FOR CONTRACT NO.: 12-0M0004

INFORMATION HANDOUT

MATERIALS INFORMATION

LEAD INVESTIGATION REPORT

ROUTE: 12-Ora-55-12.7

AERIALLY DEPOSITED LEAD SITE INVESTIGATION
EB SR-22 TO SB SR-55 CONNECTOR AND NORTH AND SOUTH SIDE OF SR-91 HARBOR BOULEVARD TO LEMON STREET CONNECTORS
ORANGE, FULLERTON, AND ANAHEIM, CALIFORNIA
TASK ORDER NO. 12-OM0001-02
EA NO. OM0001, CONTRACT NO. 12A1340

PREPARED FOR:
State of California
Department of Transportation
District 12, Environmental Engineering
3347 Michelson Drive, Suite 100
Irvine, California 92612-8894

PREPARED BY:
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Geotechnical and Environmental Sciences Consultants
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February 27, 2012
Project No. 208449002

February 27, 2012
Project No. 208449002

Mr. Wayne Chiou
State of California Department of Transportation
District 12, Environmental Engineering
3347 Michelson Drive, Suite 100
Irvine, California 92612-8894

Subject: Aerially Deposited Lead Site Investigation
EB SR-22 to SB SR-55 Connector and North and South Side of SR-91
Harbor Boulevard to Lemon Street Connectors
Orange, Fullerton, and Anaheim, California
Task Order No. 12-OM0001-02
EA No. OM0001
Contract No. 12A1340

Dear Mr. Chiou:

In accordance with the State of California Department of Transportation Contract No. 12A1340, Task Order No. 12-OM0001-02, Ninyo & Moore has conducted an aerially deposited lead investigation at the eastbound State Route 22 to the southbound State Route 55 connector and the north and south side of State Route 91 Harbor Boulevard to Lemon Street Connectors in the cities of Orange, Fullerton, and Anaheim, California.

The following report documents our methodologies, findings, conclusions, and recommendations.

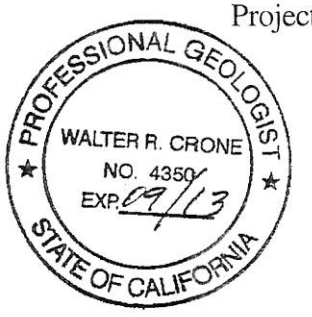
We appreciate the opportunity to be of service to you on this project.

Sincerely,
NINYO & MOORE

Pedro Rodriguez-Mendez
Staff Scientist

Michael Cashner, CAC
Project Environmental Scientist

Walter R. Crone, PG, REA
Principal Environmental Geologist



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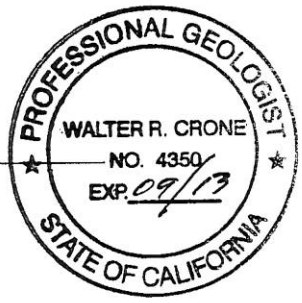
AERIALLY DEPOSITED LEAD INVESTIGATION REPORT
Task Order No. 12-OM0001-02
E.A. OM0001

This report was prepared by the staff of Ninyo & Moore Geotechnical and Environmental Sciences Consultants under the supervision of the Engineer and/or Geologist whose signature appears hereon.

The findings, recommendations, specifications, or professional opinions are presented within the limits described by the client, after being prepared in accordance with generally accepted professional engineering and geologic practice. No warranty is expressed or implied.



Walter R. Crone, PG, REA
Principal Environmental Geologist

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EXECUTIVE SUMMARY

The State of California Department of Transportation (Department) authorized Ninyo & Moore to conduct an aerially deposited lead site investigation at the eastbound (EB) State Route 22 (SR-22) to southbound (SB) State Route 55 (SR-55) connector in the city of Orange (Site 1; Figure 1) and at the Harbor Boulevard to Lemon Street connectors on the north and south side of State Route 91 (SR-91) in the cities of Fullerton and Anaheim, California (Site 2; Figure 2). Work was conducted in general accordance with the Department Contract No. 12A1340, Task Order No. 12-OM0001-02, dated December 20, 2011.

It is our understanding that the Department proposes removal of the existing culvert wall and the installation of a metal beam guard rail at the SR-22/SR-55 interchange site (Site 1) and the installation of three yellow flashing beacons at the SR-91 site (Site 2). This investigation was performed to evaluate the presence of lead in soil resulting from the combustion of leaded fuel from nearby traffic. Data collected during this investigation were used to develop recommendations for the potential reuse or disposal of soil excavated from the site and to inform the Department of potential health and safety issues concerning the presence of lead in soil for workers at the site during construction activities.

Ninyo & Moore collected 18 soil samples from five borings at the sites (B1 through B5). Borings B1 and B2 were advanced at Site 1 and borings B3 through B5 were advanced at Site 2. Three samples (B2-0.5, B2-3.0, and B2-4.0) contained a total lead concentration greater than or equal to 50 milligrams per kilogram (mg/kg) and less than 1,000 mg/kg and were subsequently analyzed for soluble lead in accordance with the Waste Extraction Test using citric acid. The results showed B2-0.5 having a soluble lead concentration of 0.51 milligrams per liter (mg/l) and B2-4.0 having a soluble lead concentration of 3.4 mg/l; both are below the Soluble Threshold Limit Concentration for California hazardous waste (Title 22 California Code of Regulations [CCR], Section 66261.24). Sample B2-3.0 contained a soluble lead concentration greater than or equal to 5 mg/l and was subsequently analyzed for leachable lead by the Toxicity Characteristic Leaching Procedure (TCLP). The result showed B2-3.0 having a leachable lead concentration of 0.02 mg/l,

which is below the TCLP for federal hazardous waste under the Resource, Conservation, and Recovery Act (Title 40 Code of Federal Regulations [CFR] 261.24).

Two samples were analyzed for pH. The pH level ranged from 8.7 to 9.2.

Our recommendations for soil reuse on site are based on the guidelines set forth by the Department of Toxic Substances Control (DTSC) Lead Variance issued to the Department on June 30, 2009 (DTSC Variance). Laboratory analytical results for lead were compared to the guidelines of the DTSC Variance for potential reuse of the soil as fill within the Department right-of-way.

Our recommendations for off-site disposal were based on the comparison of lead concentrations in soil samples to the California Health and Safety Code thresholds and Title 40 CFR 261.24 thresholds.

Based on the analytical results, the on-site reuse and the off-site disposal recommendations are summarized below.

Site 1 – Recommendations for Soil for Reuse by the Department (Borings B1 and B2)

Soil at the site can be reused on site with the following restrictions:

- Scenario A: The soil in the surface layer (surface to 0.5 feet below ground surface [bgs]) is suitable for on-site reuse by the department with no restrictions based on total and soluble lead concentrations. The remaining soil from the 1.5- to 4-foot layers combined (0.5 to 4 feet bgs) may be reused on site if it is placed a minimum of 5 feet above the maximum water table elevation and covered with at least 1 foot of non-hazardous soil.

- Scenario B: The soil in the surface and 1.5-foot layers combined (surface to 1.5 feet bgs) is suitable for on-site reuse by the department with no restrictions based on total and soluble lead concentrations. The remaining soil from the 3- and 4-foot layers combined (1.5 to 4 feet bgs) may be reused on site if it is placed a minimum of 5 feet above the maximum water table elevation and covered with at least 1 foot of non-hazardous soil.

- Scenario C: The soil in the surface to 3-foot layers combined (surface to 3 feet bgs) may be reused on site if it is placed a minimum of 5 feet above the maximum water table elevation and covered with at least 1 foot of non-hazardous soil. The remaining soil

from the 4-foot layer (3 to 4 feet bgs) has no restrictions based on total and soluble lead concentrations.

- Scenario D: The soil in the layers combined (surface to 4 feet bgs) may be reused on site if it is placed a minimum of 5 feet above the maximum water table elevation and covered with at least 1 foot of non-hazardous soil.

Site 1 – Recommendations for Soil to be Disposed Off Site (Borings B1 and B2)

If the Department elects to dispose the soil off site, the following restrictions apply:

- Scenario A: The soil in the surface layer (surface to 0.5 feet bgs) is classified as non-hazardous and may be disposed off site with no restrictions based on total and soluble lead concentrations. The remaining soil from the 1.5- to 4-foot layers combined (0.5 to 4 feet bgs) is classified as California hazardous and should be disposed at a Class 1 disposal site in accordance with Title 22 CCR requirements.

- Scenario B: The soil in the surface and 1.5-foot layer combined (surface to 1.5 feet bgs) is classified as non-hazardous and may be disposed off site with no restrictions based on total and soluble lead concentrations. The remaining soil from the 3- and 4-foot layers combined (1.5 to 4 feet bgs) is classified as California hazardous and should be disposed at a Class 1 disposal site in accordance with Title 22 CCR requirements.

- Scenario C: The soil in the surface to 3-foot layers combined (surface to 3 feet bgs) is classified as California hazardous and should be disposed at a Class 1 disposal site in accordance with Title 22 CCR requirements. The remaining soil from the 4-foot layer (3 to 4 feet bgs) is classified as non-hazardous and may be disposed off site with no restrictions based on total and soluble lead concentrations.

- Scenario D: The soil in the layers combined (surface to 4 feet bgs) is classified as California hazardous and should be disposed at a Class 1 disposal site in accordance with Title 22 CCR requirements.

Site 2 – Recommendations for Soil for Reuse by the Department (Borings B3, B4, and B5)

Soil at the site can be reused on site with the following restrictions:

- Scenario A: The soil in the surface layer (surface to 0.5 feet bgs) is suitable for on-site reuse by the Department with no restrictions based on total lead concentrations. The remaining soil from the 1.5- to 4-foot layers combined (0.5 to 4 feet bgs) is suitable for on-site reuse by the Department with no restrictions based on total lead concentrations.

- Scenario B: The soil in the surface and 1.5-foot layers combined (surface to 1.5 feet bgs) is suitable for on-site reuse by the Department with no restrictions based on total lead concentrations. The remaining soil from the 3- and 4-foot layers combined (1.5 to 4 feet bgs) is suitable for on-site reuse by the Department with no restrictions based on total lead concentrations.

- Scenario C: The soil in the surface to 3-foot layers combined (surface to 3 feet bgs) is suitable for on-site reuse by the Department with no restrictions based on total lead concentrations. The remaining soil from the 4-foot layer (3 to 4 feet bgs) is suitable for on-site reuse by the Department with no restrictions based on total lead concentrations.

- Scenario D: The soil in the layers combined (surface to 4 feet bgs) is suitable for on-site reuse by the Department with no restrictions based on total lead concentrations.

Site 2 – Recommendations for Soil to be Disposed Off Site (Borings B3, B4, and B5)

If the Department elects to dispose the soil off site, the following restrictions apply:

- Scenario A: The soil in the surface layer (surface to 0.5 feet bgs) is classified as non-hazardous and may disposed off site with no restrictions based on total lead concentrations. The remaining soil from the 1.5- to 4-foot layers combined (0.5 to 4 feet bgs) is also classified as non-hazardous and may be disposed off site with no restrictions based on total lead concentrations.

- Scenario B: The soil in the surface to 1.5-foot layer combined (surface to 1.5 feet bgs) is classified as non-hazardous and may be disposed off site with no restrictions based on total lead concentrations. The remaining soil from the 3- and 4-foot layers combined (1.5 to 4 feet bgs) also has no restrictions based on total lead concentrations.

- Scenario C: The soil in the surface to 3-foot layers combined (surface to 3 feet bgs) is classified as non-hazardous and may be disposed off site with no restrictions based on total lead. The remaining soil from the 4-foot layer (3 to 4-feet bgs) is also classified as non-hazardous and may be disposed off site with no restrictions based on total lead concentrations.

- Scenario D: The soil in the layers combined (surface to 4 feet bgs) is classified as non-hazardous and may be disposed off site with no restrictions based on total lead concentrations.

The Department should notify the contractors performing the construction activities that elevated concentrations of lead are present in on-site soil. Appropriate health and safety measures should be taken to minimize the potential exposure to lead.

1. INTRODUCTION

The State of California Department of Transportation (Department) authorized Ninyo & Moore to conduct an aerially deposited lead (ADL) site investigation at the eastbound (EB) State Route 22 (SR-22) to southbound (SB) State Route 55 (SR-55) connector in the city of Orange (Site 1; Figure 1) and at the Harbor Boulevard to Lemon Street connectors on the north and south side of State Route 91 (SR-91) in the cities of Fullerton and Anaheim, California (Site 2; Figure 2). Work was conducted in general accordance with the Department Contract No. 12A1340, Task Order No. 12-OM0001-02 (TO 02), dated December 20, 2011.

1.1. Project Description and Objective

It is our understanding that the Department is proposing removal of the existing culvert wall and the installation of a metal beam guard rail at the SR-22/SR-55 interchange site (Site 1; Figure 1) and the installation of three yellow flashing beacons at the SR-91 site (Site 2; Figure 2). This report has been prepared by Ninyo & Moore to document the results of a study to evaluate the presence of ADL along the unpaved shoulder area of the site. Five borings were hand augered at the site for this task order.

1.2. Scope of Work

Ninyo & Moore performed the tasks described in the following sections.

1.2.1. Prefield Activities

Prefield activities included:

- Preparing a site specific health and safety plan (HSP).
- Marking boring locations at the sites.
- Notifying Underground Service Alert (USA) that Ninyo & Moore would be advancing soil borings in the area (USA ticket number A20100267 and A20100551).
- Preparing a project schedule and coordinating work with subcontractors

1.2.2. Soil Sampling

Soil sampling was conducted on January 19, 2012. Five sampling locations (B1 through B5) were chosen, as shown on Figures 3 through 5. Borings B1 and B2 were advanced at Site 1 and borings B3 through B5 were advanced at Site 2. One boring at each sampling location was advanced and sampled using a hand auger. Four soil samples were attempted for collection from depths of surface to ½, 1½ to 2, 2 ½ to 3, and 3 ½ to 4 feet below ground surface (bgs) at each boring location.

