 | 2 | 5.0 | --- | --- | --- | --- |
| B2-RVR-ON-3 | 3 | 5.2 | --- | --- | --- | --- |
| B1-SHO-0 | 0 | 130 | 3.7 | --- | --- | --- |
| B1-SHO-1 | 1 | 7.0 | --- | --- | --- | --- |
| B1-SHO-2 | 2 | 6.3 | --- | --- | --- | --- |
| B1-SHO-3 | 3 | 9.4 | --- | --- | --- | --- |
| B2-SHO-0 | 0 | 47 | --- | --- | --- | --- |
| B2-SHO-1 | 1 | 20 | --- | --- | --- | --- |
| B2-SHO-2 | 2 | 6.1 | --- | --- | --- | --- |
| B2-SHO-3 | 3 | 6.5 | --- | --- | --- | --- |
| B1-SHR-0 | 0 | 64 | 1.8 | --- | --- | --- |
| B1-SHR-1 | 1 | <5.0 | --- | --- | --- | --- |
| B1-SHR-2 | 2 | 8.1 | --- | --- | --- | --- |
| B1-SHR-3 | 3 | 7.6 | --- | --- | --- | --- |

**TABLE 2e**
**SUMMARY OF LEAD AND pH RESULTS - SOIL**
**Miscellaneous Borings**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) | WET-DI (mg/l) | TCLP (mg/l) | pH |
|---|---|---|---|---|---|---|
| B2-SHR-0 | 0 | 45 | --- | --- | --- | --- |
| B2-SHR-1 | 1 | <5.0 | --- | --- | --- | --- |
| B2-SHR-2 | 2 | 7.1 | --- | --- | --- | --- |
| B2-SHR-3 | 3 | 7.7 | --- | --- | --- | --- |
| B1-WS-0 | 0 | 29 | --- | --- | --- | --- |
| B1-WS-1 | 1 | <5.0 | --- | --- | --- | --- |
| B1-WS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B1-WS-3 | 3 | 6.0 | --- | --- | --- | --- |
| B2-WS-0 | 0 | 7.4 | --- | --- | --- | --- |
| B2-WS-1 | 1 | 7.0 | --- | --- | --- | --- |
| B2-WS-2 | 2 | <5.0 | --- | --- | --- | --- |
| B2-WS-3 | 3 | 5.0 | --- | --- | --- | --- |

Notes:
WET = Waste Extraction Test using citric acid as the extraction fluid
WET-DI = Waste Extraction Test using deionized water as the extraction fluid
TCLP = Toxicity Characteristic Leaching Procedure
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
< = Analyte was not detected above the laboratory reporting limit
--- = Not analyzed

# TABLE 3
## SUMMARY OF CAM 17 METALS RESULTS – SOIL
## State Route 101 Santa Rosa/Windsor
## Sonoma County, California

| Sample ID | Sample Depth (ft) | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Copper | Lead | Molybdenum | Nickel | Selenium | Silver | Thallium | Vanadium | Zinc | Mercury |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B11-NS-9 | 9 | <2.0 | <1.0 | 88 | <1.0 | <1.0 | 37 | 9.1 | 14 | 4.6 | <1.0 | 38 | <1.0 | <1.0 | <1.0 | 30 | 19 | <0.10 |
| B3-SW351-15 | 15 | <2.0 | 1.3 | 77 | <1.0 | <1.0 | 22 | 13 | 9.0 | 4.8 | <1.0 | 27 | <1.0 | <1.0 | <1.0 | 18 | 21 | 0.17 |
| B3-SW358-6 | 6 | <2.0 | 4.2 | 100 | <1.0 | <1.0 | 27 | 6.1 | 11 | 6.7 | <1.0 | 18 | <1.0 | <1.0 | <1.0 | 26 | 25 | 0.12 |
| B4-SW343-14 | 14 | <2.0 | 1.8 | 100 | <1.0 | <1.0 | 15 | 7.7 | 7.9 | 4.0 | <1.0 | 36 | <1.0 | <1.0 | <1.0 | 16 | 21 | <0.10 |
| B5-SW350-8 | 8 | <2.0 | 5.0 | 170 | <1.0 | <1.0 | 23 | 23 | 18 | 12 | <1.0 | 77 | <1.0 | <1.0 | <1.0 | 26 | 24 | 0.22 |

Notes:

Results are shown in milligrams per kilogram

< = Analyte not detected above laboratory reporting limit

**TABLE 4**
**SUMMARY OF ORGANICS RESULTS – SOIL**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | Sample Depth (ft) | TPHd (mg/kg) | TPHmo (mg/kg) | TPHg (mg/kg) | Benzene (ug/kg) | Ethylbenzene (ug/kg) | m,p-Xylene (ug/kg) | MTBE (ug/kg) | o-Xylene (ug/kg) | Toluene (ug/kg) | VOCs (ug/kg) | SVOCs (ug/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B11-NS-9 | 9 | <1.0 | <1.0 | <1.0 | <5.0 | <5.0 | <10 | <5.0 | <5.0 | <5.0 | ND | ND |
| B3-SW351-15 | 15 | <1.0 | <1.0 | <1.0 | <5.0 | <5.0 | <10 | <5.0 | <5.0 | <5.0 | ND | ND |
| B3-SW358-6 | 6 | 1.5 | <1.0 | <1.0 | <5.0 | <5.0 | <10 | <5.0 | <5.0 | <5.0 | ND | Phenol=1,000 |
| B4-SW343-14 | 14 | <1.0 | <1.0 | <1.0 | <5.0 | <5.0 | <10 | <5.0 | <5.0 | <5.0 | ND | ND |
| B5-SW350-8 | 8 | 4.5 | 2.4 | <1.0 | <5.0 | <5.0 | <10 | <5.0 | <5.0 | <5.0 | ND | Phenol=1,400 |

Notes:

TPHd = Total Petroleum Hydrocarbons as diesel
TPHmo = Total Petroleum Hydrocarbons as motor oil
TPHg = Total Petroleum Hydrocarbons as gasoline
MTBE = Methyl tertiary butyl ether
VOCS = Volatile Organic Compounds
SVOCs = Semi-Volatile Organic Compounds
mg/kg = milligrams per kilogram
ug/k = micrograms per kilogram
< = Analyte was not detected at or above the stated detection limit
ND = No analytes detected at or above the method detection limit

**TABLE 5**
**SUMMARY OF ORGANICS RESULTS – GROUNDWATER**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

| Sample ID | TPHd (mg/l) | TPHmo (mg/l) | TPHg (mg/l) | Benzene (ug/l) | Ethylbenzene (ug/l) | m,p-Xylene (ug/l) | MTBE (ug/l) | o-Xylene (ug/l) | Toluene (ug/l) | VOCs (ug/l) | SVOCs (ug/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| B11-NS-GW | <0.050 | 0.065 | <0.050 | <0.50 | <0.50 | <1.0 | <0.50 | <0.50 | <0.50 | ND | ND |
| B43-NS-GW | <0.050 | <0.050 | <0.050 | <0.50 | <0.50 | <1.0 | <0.50 | <0.50 | <0.50 | ND | ND |
| B3-SW351-GW | <0.050 | <0.050 | <0.050 | <0.50 | <0.50 | <1.0 | <0.50 | <0.50 | <0.50 | ND | ND |
| B3-SW358-GW | <0.050 | <0.050 | <0.050 | <0.50 | <0.50 | <1.0 | <0.50 | <0.50 | <0.50 | ND | ND |
| B4-SW343-GW | <0.050 | <0.050 | <0.050 | <0.50 | <0.50 | <1.0 | <0.50 | <0.50 | <0.50 | ND | ND |
| B5-SW350-GW | 0.054 | 0.082 | 0.083 | <0.50 | <0.50 | <1.0 | <0.50 | <0.50 | <0.50 | ND | ND |

Notes:
TPHd = Total Petroleum Hydrocarbons as diesel
TPHmo = Total Petroleum Hydrocarbons as motor oil
TPHg = Total Petroleum Hydrocarbons as gasoline
MTBE = Methyl tertiary butyl ether
VOCS = Volatile Organic Compounds
SVOCs = Semi-Volatile Organic Compounds
mg/l = milligrams per liter
ug/l = micrograms per liter
< = Analyte was not detected at or above the stated detection limit
ND = No analytes detected at or above the method detection limit

**TABLE 6a**
**Summary of Statistical Analysis**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

**Center Median (Borings B1-MS to B57-MS)**

**TOTAL LEAD UCLs**

| | Total Lead (mg/kg) | |
|---|---|---|
| | 90% UCL | 95% UCL |
| 0 to 0.5 ft | 220 | 227 |
| 1 to 1.5 ft | 9.2 | 9.7 |
| 2 to 2.5 ft | 5.1 | 5.3 |
| 3 to 3.5 ft | 6.3 | 6.5 |

**EXCAVATION SCENARIOS**

| | 90% UCL | | 95% UCL |
|---|---|---|---|
| Excavation Depth | Total Lead (mg/kg) | Soluble (WET) Lead* (mg/l) | Total Lead (mg/kg) |
| 0 to 1 ft. | 220 | 14 | 227 |
| *Underlying Soil (1 to 3.5 ft.)* | *7.0* | *0.4* | *7.3* |
| 0 to 2 ft. | 115 | 7.4 | 118 |
| *Underlying Soil (2 to 3.5 ft.)* | *5.5* | *0.4* | *5.7* |
| 0 to 3 ft. | 78 | 5.0 | 81 |
| *Underlying Soil (3 to 3.5 ft.)* | *6.3* | *0.4* | *6.5* |
| 0 to 3.5 ft. | 68 | 4.4 | 70 |

**Notes:**

UCL = Upper Confidence Limit (90% UCL is applicable for waste classificattion; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = Soluble (WET) lead concentrations are predicted using slope of regression line, where $y$ = predicted soluble (WET) lead and $x$ = total lead.

Regression Line Slope: $y =$ 0.0645 $x$

**TABLE 6b**
**Summary of Statistical Analysis**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

**Northbound Shoulder (Borings B1-NS to B57-NS)**

**TOTAL LEAD UCLs**

| | Total Lead (mg/kg) | |
|---|---|---|
| | 90% UCL | 95% UCL |
| 0 to 0.5 ft | 245 | 254 |
| 1 to 1.5 ft | 45 | 51 |
| 2 to 2.5 ft | 6.9 | 7.2 |
| 3 to 3.5 ft | 5.7 | 5.8 |

**EXCAVATION SCENARIOS**

| | 90% UCL | | 95% UCL |
|---|---|---|---|
| Excavation Depth | Total Lead (mg/kg) | Soluble (WET) Lead* (mg/l) | Total Lead (mg/kg) |
| 0 to 1 ft. | 245 | 12 | 254 |
| *Underlying Soil (1 to 3.5 ft.)* | *22* | *1.1* | *25* |
| 0 to 2 ft. | 145 | 7.1 | 153 |
| *Underlying Soil (2 to 3.5 ft.)* | *6.5* | *0.3* | *6.7* |
| 0 to 3 ft. | 99 | 4.9 | 104 |
| *Underlying Soil (3 to 3.5 ft.)* | *5.7* | *0.3* | *5.8* |
| 0 to 3.5 ft. | 86 | 4.2 | 90 |

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classificattion; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = Soluble (WET) lead concentrations are predicted using slope of regression line, where $y$ = predicted soluble (WET) lead and $x$ = total lead.

Regression Line Slope: $y = 0.0491\ x$

**TABLE 6c**
**Summary of Statistical Analysis**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

**Southbound Shoulder (Borings B1-SS to B58-SS)**

**TOTAL LEAD UCLs**

| | Total Lead (mg/kg) | |
|---|---|---|
| | 90% UCL | 95% UCL |
| 0 to 0.5 ft | 220 | 228 |
| 1 to 1.5 ft | 29 | 31 |
| 2 to 2.5 ft | 9.2 | 9.7 |
| 3 to 3.5 ft | 6.9 | 7.1 |

**EXCAVATION SCENARIOS**

| | 90% UCL | | 95% UCL |
|---|---|---|---|
| Excavation Depth | Total Lead (mg/kg) | Soluble (WET) Lead* (mg/l) | Total Lead (mg/kg) |
| 0 to 1 ft. | 220 | 11 | 228 |
| *Underlying Soil (1 to 3.5 ft.)* | *17* | *0.8* | *18* |
| 0 to 2 ft. | 124 | 6.1 | 129 |
| *Underlying Soil (2 to 3.5 ft.)* | *8.5* | *0.4* | *8.8* |
| 0 to 3 ft. | 86 | 4.2 | 90 |
| *Underlying Soil (3 to 3.5 ft.)* | *6.9* | *0.3* | *7.1* |
| 0 to 3.5 ft. | 75 | 3.7 | 78 |

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classificattion; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = Soluble (WET) lead concentrations are predicted using slope of regression line, where $y$ = predicted soluble (WET) lead and $x$ = total lead.

