FOR CONTRACT NO.: 12-0K6304

INFORMATION HANDOUT

MATERIALS INFORMATION

AERIALLY DEPOSITED LEAD INVESTIGATION REPORT

ROUTE: 12-Ora-405-13.6

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Ninyo & Moore

AERIALLY DEPOSITED LEAD INVESTIGATION REPORT SOUTHBOUND ROUTE 405 ONRAMP FROM SOUTHBOUND BROOKHURST STREET FOUNTAIN VALLEY, CALIFORNIA TASK ORDER NO. 12-0K6300-19 EA NO. 0K6300, CONTRACT NO. 12A1139

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Project No. 207384019

AERIALLY DEPOSITED LEAD INVESTIGATION REPORT
Task Order No. 12-0K6300-19
E.A. No. OK6300

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.

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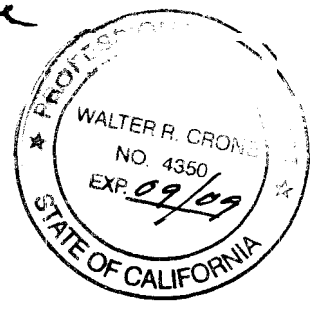

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EXECUTIVE SUMMARY

The State of California Department of Transportation (Department) authorized Ninyo & Moore to conduct an aerially deposited lead (ADL) investigation for the project improvement which will include removal of the curb, gutter, and metal beam guardrail (MBGR), relocation of the end treatment and flattening the embankment slopes beyond the upstream gore at the southbound Route 405 (R-405) onramp from southbound Brookhurst Street in the city of Fountain Valley, Orange County,,California (site). Work was conducted in general accordance with the Department Contract No. 12A1139, Task Order No. 12-0K6300-19 (TO 19), dated May 19,2009.

This investigation was performed to evaluate the presence of lead in soil resulting from the combustion of leaded fuel from freeway 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 20 soil samples from 5 borings. Five of the 20 samples contained a total lead concentration greater than or equal to 50 milligrams per kilogram (mg/kg) and were subsequently analyzed for soluble lead. Four samples contained soluble lead at a concentration greater than or equal to 5 milligrams per liter (mg/l) and were subsequently analyzed for soluble lead using deionized water as the extractant and using the Toxicity Characteristic Leaching Procedure (TCLP). The results were below 0.5 and 5 mg/l, respectively. Two samples were analyzed for pH. The pH levels ranged from 7.9 to 8.0, which would not cause the soil to be classified as Resource Conservation and Recovery Act (RCRA) hazardous waste and is greater than the California Environmental Protection Agency (Cal-EPA), Department of Toxic Substances Control (DTSC) lower limit of 5.0.

Our recommendations for soil reuse on site are based on the guidelines set forth by the DTSC Lead Variance issued to the Department in October 2000 that was subsequently modified by Assembly Bill 41.4, a DTSC: Variance modification letter dated December 13, 2002, and a subsequent extension dated June 17, 2008 (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 (ROW).

Our recommendations for off-site disposal are based on the comparison of lead concentrations in soil samples to the DTSC Variance thresholds, the California Health and Safety Code thresholds, and Title 40 Code of Federal Regulations (CFR) 261.24 thresholds.

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

Recommendations for Soil for Reuse by the Department

Soil at the site is suitable for on-site reuse by the Department with respect to total and soluble lead concentrations. Soil from the layers combined (surface to 4 feet below ground surface [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. Soil from the surface and 1.5-foot bgs layers separated 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 3- and 4-foot bgs layers has no restrictions based on total and soluble lead concentrations.

Recommendations for Soil to be Disposed Off Site

If the Department elects to dispose the soil off site, soil from the layers combined (surface to 4 feet bgs) is classified as hazardous and should be disposed at a Class 1 disposal site in accordance with Title 22 California Code Regulations (CCR) requirements. Soil from the surface and 1.5-foot bgs layers separated is classified as hazardous and should be disposed at a Class 1 disposal site in accordance with Title 22 CCR requirements. The remaining soil from the 3- and 4-foot bgs layers is non-hazardous and may be disposed off site with no restrictions based on total and soluble lead.

The Department should notify the contractors performing the construction activities that hazardous concentrations of lead could be present in isolated on-site locations, but as a whole the

site would be considered non-hazardous. Appropriate health and safety measures should be taken to minimrze 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) investigation for the project improvement which will include removal of the curb, gutter, and metal beam guardrail (MBGR), relocation of the end treatment and flattening the embankment slopes beyond the upstream gore at the southbound Route 405 (R-405) onramp from southbound Brookhurst Street in the city of Fountain Valley, Orange County, California (site). Work was conducted in general accordance with the Department Contract No. 12A1139, Task Order No. 12-0K6300-19 (TO 19), dated May 19,2009.

This report has been prepared by Ninyo & Moore to document the results of a study to evaluate the potential presence of ADL along the unpaved shoulder and slope in the area of the site.

1.1. Project Description and Objective

It is our understanding that the Department is planning to flatten the embankment slopes beyond the upstream gore, relocate the MBGR and end treatment, widen part of the left shoulder, and construct a sidewalk at the southbound R-405 onramp from southbound Brookhurst Street in the city of Fountain Valley. Five borings were hand augered at the site (Figures 2 and 3).