1.2.3. Laboratory Analysis

Ninyo & Moore submitted the soil samples under chain-of-custody (COC) protocol to Pat-Chem Laboratories of Moorpark, California; a laboratory certified by the State of California Department of Health Services Environmental Laboratory Accreditation Program.

1.2.4. Global Positioning System Surveying

Approximate latitude and longitude (North American Datum 83) of sampling locations were recorded with a handheld GPS unit (GeoXT, Trimble). The latitude and longitude data for each boring are presented on Table 1.

1.2.5. Report Preparation

This report was prepared in general accordance with Department Contract No. 12A1340 and TO 02 dated December 20, 2011.

1.3. Previous Site Investigations

Ninyo & Moore has not performed previous investigations at this site. In addition, the Department has not notified Ninyo & Moore of previous investigations performed at the site.

2. BACKGROUND

The Department obtained a variance (V09 HQSCD006) from the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC), on June 30, 2009 (DTSC Variance). The DTSC Variance allows for conditional reuse of lead-impacted soil within the Department right-of-way (ROW). Background information regarding the source of ADL and the reuse or disposal of lead-impacted soil is discussed in the following sections.

2.1. Aerially Deposited Lead in Soil

Analyses for lead in soil along highways throughout the state of California have revealed that lead is commonly present along the shoulders of the highways as a result of automobile exhaust containing lead from the combustion of leaded gasoline. Elevated concentrations of lead are commonly found in the upper 2 feet of soil. Lead concentrations in soil are dependent on many variables; but in general, are a function of the age of the highway and the volume of traffic using the highway (DTSC, 2009).

2.2. Hazardous Waste Classification Criteria

Soil that exceeds the following limitations may be classified as hazardous waste with respect to lead concentrations:

- The soil contains more than 1,000 milligrams per kilogram (mg/kg) total lead, exceeding the Total Threshold Limit Concentration (TTLC) for California hazardous waste (Title 22 California Code of Regulations [CCR], Section 66261.24);
- The soil contains more than 5.0 milligrams per liter (mg/l) citric acid-extractable lead, exceeding the Soluble Threshold Limit Concentration (STLC) for California hazardous waste (Title 22 CCR, Section 66261.24);
- The soil contains more than 5.0 mg/l leachable lead using the Toxicity Characteristic Leaching Procedure (TCLP), exceeding the maximum concentration for the toxicity characteristic of the Resource, Conservation, and Recovery Act (RCRA; Title 40 Code of Federal Regulations [CFR] 261.24); or
- The soil pH is less than or equal to 2.0 or greater than or equal to 12.5, which exceeds the limits for the corrosivity characteristic of RCRA hazardous waste (40 CFR 261.22) and California hazardous waste (Title 22 CCR, Section 66261.22).

2.3. DTSC Variance

In accordance with the DTSC Variance, soil that is subject to the guidelines presented below may be reused within the Department ROW. A chart presenting the different ADL soil type classifications is included in Appendix A.

2.3.1. Reuse – Condition 1

Soil containing less than 1.5 mg/l extractable lead by the Waste Extraction Test (WET) using de-ionized water as the extractant (WET-DI) and less than or equal to 1,411 mg/kg total lead (United States Environmental Protection Agency [EPA] Method 6010B) may be used as fill in the Department ROW provided the soil is placed a minimum of 5 feet above the maximum level of the water table and covered with at least 1 foot of non-hazardous soil.

2.3.2. Reuse – Condition 2

Soil containing greater than or equal to 1.5 mg/l, but less than 150 mg/l, extractable lead by WET-DI method, or more than 1,411 mg/kg total lead but less than 3,397 mg/kg total lead, may be used as fill in the Department ROW provided the soil is placed a minimum of 5 feet above the maximum level of the water table and protected from infiltration by a paved structure that will be maintained by the Department.

2.3.3. Reuse – Condition 3

Lead-contaminated soil with a pH less than 5.5 but greater than 5.0 shall only be used as fill material under the paved portion of the roadway. Lead-contaminated soil with a pH at or less than 5.0 shall be managed as a hazardous waste.

2.4. Criteria for Disposal of Soil Not Intended for Reuse On Site

If the Department elects to dispose soil within the Department ROW that has been excavated during construction activities, the soil may be classified either as hazardous waste or non-hazardous waste. The distinction is based on the total and soluble lead concentrations com-

pared to the TTLC and STLC criteria. As mentioned in Section 2.2, the TTLC for total lead is 1,000 mg/kg and the STLC for citric acid extractable lead is 5.0 mg/l. Waste containing lead concentrations in excess of or equal to those listed must be disposed at a Class I hazardous waste disposal facility pursuant to State of California regulations.

3. INVESTIGATION METHODS

The investigation activities are described in the following subsections and were conducted in general accordance with the TO that was approved by the Department prior to beginning the field activities.

3.1. Health and Safety Plan (HSP)

A site-specific HSP dated January 6, 2012, was prepared by Ninyo & Moore and submitted to the Department for approval prior to commencing field work.

3.2. Utility Clearance

The boring locations were described to USA during the notification at least 2 working days prior to conducting the soil sampling. USA marked the member utilities known to be in the vicinity of the boring locations.

3.3. Hand-Auger Sampling

The field work was conducted on January 19, 2012. The boring locations were approved by the Department Task Order Manager and are shown on the attached Figure 3, 4, and 5. Four samples were attempted for collection from each of the five boreholes at depths of ½, 1½ to 2, 2 ½ to 3, and 3 ½ to 4 feet bgs unless refusal was encountered. The depths reached for each boring are presented on Table 1.

Samples were placed into new, 4-ounce, glass jars; capped with Teflon-coated plastic lids; labeled; placed in a resealable plastic bag; and stored in a cooler. The sampling equipment

was decontaminated between each boring. Soil samples were transferred under COC protocol to Pat-Chem Laboratories within 24 hours of collection. In accordance with the TO, soil sample homogenization was performed in the laboratory.

Hand augering was conducted by Ninyo & Moore personnel.

3.4. Investigation-Derived Wastes

Soil cuttings generated by hand-auger drilling were returned to their corresponding boreholes after collection of soil samples. Decontamination water was transported to Ninyo & Moore's Irvine office and placed in a drum pending chemical characterization. Based on the analytical result of the decontamination water sample, the decontamination water was subsequently disposed in the sanitary sewer.

3.5. Laboratory Analyses

Once the samples were received by Pat-Chem Laboratories the samples were homogenized and analyzed for the following:

- Eighteen soil samples were analyzed for total lead using EPA Method 6010B;
- Three soil samples were analyzed for soluble lead by the WET using a citric acid extraction (WET-citric);
- One soil sample was analyzed for soluble lead by the WET-DI and soluble lead by TCLP;
- Two soil samples were analyzed for pH using EPA Method 9045;
- One decontamination water sample was analyzed for total lead using EPA Method 6010B.

4. ANALYTICAL RESULTS

The results of this investigation are described in the following subsections. The analytical results of lead and pH are summarized in Table 1, and the sampling locations with their corresponding

data are shown on Figures 6 through 8. Laboratory reports and COC records are included in Appendix B.

4.1. Total Lead

Eighteen samples were analyzed for total lead. The maximum total lead concentration was 140 mg/kg. The minimum total lead concentration was less than the laboratory practical quantitation limit of 1.0 mg/kg (Table 1).

The decontamination water sample contained 0.22 mg/l of lead.

4.2. Soluble Lead – Citric Acid

Three of the 18 samples contained total lead at a concentration of greater than or equal to 50 mg/kg and less than 1,000 mg/kg and were subsequently analyzed for soluble lead by WET-citric. The maximum soluble lead concentration was 6.7 mg/l. The minimum total lead concentration was 0.51 mg/kg (Table 1).

4.3. Soluble Lead – Deionized Water

One sample analyzed using the WET-citric contained soluble lead at a concentration greater than or equal to 5.0 mg/l and was subsequently analyzed for soluble lead using the WET-DI. Concentrations were less than the laboratory practical quantitation limit of 0.20 mg/l.

4.4. Soluble Lead – TCLP

One of the three samples analyzed using the WET contained soluble lead at a concentration greater than or equal to 5.0 mg/l and was subsequently analyzed for soluble lead by the TCLP Method. The reported concentration was 0.20 mg/l.

4.5. pH

Two of the samples collected were analyzed for pH. The maximum pH level was 9.2 and the minimum pH level was 8.7.

5. STATISTICAL EVALUATION

Based on the data reported (Table 1) for both Site 1 and Site 2, only sample (B2-3.0) within Site 1 contained a soluble lead concentration above 5 mg/l. None of the remaining samples with total lead concentrations in excess of 50 mg/kg contained soluble lead concentrations in excess of 5 mg/l. Therefore, additional testing was not performed and statistical analyses were not performed.

In order to evaluate four of the possible soil excavation depth scenarios, the following depth combinations were evaluated:

- **Scenario A** – surface soil (0 to ½ foot) and underlying subsurface soil (½ foot to 4 feet bgs)
- **Scenario B** – the upper 1½ feet (0 to 1½ feet) and the underlying subsurface soil (1½ to 4 feet)
- **Scenario C** – the upper 3 feet (0 to 3 feet) and the underlying subsurface soil (3 to 4 feet)
- **Scenario D** – the entire 4-foot soil column

6. CONCLUSIONS

The analyses of the data indicate that the surface layers tend to have the highest concentrations of total lead, followed by the 1½-, 3-, and 4-foot layers with the exception of the 3-foot sample collected from boring B2-3.0, which appears to be an anomaly. Assuming the soil has not been disturbed since construction of the routes in the site vicinities, concentrations of total lead would be expected to decrease with depth.

7. RECOMMENDATIONS

Based on the findings of this study, recommendations are summarized on block diagrams in Appendix C and discussed below.

7.1. Site 1 – Recommendations for Soil for Reuse by the Department (Borings B1 and B2)

Soil at the site can be reused on site with the following restrictions:

- Scenario A: The soil in the surface layer (surface to 0.5 feet below ground surface [bgs]) is suitable for on-site reuse by the department with no restrictions based on total and soluble lead concentrations. The remaining soil from the 1.5- to 4-foot layers combined (0.5 to 4 feet bgs) may be reused on site if it is placed a minimum of 5 feet above the maximum water table elevation and covered with at least 1 foot of non-hazardous soil.

- Scenario B: The soil in the surface and 1.5-foot layers combined (surface to 1.5 feet bgs) is suitable for on-site reuse by the department with no restrictions based on total and soluble lead concentrations. The remaining soil from the 3- and 4-foot layers combined (1.5 to 4 feet bgs) may be reused on site if it is placed a minimum of 5 feet above the maximum water table elevation and covered with at least 1 foot of non-hazardous soil.

- Scenario C: The soil in the surface to 3-foot layers combined (surface to 3 feet bgs) may be reused on site if it is placed a minimum of 5 feet above the maximum water table elevation and covered with at least 1 foot of non-hazardous soil. The remaining soil from the 4-foot layer (3 to 4 feet bgs) has no restrictions based on total and soluble lead concentrations.

- Scenario D: The soil in the layers combined (surface to 4 feet bgs) may be reused on site if it is placed a minimum of 5 feet above the maximum water table elevation and covered with at least 1 foot of non-hazardous soil.

7.2. Site 1 – Recommendations for Soil to be Disposed Off Site (Borings B1 and B2)

If the Department elects to dispose the soil off site, the following restrictions apply:

- Scenario A: The soil in the surface layer (surface to 0.5 feet bgs) is classified as non-hazardous and may be disposed off site with no restrictions based on total and soluble lead concentrations. The remaining soil from the 1.5- to 4-foot layers combined (0.5 to 4 feet bgs) is classified as California hazardous and should be disposed at a Class 1 disposal site in accordance with Title 22 CCR requirements.

- Scenario B: The soil in the surface and 1.5-foot layer combined (surface to 1.5 feet bgs) is classified as non-hazardous and may be disposed off site with no restrictions based on total and soluble lead concentrations. The remaining soil from the 3- and 4-foot layers combined (1.5 to 4 feet bgs) is classified as California hazardous and should be disposed at a Class 1 disposal site in accordance with Title 22 CCR requirements.

- Scenario C: The soil in the surface to 3-foot layers combined (surface to 3 feet bgs) is classified as California hazardous and should be disposed at a Class 1 disposal site in accordance with Title 22 CCR requirements. The remaining soil from the 4-foot layer (3 to 4 feet bgs) is classified as non-hazardous and may be disposed off site with no restrictions based on total and soluble lead concentrations.

- Scenario D: The soil in the layers combined (surface to 4 feet bgs) is classified as California hazardous and should be disposed at a Class 1 disposal site in accordance with Title 22 CCR requirements.

7.3. Site 2 – Recommendations for Soil for Reuse by the Department (Borings B3, B4, and B5)

Soil at the site can be reused on site with the following restrictions:

- Scenario A: The soil in the surface layer (surface to 0.5 feet bgs) is suitable for on-site reuse by the Department with no restrictions based on total lead concentrations. The remaining soil from the 1.5- to 4-foot layers combined (0.5 to 4 feet bgs) is suitable for on-site reuse by the Department with no restrictions based on total lead concentrations.

- Scenario B: The soil in the surface and 1.5-foot layers combined (surface to 1.5 feet bgs) is suitable for on-site reuse by the Department with no restrictions based on total lead concentrations. The remaining soil from the 3- and 4-foot layers combined (1.5 to 4 feet bgs) is suitable for on-site reuse by the Department with no restrictions based on total lead concentrations.