Regression Line Slope: $y = 0.0491\ x$

**TABLE 6d**
**Summary of Statistical Analysis**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

**Retaining Wall 1 (Borings B1-RW1 to B4-RW1)**

**TOTAL LEAD UCLs**

| | Total Lead (mg/kg) Maximum |
|---|---|
| 0 to 0.5 ft | 130 |
| 1 to 1.5 ft | 80 |
| 2 to 2.5 ft | 100 |
| 3 to 3.5 ft | 53 |

**EXCAVATION SCENARIOS**

| Excavation Depth | Maximum Total Lead (mg/kg) | Maximum Soluble (WET) Lead* (mg/l) |
|---|---|---|
| 0 to 1 ft. | 130 | 8.4 |
| *Underlying Soil (1 to 3.5 ft.)* | *83* | *5.4* |
| 0 to 2 ft. | 105 | 6.8 |
| *Underlying Soil (2 to 3.5 ft.)* | *84* | *5.5* |
| 0 to 3 ft. | 103.3 | 6.7 |
| *Underlying Soil (3 to 3.5 ft.)* | *53.0* | *3.4* |
| 0 to 3.5 ft. | 96 | 6.2 |

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classificattion; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = Soluble (WET) lead concentrations are predicted using slope of regression line, where $y$ = predicted soluble (WET) lead and $x$ = total lead.

Regression Line Slope: $y = 0.0649\ x$

**TABLE 6e**
**Summary of Statistical Analysis**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

**Retaining Wall 2 (Borings B1-RW2 to B4-RW2)**

## TOTAL LEAD UCLs

| | Total Lead (mg/kg) Maximum |
|---|---|
| 0 to 0.5 ft | 100 |
| 1 to 1.5 ft | 10 |
| 2 to 2.5 ft | 2.5 |
| 3 to 3.5 ft | 5.1 |

## EXCAVATION SCENARIOS

| Excavation Depth | Maximum Total Lead (mg/kg) | Maximum Soluble (WET) Lead* (mg/l) |
|---|---|---|
| 0 to 1 ft. | 100 | 6.5 |
| *Underlying Soil (1 to 3.5 ft.)* | *6.0* | *0.4* |
| 0 to 2 ft. | 55 | 3.6 |
| *Underlying Soil (2 to 3.5 ft.)* | *3.4* | *0.2* |
| 0 to 3 ft. | 38 | 2.4 |
| *Underlying Soil (3 to 3.5 ft.)* | *5.1* | *0.3* |
| 0 to 3.5 ft. | 33 | 2.1 |

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classificattion; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = Soluble (WET) lead concentrations are predicted using slope of regression line, where $y$ = predicted soluble (WET) lead and $x$ = total lead.

Regression Line Slope: $y = 0.0649\ x$

**TABLE 6f**
**Summary of Statistical Analysis**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

**Sound Wall 252 (Borings B1-SW252 to B4-SW252)**

## TOTAL LEAD UCLs

| | Total Lead (mg/kg) Maximum |
|---|---|
| 0 to 0.5 ft | 310 |
| 1 to 1.5 ft | 44 |
| 2 to 2.5 ft | 8.7 |
| 3 to 3.5 ft | 7.1 |

## EXCAVATION SCENARIOS

| Excavation Depth | Maximum Total Lead (mg/kg) | Maximum Soluble (WET) Lead* (mg/l) |
|---|---|---|
| 0 to 1 ft. | 310 | 20 |
| *Underlying Soil (1 to 3.5 ft.)* | *23* | *1.5* |
| 0 to 2 ft. | 177 | 11 |
| *Underlying Soil (2 to 3.5 ft.)* | *8.2* | *0.5* |
| 0 to 3 ft. | 121 | 7.8 |
| *Underlying Soil (3 to 3.5 ft.)* | *7.1* | *0.5* |
| 0 to 3.5 ft. | 105 | 6.8 |

**Notes:**

UCL = Upper Confidence Limit (90% UCL is applicable for waste classificattion; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = Soluble (WET) lead concentrations are predicted using slope of regression line, where $y$ = predicted soluble (WET) lead and $x$ = total lead.

Regression Line Slope: $y = 0.0649\ x$

**TABLE 6g**
**Summary of Statistical Analysis**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

**Sound Wall 342 (Borings B1-SW342 to B4-SW342)**

**TOTAL LEAD UCLs**

| | Total Lead (mg/kg) Maximum |
|---|---|
| 0 to 0.5 ft | 350 |
| 1 to 1.5 ft | 23 |
| 2 to 2.5 ft | 21 |
| 3 to 3.5 ft | 15 |

**EXCAVATION SCENARIOS**

| Excavation Depth | Maximum Total Lead (mg/kg) | Maximum Soluble (WET) Lead* (mg/l) |
|---|---|---|
| 0 to 1 ft. | 350 | 23 |
| *Underlying Soil (1 to 3.5 ft.)* | *21* | *1.3* |
| 0 to 2 ft. | 187 | 12 |
| *Underlying Soil (2 to 3.5 ft.)* | *19* | *1.2* |
| 0 to 3 ft. | 131 | 8.5 |
| *Underlying Soil (3 to 3.5 ft.)* | *15* | *1.0* |
| 0 to 3.5 ft. | 115 | 7.4 |

**Notes:**

UCL = Upper Confidence Limit (90% UCL is applicable for waste classificattion; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = Soluble (WET) lead concentrations are predicted using slope of regression line, where $y$ = predicted soluble (WET) lead and $x$ = total lead.

Regression Line Slope: $y = 0.0649\ x$

**TABLE 6h**
**Summary of Statistical Analysis**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

**Sound Wall 343 (Borings B1-SW343 to B4-SW343)**

## TOTAL LEAD UCLs

| | Total Lead (mg/kg) Maximum |
|---|---|
| 0 to 0.5 ft | 230 |
| 1 to 1.5 ft | 7.9 |
| 2 to 2.5 ft | 2.5 |
| 3 to 3.5 ft | 11 |

## EXCAVATION SCENARIOS

| Excavation Depth | Maximum Total Lead (mg/kg) | Maximum Soluble (WET) Lead* (mg/l) |
|---|---|---|
| 0 to 1 ft. | 230 | 15 |
| *Underlying Soil (1 to 3.5 ft.)* | *6.4* | *0.4* |
| 0 to 2 ft. | 119 | 7.7 |
| *Underlying Soil (2 to 3.5 ft.)* | *5.3* | *0.3* |
| 0 to 3 ft. | 80 | 5.2 |
| *Underlying Soil (3 to 3.5 ft.)* | *11* | *0.7* |
| 0 to 3.5 ft. | 70 | 4.6 |

**Notes:**

UCL = Upper Confidence Limit (90% UCL is applicable for waste classificattion; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = Soluble (WET) lead concentrations are predicted using slope of regression line, where $y$ = predicted soluble (WET) lead and $x$ = total lead.

Regression Line Slope: $y =$ 0.0649 $x$

**TABLE 6i**
**Summary of Statistical Analysis**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

**Sound Wall 350 (Borings B1-SW350 to B5-SW350 and B2A-SW350)**

## TOTAL LEAD UCLs

| | Total Lead (mg/kg) 90% UCL | 95% UCL |
|---|---|---|
| 0 to 0.5 ft | 169 | 186 |
| | **Maximum** | |
| 1 to 1.5 ft | 30 | |
| 2 to 2.5 ft | 18 | |
| 3 to 3.5 ft | 27 | |

## EXCAVATION SCENARIOS

| Excavation Depth | Maximum Total Lead (mg/kg) | Maximum Soluble (WET) Lead* (mg/l) |
|---|---|---|
| 0 to 1 ft. | 169 | 11 |
| *Underlying Soil (1 to 3.5 ft.)* | *25* | *1.6* |
| 0 to 2 ft. | 99 | 6.4 |
| *Underlying Soil (2 to 3.5 ft.)* | *21* | *1.4* |
| 0 to 3 ft. | 72 | 4.7 |
| *Underlying Soil (3 to 3.5 ft.)* | *27* | *1.8* |
| 0 to 3.5 ft. | 66 | 4.3 |

**Notes:**

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = Soluble (WET) lead concentrations are predicted using slope of regression line, where $y$ = predicted soluble (WET) lead and $x$ = total lead.

Regression Line Slope: $y = 0.0649\ x$

**TABLE 6j**
**Summary of Statistical Analysis**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

**Sound Wall 351 (Borings B1-SW351 to B4-SW351)**

**TOTAL LEAD UCLs**

| | Total Lead (mg/kg) Maximum |
|---|---|
| 0 to 0.5 ft | 260 |
| 1 to 1.5 ft | 13 |
| 2 to 2.5 ft | 5.2 |
| 3 to 3.5 ft | 6.8 |

**EXCAVATION SCENARIOS**

| Excavation Depth | Maximum Total Lead (mg/kg) | Maximum Soluble (WET) Lead* (mg/l) |
|---|---|---|
| 0 to 1 ft. | 260 | 17 |
| *Underlying Soil (1 to 3.5 ft.)* | *8.6* | *0.6* |
| 0 to 2 ft. | 137 | 8.9 |
| *Underlying Soil (2 to 3.5 ft.)* | *5.7* | *0.4* |
| 0 to 3 ft. | 93 | 6.0 |
| *Underlying Soil (3 to 3.5 ft.)* | *6.8* | *0.4* |
| 0 to 3.5 ft. | 80 | 5.2 |

**Notes:**

UCL = Upper Confidence Limit (90% UCL is applicable for waste classificattion; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = Soluble (WET) lead concentrations are predicted using slope of regression line, where $y$ = predicted soluble (WET) lead and $x$ = total lead.

Regression Line Slope: $y = 0.0649\ x$

**TABLE 6k**
**Summary of Statistical Analysis**
**State Route 101 Santa Rosa/Windsor**
**Sonoma County, California**

**Sound Wall 358 (Borings B1-SW358 to B3-SW358)**

**TOTAL LEAD UCLs**

| | Total Lead (mg/kg) Maximum |
|---|---|
| 0 to 0.5 ft | 290 |
| 1 to 1.5 ft | 16 |
| 2 to 2.5 ft | 6.5 |
| 3 to 3.5 ft | 23 |

**EXCAVATION SCENARIOS**

| Excavation Depth | Maximum Total Lead (mg/kg) | Maximum Soluble (WET) Lead* (mg/l) |
|---|---|---|
| 0 to 1 ft. | 290 | 19 |
| *Underlying Soil (1 to 3.5 ft.)* | *14* | *0.9* |
| 0 to 2 ft. | 153 | 9.9 |
| *Underlying Soil (2 to 3.5 ft.)* | *12.0* | *0.8* |
| 0 to 3 ft. | 104 | 6.8 |
| *Underlying Soil (3 to 3.5 ft.)* | *23* | *1.5* |
| 0 to 3.5 ft. | 93 | 6.0 |

**Notes:**

UCL = Upper Confidence Limit (90% UCL is applicable for waste classificattion; 95% UCL applicable for risk assessment)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = Soluble (WET) lead concentrations are predicted using slope of regression line, where $y$ = predicted soluble (WET) lead and $x$ = total lead.

Regression Line Slope: $y = 0.0649\ x$

# APPENDIX A

COUNTY OF SONOMA — DEPARTMENT OF HEALTH SERVICES
ENVIRONMENTAL HEALTH DIVISION
475 Aviation Blvd., Suite 220, Santa Rosa, CA 95403
Phone (707) 565-6565 Fax (707) 565-6525 www.sonoma-county.org

RECEIVED
NOV 07 2007

APPLICATION FOR DRILLING PERMIT
for Regional Board Lead/Environmental Assessment / LOP Lead

COPY

*For Office Use Only*
Amount paid $496
Receipt number
Payment date 9/13 Rev. code 13-18
Site ID# 27699
Permit # 05708-HMW

Well type: [ ] Monitoring well [ ] Recovery extraction well [ ] Boring [ ] Injection well [ ] Destruct [x] Environmental assessment
[ ] Soil gas survey [ ] Direct push [ ] Air sparging/venting [ ] Remediation well [ ] Other

Well depth ____ Boring depth ~12' MAXIMUM

# On-site well/boring ~63 ID # ____ # Off-site well/boring ____ ID # ____

DEPT. OF HEALTH
OCT 29 2007
ENVIRONMENTAL
HEALTH DIVISION

Submit legal right-of-entry/off-site well address/encroachment permit

On-site Address ~~STATE ROUTE~~ to HWY 101, WINDSOR, CA AP# ____

Facility Name NA

On-site Owner CALTRANS

Street NA Phone ____

Responsible Party CALTRANS City ____ State ____ Zip ____

Street P.O. BOX 23660, MS7-A Phone ____

Consultant GEOCON City OAKLAND State CA Zip 94623

Street 6671 BRISA ST Phone 925-371-5900

License #/Type A, HAZ, C57 #716050 City LIVERMORE State CA Zip 94550

Drilling Contractor SAME AS CONSULTANT

Street ____ Phone ____

C-57 License # 716050 City ____ State ____ Zip ____

Type of work: [ ] Initial investigation ____ # Wells [ ] Subsequent investigation ____ # Wells [ ] Destruct ____ # Wells

Groundwater investigation due to: [ ] Underground tank [ ] Surface impoundment [x] Environmental assessment
[ ] Surface disposal practice—specify involved industry
[ ] Other

Perforated intervals ____ Chemical constituents ____

Disposal method for soil cuttings ____ Disposal method for development water ____

Drilling method ____ Method of drill equip. rinsate containment ____

If destroying a well, abandonment method ____

Submit plot plan of wells in relation to all sewer or septic lines.

***Is well to be constructed within:*** 100 feet of a septic tank or leachfield? [ ] Yes [ ] No
50 feet of any sanitary sewer line? [ ] Yes [ ] No
25 feet of any private sanitary sewer line? [ ] Yes [ ] No

11/05/07

0013480
ENVDRILL 496.00
TTLAMT 496.00
CHECKS 496.00
CHANGE 0.00
D250 #2 10:05

In addition, all monitoring wells must include ***identification system*** affixed to interior surface:

1) Well identification 2) Well type 3) Well depth 4) Well casing diameter 5) Perforated intervals

Well identification number and well type shall be ***affixed*** to the ***exterior surface*** securily structure

*For Office Use Only*

Address 6 Hwy 101

Site ID# 276999

Permit # 05703-HMW

I hereby agree to comply with all laws and regulations of the County of Sonoma and State of California pertaining to water well construction. I will telephone (707) 565-6565, 48 hours in advance, to notify the Environmental Health Specialist when completing or destroying a well. I will furnish the Director of Health Services and the owner a legible copy of the State Water Well Driller's Report within 15 days; and a copy of the Summary Report, including sample results, should be received by this Department within 90 days in order to obtain final approval on this well permit. I acknowledge that the application will become a permit ***only*** after site approval and payment of fee. I understand that this permit is not transferable and expires one year from date of issuance.

Signature of Well Driller—***no proxies*** Date 10/26/07

Insurance Carrier See Attached Expiration Date

Once all wells/borings are installed, submit a Well Driller's Log and/or Summary Report to complete permit process.

Indicate on attached plot plan the exact location of well(s) with respect to the following items: property lines, water bodies or water courses drainage pattern, roads, existing wells, sewer main and laterals and private sewage disposal systems or other sources of contamination or pollution. INCLUDE DIMENSIONS. The validity of this permit depends upon the accuracy of the information provided by the applicant.

Conditions of permit:

FOR OFFICE USE ONLY – ENVIRONMENTAL HEALTH DIVISION

Permit approved by John L Mathys Date 11/5/07

Constr. approved by _____ Observed? [ ] Yes [ ] No Well # _____ Date ____/____/____

RWQCB / LOP approval _____ Date ____/____/____

# APPENDIX B

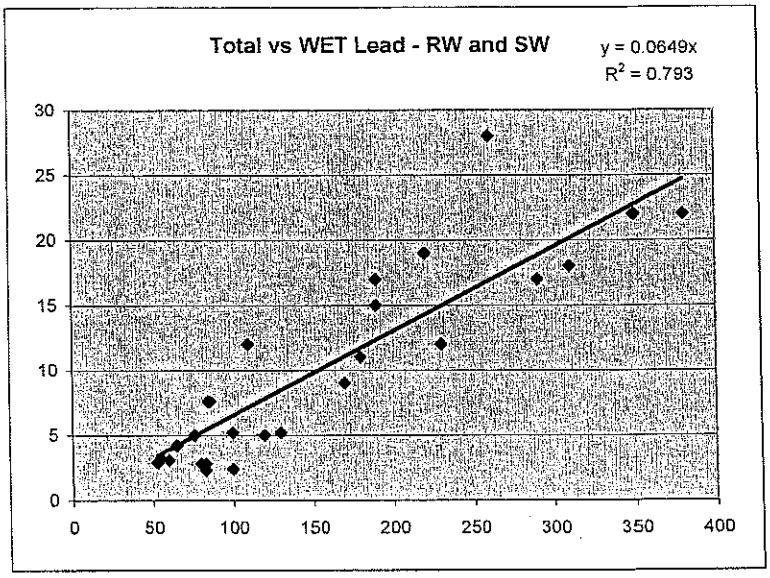
# APPENDIX B

## Laboratory Analytical Reports and Chain-of-Custody Documentation

**(See .pdf files provided on attached CD)**

# APPENDIX C

| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) |
|---|---|---|---|
| B1-RW1-3 | 3 | 53 | 2.9 |
| B1-RW1-2 | 2 | 55 | 3.2 |
| B1-SW351-0 | 0 | 60 | 3.1 |
| B2-SW350-0 | 0 | 65 | 4.2 |
| B2-SW343-0 | 0 | 76 | 5.0 |
| B2-RW1-1 | 1 | 80 | 2.8 |
| B1-SW252-0 | 0 | 83 | 2.3 |
| B3-SW350-0 | 0 | 83 | 2.8 |
| B1-RW2-0 | 0 | 85 | 7.6 |
| B2-RW2-0 | 0 | 86 | 7.6 |
| B2-RW1-2 | 2 | 100 | 2.4 |
| B3-RW2-0 | 0 | 100 | 5.2 |
| B2-SW351-0 | 0 | 110 | 12 |
| B3-SW342-0 | 0 | 120 | 5.0 |
| B1-RW1-0 | 0 | 130 | 5.2 |
| B4-SW252-0 | 0 | 170 | 9.0 |
| B2-SW358-0 | 0 | 180 | 11 |
| B1-SW342-0 | 0 | 190 | 15 |
| B2-SW342-0 | 0 | 190 | 17 |
| B1-SW343-0 | 0 | 220 | 19 |
| B4-SW343-0 | 0 | 230 | 12 |
| B3-SW351-0 | 0 | 260 | 28 |
| B1-SW358-0 | 0 | 290 | 17 |
| B3-SW358-0 | 0 | 290 | 17 |
| B2-SW252-0 | 0 | 310 | 18 |
| B4-SW342-0 | 0 | 350 | 22 |
| B2A-SW350-0 | 0 | 380 | 22 |

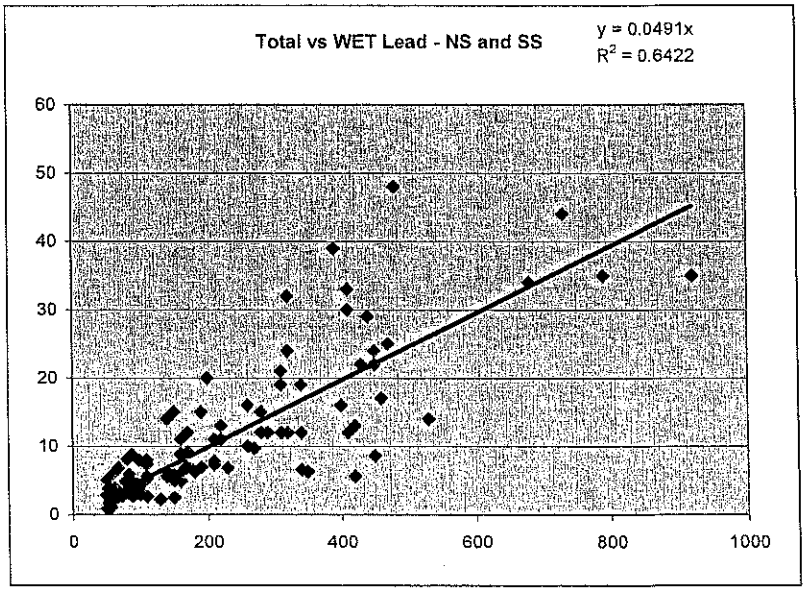


| | | | |
|---|---|---|---|
| B11-NS-0 | 0 | 190 | 15 |
| B48-SS-0 | 0 | 190 | 6.9 |
| B25-NS-0 | 0 | 200 | 20 |
| B51-NS-0 | 0 | 210 | 11 |
| B34-SS-0 | 0 | 210 | 7.8 |
| B20-NS-0 | 0 | 210 | 7.3 |
| B16-SS-0 | 0 | 220 | 13 |
| B20-SS-0 | 0 | 220 | 11 |
| B21-SS-0 | 0 | 230 | 6.8 |
| B45-SS-0 | 0 | 230 | 6.8 |
| B23-NS-0 | 0 | 260 | 16 |
| B25-SS-0 | 0 | 260 | 10 |
| B57-NS-0 | 0 | 270 | 9.7 |
| B18-SS-0 | 0 | 280 | 15 |
| B26-NS-0 | 0 | 280 | 12 |
| B4-SS-0 | 0 | 290 | 12 |
| B9-NS-0 | 0 | 310 | 21 |
| B3-NS-0 | 0 | 310 | 19 |
| B28-SS-0 | 0 | 310 | 12 |
| B5-NS-0 | 0 | 320 | 32 |
| B2-NS-0 | 0 | 320 | 24 |
| B30-NS-0 | 0 | 320 | 12 |
| B29-SS-0 | 0 | 340 | 19 |
| B30-SS-0 | 0 | 340 | 12 |
| B37-NS-0 | 0 | 340 | 6.6 |
| B46-NS-0 | 0 | 350 | 6.3 |
| B1-NS-0 | 0 | 390 | 39 |
| B44-SS-0 | 0 | 400 | 16 |
| B6-SS-0 | 0 | 410 | 33 |
| B42-SS-0 | 0 | 410 | 30 |
| B39-SS-0 | 0 | 410 | 12 |
| B8-NS-0 | 0 | 420 | 13 |
| B7-SS-1 | 1 | 420 | 5.6 |
| B14-NS-0 | 0 | 430 | 22 |
| B22-SS-0 | 0 | 440 | 29 |
| B32-SS-0 | 0 | 450 | 24 |
| B49-NS-0 | 0 | 450 | 22 |
| B34-NS-0 | 0 | 450 | 8.6 |
| B23-SS-0 | 0 | 460 | 17 |
| B18-NS-0 | 0 | 470 | 25 |
| B7-NS-0 | 0 | 480 | 48 |
| B41-SS-0 | 0 | 530 | 14 |
| B6-NS-0 | 0 | 680 | 34 |
| B55-SS-0 | 0 | 730 | 44 |
| B32-NS-0 | 0 | 790 | 35 |
| B5-SS-0 | 0 | 920 | 35 |