- Scenario C: The soil in the surface to 3-foot layers combined (surface to 3 feet bgs) is suitable for on-site reuse by the Department with no restrictions based on total lead concentrations. The remaining soil from the 4-foot layer (3 to 4 feet bgs) is suitable for on-site reuse by the Department with no restrictions based on total lead concentrations.

- Scenario D: The soil in the layers combined (surface to 4 feet bgs) is suitable for on-site reuse by the Department with no restrictions based on total lead concentrations.

7.4. Site 2 – Recommendations for Soil to be Disposed Off Site (Borings B3, B4, and B5)

If the Department elects to dispose the soil off site, the following restrictions apply:

- Scenario A: The soil in the surface layer (surface to 0.5 feet bgs) is classified as non-hazardous and may disposed off site with no restrictions based on total lead concentrations. The remaining soil from the 1.5- to 4-foot layers combined (0.5 to 4 feet bgs) is also classified as non-hazardous and may be disposed off site with no restrictions based on total lead concentrations.

- Scenario B: The soil in the surface to 1.5-foot layer combined (surface to 1.5 feet bgs) is classified as non-hazardous and may be disposed off site with no restrictions based on total lead concentrations. The remaining soil from the 3- and 4-foot layers combined (1.5 to 4 feet bgs) also has no restrictions based on total lead concentrations.

- Scenario C: The soil in the surface to 3-foot layers combined (surface to 3 feet bgs) is classified as non-hazardous and may be disposed off site with no restrictions based on total lead. The remaining soil from the 4-foot layer (3 to 4-feet bgs) is also classified as non-hazardous and may be disposed off site with no restrictions based on total lead concentrations.

- Scenario D: The soil in the layers combined (surface to 4 feet bgs) is classified as non-hazardous and may be disposed off site with no restrictions based on total lead concentrations.

The Department should notify the contractors performing the construction activities that elevated concentrations of lead are present in on-site soil. Appropriate health and safety measures should be taken to minimize the potential exposure to lead

8. HEALTH EFFECTS OF LEAD

Concentrations of lead in soil at the site represent a potential threat to the health of site workers performing earthwork activities.

Lead in its element form is a heavy, ductile, soft, gray metal. The permissible exposure limit for lead is 0.05 milligrams per cubic meter (mg/m^3) in air based on an eight-hour time-weighted average. The immediately dangerous to life and health exposure limit is 100 mg/m^3 as established by the National Institute of Occupational Safety and Health. Exposure may produce several symptoms including weakness, eye irritation, facial pallor, pale eyes, lassitude, insomnia, and

mia, tremors, malnutrition, constipation, paralysis of the wrists and ankles, abdominal pain, colic, nephropathy, encephalopathy, gingival lead line, hypertension, anorexia, and weight loss. Target organs are the central nervous system, kidneys, eyes, blood, gingival tissue, and the gastrointestinal tract.

Because of the potential hazard from exposure to lead-contaminated soil, a lead HSP should be prepared by a Certified Industrial Hygienist (CIH). In addition, all site workers (earthwork) should have completed a training program meeting the requirements of 29 CFR 1910.120 and 8 CCR 1532.1. The plan developed by the CIH should include a hazard analysis, dust control measures, air monitoring, signage, work practices, emergency response plans, personal protective equipment, decontamination, and documentation.

9. LIMITATIONS

The services outlined in this report have been conducted in a manner generally consistent with current regulatory guidelines. No warranty, expressed or implied, is made regarding the professional opinions presented in this report. Ninyo & Moore's opinions are based on an analysis of observed conditions and on information obtained from third parties. It is likely that variations in soil conditions may exist.

The samples collected and chemically analyzed and the observations made are believed to be representative of the general area evaluated; however, conditions can vary significantly between sampling locations. The interpretations and opinions contained in this report are based on the results of laboratory tests and analyses intended to detect the presence and measure the concentration of selected chemical or physical constituents in samples collected from the site. The analyses have been conducted by an independent laboratory certified by the State of California to conduct such analyses. Ninyo & Moore has no involvement in, or control over, such analyses and has no means of confirming the accuracy of laboratory results. Ninyo & Moore, therefore, disclaims any responsibility for inaccuracy in such laboratory results.

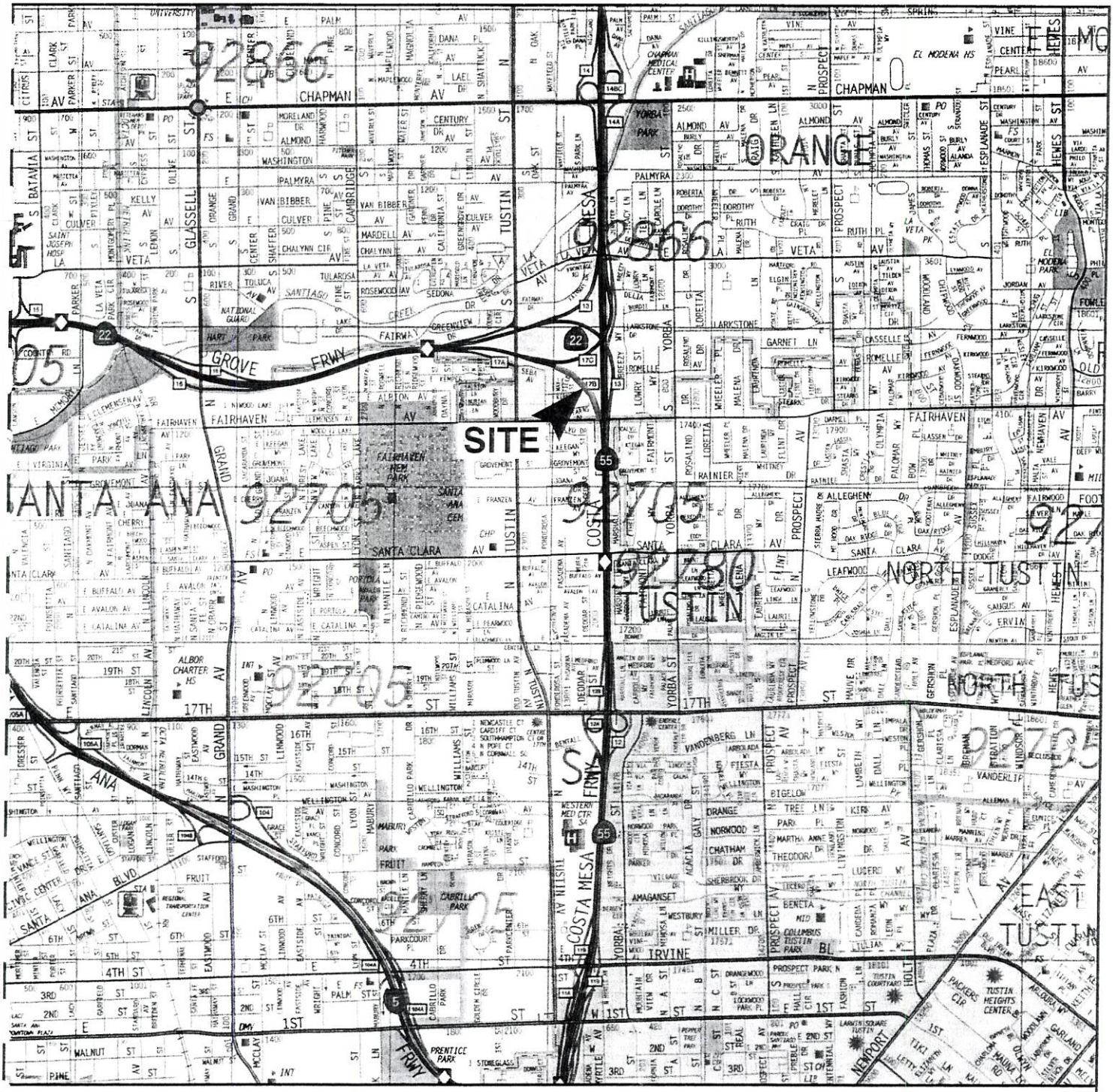
This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader wants any additional information, or has questions regarding content, interpretations presented, or completeness of this document. Opinions and judgments expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal opinions.

For individuals with sensory disabilities, this document is available in alternate formats upon request. For any questions regarding this document, please call or write David Yaghoubi, Environmental Engineering, 3347 Michelson Drive, Suite 100, Irvine, California 92612-1692. Phone Number (949) 724-2221.

TABLE 1 – SOIL ANALYTICAL RESULTS – AERIALLY DEPOSITED LEAD, pH, AND GPS COORDINATES

Sample	Sample Depth (feet bgs)	Sample Date	TTLC (mg/kg)	WET-citric (mg/l)	WET-DI (mg/l)	TCLP (mg/l)	pH	Latitude	Longitude
B1-0.5	0.5	1/19/2012	21	--	--	--	--	33.776027	-117.835193
B1-1.5	1.5	1/19/2012	44	--	--	--	8.7		
B2-0.5	0.5	1/19/2012	140	0.51	--	--	--	33.774975	-117.831746
B2-1.5	1.5	1/19/2012	25	--	--	--	--		
B2-3.0	3.0	1/19/2012	97	6.7	<0.2	0.02	--		
B2-4.0	4.0	1/19/2012	54	3.4	--	--	--		
B3-0.5	0.5	1/19/2012	27	--	--	--	--	33.854474	-117.921564
B3-1.5	1.5	1/19/2012	8.5	--	--	--	--		
B3-3.0	3.0	1/19/2012	2.4	--	--	--	9.2		
B3-4.0	4.0	1/19/2012	1.4	--	--	--	--		
B4-0.5	0.5	1/19/2012	9.1	--	--	--	--	33.853554	-117.921992
B4-1.5	1.5	1/19/2012	18	--	--	--	--		
B4-3.0	3.0	1/19/2012	16	--	--	--	--		
B4-4.0	4.0	1/19/2012	21	--	--	--	--		
B5-0.5	0.5	1/19/2012	2.6	--	--	--	--	33.853377	-117.921912
B5-1.5	1.5	1/19/2012	1.2	--	--	--	--		
B5-3.0	3.0	1/19/2012	ND < 1.0	--	--	--	--		
B5-4.0	4.0	1/19/2012	ND < 1.0	--	--	--	--		
Maximum			140	6.7	<0.2	0.02	9.2		
Average			27.2	3.5	<0.2	0.02	9.0		
Minimum			ND < 1.0	0.51	<0.2	0.02	8.7		
Regulatory Limits			1411[1]	5[2]	1.5[3]	5[4]	5[5]		
SSLs			--	--	--	--	--		
Decontamination Water (mg/l)									
R1	--	1/19/2012	0.22	--	--	--	--		

Notes:
bgs – below ground surface
TTLC – total lead for comparison to the Total Threshold Limit Concentration
mg/kg – milligrams per kilogram
WET – Waste Extraction Test
WET-citric – soluble lead by WET using citric acid for comparison to the Soluble Threshold Limit Concentration
WET-DI – soluble lead by WET using deionized water for comparison to the Soluble Threshold Limit Concentration
mg/l – milligrams per liter
TCLP – soluble lead by the Toxicity Characteristic Leaching Procedure
ND – not detected above the practical quantitation limits presented in Appendix C
1 – Limit specified in addendum to Variance issued by the Department of Toxic Substance Control (DTSC) to the Department
2 – Soluble Threshold Limit Concentration for California Hazardous Waste (California Code of Regulations [CCR] Title 22, Section 66261.24)
3 – Limit Specified by DTSC Variance
4 – Maximum concentration for the TCLP of Resource, Conservation, and Recovery Act (RCRA) hazardous waste (CCR Title 22, Section 66216.24)
5 – Minimum value specified by DTSC variance