Not Used:

| | | | |
|---|---|---|---|
| B36-NS-0 | 0 | 850 | 16 |
| B7-NS-1 | 1 | 940 | 9.5 |

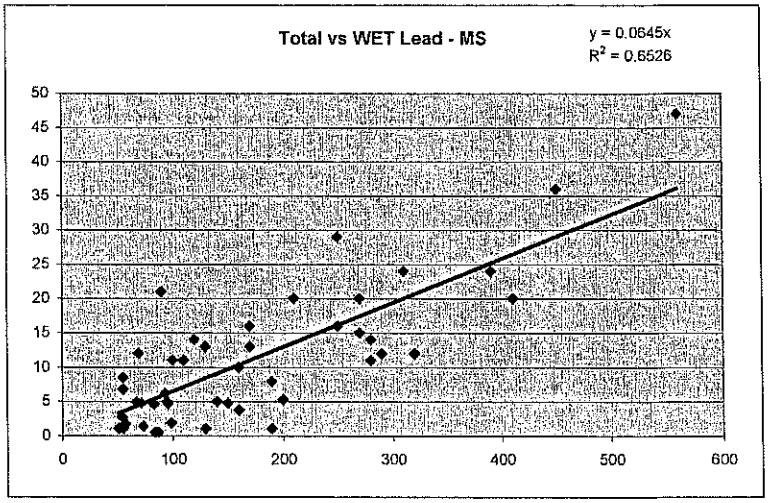
| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) |
|---|---|---|---|
| B47-NS-0 | 0 | 50 | 2.8 |
| B31-NS-0 | 0 | 51 | 5.1 |
| B3-SS-1 | 1 | 51 | 0.85 |
| B2-SS-1 | 1 | 52 | 3.8 |
| B35-NS-1 | 1 | 53 | 1.7 |
| B33-SS-0 | 0 | 55 | 5.5 |
| B48-NS-0 | 0 | 55 | 5.5 |
| B55-NS-0 | 0 | 57 | 1.1 |
| B10-SS-0 | 0 | 59 | 5.9 |
| B54-SS-0 | 0 | 62 | 3.9 |
| B38-NS-0 | 0 | 64 | 2.3 |
| B14-SS-0 | 0 | 68 | 6.8 |
| B8-SS-0 | 0 | 73 | 2.7 |
| B13-SS-0 | 0 | 78 | 4.8 |
| B19-NS-0 | 0 | 80 | 3.2 |
| B43-SS-0 | 0 | 81 | 8.1 |
| B2-SS-0 | 0 | 84 | 5.9 |
| B16-NS-0 | 0 | 88 | 8.8 |
| B54-SS-1 | 1 | 88 | 2.9 |
| B7-SS-2 | 2 | 89 | 2.7 |
| B50-SS-0 | 0 | 91 | 4.6 |
| B47-SS-0 | 0 | 96 | 4.4 |
| B17-SS-0 | 0 | 98 | 8.0 |
| B42-NS-0 | 0 | 98 | 3.7 |
| B3-SS-0 | 0 | 99 | 4.1 |
| B40-SS-0 | 0 | 100 | 2.9 |
| B26-SS-0 | 0 | 110 | 8.0 |
| B12-NS-0 | 0 | 110 | 7.3 |
| B39-NS-0 | 0 | 110 | 5.6 |
| B38-SS-0 | 0 | 110 | 5.2 |
| B28-NS-0 | 0 | 110 | 2.7 |
| B56-SS-0 | 0 | 130 | 2.2 |
| B24-NS-0 | 0 | 140 | 14 |
| B31-SS-0 | 0 | 140 | 6.3 |
| B43-NS-0 | 0 | 140 | 5.6 |
| B13-NS-0 | 0 | 150 | 15 |
| B35-SS-0 | 0 | 150 | 5.8 |
| B40-NS-0 | 0 | 150 | 5.4 |
| B24-SS-0 | 0 | 150 | 5.0 |
| B12-SS-0 | 0 | 150 | 2.5 |
| B27-NS-0 | 0 | 160 | 11 |
| B41-NS-0 | 0 | 160 | 11 |
| B35-NS-0 | 0 | 160 | 8.9 |
| B49-SS-0 | 0 | 160 | 8.7 |
| B15-NS-0 | 0 | 160 | 6.1 |
| B7-SS-0 | 0 | 160 | 4.9 |
| B4-NS-0 | 0 | 170 | 12 |
| B10-NS-0 | 0 | 170 | 9.1 |
| B29-NS-0 | 0 | 170 | 7.1 |
| B50-NS-0 | 0 | 180 | 6.2 |



| Sample ID | Sample Depth (ft) | Total Lead (mg/kg) | WET (mg/l) |
|---|---|---|---|
| B49-MS-0 | 0 | 84 | 0.5 |
| B41-MS-0 | 0 | 87 | 0.5 |
| B27-MS-0 | 0 | 51 | 1.1 |
| B19-MS-0 | 0 | 55 | 1.1 |
| B17-MS-0 | 0 | 130 | 1.1 |
| B11-MS-0 | 0 | 190 | 1.1 |
| B35-MS-0 | 0 | 73 | 1.4 |
| B48-MS-1 | 1 | 57 | 1.8 |
| B13-MS-0 | 0 | 99 | 1.9 |
| B22-MS-1 | 1 | 54 | 2.7 |
| B23-MS-0 | 0 | 160 | 3.8 |
| B38-MS-0 | 0 | 83 | 4.6 |
| B4-MS-0 | 0 | 96 | 4.7 |
| B28-MS-0 | 0 | 71 | 4.8 |
| B37-MS-0 | 0 | 150 | 4.8 |
| B42-MS-0 | 0 | 67 | 4.9 |
| B9-MS-0 | 0 | 95 | 5.0 |
| B25-MS-0 | 0 | 140 | 5.0 |
| B47-MS-0 | 0 | 200 | 5.3 |
| B1-MS-0 | 0 | 93 | 6.2 |
| B57-MS-0 | 0 | 55 | 6.8 |
| B40-MS-0 | 0 | 190 | 7.9 |
| B8-MS-0 | 0 | 55 | 8.5 |
| B34-MS-0 | 0 | 160 | 10 |
| B53-MS-0 | 0 | 100 | 11 |
| B45-MS-0 | 0 | 110 | 11 |
| B48-MS-0 | 0 | 280 | 11 |
| B16-MS-0 | 0 | 69 | 12 |
| B14-MS-0 | 0 | 290 | 12 |
| B36-MS-0 | 0 | 320 | 12 |
| B39-MS-0 | 0 | 130 | 13 |
| B6-MS-0 | 0 | 170 | 13 |
| B29-MS-0 | 0 | 120 | 14 |
| B26-MS-0 | 0 | 280 | 14 |
| B30-MS-0 | 0 | 270 | 15 |
| B22-MS-0 | 0 | 170 | 16 |
| B10-MS-0 | 0 | 250 | 16 |
| B46-MS-0 | 0 | 210 | 20 |
| B24-MS-0 | 0 | 270 | 20 |
| B50-MS-0 | 0 | 410 | 20 |
| B21-MS-0 | 0 | 90 | 21 |
| B7-MS-0 | 0 | 310 | 24 |
| B44-MS-0 | 0 | 390 | 24 |
| B56-MS-0 | 0 | 250 | 29 |
| B52-MS-0 | 0 | 450 | 36 |
| B54-MS-0 | 0 | 560 | 47 |

Not Used:

| | | | |
|---|---|---|---|
| B32-MS-0 | 0 | 390 | 14 |
| B20-MS-0 | 0 | 680 | 23 |
| B51-MS-0 | 0 | 740 | 6.4 |
| B31-MS-0 | 0 | 310 | 1.5 |
| B43-MS-0 | 0 | 250 | 1.1 |
| B33-MS-0 | 0 | 340 | 1.3 |
| B18-MS-0 | 0 | 270 | 0.5 |



SW358-0

| | |
|---|---|
| Number of Valid Observations | 3 |
| Number of Distinct Observations | 2 |
| Minimum | 180 |
| Maximum | 290 |

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW358-0 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

SW358-1

| | |
|---|---|
| Number of Valid Observations | 3 |
| Number of Distinct Observations | 2 |
| Minimum | 2.5 |
| Maximum | 16 |

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW358-1 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

SW358-2

| | |
|---|---|
| Number of Valid Observations | 3 |
| Number of Distinct Observations | 3 |
| Minimum | 2.5 |
| Maximum | 6.5 |

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW358-2 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

SW358-3

| | |
|---|---|
| Number of Valid Observations | 3 |
| Number of Distinct Observations | 3 |
| Minimum | 2.5 |
| Maximum | 23 |

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW358-3 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

Data do not follow a Discernable Distribution

| | |
|---|---|
| 95% Useful UCLs | |
| Student's-t UCL | 15.45 |
| 95% UCLs (Adjusted for Skewness) | |
| 95% Adjusted-CLT UCL | 17.9 |
| 95% Modified-t UCL | 16.06 |
| Non-Parametric UCLs | |
| 95% CLT UCL | 13.96 |
| 95% Jackknife UCL | 15.45 |
| 95% Standard Bootstrap UCL | N/A |
| 95% Bootstrap-t UCL | N/A |
| 95% Hall's Bootstrap UCL | N/A |
| 95% Percentile Bootstrap UCL | N/A |
| 95% BCA Bootstrap UCL | N/A |
| 95% Chebyshev(Mean, Sd) UCL | 24.82 |
| 97.5% Chebyshev(Mean, Sd) UCL | 32.37 |
| 99% Chebyshev(Mean, Sd) UCL | 47.19 |
| Potential UCL to Use | |
| Use 95% Chebyshev (Mean, Sd) UCL | 24.82 |

SW351-0

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 14 |
| Maximum | 260 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW351-0 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

SW351-1

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 5.4 |
| Maximum | 13 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW351-1 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

SW351-2

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 2 |
| Minimum | 2.5 |
| Maximum | 5.2 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW351-2 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

SW351-3

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 2 |
| Minimum | 2.5 |
| Maximum | 6.8 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW351-3 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

Potential UCL to Use
99% Chebyshev(Mean, Sd) UCL 63.67
Recommended UCL exceeds the maximum observation

SW350-2

| | |
|---|---|
| Number of Valid Observations | 6 |
| Number of Distinct Observations | 3 |
| Minimum | 2.5 |
| Maximum | 18 |
| Mean | 5.917 |
| Median | 2.5 |
| SD | 6.248 |
| Variance | 39.04 |
| Coefficient of Variation | 1.056 |
| Skewness | 1.978 |
| Mean of log data | 1.428 |
| SD of log data | 0.84 |

Warning: There are only 3 Distinct Values in this data
There are insufficient Distinct Values to perform some GOF tests and bootstrap methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values to compute bootstrap methods.
It is recommended to have 10-15 or more observations for accurate and meaningful bootstrap results.

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test sta

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical result

Data do not follow a Discernable Distribution

| | |
|---|---|
| 95% Useful UCLs | |
| Student's-t UCL | 11.06 |
| 95% UCLs (Adjusted for Skewness) | |
| 95% Adjusted-CLT UCL | 12.31 |
| 95% Modified-t UCL | 11.4 |
| Non-Parametric UCLs | |
| 95% CLT UCL | 10.11 |
| 95% Jackknife UCL | 11.06 |
| 95% Standard Bootstrap UCL | N/A |
| 95% Bootstrap-t UCL | N/A |
| 95% Hall's Bootstrap UCL | N/A |
| 95% Percentile Bootstrap UCL | N/A |
| 95% BCA Bootstrap UCL | N/A |
| 95% Chebyshev(Mean, Sd) UCL | 17.04 |
| 97.5% Chebyshev(Mean, Sd) UCL | 21.85 |
| 99% Chebyshev(Mean, Sd) UCL | 31.3 |
| Potential UCL to Use | |
| Use 95% Chebyshev (Mean, Sd) UCL | 17.04 |

SW350-3

| | |
|---|---|
| Number of Valid Observations | 6 |
| Number of Distinct Observations | 3 |
| Minimum | 2.5 |
| Maximum | 27 |
| Mean | 7.383 |
| Median | 2.5 |
| SD | 9.8 |
| Variance | 96.04 |
| Coefficient of Variation | 1.327 |
| Skewness | 2.258 |
| Mean of log data | 1.491 |
| SD of log data | 0.982 |

Warning: There are only 3 Distinct Values in this data
There are insufficient Distinct Values to perform some GOF tests and bootstrap methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values to compute bootstrap methods.
It is recommended to have 10-15 or more observations for accurate and meaningful bootstrap results.

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test sta

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical result

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical result

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

| | |
|---|---|
| 95% Useful UCLs | |
| Student's-t UCL | 215.7 |
| 95% UCLs (Adjusted for Skewness) | |
| 95% Adjusted-CLT UCL | 251.4 |
| 95% Modified-t UCL | 224.6 |
| Non-Parametric UCLs | |
| 95% CLT UCL | 194.9 |
| 95% Jackknife UCL | 215.7 |
| 95% Standard Bootstrap UCL | 185.6 |
| 95% Bootstrap-t UCL | 714.3 |
| 95% Hall's Bootstrap UCL | 694 |
| 95% Percentile Bootstrap UCL | 205 |
| 95% BCA Bootstrap UCL | 225.5 |
| 95% Chebyshev(Mean, Sd) UCL | 347.8 |
| 97.5% Chebyshev(Mean, Sd) UCL | 454.2 |
| 99% Chebyshev(Mean, Sd) UCL | 663 |

Data follow Appr. Gamma Distribution (0.05)

May want to try Gamma UCLs

SW350-1

| | |
|---|---|
| Number of Valid Observations | 6 |
| Number of Distinct Observations | 3 |
| Minimum | 2.5 |
| Maximum | 30 |
| Mean | 10.83 |
| Median | 2.5 |
| SD | 13.01 |
| Variance | 169.2 |
| Coefficient of Variation | 1.201 |
| Skewness | 1.032 |
| Mean of log data | 1.714 |
| SD of log data | 1.237 |

Warning: There are only 3 Distinct Values in this data
There are insufficient Distinct Values to perform some GOF tests and bootstrap methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values to compute bootstrap methods.
It is recommended to have 10-15 or more observations for accurate and meaningful bootstrap results.