REFERENCE: 2007 THOMAS GUIDE FOR LOS ANGELES/ORANGE COUNTIES, STREET GUIDE AND DIRECTORY

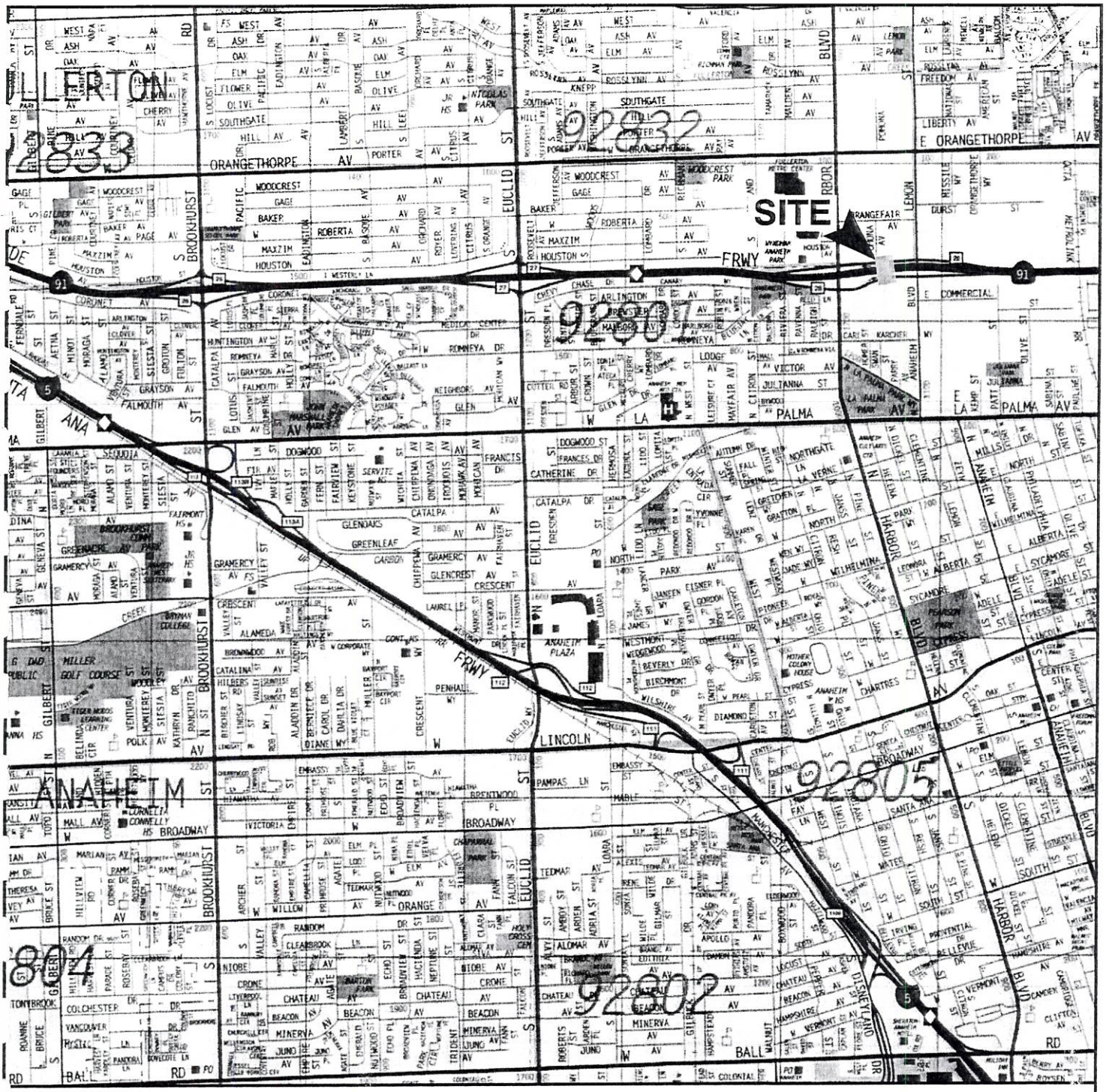
N

SCALE IN FEET

0 2400 4800

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

Ninyo & Moore	SITE LOCATION 1	FIGURE
PROJECT NO. 208449002 / DATE 2/12	EAST BOUND SR-22 TO SOUTH BOUND SR-55 CONNECTOR ORANGE, CALIFORNIA	1



REFERENCE: 2007 THOMAS GUIDE FOR LOS ANGELES/ORANGE COUNTIES, STREET GUIDE AND DIRECTORY

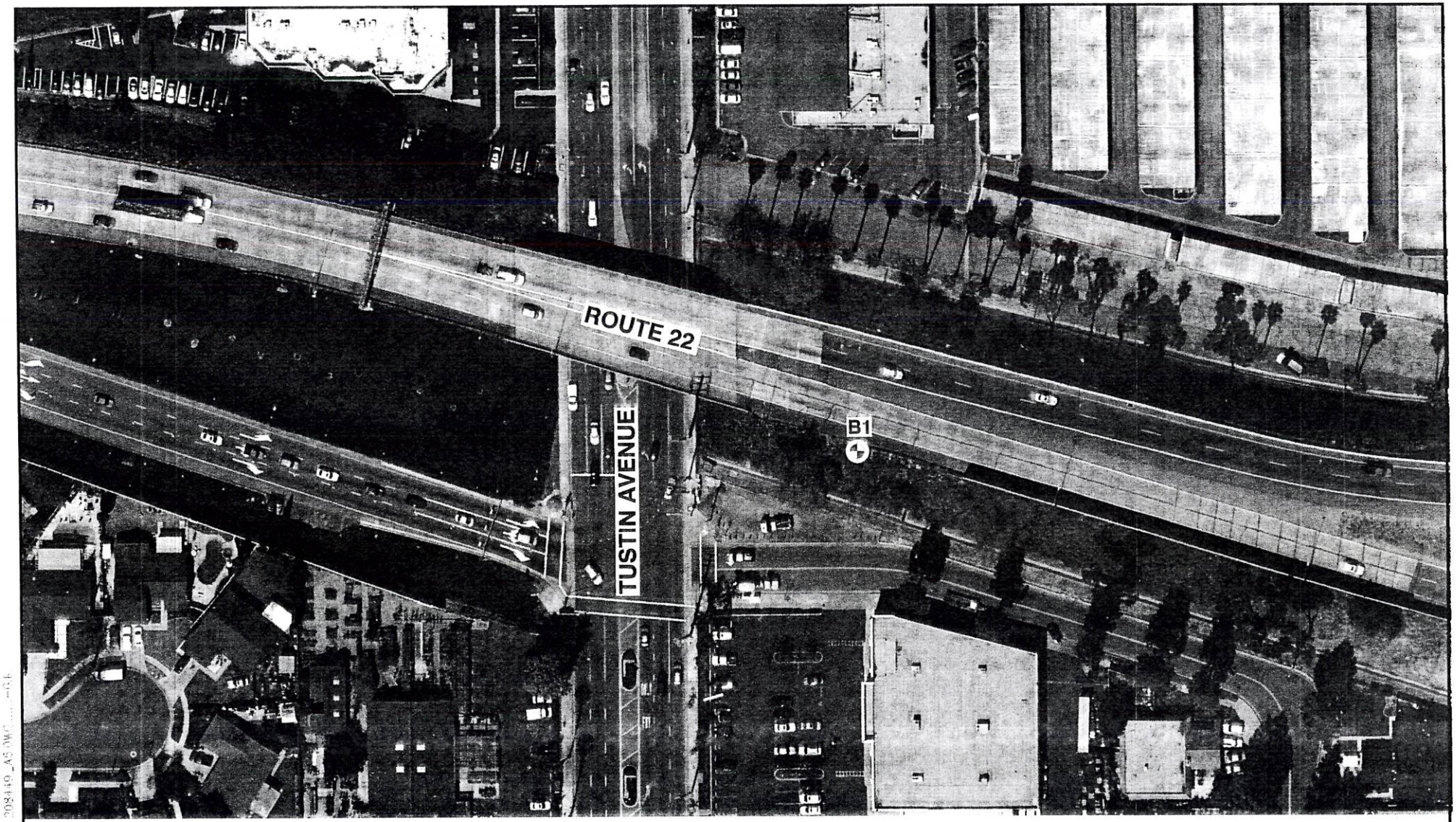
N

SCALE IN FEET

0 2400 4800

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

Ninyo & Moore	SITE LOCATION 2	FIGURE
PROJECT NO. 208449002 / DATE 2/12	SR-91 HARBOR BOULEVARD TO LEMON STREET CONNECTOR FULLERTON AND ANAHEIM, CALIFORNIA	2



N

SCALE IN FEET

0 100 200

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

LEGEND

B1 BORING

REFERENCE: GOOGLE EARTH AERIAL PHOTO, 2012.

Ninyo & Moore

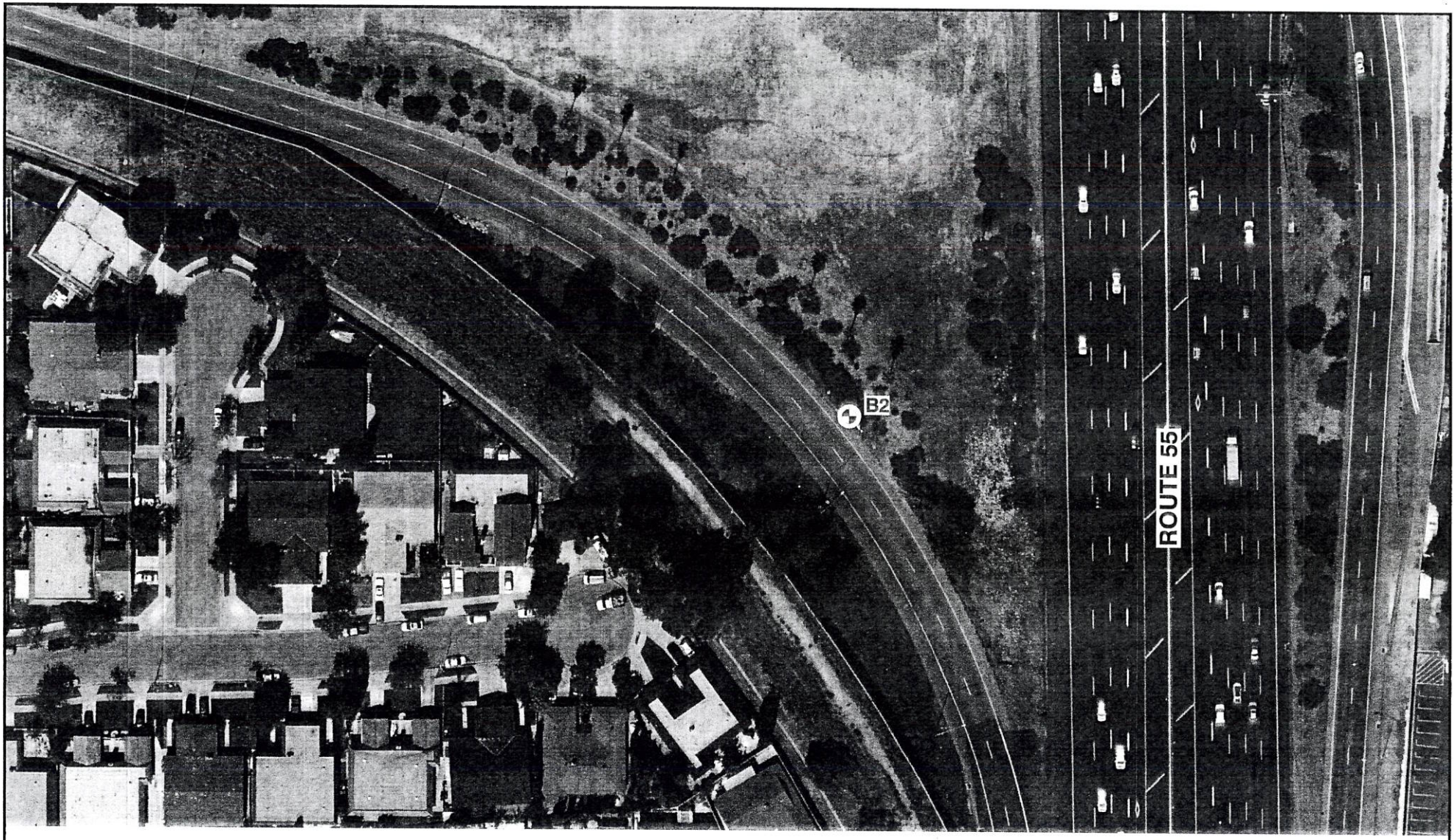
PROJECT NO.	DATE
208449002	2/12

BORING LOCATION - SITE 1

EAST BOUND SR-22 TO SOUTH BOUND SR-55 CONNECTOR
ORANGE, CALIFORNIA

FIGURE

3



N

SCALE IN FEET

0 100 200

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

LEGEND	
B2	BORING

REFERENCE: GOOGLE EARTH AERIAL PHOTO, 2012.

Ninyo & Moore

PROJECT NO.	DATE
208449002	2/12

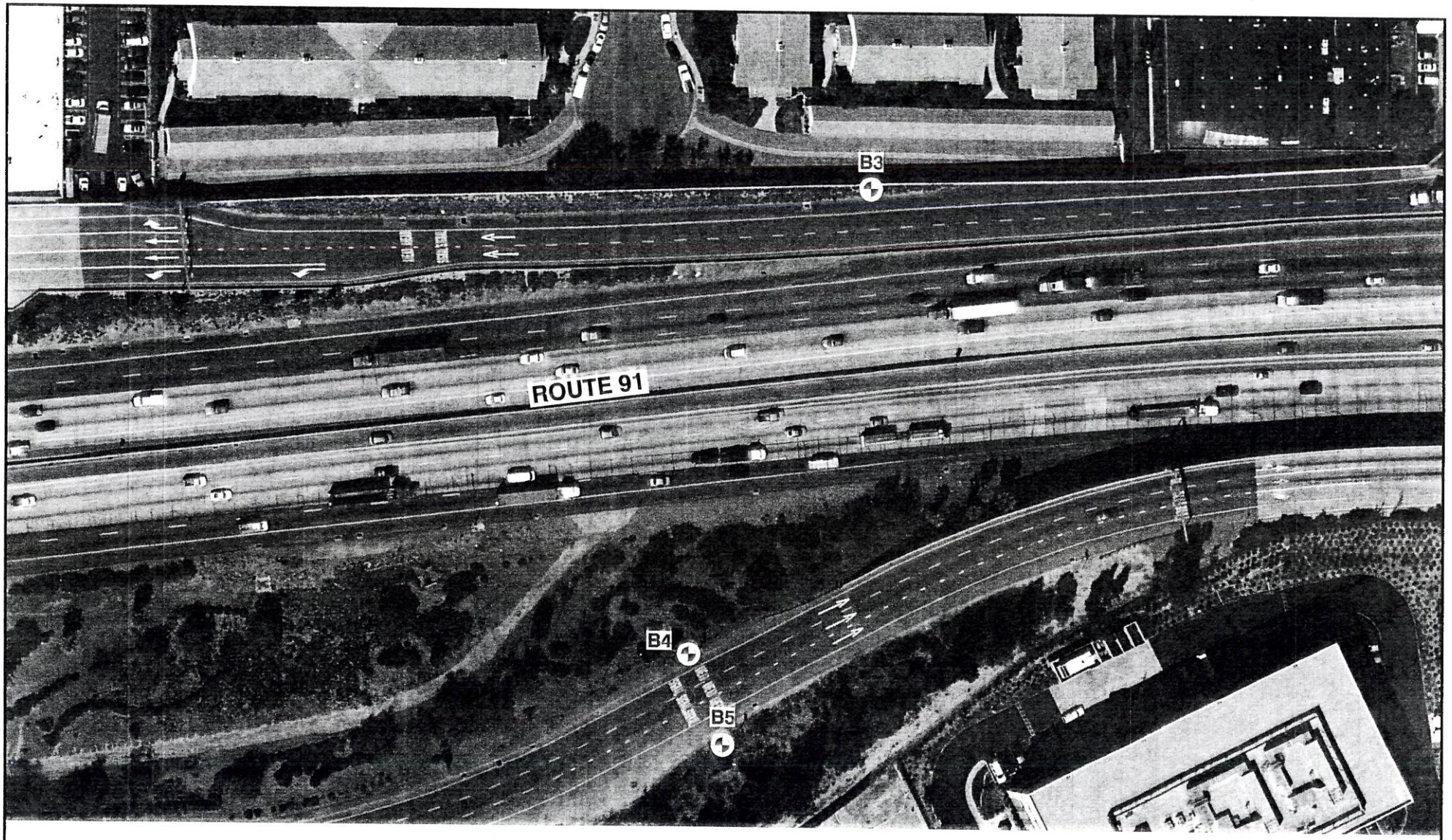
BORING LOCATION - SITE 1

EAST BOUND SR-22 TO SOUTH BOUND SR-55 CONNECTOR
ORANGE, CALIFORNIA

FIGURE

4

208449 A6.DWG ..... C.K.



N

SCALE IN FEET

0 100 200

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

REFERENCE: GOOGLE EARTH AERIAL PHOTO, 2012.

LEGEND

B5 BORING

Ninyo & Moore

PROJECT NO.	DATE
208449002	2/12

BORING LOCATIONS - SITE 2

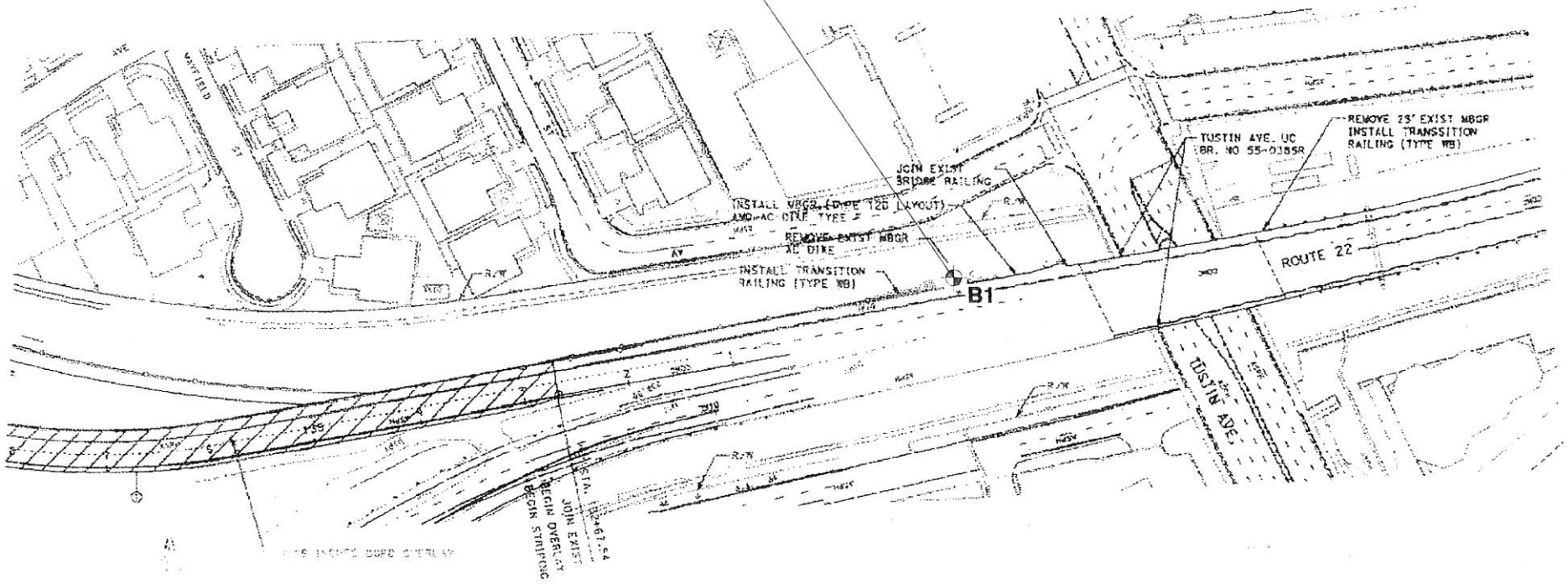
SR-91 HARBOR BOULEVARD TO LEMON STREET CONNECTOR
FULLERTON AND ANAHEIM, CALIFORNIA

FIGURE

5

208449 A7.DWG ... G.K.

Sample	Sample Depth (feet)	Sample Date	TTLC (mg/kg)	WET-citric (mg/l)	WET-DI (mg/l)	TCLP (mg/l)	pH
B1-0.5	0.5	1/19/2012	21	--	--	--	--
B1-1.5	1.5	1/19/2012	44	--	--	--	8.7



REFERENCE: CALTRANS, 2012.

LEGEND			
B1	Boring location	WET-citric	Soluble lead by WET using citric acide for comparision to Soluble Threshold Limit Concentration
TTLC	Total lead for comparison to the Total Threshold Limit Concentration	WET-DI	Soluble lead by WET using deionized water for comparison to Soluble Threshold Limit Concentration
mg/kg	milligrams per kilogram	mg/l	milligrams per liter
WET	Waste Extraction Test	TCLP	Soluble lead by Toxicity Characteristic Leaching Procedure

N

SCALE IN FEET

0 100 200

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

Ninyo & Moore

PROJECT NO.	DATE
208449002	2/12

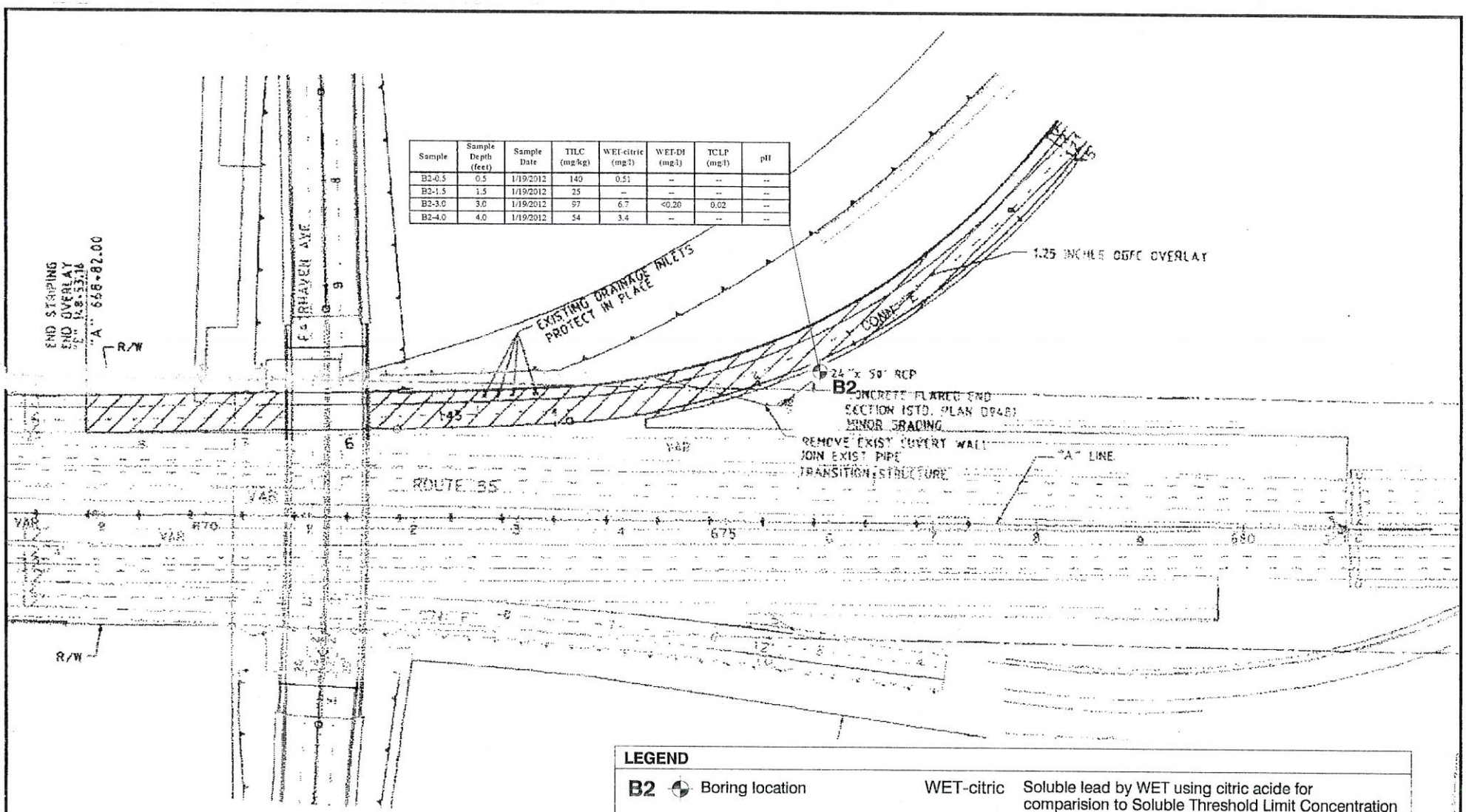
BORING DATA - SITE 1

EAST BOUND SR-22 TO SOUTH BOUND SR-55 CONNECTOR
ORANGE, CALIFORNIA

FIGURE

6

208449_A8.DWG.....G.K.



Sample	Sample Depth (feet)	Sample Date	TTLC (mg/kg)	WET-citric (mg/l)	WET-DI (mg/l)	TCLP (mg/l)	pH
B2-0.5	0.5	1/19/2012	140	0.51	--	--	--
B2-1.5	1.5	1/19/2012	25	--	--	--	--
B2-3.0	3.0	1/19/2012	97	6.7	<0.20	0.02	--
B2-4.0	4.0	1/19/2012	54	3.4	--	--	--

REFERENCE: CALTRANS, 2012.

LEGEND			
B2 ⊕	Boring location	WET-citric	Soluble lead by WET using citric acide for comparision to Soluble Threshold Limit Concentration
TTLC	Total lead for comparison to the Total Threshold Limit Concentration	WET-DI	Soluble lead by WET using deionized water for comparison to Soluble Threshold Limit Concentration
mg/kg	milligrams per kilogram	mg/l	milligrams per liter
WET	Waste Extraction Test	TCLP	Soluble lead by Toxicity Characteristic Leaching Procedure

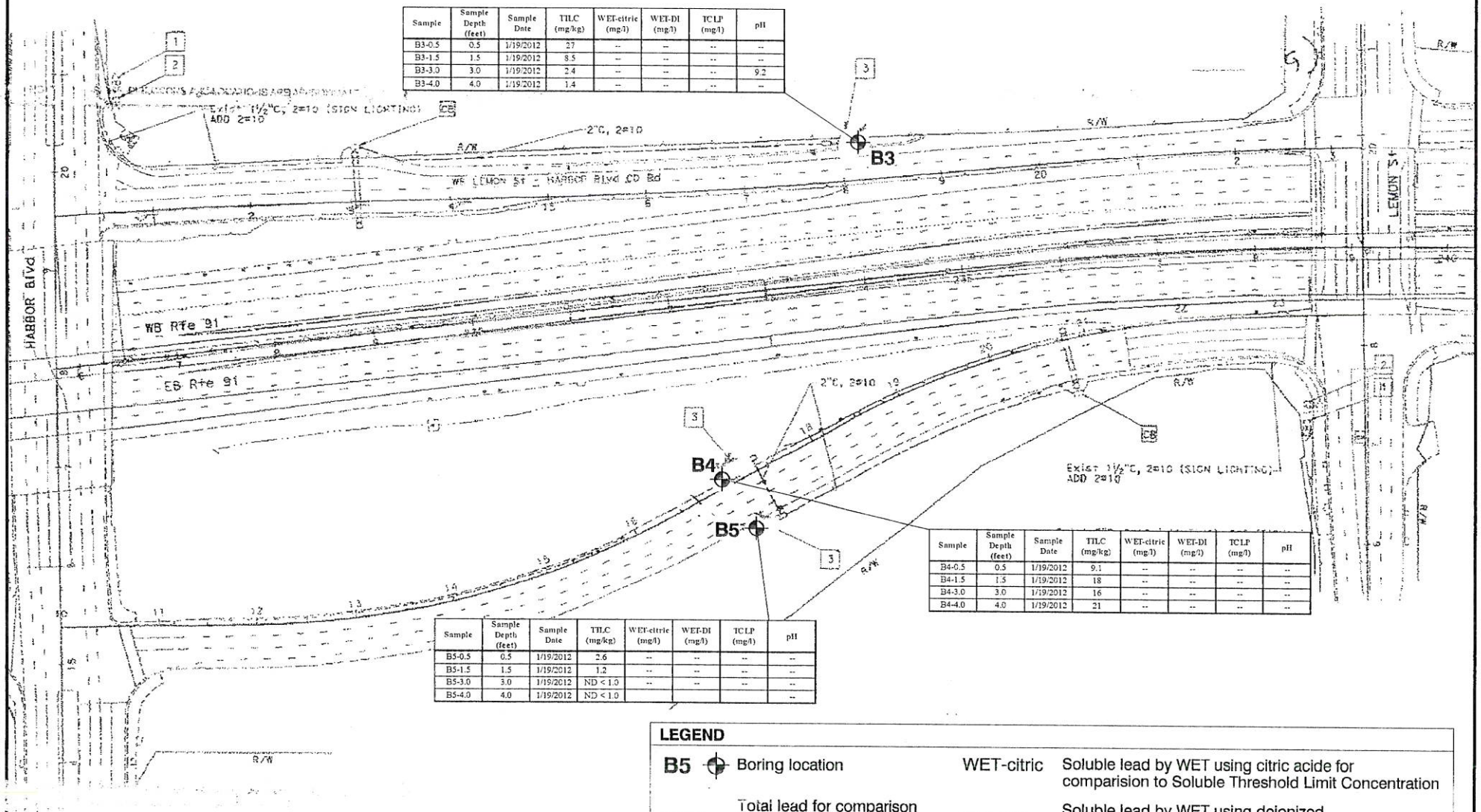
N

SCALE IN FEET

0 100 200

208449_A9.DWG ——— G.K.