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test sta

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical result

Data do not follow a Discernable Distribution

| | |
|---|---|
| 95% Useful UCLs | |
| Student's-t UCL | 21.53 |
| 95% UCLs (Adjusted for Skewness) | |
| 95% Adjusted-CLT UCL | 21.96 |
| 95% Modified-t UCL | 21.91 |
| Non-Parametric UCLs | |
| 95% CLT UCL | 19.57 |
| 95% Jackknife UCL | 21.53 |
| 95% Standard Bootstrap UCL | N/A |
| 95% Bootstrap-t UCL | N/A |
| 95% Hall's Bootstrap UCL | N/A |
| 95% Percentile Bootstrap UCL | N/A |
| 95% BCA Bootstrap UCL | N/A |
| 95% Chebyshev(Mean, Sd) UCL | 33.98 |
| 97.5% Chebyshev(Mean, Sd) UCL | 43.99 |
| 99% Chebyshev(Mean, Sd) UCL | 63.67 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW342-3 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

SW343-0

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 19 |
| Maximum | 230 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW343-0 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

SW343-1

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 6.6 |
| Maximum | 7.9 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW343-1 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

SW343-2

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 1 |
| Minimum | 2.5 |
| Maximum | 2.5 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW343-2 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

SW343-3

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 5.1 |
| Maximum | 11 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW343-3 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

SW350-0

| | |
|---|---|
| Number of Valid Observations | 6 |
| Number of Distinct Observations | 6 |
| Minimum | 26 |
| Maximum | 380 |
| Mean | 102.2 |
| Median | 47.5 |
| SD | 138.1 |
| Variance | 19061 |
| Coefficient of Variation | 1.351 |
| Skewness | 2.3 |
| Mean of log data | 4.093 |
| SD of log data | 1.022 |

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test sta

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW252-2 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

SW252-3

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 3 |
| Minimum | 2.5 |
| Maximum | 7.1 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW252-3 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

SW342-0

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 3 |
| Minimum | 120 |
| Maximum | 350 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW342-0 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

SW342-1

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 2.5 |
| Maximum | 23 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW342-1 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

SW342-2

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 2.5 |
| Maximum | 21 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW342-2 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

SW342-3

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 9.1 |
| Maximum | 15 |

RW2-1

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 2.5 |
| Maximum | 10 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable RW2-1 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

RW2-2

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 1 |
| Minimum | 2.5 |
| Maximum | 2.5 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable RW2-2 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

RW2-3

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 2 |
| Minimum | 2.5 |
| Maximum | 5.1 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable RW2-3 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

SW252-0

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 18 |
| Maximum | 310 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW252-0 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

SW252-1

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 2.5 |
| Maximum | 44 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW252-1 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

SW252-2

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 3 |
| Minimum | 2.5 |
| Maximum | 8.7 |

Nonparametric UCL Statistics for Full Data Sets

| User Selected Options | |
|---|---|
| From File | \\Geoconprimary1\netfolder\GEC Jobs\Caltrans\E8220 Contract 04A |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

RW1-0

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 14 |
| Maximum | 130 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable RW1-0 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

RW1-1

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 2.5 |
| Maximum | 80 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable RW1-1 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

RW1-2

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 2.5 |
| Maximum | 100 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable RW1-2 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

RW1-3

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 2.5 |
| Maximum | 53 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable RW1-3 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

RW2-0

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 8.4 |
| Maximum | 100 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable RW2-0 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical resul

SS-2

| | |
|---|---|
| Number of Valid Observations | 58 |
| Number of Distinct Observations | 27 |
| Minimum | 2.5 |
| Maximum | 89 |
| Mean | 7.307 |
| Median | 5.65 |
| SD | 11.6 |
| Variance | 134.6 |
| Coefficient of Variation | 1.588 |
| Skewness | 6.393 |
| Mean of log data | 1.644 |
| SD of log data | 0.696 |

Data do not follow a Discernable Distribution

| 90% Useful UCLs | |
|---|---|
| Student's-t UCL | 9.282 |
| **90% UCLs (Adjusted for Skewness)** | |
| 90% Adjusted-CLT UCL | 10.17 |
| 90% Modified-t UCL | 9.495 |
| **Non-Parametric UCLs** | |
| 90% CLT UCL | 9.259 |
| 90% Jackknife UCL | 9.282 |
| 90% Standard Bootstrap UCL | 9.247 |
| 90% Bootstrap-t UCL | 13.57 |
| 90% Hall's Bootstrap UCL | 18.65 |
| 90% Percentile Bootstrap UCL | 9.274 |
| 90% BCA Bootstrap UCL | 10.56 |
| 90% Chebyshev(Mean, Sd) UCL | 11.88 |
| 95% Chebyshev(Mean, Sd) UCL | 13.95 |
| 97.5% Chebyshev(Mean, Sd) UCL | 16.82 |
| 99% Chebyshev(Mean, Sd) UCL | 22.46 |

Potential UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

SS-3

| | |
|---|---|
| Number of Valid Observations | 58 |
| Number of Distinct Observations | 32 |
| Minimum | 2.5 |
| Maximum | 16 |
| Mean | 6.338 |
| Median | 6.25 |
| SD | 3.499 |
| Variance | 12.25 |
| Coefficient of Variation | 0.552 |
| Skewness | 0.775 |
| Mean of log data | 1.685 |
| SD of log data | 0.592 |

Data do not follow a Discernable Distribution

| 90% Useful UCLs | |
|---|---|
| Student's-t UCL | 6.934 |
| **90% UCLs (Adjusted for Skewness)** | |
| 90% Adjusted-CLT UCL | 6.96 |
| 90% Modified-t UCL | 6.942 |
| **Non-Parametric UCLs** | |
| 90% CLT UCL | 6.927 |
| 90% Jackknife UCL | 6.934 |
| 90% Standard Bootstrap UCL | 6.922 |
| 90% Bootstrap-t UCL | 6.955 |
| 90% Hall's Bootstrap UCL | 6.977 |
| 90% Percentile Bootstrap UCL | 6.938 |
| 90% BCA Bootstrap UCL | 6.928 |
| 90% Chebyshev(Mean, Sd) UCL | 7.716 |
| 95% Chebyshev(Mean, Sd) UCL | 8.341 |
| 97.5% Chebyshev(Mean, Sd) UCL | 9.208 |
| 99% Chebyshev(Mean, Sd) UCL | 10.91 |

Potential UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

SS-0

| | |
|---|---|
| Number of Valid Observations | 58 |
| Number of Distinct Observations | 46 |
| Minimum | 2.5 |
| Maximum | 920 |
| Mean | 187.8 |
| Median | 120 |
| SD | 187.5 |
| Variance | 35160 |
| Coefficient of Variation | 0.999 |
| Skewness | 1.698 |
| Mean of log data | 4.604 |
| SD of log data | 1.379 |

90% Useful UCLs

| | |
|---|---|
| Student's-t UCL | 219.7 |

90% UCLs (Adjusted for Skewness)

| | |
|---|---|
| 90% Adjusted-CLT UCL | 223.2 |
| 90% Modified-t UCL | 220.6 |

Non-Parametric UCLs

| | |
|---|---|
| 90% CLT UCL | 219.3 |
| 90% Jackknife UCL | 219.7 |
| 90% Standard Bootstrap UCL | 219.8 |
| 90% Bootstrap-t UCL | 223.4 |
| 90% Hall's Bootstrap UCL | 227.4 |
| 90% Percentile Bootstrap UCL | 220.2 |
| 90% BCA Bootstrap UCL | 223.9 |
| 90% Chebyshev(Mean, Sd) UCL | 261.6 |
| 95% Chebyshev(Mean, Sd) UCL | 295.1 |
| 97.5% Chebyshev(Mean, Sd) UCL | 341.5 |
| 99% Chebyshev(Mean, Sd) UCL | 432.7 |

Data appear Gamma Distributed (0.05)

May want to try Gamma UCLs

SS-1

| | |
|---|---|
| Number of Valid Observations | 58 |
| Number of Distinct Observations | 33 |
| Minimum | 2.5 |
| Maximum | 420 |
| Mean | 19.26 |
| Median | 6.45 |
| SD | 55.92 |
| Variance | 3127 |
| Coefficient of Variation | 2.903 |
| Skewness | 6.72 |
| Mean of log data | 2.052 |
| SD of log data | 1.078 |

Data do not follow a Discernable Distribution

90% Useful UCLs

| | |
|---|---|
| Student's-t UCL | 28.78 |

90% UCLs (Adjusted for Skewness)

| | |
|---|---|
| 90% Adjusted-CLT UCL | 33.3 |
| 90% Modified-t UCL | 29.86 |

Non-Parametric UCLs

| | |
|---|---|
| 90% CLT UCL | 28.67 |
| 90% Jackknife UCL | 28.78 |
| 90% Standard Bootstrap UCL | 28.57 |
| 90% Bootstrap-t UCL | 53.49 |
| 90% Hall's Bootstrap UCL | 72.02 |
| 90% Percentile Bootstrap UCL | 29.19 |
| 90% BCA Bootstrap UCL | 35.44 |
| 90% Chebyshev(Mean, Sd) UCL | 41.29 |
| 95% Chebyshev(Mean, Sd) UCL | 51.27 |
| 97.5% Chebyshev(Mean, Sd) UCL | 65.12 |
| 99% Chebyshev(Mean, Sd) UCL | 92.32 |

Potential UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

NS-2

| | |
|---|---|
| Number of Valid Observations | 58 |
| Number of Distinct Observations | 28 |
| Minimum | 2.5 |
| Maximum | 36 |
| Mean | 6.062 |
| Median | 5.85 |
| SD | 5.047 |
| Variance | 25.47 |
| Coefficient of Variation | 0.833 |
| Skewness | 3.891 |
| Mean of log data | 1.591 |
| SD of log data | 0.623 |

Data do not follow a Discernable Distribution

90% Useful UCLs

| | |
|---|---|
| Student's-t UCL | 6.921 |

90% UCLs (Adjusted for Skewness)

| | |
|---|---|
| 90% Adjusted-CLT UCL | 7.153 |
| 90% Modified-t UCL | 6.978 |

Non-Parametric UCLs

| | |
|---|---|
| 90% CLT UCL | 6.911 |
| 90% Jackknife UCL | 6.921 |
| 90% Standard Bootstrap UCL | 6.906 |
| 90% Bootstrap-t UCL | 7.396 |
| 90% Hall's Bootstrap UCL | 11.28 |
| 90% Percentile Bootstrap UCL | 6.978 |
| 90% BCA Bootstrap UCL | 7.359 |
| 90% Chebyshev(Mean, Sd) UCL | 8.05 |
| 95% Chebyshev(Mean, Sd) UCL | 8.951 |
| 97.5% Chebyshev(Mean, Sd) UCL | 10.2 |
| 99% Chebyshev(Mean, Sd) UCL | 12.66 |

Potential UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

NS-3

| | |
|---|---|
| Number of Valid Observations | 58 |
| Number of Distinct Observations | 29 |
| Minimum | 2.5 |
| Maximum | 14 |
| Mean | 5.214 |
| Median | 5.55 |
| SD | 2.678 |
| Variance | 7.17 |
| Coefficient of Variation | 0.514 |
| Skewness | 0.663 |
| Mean of log data | 1.515 |
| SD of log data | 0.536 |

Data do not follow a Discernable Distribution

90% Useful UCLs

| | |
|---|---|
| Student's-t UCL | 5.67 |

90% UCLs (Adjusted for Skewness)

| | |
|---|---|
| 90% Adjusted-CLT UCL | 5.686 |
| 90% Modified-t UCL | 5.675 |

Non-Parametric UCLs

| | |
|---|---|
| 90% CLT UCL | 5.664 |
| 90% Jackknife UCL | 5.67 |
| 90% Standard Bootstrap UCL | 5.652 |
| 90% Bootstrap-t UCL | 5.701 |
| 90% Hall's Bootstrap UCL | 5.707 |
| 90% Percentile Bootstrap UCL | 5.674 |
| 90% BCA Bootstrap UCL | 5.652 |
| 90% Chebyshev(Mean, Sd) UCL | 6.269 |
| 95% Chebyshev(Mean, Sd) UCL | 6.746 |
| 97.5% Chebyshev(Mean, Sd) UCL | 7.41 |
| 99% Chebyshev(Mean, Sd) UCL | 8.712 |