Ninyo & Moore	BORING DATA - SITE 1	FIGURE
PROJECT NO. 208449002 / DATE 2/12	EAST BOUND SR-22 TO SOUTH BOUND SR-55 CONNECTOR ORANGE, CALIFORNIA	7



Sample	Sample Depth (feet)	Sample Date	TTLC (mg/kg)	WET-citric (mg/l)	WET-DI (mg/l)	TCLP (mg/l)	pH
B3-0.5	0.5	1/19/2012	27	--	--	--	--
B3-1.5	1.5	1/19/2012	8.5	--	--	--	--
B3-3.0	3.0	1/19/2012	2.4	--	--	--	9.2
B3-4.0	4.0	1/19/2012	1.4	--	--	--	--

Sample	Sample Depth (feet)	Sample Date	TTLC (mg/kg)	WET-citric (mg/l)	WET-DI (mg/l)	TCLP (mg/l)	pH
B4-0.5	0.5	1/19/2012	9.1	--	--	--	--
B4-1.5	1.5	1/19/2012	18	--	--	--	--
B4-3.0	3.0	1/19/2012	16	--	--	--	--
B4-4.0	4.0	1/19/2012	21	--	--	--	--

Sample	Sample Depth (feet)	Sample Date	TTLC (mg/kg)	WET-citric (mg/l)	WET-DI (mg/l)	TCLP (mg/l)	pH
B5-0.5	0.5	1/19/2012	2.6	--	--	--	--
B5-1.5	1.5	1/19/2012	1.2	--	--	--	--
B5-3.0	3.0	1/19/2012	ND < 1.0	--	--	--	--
B5-4.0	4.0	1/19/2012	ND < 1.0				--

LEGEND

B5 ⊕	Boring location	WET-citric	Soluble lead by WET using citric acide for comparision to Soluble Threshold Limit Concentration
TTLC	Total lead for comparison to the Total Threshold Limit Concentration	WET-DI	Soluble lead by WET using deionized water for comparison to Soluble Threshold Limit Concentration
mg/kg	milligrams per kilogram	mg/l	milligrams per liter
WET	Waste Extraction Test	TCLP	Soluble lead by Toxicity Characteristic Leaching Procedure

REFERENCE: CALTRANS, 2012.

N

SCALE IN FEET

0 100 200

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

Ninyo & Moore

PROJECT NO.	DATE
208449002	2/12

BORING DATA - SITE 2

SR-91 HARBOR BOULEVARD TO LEMON STREET CONNECTOR
FULLERTON AND ANAHEIM, CALIFORNIA

FIGURE

8

APPENDIX A

AERIALLY DEPOSITED LEAD SOIL MANAGEMENT CHART

AERIALLY DEPOSITED LEAD SOIL MANAGEMENT			
SOLUBLE LEAD (mg/l)	**TOTAL LEAD (mg/kg)**	**SOIL TYPE**	**HANDLING**
CALIFORNIA TESTING			
STLC [illegible]	TTLC <1000	X	**Non-hazardous Waste.** Notify and require Lead Compliance Plan for worker safety.
	1000 – 1411 and DI WET < 1.5 mg/l	Y1	**Hazardous Waste. Variance applies** – cover with minimum 1 foot of clean soil.*
	1411 – 3397 and DI WET < 150 mg/l	Y2	**Hazardous Waste. Variance applies** – cover with pavement structure. *
	1000 – 3397 but Surplus	Z2	**Hazardous Waste** - Surplus. Dispose at Class 1 disposal site.
	> 3397 or 1000 – 3397 & DI WET > 150 mg/l	Z2	**Hazardous Waste** – not reusable under Variance. Dispose at Class 1 disposal site.
STLC >5.0	TTLC < 1411 and DI WET < 1.5 mg/l	Y1	**Hazardous Waste. Variance applies** – cover with minimum of 1 foot of clean soil.*
	1411 – 3397 and DI WET < 150 mg/l	Y2	**Hazardous Waste. Variance applies** – cover with pavement structure.*
	< 3397 and DI WET < 150 mg/l but Surplus	Z2	**Hazardous Waste** - Surplus. Dispose at Class 1 disposal site.
	> 3397 or DI WET > 150 mg/l	Z2	**Hazardous Waste** – not reusable under Variance. Dispose at Class 1 disposal site.
FEDERAL TESTING			
TCLP > 5.0 mg/l	N/A	Z3	**RCRA Hazardous Waste** Dispose at Class 1 disposal site as a RCRA waste regardless of TTLC and STLC results.

*Note: For hazardous waste levels of lead - if pH is less than 5.5 soil must be placed under a pavement structure. If pH is less than 5.0 variance can not be used and the soil must be disposed as Z-2 material.

APPENDIX B

LABORATORY REPORTS AND CHAIN-OF-CUSTODY DOCUMENTATION

PAT-CHEM LABORATORIES

11990 Discovery Ct. • Moorpark, CA 93021 • Ph. (805) 532-0012 • Fax (805) 532-0016

tomer: **Ninyo & Moore, Geo. & Enviro. Sciences Consul**
475 Goddard, Suite 200
Irvine CA, 92618

ntion: Mike Cushner
eport Date: 30-Jan-12 16:10
bject: Lead Soil Samples

Project/P.O.#: 208449002, EB SR-22 to SB SR-55; N & S side of 91

PARAMETER	METHOD	QC BATCH	REPORTING LIMIT	ANALYZED (ANALYST)		RESULT	NOTE
.5 (Sample I.D.# : 1201202-01) Collected: 19-Jan-12 By P.R.							
Lead	EPA 6010B	AA22015	1.0	23-Jan-12 (AF)		21 mg/kg	
-1.5 (Sample I.D.# : 1201202-02) Collected: 19-Jan-12 By P.R.							
ead	EPA 6010B	AA22015	1.0	23-Jan-12 (AF)		44 mg/kg	
pH	EPA 9045B	AA22024	0.1	20-Jan-12 (SJ)		8.7 pH Units	
-0.5 (Sample I.D.# : 1201202-03) Collected: 19-Jan-12 By P.R.							
ead	EPA 6010B	AA22015	1.0	23-Jan-12 (AF)		140 mg/kg	
Lead	EPA 6010B(STLC)	AA22609	0.20	26-Jan-12 (AF)		0.51 mg/l	
-1.5 (Sample I.D.# : 1201202-04) Collected: 19-Jan-12 By P.R.							
ead	EPA 6010B	AA22015	1.0	23-Jan-12 (AF)		25 mg/kg	
.0 (Sample I.D.# : 1201202-05) Collected: 19-Jan-12 By P.R.							
Lead	EPA 6010B	AA22015	1.0	23-Jan-12 (AF)		97 mg/kg	
ead	EPA 6010B(TCLP)	AA22712	0.02	27-Jan-12 (AF)		0.02 mg/l	
ead	EPA 6010B(STLC)	AA22609	0.20	26-Jan-12 (AF)		6.7 mg/l	
Lead	EPA 6010B(STLC-DI)	AA23038	0.20	30-Jan-12 (AF)	<	0.20 mg/l	
.0 (Sample I.D.# : 1201202-06) Collected: 19-Jan-12 By P.R.							
Lead	EPA 6010B	AA22015	1.0	23-Jan-12 (AF)		54 mg/kg	
Lead	EPA 6010B(STLC)	AA22609	0.20	26-Jan-12 (AF)		3.4 mg/l	
.5 (Sample I.D.# : 1201202-07) Collected: 19-Jan-12 By P.R.							
Lead	EPA 6010B	AA22015	1.0	23-Jan-12 (AF)		27 mg/kg	
-1.5 (Sample I.D.# : 1201202-08) Collected: 19-Jan-12 By P.R.							
ead	EPA 6010B	AA22015	1.0	23-Jan-12 (AF)		8.5 mg/kg	
-5.0 (Sample I.D.# : 1201202-09) Collected: 19-Jan-12 By P.R.							
Lead	EPA 6010B	AA22015	1.0	23-Jan-12 (AF)		2.4 mg/kg	

espectfully Submitted,

Pat Brueckner

at Brueckner 1/30/2012
oratory Director

PAT-CHEM LABORATORIES

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ntion: Mike Cushner
eport Date: 30-Jan-12 16:10
ubject: Lead Soil Samples

Project/P.O.#: 208449002, EB SR-22 to SB SR-55; N & S side of 91

PARAMETER	METHOD	QC BATCH	REPORTING LIMIT	ANALYZED (ANALYST)		RESULT	NOTE
.0 (Sample I.D.# : 1201202-09) Collected: 19-Jan-12 By P.R.							
pH	EPA 9045B	AA22024	0.1	20-Jan-12 (SJ)		9.2 pH Units	
3-4.0 (Sample I.D.# : 1201202-10) Collected: 19-Jan-12 By P.R.							
ead	EPA 6010B	AA22015	1.0	23-Jan-12 (AF)		1.4 mg/kg	
4-0.5 (Sample I.D.# : 1201202-11) Collected: 19-Jan-12 By P.R.							
Lead	EPA 6010B	AA22015	1.0	23-Jan-12 (AF)		9.1 mg/kg	
.5 (Sample I.D.# : 1201202-12) Collected: 19-Jan-12 By P.R.							
Lead	EPA 6010B	AA22015	1.0	23-Jan-12 (AF)		18 mg/kg	
3-3.0 (Sample I.D.# : 1201202-13) Collected: 19-Jan-12 By P.R.							
ead	EPA 6010B	AA22015	1.0	23-Jan-12 (AF)		16 mg/kg	
4-4.0 (Sample I.D.# : 1201202-14) Collected: 19-Jan-12 By P.R.							
Lead	EPA 6010B	AA22015	1.0	23-Jan-12 (AF)		21 mg/kg	
.5 (Sample I.D.# : 1201202-15) Collected: 19-Jan-12 By P.R.							
Lead	EPA 6010B	AA22015	1.0	23-Jan-12 (AF)		2.6 mg/kg	
1.5 (Sample I.D.# : 1201202-16) Collected: 19-Jan-12 By P.R.							
ead	EPA 6010B	AA22015	1.0	23-Jan-12 (AF)		1.2 mg/kg	
3.0 (Sample I.D.# : 1201202-17) Collected: 19-Jan-12 By P.R.							
Lead	EPA 6010B	AA22015	1.0	23-Jan-12 (AF)	<	1.0 mg/kg	
.0 (Sample I.D.# : 1201202-18) Collected: 19-Jan-12 By P.R.							
Lead	EPA 6010B	AA22015	1.0	23-Jan-12 (AF)	<	1.0 mg/kg	
(Sample I.D.# : 1201202-19) Collected: 19-Jan-12 By P.R.							
ead	EPA 6010B	AA22008	0.02	20-Jan-12 (AF)		0.22 mg/l	

espectfully Submitted,

Pat Brueckner

at Brueckner 1/30/2012
oratory Director

PAT-CHEM LABORATORIES

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ubject: Lead Soil Samples

Project/P.O.#: 208449002, EB SR-22 to SB SR-55; N & S side of 91

Metals by EPA 6000/7000 Series Methods - Quality Control

imeter	Result	Rep. Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Note
atch AA22008 - EPA 200 Series										
nk (AA22008-BLK1)				Prepared & Analyzed: 20-Jan-12						
d	ND	0.02	mg/l							
lank (AA22008-BLK2)				Prepared & Analyzed: 20-Jan-12						
d	ND	0.02	mg/l							
3 (AA22008-BS1)				Prepared & Analyzed: 20-Jan-12						
ead	0.507	0.02	mg/l	0.500		101	80-120			
3 (AA22008-BS2)				Prepared & Analyzed: 20-Jan-12						
d	0.479	0.02	mg/l	0.500		95.8	80-120			
CS Dup (AA22008-BSD1)				Prepared & Analyzed: 20-Jan-12						
d	0.494	0.02	mg/l	0.500		98.9	80-120	2.59	20	
CS Dup (AA22008-BSD2)				Prepared & Analyzed: 20-Jan-12						
d	0.480	0.02	mg/l	0.500		96.0	80-120	0.154	20	
licate (AA22008-DUP1)		**Source: 1201199-01**		Prepared & Analyzed: 20-Jan-12						
ead	ND	0.02	mg/l		ND				20	
licate (AA22008-DUP2)		**Source: 1201199-02**		Prepared & Analyzed: 20-Jan-12						
d	ND	0.02	mg/l		ND				20	
latrix Spike (AA22008-MS1)		**Source: 1201199-01**		Prepared & Analyzed: 20-Jan-12						
d	0.953	0.02	mg/l	1.00	ND	95.3	80-120			
latrix Spike (AA22008-MS2)		**Source: 1201199-02**		Prepared & Analyzed: 20-Jan-12						
ead	0.881	0.02	mg/l	1.00	ND	88.1	80-120			