Potential UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

NS-0

| | |
|---|---|
| Number of Valid Observations | 58 |
| Number of Distinct Observations | 41 |
| Minimum | 10 |
| Maximum | 850 |
| Mean | 214.2 |
| Median | 160 |
| SD | 189.1 |
| Variance | 35759 |
| Coefficient of Variation | 0.883 |
| Skewness | 1.456 |
| Mean of log data | 4.902 |
| SD of log data | 1.105 |

90% Useful UCLs

| | |
|---|---|
| Student's-t UCL | 246.4 |

90% UCLs (Adjusted for Skewness)

| | |
|---|---|
| 90% Adjusted-CLT UCL | 249.4 |
| 90% Modified-t UCL | 247.2 |

Non-Parametric UCLs

| | |
|---|---|
| 90% CLT UCL | 246 |
| 90% Jackknife UCL | 246.4 |
| 90% Standard Bootstrap UCL | 245 |
| 90% Bootstrap-t UCL | 250.6 |
| 90% Hall's Bootstrap UCL | 250.3 |
| 90% Percentile Bootstrap UCL | 246.1 |
| 90% BCA Bootstrap UCL | 245.8 |
| 90% Chebyshev(Mean, Sd) UCL | 288.7 |
| 95% Chebyshev(Mean, Sd) UCL | 322.4 |
| 97.5% Chebyshev(Mean, Sd) UCL | 369.3 |
| 99% Chebyshev(Mean, Sd) UCL | 461.2 |

Data appear Gamma Distributed (0.05)

May want to try Gamma UCLs

NS-1

| | |
|---|---|
| Number of Valid Observations | 58 |
| Number of Distinct Observations | 30 |
| Minimum | 2.5 |
| Maximum | 940 |
| Mean | 24.28 |
| Median | 5.85 |
| SD | 122.7 |
| Variance | 15044 |
| Coefficient of Variation | 5.051 |
| Skewness | 7.558 |
| Mean of log data | 1.846 |
| SD of log data | 1.032 |

Data do not follow a Discernable Distribution

90% Useful UCLs

| | |
|---|---|
| Student's-t UCL | 45.17 |

90% UCLs (Adjusted for Skewness)

| | |
|---|---|
| 90% Adjusted-CLT UCL | 56.34 |
| 90% Modified-t UCL | 47.83 |

Non-Parametric UCLs

| | |
|---|---|
| 90% CLT UCL | 44.92 |
| 90% Jackknife UCL | 45.17 |
| 90% Standard Bootstrap UCL | 44.54 |
| 90% Bootstrap-t UCL | 311.1 |
| 90% Hall's Bootstrap UCL | 159.4 |
| 90% Percentile Bootstrap UCL | 42.07 |
| 90% BCA Bootstrap UCL | 57.35 |
| 90% Chebyshev(Mean, Sd) UCL | 72.6 |
| 95% Chebyshev(Mean, Sd) UCL | 94.49 |
| 97.5% Chebyshev(Mean, Sd) UCL | 124.9 |
| 99% Chebyshev(Mean, Sd) UCL | 184.5 |

Potential UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

MS-2

| | |
|---|---|
| Number of Valid Observations | 56 |
| Number of Distinct Observations | 15 |
| Minimum | 2.5 |
| Maximum | 25 |
| Mean | 4.493 |
| Median | 2.5 |
| SD | 3.556 |
| Variance | 12.64 |
| Coefficient of Variation | 0.791 |
| Skewness | 3.733 |
| Mean of log data | 1.324 |
| SD of log data | 0.55 |

Data do not follow a Discernable Distribution

| 90% Useful UCLs | |
|---|---|
| Student's-t UCL | 5.109 |
| **90% UCLs (Adjusted for Skewness)** | |
| 90% Adjusted-CLT UCL | 5.271 |
| 90% Modified-t UCL | 5.149 |
| **Non-Parametric UCLs** | |
| 90% CLT UCL | 5.102 |
| 90% Jackknife UCL | 5.109 |
| 90% Standard Bootstrap UCL | 5.078 |
| 90% Bootstrap-t UCL | 5.438 |
| 90% Hall's Bootstrap UCL | 6.296 |
| 90% Percentile Bootstrap UCL | 5.12 |
| 90% BCA Bootstrap UCL | 5.286 |
| 90% Chebyshev(Mean, Sd) UCL | 5.918 |
| 95% Chebyshev(Mean, Sd) UCL | 6.564 |
| 97.5% Chebyshev(Mean, Sd) UCL | 7.46 |
| 99% Chebyshev(Mean, Sd) UCL | 9.22 |

Potential UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

MS-3

| | |
|---|---|
| Number of Valid Observations | 56 |
| Number of Distinct Observations | 23 |
| Minimum | 2.5 |
| Maximum | 24 |
| Mean | 5.504 |
| Median | 5.2 |
| SD | 4.441 |
| Variance | 19.72 |
| Coefficient of Variation | 0.807 |
| Skewness | 2.353 |
| Mean of log data | 1.484 |
| SD of log data | 0.63 |

Data do not follow a Discernable Distribution

| 90% Useful UCLs | |
|---|---|
| Student's-t UCL | 6.273 |
| **90% UCLs (Adjusted for Skewness)** | |
| 90% Adjusted-CLT UCL | 6.397 |
| 90% Modified-t UCL | 6.305 |
| **Non-Parametric UCLs** | |
| 90% CLT UCL | 6.264 |
| 90% Jackknife UCL | 6.273 |
| 90% Standard Bootstrap UCL | 6.265 |
| 90% Bootstrap-t UCL | 6.384 |
| 90% Hall's Bootstrap UCL | 6.503 |
| 90% Percentile Bootstrap UCL | 6.259 |
| 90% BCA Bootstrap UCL | 6.425 |
| 90% Chebyshev(Mean, Sd) UCL | 7.284 |
| 95% Chebyshev(Mean, Sd) UCL | 8.091 |
| 97.5% Chebyshev(Mean, Sd) UCL | 9.21 |
| 99% Chebyshev(Mean, Sd) UCL | 11.41 |

Potential UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Nonparametric UCL Statistics for Full Data Sets

| | |
|---|---|
| User Selected Options | |
| From File | \\Geoconprimary1\netfolder\GEC Jobs\Caltrans\E8220 Contract 04A |
| Full Precision | OFF |
| Confidence Coefficient | 90% |
| Number of Bootstrap Operations | 2000 |

MS-0

| | |
|---|---|
| Number of Valid Observations | 57 |
| Number of Distinct Observations | 44 |
| Minimum | 5.7 |
| Maximum | 740 |
| Mean | 192.7 |
| Median | 150 |
| SD | 159.1 |
| Variance | 25320 |
| Coefficient of Variation | 0.826 |
| Skewness | 1.488 |
| Mean of log data | 4.873 |
| SD of log data | 1.015 |

90% Useful UCLs

| | |
|---|---|
| Student's-t UCL | 220 |

90% UCLs (Adjusted for Skewness)

| | |
|---|---|
| 90% Adjusted-CLT UCL | 222.7 |
| 90% Modified-t UCL | 220.7 |

Non-Parametric UCLs

| | |
|---|---|
| 90% CLT UCL | 219.7 |
| 90% Jackknife UCL | 220 |
| 90% Standard Bootstrap UCL | 219.8 |
| 90% Bootstrap-t UCL | 225.5 |
| 90% Hall's Bootstrap UCL | 221.9 |
| 90% Percentile Bootstrap UCL | 219.5 |
| 90% BCA Bootstrap UCL | 222.1 |
| 90% Chebyshev(Mean, Sd) UCL | 255.9 |
| 95% Chebyshev(Mean, Sd) UCL | 284.6 |
| 97.5% Chebyshev(Mean, Sd) UCL | 324.3 |
| 99% Chebyshev(Mean, Sd) UCL | 402.4 |

Data appear Gamma Distributed (0.05)

May want to try Gamma UCLs

MS-1

| | |
|---|---|
| Number of Valid Observations | 57 |
| Number of Distinct Observations | 27 |
| Minimum | 2.5 |
| Maximum | 57 |
| Mean | 7.463 |
| Median | 5.2 |
| SD | 10.23 |
| Variance | 104.7 |
| Coefficient of Variation | 1.371 |
| Skewness | 3.912 |
| Mean of log data | 1.607 |
| SD of log data | 0.785 |

Data do not follow a Discernable Distribution

90% Useful UCLs

| | |
|---|---|
| Student's-t UCL | 9.221 |

90% UCLs (Adjusted for Skewness)

| | |
|---|---|
| 90% Adjusted-CLT UCL | 9.702 |
| 90% Modified-t UCL | 9.338 |

Non-Parametric UCLs

| | |
|---|---|
| 90% CLT UCL | 9.2 |
| 90% Jackknife UCL | 9.221 |
| 90% Standard Bootstrap UCL | 9.212 |
| 90% Bootstrap-t UCL | 10.48 |
| 90% Hall's Bootstrap UCL | 11.86 |
| 90% Percentile Bootstrap UCL | 9.2 |
| 90% BCA Bootstrap UCL | 9.996 |
| 90% Chebyshev(Mean, Sd) UCL | 11.53 |
| 95% Chebyshev(Mean, Sd) UCL | 13.37 |
| 97.5% Chebyshev(Mean, Sd) UCL | 15.93 |
| 99% Chebyshev(Mean, Sd) UCL | 20.95 |

Potential UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

SS-2

| | |
|---|---|
| Number of Valid Observations | 58 |
| Number of Distinct Observations | 27 |
| Minimum | 2.5 |
| Maximum | 89 |
| Mean | 7.307 |
| Median | 5.65 |
| SD | 11.6 |
| Variance | 134.6 |
| Coefficient of Variation | 1.588 |
| Skewness | 6.393 |
| Mean of log data | 1.644 |
| SD of log data | 0.696 |

Data do not follow a Discernable Distribution

| | |
|---|---|
| 95% Useful UCLs | |
| Student's-t UCL | 9.854 |
| 95% UCLs (Adjusted for Skewness) | |
| 95% Adjusted-CLT UCL | 11.18 |
| 95% Modified-t UCL | 10.07 |
| Non-Parametric UCLs | |
| 95% CLT UCL | 9.813 |
| 95% Jackknife UCL | 9.854 |
| 95% Standard Bootstrap UCL | 9.691 |
| 95% Bootstrap-t UCL | 15.23 |
| 95% Hall's Bootstrap UCL | 19.91 |
| 95% Percentile Bootstrap UCL | 10.23 |
| 95% BCA Bootstrap UCL | 11.82 |
| 95% Chebyshev(Mean, Sd) UCL | 13.95 |
| 97.5% Chebyshev(Mean, Sd) UCL | 16.82 |
| 99% Chebyshev(Mean, Sd) UCL | 22.46 |
| Potential UCL to Use | |
| Use 95% Chebyshev (Mean, Sd) UCL | 13.95 |

SS-3

| | |
|---|---|
| Number of Valid Observations | 58 |
| Number of Distinct Observations | 32 |
| Minimum | 2.5 |
| Maximum | 16 |
| Mean | 6.338 |
| Median | 6.25 |
| SD | 3.499 |
| Variance | 12.25 |
| Coefficient of Variation | 0.552 |
| Skewness | 0.775 |
| Mean of log data | 1.685 |
| SD of log data | 0.592 |

Data do not follow a Discernable Distribution

| | |
|---|---|
| 95% Useful UCLs | |
| Student's-t UCL | 7.106 |
| 95% UCLs (Adjusted for Skewness) | |
| 95% Adjusted-CLT UCL | 7.144 |
| 95% Modified-t UCL | 7.114 |
| Non-Parametric UCLs | |
| 95% CLT UCL | 7.094 |
| 95% Jackknife UCL | 7.106 |
| 95% Standard Bootstrap UCL | 7.094 |
| 95% Bootstrap-t UCL | 7.169 |
| 95% Hall's Bootstrap UCL | 7.182 |
| 95% Percentile Bootstrap UCL | 7.088 |
| 95% BCA Bootstrap UCL | 7.176 |
| 95% Chebyshev(Mean, Sd) UCL | 8.341 |
| 97.5% Chebyshev(Mean, Sd) UCL | 9.208 |
| 99% Chebyshev(Mean, Sd) UCL | 10.91 |
| Potential UCL to Use | |
| Use 95% Chebyshev (Mean, Sd) UCL | 8.341 |

SS-0

| | |
|---|---|
| Number of Valid Observations | 58 |
| Number of Distinct Observations | 46 |
| Minimum | 2.5 |
| Maximum | 920 |
| Mean | 187.8 |
| Median | 120 |
| SD | 187.5 |
| Variance | 35160 |
| Coefficient of Variation | 0.999 |
| Skewness | 1.698 |
| Mean of log data | 4.604 |
| SD of log data | 1.379 |

95% Useful UCLs

| | |
|---|---|
| Student's-t UCL | 228.9 |

95% UCLs (Adjusted for Skewness)

| | |
|---|---|
| 95% Adjusted-CLT UCL | 234.1 |
| 95% Modified-t UCL | 229.8 |

Non-Parametric UCLs

| | |
|---|---|
| 95% CLT UCL | 228.3 |
| 95% Jackknife UCL | 228.9 |
| 95% Standard Bootstrap UCL | 228.1 |
| 95% Bootstrap-t UCL | 238.4 |
| 95% Hall's Bootstrap UCL | 235.6 |
| 95% Percentile Bootstrap UCL | 228.9 |
| 95% BCA Bootstrap UCL | 234.2 |
| 95% Chebyshev(Mean, Sd) UCL | 295.1 |
| 97.5% Chebyshev(Mean, Sd) UCL | 341.5 |
| 99% Chebyshev(Mean, Sd) UCL | 432.7 |

Data appear Gamma Distributed (0.05)

May want to try Gamma UCLs

SS-1

| | |
|---|---|
| Number of Valid Observations | 58 |
| Number of Distinct Observations | 33 |
| Minimum | 2.5 |
| Maximum | 420 |
| Mean | 19.26 |
| Median | 6.45 |
| SD | 55.92 |
| Variance | 3127 |
| Coefficient of Variation | 2.903 |
| Skewness | 6.72 |
| Mean of log data | 2.052 |
| SD of log data | 1.078 |

Data do not follow a Discernable Distribution

95% Useful UCLs

| | |
|---|---|
| Student's-t UCL | 31.54 |

95% UCLs (Adjusted for Skewness)

| | |
|---|---|
| 95% Adjusted-CLT UCL | 38.26 |
| 95% Modified-t UCL | 32.62 |

Non-Parametric UCLs

| | |
|---|---|
| 95% CLT UCL | 31.34 |
| 95% Jackknife UCL | 31.54 |
| 95% Standard Bootstrap UCL | 30.8 |
| 95% Bootstrap-t UCL | 65.83 |
| 95% Hall's Bootstrap UCL | 73.63 |
| 95% Percentile Bootstrap UCL | 33.62 |
| 95% BCA Bootstrap UCL | 43.62 |
| 95% Chebyshev(Mean, Sd) UCL | 51.27 |
| 97.5% Chebyshev(Mean, Sd) UCL | 65.12 |
| 99% Chebyshev(Mean, Sd) UCL | 92.32 |

Potential UCL to Use

| | |
|---|---|
| Use 97.5% Chebyshev (Mean, Sd) UCL | 65.12 |

NS-2

| | |
|---|---|
| Number of Valid Observations | 58 |
| Number of Distinct Observations | 28 |
| Minimum | 2.5 |
| Maximum | 36 |
| Mean | 6.062 |
| Median | 5.85 |
| SD | 5.047 |
| Variance | 25.47 |
| Coefficient of Variation | 0.833 |
| Skewness | 3.891 |
| Mean of log data | 1.591 |
| SD of log data | 0.623 |

Data do not follow a Discernable Distribution

| | |
|---|---|
| 95% Useful UCLs | |
| Student's-t UCL | 7.17 |
| 95% UCLs (Adjusted for Skewness) | |
| 95% Adjusted-CLT UCL | 7.514 |
| 95% Modified-t UCL | 7.227 |
| Non-Parametric UCLs | |
| 95% CLT UCL | 7.152 |
| 95% Jackknife UCL | 7.17 |
| 95% Standard Bootstrap UCL | 7.173 |
| 95% Bootstrap-t UCL | 7.832 |
| 95% Hall's Bootstrap UCL | 12.44 |
| 95% Percentile Bootstrap UCL | 7.279 |
| 95% BCA Bootstrap UCL | 7.671 |
| 95% Chebyshev(Mean, Sd) UCL | 8.951 |
| 97.5% Chebyshev(Mean, Sd) UCL | 10.2 |
| 99% Chebyshev(Mean, Sd) UCL | 12.66 |
| Potential UCL to Use | |
| Use 95% Chebyshev (Mean, Sd) UCL | 8.951 |

NS-3

| | |
|---|---|
| Number of Valid Observations | 58 |
| Number of Distinct Observations | 29 |
| Minimum | 2.5 |
| Maximum | 14 |
| Mean | 5.214 |
| Median | 5.55 |
| SD | 2.678 |
| Variance | 7.17 |
| Coefficient of Variation | 0.514 |
| Skewness | 0.663 |
| Mean of log data | 1.515 |
| SD of log data | 0.536 |

Data do not follow a Discernable Distribution

| | |
|---|---|
| 95% Useful UCLs | |
| Student's-t UCL | 5.802 |
| 95% UCLs (Adjusted for Skewness) | |
| 95% Adjusted-CLT UCL | 5.825 |
| 95% Modified-t UCL | 5.807 |
| Non-Parametric UCLs | |
| 95% CLT UCL | 5.792 |
| 95% Jackknife UCL | 5.802 |
| 95% Standard Bootstrap UCL | 5.769 |
| 95% Bootstrap-t UCL | 5.831 |
| 95% Hall's Bootstrap UCL | 5.856 |
| 95% Percentile Bootstrap UCL | 5.767 |
| 95% BCA Bootstrap UCL | 5.852 |
| 95% Chebyshev(Mean, Sd) UCL | 6.746 |
| 97.5% Chebyshev(Mean, Sd) UCL | 7.41 |
| 99% Chebyshev(Mean, Sd) UCL | 8.712 |
| Potential UCL to Use | |
| Use 95% Chebyshev (Mean, Sd) UCL | 6.746 |

NS-0

| | |
|---|---|
| Number of Valid Observations | 58 |
| Number of Distinct Observations | 41 |
| Minimum | 10 |
| Maximum | 850 |
| Mean | 214.2 |
| Median | 160 |
| SD | 189.1 |
| Variance | 35759 |
| Coefficient of Variation | 0.883 |
| Skewness | 1.456 |
| Mean of log data | 4.902 |
| SD of log data | 1.105 |

95% Useful UCLs

| | |
|---|---|
| Student's-t UCL | 255.7 |

95% UCLs (Adjusted for Skewness)

| | |
|---|---|
| 95% Adjusted-CLT UCL | 260.1 |
| 95% Modified-t UCL | 256.5 |

Non-Parametric UCLs

| | |
|---|---|
| 95% CLT UCL | 255 |
| 95% Jackknife UCL | 255.7 |
| 95% Standard Bootstrap UCL | 254.1 |
| 95% Bootstrap-t UCL | 261.6 |
| 95% Hall's Bootstrap UCL | 263.9 |
| 95% Percentile Bootstrap UCL | 258.6 |
| 95% BCA Bootstrap UCL | 257.6 |
| 95% Chebyshev(Mean, Sd) UCL | 322.4 |
| 97.5% Chebyshev(Mean, Sd) UCL | 369.3 |
| 99% Chebyshev(Mean, Sd) UCL | 461.2 |

Data appear Gamma Distributed (0.05)

May want to try Gamma UCLs

NS-1

| | |
|---|---|
| Number of Valid Observations | 58 |
| Number of Distinct Observations | 30 |
| Minimum | 2.5 |
| Maximum | 940 |
| Mean | 24.28 |
| Median | 5.85 |
| SD | 122.7 |
| Variance | 15044 |
| Coefficient of Variation | 5.051 |
| Skewness | 7.558 |
| Mean of log data | 1.846 |
| SD of log data | 1.032 |

Data do not follow a Discernable Distribution

95% Useful UCLs

| | |
|---|---|
| Student's-t UCL | 51.21 |

95% UCLs (Adjusted for Skewness)

| | |
|---|---|
| 95% Adjusted-CLT UCL | 67.85 |
| 95% Modified-t UCL | 53.88 |

Non-Parametric UCLs

| | |
|---|---|
| 95% CLT UCL | 50.78 |
| 95% Jackknife UCL | 51.21 |
| 95% Standard Bootstrap UCL | 51.23 |
| 95% Bootstrap-t UCL | 380.8 |
| 95% Hall's Bootstrap UCL | 176.2 |
| 95% Percentile Bootstrap UCL | 56.29 |
| 95% BCA Bootstrap UCL | 87.44 |
| 95% Chebyshev(Mean, Sd) UCL | 94.49 |
| 97.5% Chebyshev(Mean, Sd) UCL | 124.9 |
| 99% Chebyshev(Mean, Sd) UCL | 184.5 |

Potential UCL to Use

| | |
|---|---|
| Use 97.5% Chebyshev (Mean, Sd) UCL | 124.9 |

MS-2

| | |
|---|---|
| Number of Valid Observations | 56 |
| Number of Distinct Observations | 15 |
| Minimum | 2.5 |
| Maximum | 25 |
| Mean | 4.493 |
| Median | 2.5 |
| SD | 3.556 |
| Variance | 12.64 |
| Coefficient of Variation | 0.791 |
| Skewness | 3.733 |
| Mean of log data | 1.324 |
| SD of log data | 0.55 |

Data do not follow a Discernable Distribution

| | |
|---|---|
| 95% Useful UCLs | |
| Student's-t UCL | 5.288 |
| 95% UCLs (Adjusted for Skewness) | |
| 95% Adjusted-CLT UCL | 5.528 |
| 95% Modified-t UCL | 5.327 |
| Non-Parametric UCLs | |
| 95% CLT UCL | 5.274 |
| 95% Jackknife UCL | 5.288 |
| 95% Standard Bootstrap UCL | 5.294 |
| 95% Bootstrap-t UCL | 5.746 |
| 95% Hall's Bootstrap UCL | 8.938 |
| 95% Percentile Bootstrap UCL | 5.309 |
| 95% BCA Bootstrap UCL | 5.605 |
| 95% Chebyshev(Mean, Sd) UCL | 6.564 |
| 97.5% Chebyshev(Mean, Sd) UCL | 7.46 |
| 99% Chebyshev(Mean, Sd) UCL | 9.22 |
| Potential UCL to Use | |
| Use 95% Chebyshev (Mean, Sd) UCL | 6.564 |

MS-3

| | |
|---|---|
| Number of Valid Observations | 56 |
| Number of Distinct Observations | 23 |
| Minimum | 2.5 |
| Maximum | 24 |
| Mean | 5.504 |
| Median | 5.2 |
| SD | 4.441 |
| Variance | 19.72 |
| Coefficient of Variation | 0.807 |
| Skewness | 2.353 |
| Mean of log data | 1.484 |
| SD of log data | 0.63 |

Data do not follow a Discernable Distribution

| | |
|---|---|
| 95% Useful UCLs | |
| Student's-t UCL | 6.496 |
| 95% UCLs (Adjusted for Skewness) | |
| 95% Adjusted-CLT UCL | 6.679 |
| 95% Modified-t UCL | 6.528 |
| Non-Parametric UCLs | |
| 95% CLT UCL | 6.48 |
| 95% Jackknife UCL | 6.496 |
| 95% Standard Bootstrap UCL | 6.476 |
| 95% Bootstrap-t UCL | 6.791 |
| 95% Hall's Bootstrap UCL | 6.862 |
| 95% Percentile Bootstrap UCL | 6.438 |
| 95% BCA Bootstrap UCL | 6.725 |
| 95% Chebyshev(Mean, Sd) UCL | 8.091 |
| 97.5% Chebyshev(Mean, Sd) UCL | 9.21 |
| 99% Chebyshev(Mean, Sd) UCL | 11.41 |
| Potential UCL to Use | |
| Use 95% Chebyshev (Mean, Sd) UCL | 8.091 |

Nonparametric UCL Statistics for Full Data Sets

User Selected Options

| | |
|---|---|
| From File | \\Geoconprimary1\netfolder\GEC Jobs\Caltrans\E8220 Contract 04A |
| Full Precision | OFF E8220-06-82 Rt 101 Windsor\ProUCL\MS NS SS input. |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

MS-0

| | |
|---|---|
| Number of Valid Observations | 57 |
| Number of Distinct Observations | 44 |
| Minimum | 5.7 |
| Maximum | 740 |
| Mean | 192.7 |
| Median | 150 |
| SD | 159.1 |
| Variance | 25320 |
| Coefficient of Variation | 0.826 |
| Skewness | 1.488 |
| Mean of log data | 4.873 |
| SD of log data | 1.015 |