espectfully Submitted,

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Irvine CA, 92618

ntion: Mike Cushner
eport Date: 30-Jan-12 16:10
ubject: Lead Soil Samples

Project/P.O.#: 208449002, EB SR-22 to SB SR-55; N & S side of 91

Metals by EPA 6000/7000 Series Methods - Quality Control

meter	Result	Rep. Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Note
atch AA22008 - EPA 200 Series										
'-trix Spike Dup (AA22008-MSD1)	**Source: 1201199-01**			Prepared & Analyzed: 20-Jan-12						
d	0.902	0.02	mg/l	1.00	ND	90.2	80-120	5.47	20	
latrix Spike Dup (AA22008-MSD2)	**Source: 1201199-02**			Prepared & Analyzed: 20-Jan-12						
d	0.884	0.02	mg/l	1.00	ND	88.4	80-120	0.303	20	
:h AA22015 - EPA 3050B										
lank (AA22015-BLK1)				Prepared: 20-Jan-12 Analyzed: 23-Jan-12						
d	ND	1.0	mg/kg							
LS (AA22015-BS1)				Prepared: 20-Jan-12 Analyzed: 23-Jan-12						
ead	25.7	1.0	mg/kg	25.0		103	80-120			
S Dup (AA22015-BSD1)				Prepared: 20-Jan-12 Analyzed: 23-Jan-12						
ead	26.5	1.0	mg/kg	25.0		106	80-120	3.13	20	
licate (AA22015-DUP1)	**Source: 1201202-01**			Prepared: 20-Jan-12 Analyzed: 23-Jan-12						
d	21.7	1.0	mg/kg		21.4			1.65	20	
latrix Spike (AA22015-MS1)	**Source: 1201202-01**			Prepared: 20-Jan-12 Analyzed: 23-Jan-12						
d	139	1.0	mg/kg	125	21.4	94.1	75-125			
rix Spike Dup (AA22015-MSD1)	**Source: 1201202-01**			Prepared: 20-Jan-12 Analyzed: 23-Jan-12						
ead	143	1.0	mg/kg	125	21.4	97.1	75-125	2.64	20	

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ubject: Lead Soil Samples

Project/P.O.#: 208449002, EB SR-22 to SB SR-55; N & S side of 91

TCLP Metals by 6000/7000 Series Methods - Quality Control

ımeter	Result	Rep. Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Note
atch AA22712 - TCLP Metals										
'lank (AA22712-BLK1)				Prepared & Analyzed: 27-Jan-12						
d	ND	0.02	mg/l							
LCS (AA22712-BS1)				Prepared & Analyzed: 27-Jan-12						
d	0.499	0.02	mg/l	0.500		99.7	80-120			
S Dup (AA22712-BSD1)				Prepared & Analyzed: 27-Jan-12						
ead	0.489	0.02	mg/l	0.500		97.9	80-120	1.87	20	
olicate (AA22712-DUP1)		**Source: 1201202-05**		Prepared & Analyzed: 27-Jan-12						
d	0.0173	0.02	mg/l		0.0168			2.91	20	
Matrix Spike (AA22712-MS1)		**Source: 1201202-05**		Prepared & Analyzed: 27-Jan-12						
d	0.972	0.02	mg/l	1.00	0.0168	95.5	75-125			
Matrix Spike Dup (AA22712-MSD1)		**Source: 1201202-05**		Prepared & Analyzed: 27-Jan-12						
ead	1.00	0.02	mg/l	1.00	0.0168	98.5	75-125	3.04	20	

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ubject: Lead Soil Samples

Project/P.O.#: 208449002, EB SR-22 to SB SR-55; N & S side of 91

STLC Metals by 6000/7000 Series Methods - Quality Control

imeter	Result	Rep. Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Note
atch AA22609 - TCLP Metals										
?'nk (AA22609-BLK1)				Prepared & Analyzed: 26-Jan-12						
d	ND	0.02	mg/l							
CS (AA22609-BS1)				Prepared & Analyzed: 26-Jan-12						
d	0.510	0.02	mg/l	0.500		102	80-120			
S Dup (AA22609-BSD1)				Prepared & Analyzed: 26-Jan-12						
ead	0.519	0.02	mg/l	0.500		104	80-120	1.80	20	
olicate (AA22609-DUP1)		**Source: 1201202-03**		Prepared & Analyzed: 26-Jan-12						
d	0.505	0.20	mg/l		0.510			0.995	20	
Matrix Spike (AA22609-MS1)		**Source: 1201202-03**		Prepared & Analyzed: 26-Jan-12						
d	8.83	0.20	mg/l	10.0	0.510	83.2	80-120			
Matrix Spike Dup (AA22609-MSD1)		**Source: 1201202-03**		Prepared & Analyzed: 26-Jan-12						
ead	8.75	0.20	mg/l	10.0	0.510	82.4	80-120	0.929	20	
ch AA23038 - TCLP Metals										
lank (AA23038-BLK1)				Prepared & Analyzed: 30-Jan-12						
d	ND	0.02	mg/l							
S (AA23038-BS1)				Prepared & Analyzed: 30-Jan-12						
ead	0.509	0.02	mg/l	0.500		102	80-120			
S Dup (AA23038-BSD1)				Prepared & Analyzed: 30-Jan-12						
ead	0.499	0.02	mg/l	0.500		99.7	80-120	2.06	20	

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ubject: Lead Soil Samples

Project/P.O.#: 208449002, EB SR-22 to SB SR-55; N & S side of 91

STLC Metals by 6000/7000 Series Methods - Quality Control

meter	Result	Rep. Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Note
tch AA23038 - TCLP Metals										
licate (AA23038-DUP1)	**Source: 1201202-05**			Prepared & Analyzed: 30-Jan-12						
d	ND	0.20	mg/l		0.0449				20	
latrix Spike (AA23038-MS1)	**Source: 1201202-05**			Prepared & Analyzed: 30-Jan-12						
d	10.3	0.20	mg/l	10.0	0.0449	102	80-120			
rix Spike Dup (AA23038-MSD1)	**Source: 1201202-05**			Prepared & Analyzed: 30-Jan-12						
ead	9.91	0.20	mg/l	10.0	0.0449	98.7	80-120	3.62	20	

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ubject: Lead Soil Samples

Project/P.O.#: 208449002, EB SR-22 to SB SR-55; N & S side of 91

General Inorganic Nonmetallic Chemistry by Standard Methods/EPA Methods - Quality Control

meter	Result	Rep. Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Note
atch AA22024 - General Preparation										
plicate (AA22024-DUP1)	**Source: 1201202-02**		Prepared & Analyzed: 20-Jan-12							
	8.71	0.1	pH Units		8.66			0.576	15	

Notes and Definitions

T Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
Sample results reported on a dry weight basis

espectfully Submitted,

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120/202

LABORATORY	SITE	CONSULTANT
Pat Chem Laboratories 11990 Discovery Court Moorpark, CA 93021 (805) 532-0012 / fax (805) 532-0016	EB SR-22 to SB SR-55; N and S side of SR-91In Fullerton and Anaheim, California Orange, California EA OM0001-02 Project Number 207364054	Ninyo & Moore 475 Goddard, Suite 200 Irvine, CA 92618 (949) 753-7070/fax (949) 753-7071

Special Instructions:
Homogonize the samples
If total lead is <1,000 mg/kg, but >/= 50 mg/kg, run STLC WET test (citric acid extraction EPA Method 7000 series)
If STLC WET >/= 5 mg/l, run STLC-DI (DI extraction EPA Method 7000 series)
If total lead is >/=1,000 mg/kg or STLC WET >/=5 mg/l, run TCLP (EPA Method 7000 series for leachable lead)

Samplers Name: Pedro Rodriguez

Relinquished by (name/date and time)	Received by (name/date and time)
Pedro Rodriguez [signature] 1/19/12 1515	Jesus Villanueva [signature] 1/19/12 1515
Jesus Villanueva [signature] 1/19/12 1554	[signature] 1/19/12 354

Lab No.	Sample I. D.	Date	Time	Total Lead EPA Method 6010	pH EPA Method 9045	Sample Type	Turn-Around Time	Container Type	HOLD
	B1-0.5	1/19/2012	1106	X		Soil	Normal	Glass Jar	
	B1-1.5	1/19/2012	1120	X	X	Soil	Normal	Glass Jar	
No Sample	~~B1-3.0~~	~~1/19/2012~~		~~X~~		~~Soil~~	~~Normal~~	~~Glass Jar~~	
No Sample	~~B1-4.0~~	~~1/19/2012~~		~~X~~		~~Soil~~	~~Normal~~	~~Glass Jar~~	
	B2-0.5	1/19/2012	1142	X		Soil	Normal	Glass Jar	
	B2-1.5	1/19/2012	1150	X		Soil	Normal	Glass Jar	
	B2-3.0	1/19/2012	1154	X		Soil	Normal	Glass Jar	
	B2-4.0	1/19/2012	1157	X		Soil	Normal	Glass Jar	
	B3-0.5	1/19/2012	0948	X		Soil	Normal	Glass Jar	
	B3-1.5	1/19/2012	0953	X		Soil	Normal	Glass Jar	
	B3-3.0	1/19/2012	0959	X		Soil	Normal	Glass Jar	
	B3-4.0	1/19/2012	1003	X		Soil	Normal	Glass Jar	
	B4-0.5	1/19/2012	0900	X		Soil	Normal	Glass Jar	
	B4-1.5	1/19/2012	0907	X	X	Soil	Normal	Glass Jar	
	B4-3.0	1/19/2012	0910	X		Soil	Normal	Glass Jar	
	B4-4.0	1/19/2012	0915	X		Soil	Normal	Glass Jar	
	B5-0.5	1/19/2012	0820	X		Soil	Normal	Glass Jar	
	B5-1.5	1/19/2012	0827	X		Soil	Normal	Glass Jar	
	B5-3.0	1/19/2012	0831	X		Soil	Normal	Glass Jar	
	B5-4.0	1/19/2012	0836	X		Soil	Normal	Glass Jar	
	R1	1/19/2012	1159	X		Water/Rinsate	Normal	Plastic ~~Glass Jar~~	
						Soil	Normal	Glass Jar	
						Soil	Normal	Glass Jar	
						Soil	Normal	Glass Jar	
						Soil	Normal	Glass Jar	
						Soil	Normal	Glass Jar	
						Soil	Normal	Glass Jar	
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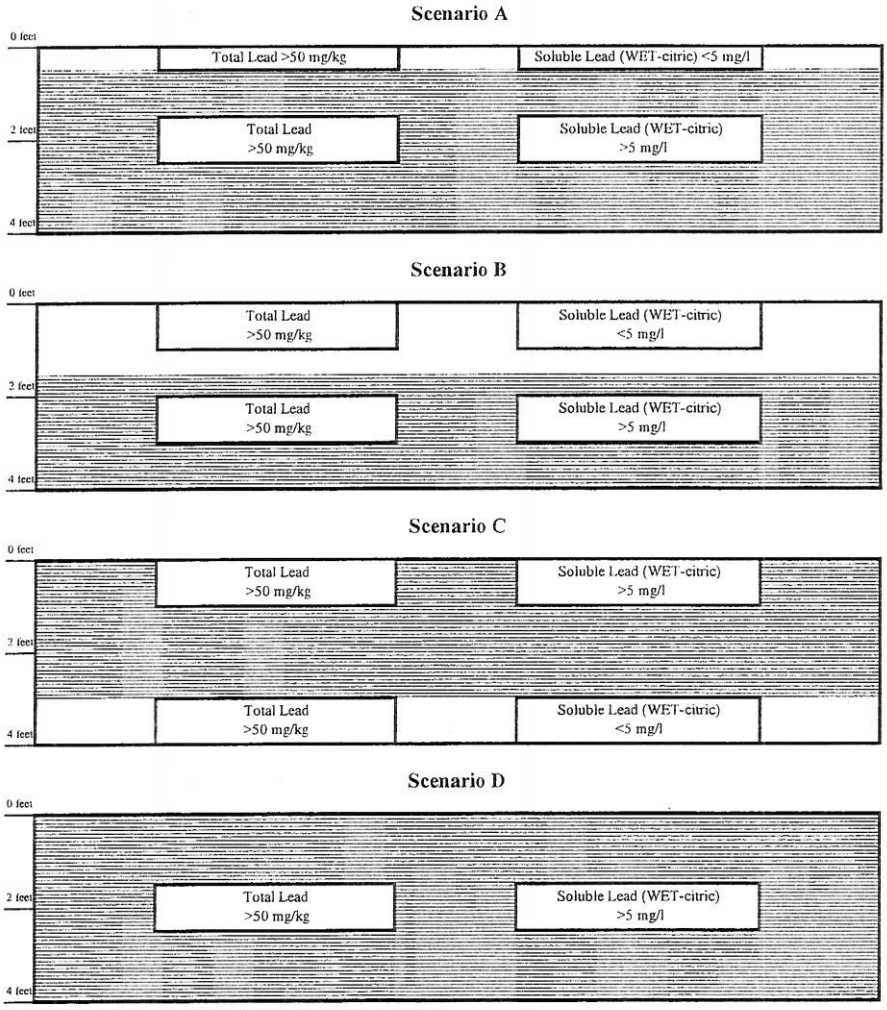
						Soil	Normal	Glass Jar	
						Soil	Normal	Glass Jar	
						Soil	Normal	Glass Jar	
						Soil	Normal	Glass Jar	
						Soil	Normal	Glass Jar	
						Soil	Normal	Glass Jar	
						Soil	Normal	Glass Jar	
						water	Normal	Plastic	

[initials] 1/19

APPENDIX C

BLOCK DIAGRAMS

FIGURE C1 – SITE 1 - BLOCK DIAGRAM FOR POTENTIAL DEPARTMENT RIGHT-OF-WAY RE-USE (BORINGS B1 AND B2)



– Non-hazardous soil with respect to total and soluble lead

– Reuse Condition 1 [Hazardous. Variance applies. Use material on job site. Place a minimum of 5 feet above maximum water table elevation and cover with at least 1 foot of non-hazardous soil]

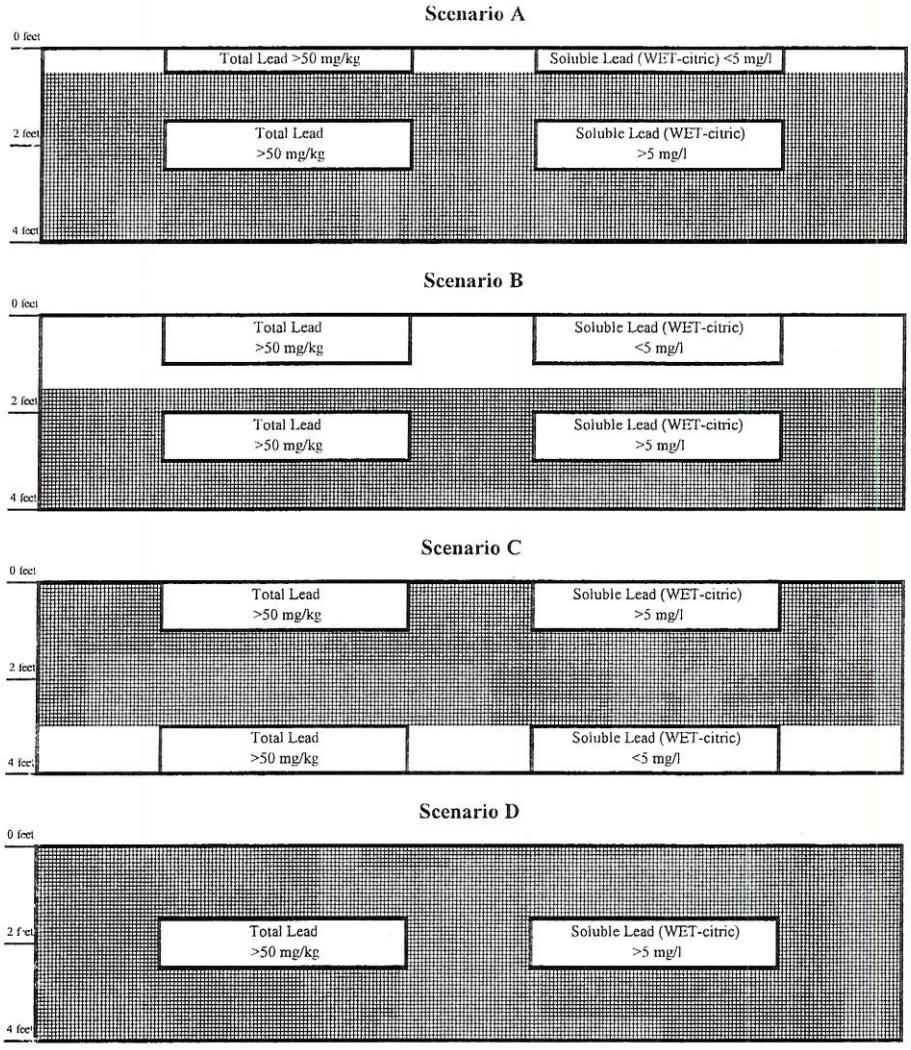
– Reuse Condition 2 [Hazardous. Variance applies. Use material on job site. Place a minimum of 5 feet above maximum water table elevation and protect from infiltration with a pavement structure which will be maintained by the Department]

– Hazardous. Class 1 disposal site, all other Title 22 CCR requirements apply

– Hazardous. Class 1 disposal site RCRA based on the layer having a TCLP value ≥ 5 mg/l

UCL – upper confidence limit
WET-DI – soluble lead using the Waste Extraction Test with deionized water
WET-citric acid – soluble lead using the Waste Extraction Test with citric acid
TCLP – Toxicity Characteristic Leaching Procedure
mg/kg – milligrams per kilogram
mg/l – milligrams per liter
CCR – California Code of Regulations
RCRA – Resource, Conservation, and Recovery Act
NA – not applicable

FIGURE C2 – SITE 1 - BLOCK DIAGRAM FOR POTENTIAL DEPARTMENT OFF SITE DISPOSAL (BORINGS B1 AND B2)



– Non-hazardous soil with respect to total and soluble lead

– Reuse Condition 1 [Hazardous. Variance applies. Use material on job site. Place a minimum of 5 feet above maximum water table elevation and cover with at least 1 foot of non-hazardous soil]

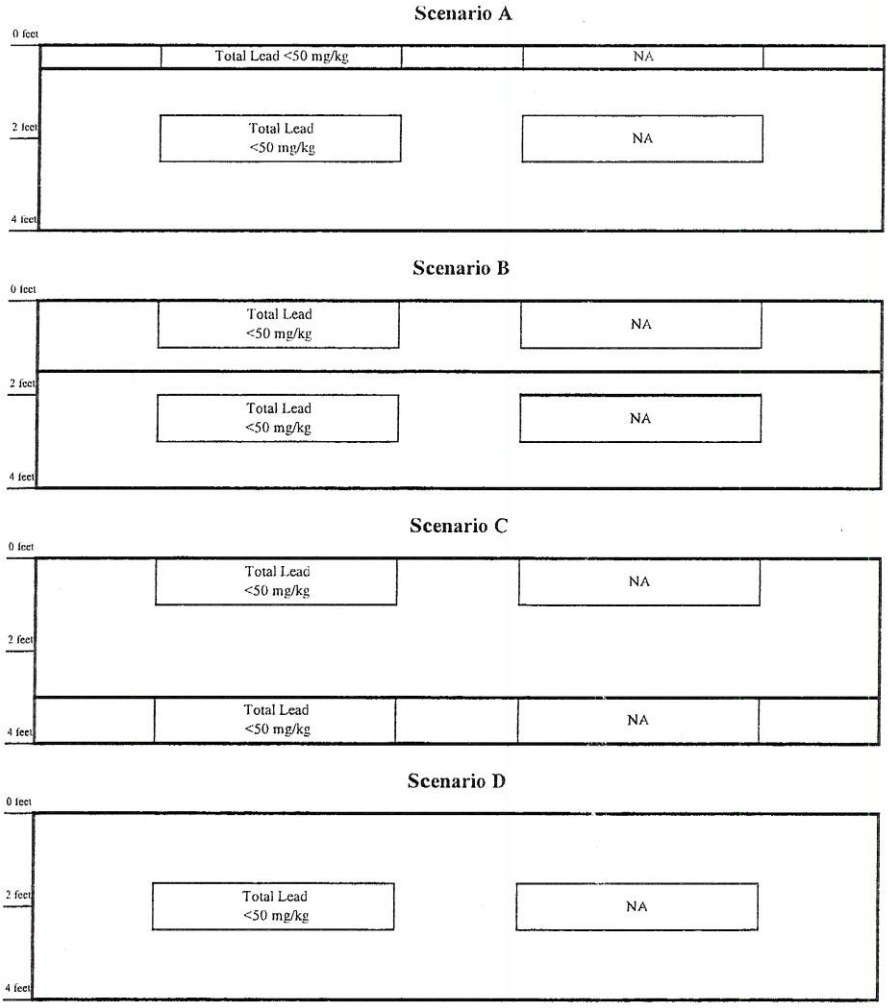
– Reuse Condition 2 [Hazardous. Variance applies. Use material on job site. Place a minimum of 5 feet above maximum water table elevation and protect from infiltration with a pavement structure which will be maintained by the Department]

– Hazardous. Class 1 disposal site, all other Title 22 CCR requirements apply

– Hazardous. Class 1 disposal site RCRA based on the layer having a TCLP value ≥ 5 mg/l

UCL – per confidence limit
WET-DI – luble lead using the Waste Extraction Test with deionized water
WET-citric acid – luble lead using the Waste Extraction Test with citric acid
TCLP – xicity Characteristic Leaching Procedure
mg/kg – lligrams per kilogram
mg/l – lligrams per liter
CCR – lifornia Code of Regulations
RCRA – source, Conservation, and Recovery Act
NA – t applicable

FIGURE C3 – SITE 2 - BLOCK DIAGRAM FOR POTENTIAL DEPARTMENT RIGHT-OF-WAY RE-USE (BORINGS B3, B4, AND B5)



– Non-hazardous soil with respect to total and soluble lead

– Reuse Condition 1 [Hazardous. Variance applies. Use material on job site. Place a minimum of 5 feet above maximum water table elevation and cover with at least 1 foot of non-hazardous soil]

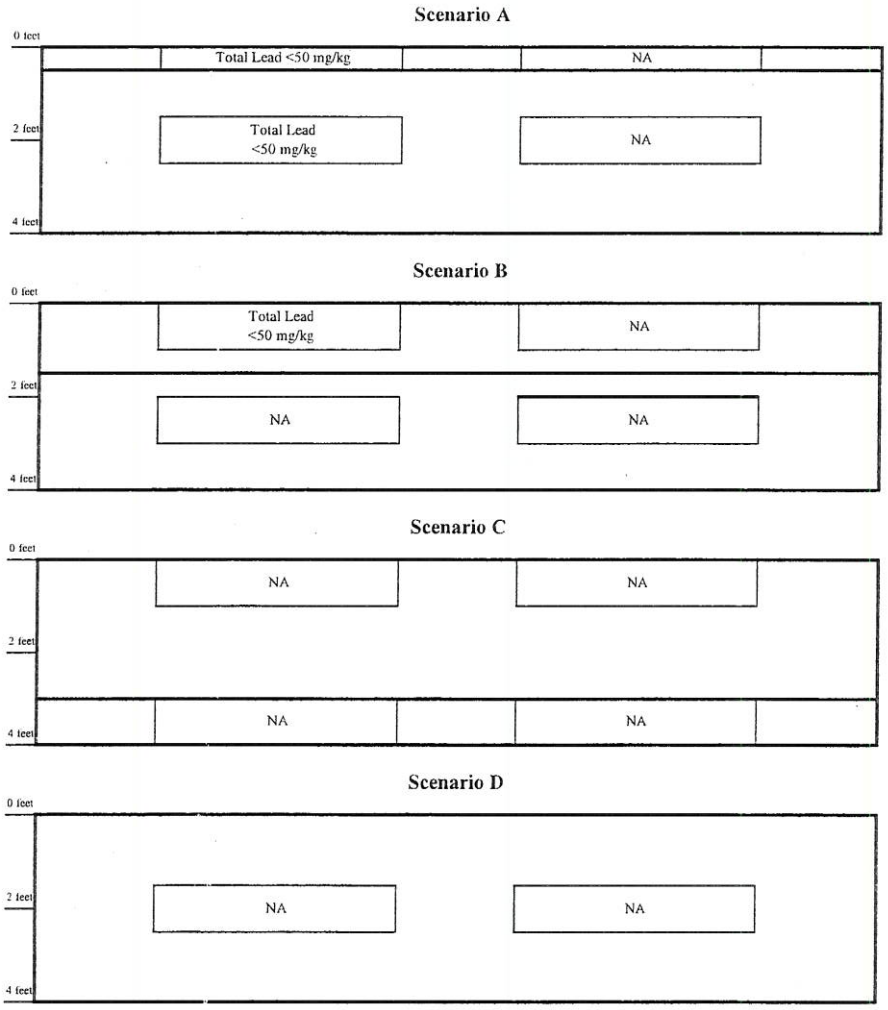
– Reuse Condition 2 [Hazardous. Variance applies. Use material on job site. Place a minimum of 5 feet above maximum water table elevation and protect from infiltration with a pavement structure which will be maintained by the Department]

– Hazardous. Class 1 disposal site, all other Title 22 CCR requirements apply

– Hazardous. Class 1 disposal site RCRA based on the layer having a TCLP value ≥ 5 mg/l

UCL – upper confidence limit
WET-DI – soluble lead using the Waste Extraction Test with deionized water
WET-citric acid – soluble lead using the Waste Extraction Test with citric acid
TCLP – Toxicity Characteristic Leaching Procedure
mg/kg – milligrams per kilogram
mg/l – milligrams per liter
CCR – California Code of Regulations
RCRA – Resource, Conservation, and Recovery Act
NA – not applicable

FIGURE C4 – SITE 2 - BLOCK DIAGRAM FOR POTENTIAL DEPARTMENT OFF SITE DISPOSAL (BORINGS B3, B4, AND B5)



– Non-hazardous soil with respect to total and soluble lead

– Reuse Condition 1 [Hazardous. Variance applies. Use material on job site. Place a minimum of 5 feet above maximum water table elevation and cover with at least 1 foot of non-hazardous soil]

– Reuse Condition 2 [Hazardous. Variance applies. Use material on job site. Place a minimum of 5 feet above maximum water table elevation and protect from infiltration with a pavement structure which will be maintained by the Department]

– Hazardous. Class 1 disposal site, all other Title 22 CCR requirements apply

– Hazardous. Class 1 disposal site RCRA based on the layer having a TCLP value ≥ 5 mg/l

UCL – upper confidence limit
WET-DI – soluble lead using the Waste Extraction Test with deionized water
WET-citric acid – soluble lead using the Waste Extraction Test with citric acid
TCLP – Toxicity Characteristic Leaching Procedure
mg/kg – milligrams per kilogram
mg/l – milligrams per liter
CCR – California Code of Regulations
RCRA – Resource, Conservation, and Recovery Act
NA – not applicable