95% Useful UCLs

| | |
|---|---|
| Student's-t UCL | 228 |

95% UCLs (Adjusted for Skewness)

| | |
|---|---|
| 95% Adjusted-CLT UCL | 231.8 |
| 95% Modified-t UCL | 228.7 |

Non-Parametric UCLs

| | |
|---|---|
| 95% CLT UCL | 227.4 |
| 95% Jackknife UCL | 228 |
| 95% Standard Bootstrap UCL | 227.3 |
| 95% Bootstrap-t UCL | 232.9 |
| 95% Hall's Bootstrap UCL | 233.1 |
| 95% Percentile Bootstrap UCL | 227.7 |
| 95% BCA Bootstrap UCL | 232.8 |
| 95% Chebyshev(Mean, Sd) UCL | 284.6 |
| 97.5% Chebyshev(Mean, Sd) UCL | 324.3 |
| 99% Chebyshev(Mean, Sd) UCL | 402.4 |

Data appear Gamma Distributed (0.05)

May want to try Gamma UCLs

MS-1

| | |
|---|---|
| Number of Valid Observations | 57 |
| Number of Distinct Observations | 27 |
| Minimum | 2.5 |
| Maximum | 57 |
| Mean | 7.463 |
| Median | 5.2 |
| SD | 10.23 |
| Variance | 104.7 |
| Coefficient of Variation | 1.371 |
| Skewness | 3.912 |
| Mean of log data | 1.607 |
| SD of log data | 0.785 |

Data do not follow a Discernable Distribution

95% Useful UCLs

| | |
|---|---|
| Student's-t UCL | 9.73 |

95% UCLs (Adjusted for Skewness)

| | |
|---|---|
| 95% Adjusted-CLT UCL | 10.44 |
| 95% Modified-t UCL | 9.847 |

Non-Parametric UCLs

| | |
|---|---|
| 95% CLT UCL | 9.693 |
| 95% Jackknife UCL | 9.73 |
| 95% Standard Bootstrap UCL | 9.665 |
| 95% Bootstrap-t UCL | 12.05 |
| 95% Hall's Bootstrap UCL | 20.48 |
| 95% Percentile Bootstrap UCL | 9.905 |
| 95% BCA Bootstrap UCL | 10.44 |
| 95% Chebyshev(Mean, Sd) UCL | 13.37 |
| 97.5% Chebyshev(Mean, Sd) UCL | 15.93 |
| 99% Chebyshev(Mean, Sd) UCL | 20.95 |

Potential UCL to Use

| | |
|---|---|
| Use 95% Chebyshev (Mean, Sd) UCL | 13.37 |

SW351-2

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 2 |
| Minimum | 2.5 |
| Maximum | 5.2 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW351-2 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW351-3

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 2 |
| Minimum | 2.5 |
| Maximum | 6.8 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW351-3 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW358-0

| | |
|---|---|
| Number of Valid Observations | 3 |
| Number of Distinct Observations | 2 |
| Minimum | 180 |
| Maximum | 290 |

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW358-0 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW358-1

| | |
|---|---|
| Number of Valid Observations | 3 |
| Number of Distinct Observations | 2 |
| Minimum | 2.5 |
| Maximum | 16 |

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW358-1 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW358-2

| | |
|---|---|
| Number of Valid Observations | 3 |
| Number of Distinct Observations | 3 |
| Minimum | 2.5 |
| Maximum | 6.5 |

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW358-2 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW358-3

| | |
|---|---|
| Number of Valid Observations | 3 |
| Number of Distinct Observations | 3 |
| Minimum | 2.5 |
| Maximum | 23 |

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW358-3 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW350-3

| | |
|---|---|
| Number of Valid Observations | 6 |
| Number of Distinct Observations | 3 |
| Minimum | 2.5 |
| Maximum | 27 |
| Mean | 7.383 |
| Median | 2.5 |
| SD | 9.8 |
| Variance | 96.04 |
| Coefficient of Variation | 1.327 |
| Skewness | 2.258 |
| Mean of log data | 1.491 |
| SD of log data | 0.982 |

Warning: There are only 3 Distinct Values in this data
There are insufficient Distinct Values to perform some GOF tests and bootstrap methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values to compute bootstrap methods.
It is recommended to have 10-15 or more observations for accurate and meaningful bootstrap results.

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Data do not follow a Discernable Distribution

| | |
|---|---|
| 90% Useful UCLs | |
| Student's-t UCL | 13.29 |
| 90% UCLs (Adjusted for Skewness) | |
| 90% Adjusted-CLT UCL | 15.14 |
| 90% Modified-t UCL | 13.9 |
| Non-Parametric UCLs | |
| 90% CLT UCL | 12.51 |
| 90% Jackknife UCL | 13.29 |
| 90% Standard Bootstrap UCL | N/A |
| 90% Bootstrap-t UCL | N/A |
| 90% Hall's Bootstrap UCL | N/A |
| 90% Percentile Bootstrap UCL | N/A |
| 90% BCA Bootstrap UCL | N/A |
| 90% Chebyshev(Mean, Sd) UCL | 19.39 |
| 95% Chebyshev(Mean, Sd) UCL | 24.82 |
| 97.5% Chebyshev(Mean, Sd) UCL | 32.37 |
| 99% Chebyshev(Mean, Sd) UCL | 47.19 |

Potential UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

SW351-0

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 14 |
| Maximum | 260 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW351-0 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW351-1

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 5.4 |
| Maximum | 13 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW351-1 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Data do not follow a Discernable Distribution

| | |
|---|---|
| 90% Useful UCLs | |
| Student's-t UCL | 18.67 |
| | |
| 90% UCLs (Adjusted for Skewness) | |
| 90% Adjusted-CLT UCL | 19.24 |
| 90% Modified-t UCL | 19.04 |
| | |
| Non-Parametric UCLs | |
| 90% CLT UCL | 17.64 |
| 90% Jackknife UCL | 18.67 |
| 90% Standard Bootstrap UCL | N/A |
| 90% Bootstrap-t UCL | N/A |
| 90% Hall's Bootstrap UCL | N/A |
| 90% Percentile Bootstrap UCL | N/A |
| 90% BCA Bootstrap UCL | N/A |
| 90% Chebyshev(Mean, Sd) UCL | 26.76 |
| 95% Chebyshev(Mean, Sd) UCL | 33.98 |
| 97.5% Chebyshev(Mean, Sd) UCL | 43.99 |
| 99% Chebyshev(Mean, Sd) UCL | 63.67 |

Potential UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

SW350-2

| | |
|---|---|
| Number of Valid Observations | 6 |
| Number of Distinct Observations | 3 |
| Minimum | 2.5 |
| Maximum | 18 |
| Mean | 5.917 |
| Median | 2.5 |
| SD | 6.248 |
| Variance | 39.04 |
| Coefficient of Variation | 1.056 |
| Skewness | 1.978 |
| Mean of log data | 1.428 |
| SD of log data | 0.84 |

Warning: There are only 3 Distinct Values in this data
There are insufficient Distinct Values to perform some GOF tests and bootstrap methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values to compute bootstrap methods.
It is recommended to have 10-15 or more observations for accurate and meaningful bootstrap results.

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Data do not follow a Discernable Distribution

| | |
|---|---|
| 90% Useful UCLs | |
| Student's-t UCL | 9.681 |
| | |
| 90% UCLs (Adjusted for Skewness) | |
| 90% Adjusted-CLT UCL | 10.66 |
| 90% Modified-t UCL | 10.02 |
| | |
| Non-Parametric UCLs | |
| 90% CLT UCL | 9.186 |
| 90% Jackknife UCL | 9.681 |
| 90% Standard Bootstrap UCL | N/A |
| 90% Bootstrap-t UCL | N/A |
| 90% Hall's Bootstrap UCL | N/A |
| 90% Percentile Bootstrap UCL | N/A |
| 90% BCA Bootstrap UCL | N/A |
| 90% Chebyshev(Mean, Sd) UCL | 13.57 |
| 95% Chebyshev(Mean, Sd) UCL | 17.04 |
| 97.5% Chebyshev(Mean, Sd) UCL | 21.85 |
| 99% Chebyshev(Mean, Sd) UCL | 31.3 |

Potential UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

SW350-0

| | |
|---|---|
| Number of Valid Observations | 6 |
| Number of Distinct Observations | 6 |
| Minimum | 26 |
| Maximum | 380 |
| Mean | 102.2 |
| Median | 47.5 |
| SD | 138.1 |
| Variance | 19061 |
| Coefficient of Variation | 1.351 |
| Skewness | 2.3 |
| Mean of log data | 4.093 |
| SD of log data | 1.022 |

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

| | |
|---|---|
| 90% Useful UCLs | |
| Student's-t UCL | 185.4 |
| 90% UCLs (Adjusted for Skewness) | |
| 90% Adjusted-CLT UCL | 212.2 |
| 90% Modified-t UCL | 194.2 |
| Non-Parametric UCLs | |
| 90% CLT UCL | 174.4 |
| 90% Jackknife UCL | 185.4 |
| 90% Standard Bootstrap UCL | 168.7 |
| 90% Bootstrap-t UCL | 500.6 |
| 90% Hall's Bootstrap UCL | 578.8 |
| 90% Percentile Bootstrap UCL | 164.2 |
| 90% BCA Bootstrap UCL | 210.7 |
| 90% Chebyshev(Mean, Sd) UCL | 271.3 |
| 95% Chebyshev(Mean, Sd) UCL | 347.8 |
| 97.5% Chebyshev(Mean, Sd) UCL | 454.2 |
| 99% Chebyshev(Mean, Sd) UCL | 663 |

Data follow Appr. Gamma Distribution (0.05)

May want to try Gamma UCLs

SW350-1

| | |
|---|---|
| Number of Valid Observations | 6 |
| Number of Distinct Observations | 3 |
| Minimum | 2.5 |
| Maximum | 30 |
| Mean | 10.83 |
| Median | 2.5 |
| SD | 13.01 |
| Variance | 169.2 |
| Coefficient of Variation | 1.201 |
| Skewness | 1.032 |
| Mean of log data | 1.714 |
| SD of log data | 1.237 |

Warning: There are only 3 Distinct Values in this data
There are insufficient Distinct Values to perform some GOF tests and bootstrap methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values to compute bootstrap methods.
It is recommended to have 10-15 or more observations for accurate and meaningful bootstrap results.

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW342-3

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 9.1 |
| Maximum | 15 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW342-3 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW343-0

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 19 |
| Maximum | 230 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW343-0 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW343-1

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 6.6 |
| Maximum | 7.9 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW343-1 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW343-2

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 1 |
| Minimum | 2.5 |
| Maximum | 2.5 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW343-2 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW343-3

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 5.1 |
| Maximum | 11 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW343-3 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW252-2

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 3 |
| Minimum | 2.5 |
| Maximum | 8.7 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW252-2 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW252-3

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 3 |
| Minimum | 2.5 |
| Maximum | 7.1 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW252-3 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW342-0

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 3 |
| Minimum | 120 |
| Maximum | 350 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW342-0 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW342-1

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 2.5 |
| Maximum | 23 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW342-1 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW342-2

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 2.5 |
| Maximum | 21 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW342-2 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

RW2-1

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 2.5 |
| Maximum | 10 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable RW2-1 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

RW2-2

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 1 |
| Minimum | 2.5 |
| Maximum | 2.5 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable RW2-2 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

RW2-3

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 2 |
| Minimum | 2.5 |
| Maximum | 5.1 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable RW2-3 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW252-0

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 18 |
| Maximum | 310 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW252-0 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW252-1

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 2.5 |
| Maximum | 44 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW252-1 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Nonparametric UCL Statistics for Full Data Sets

User Selected Options

| | |
|---|---|
| From File | \\Geoconprimary1\netfolder\GEC Jobs\Caltrans\E8220 Contract 04A1862\80-89\E8220-0( |
| Full Precision | OFF |
| Confidence Coefficient | 90% |
| Number of Bootstrap Operations | 2000 |

RW1-0

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 14 |
| Maximum | 130 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable RW1-0 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

RW1-1

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 2.5 |
| Maximum | 80 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable RW1-1 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

RW1-2

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 2.5 |
| Maximum | 100 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable RW1-2 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

RW1-3

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 2.5 |
| Maximum | 53 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable RW1-3 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

RW2-0

| | |
|---|---|
| Number of Valid Observations | 4 |
| Number of Distinct Observations | 4 |
| Minimum | 8.4 |
| Maximum | 100 |

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable RW2-0 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.