This investigation was performed to evaluate the potential presence of ADL along the shoulder of the site before excavation of soil begins as part of the road improvement project.

1.2. Scope of Work

Ninyo & Moore performed the following tasks:

1.2.1. Pre-field Activities

Pre-field activities included:

- Preparing a site specific health and safety plan (HSP).
- Marking boring locations at the site.

- Notifying Underground Service Alert (USA) that Ninyo & Moore would be advancing soil borings in the area (USA ticket number A91481387).

  Preparing a project schedule, and coordinating work with subcontractors.

1.2.2. Soil Sampling

Soil sampling was conducted on June 2,2009. Five sampling locations (B1 to B5) were augered as shown on Figures 2 and 3. The borings were advanced and sampled using a hand auger. Four soil samples were attempted for collection from depths of surface to ½, 1½ to 2, 2½ to 3, and 3½ to 4 feet below ground surface (bgs).

1.2.3. Laboratory Analysis

Ninyo & Moore submitted the soil samples under chain of custody to Advanced Technology Laboratories (ATL) of Signal Hill, California, a laboratory certified by the State of California Department of Health Services Environmental Laboratory Accreditation Program (ELAP).

1.2.4. GPS Surveying

Approximate latitude and longitude (North American Datum [NAD] 83) of sampling locations were recorded with a handheld global positioning system (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. 12A1139 and TO 19 dated May 19,2009.

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 (00-H-VAR-02) from the California Environmental Protection Agency (Cal-EPA), Department of Toxic Substances Control (DTSC), on October 2000 that was subsequently modified by Assembly Bill 414, a DTSC Variance modification letter dated December 13, 2002, and a subsequent extension dated June 17, 2008 (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 found 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, 2000).

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 (40CFR 261.22).

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 right-of-way (ROW).

2.3.1. Reuse – Clondition 1

Soil containing less than 0.5 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 – Clondition 2

Soil containing greater than or equal to 0.5 mg/l but less than 50 mg/l extractable lead by WET-DI method, and more than 1,411 mgkg total lead but less than 3,397 mgkg 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

Soil that has a pH value less than 5.0 may only be used as fill material under the paved portion of the roadway. This condition takes precedence over Conditions 1 and 2.

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

If the Department elects to reuse 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 TO 19 that was approved by the Department prior to beginning the field activities.

3.1. Health and Safety Plan (HSP)

A site-specific HSP dated June 1, 2009, 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 48 hours 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 June 2, 2009. The boring locations were approved by the Department Task Order Manager and are shown on the attached Figures 2 and 3. Four samples were attempted for collection from each of the five boreholes at depths of 0 to ½ foot, 1½ to 2, 2½ to 3, and 3½ 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 chain-of-

custody (COC) protocol to ATL within 24 hours of collection. In accordance with TO 19, soil sample homogenization was perfonned in the laboratory.

Hand augering was conducted by Ninyo & Moore personnel.

3.4. Investigative-Derived Wastes

Soil cuttings generated by hand-auger drilling were returned to their corresponding bore-holes 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 result of analysis of the decontamination water sample for total lead (non-detect), the decon-tamination water was subsequently disposed in the sanitary sewer.

3.5. Laboratory Analyses

Once the samples were: received by ATL, the samples were homogenized and analyzed for the following:

- Twenty soil samples were analyzed for total lead using EPA Method 6010B;
- Five of the soil samples contained a total lead concentration greater than or equal to 50 mg/kg and were subsequently analyzed for soluble lead by WET using citric acid as the extractant.
- Four soil samples contained soluble lead concentrations greater than or equal to 5 mg/l and were analyzed for soluble lead by WET using de-ionized water as the extractant and soluble lead by TCLP.
- Approximately 10 percent of the soil samples (2 samples) were analyzed for pH using EPA Method 9045; and
- One sample of the decontamination water 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 Figure 3. Laboratory reports and COC records are included in Appendix A.

4.1. Total Lead

The maximum total lead concentration was 230 mg/kg. The minimum total lead concentration was less than the laboratory practical quantitation limit (PQL) of 5.0 mg/kg (Table 1).

The decontamination water sample did not contain a reportable concentration of lead.

4.2. Soluble Lead – Citric Acid

Five of the 20 samples contained total lead at a concentration greater than or equal to 50 mg/kg and were subsequently analyzed for soluble lead using citric acid as the extractant. The maximum reported concentration was 20 mg/l. The minimum reported concentration was 4.2 mg/l.

4.3. Soluble Lead – Deionized Water

Four samples contained soluble lead at a concentration greater than or equal to 5 mg/l and were subsequently analyzed for soluble lead using deionized water as the extractant. The reported concentrations were less than the laboratory PQL of 0.25 mg/l.

4.4. Soluble Lead - TCLP

Four samples contained soluble lead at a concentration greater than or equal to 5 mg/l and were subsequently analyzed for soluble lead by the TCLP. The maximum reported concentration was 0.53 mg/l. The minimum concentration was 0.39 mg/l.

4.5. pH

Approximately 10 percent of the samples collected (2 samples) were analyzed for pH. The pH levels were 7.9 and 8.0. This soil pH value is not characteristic of RCRA hazardous waste and is greater than the lower limit of 5.0 specified in the DTSC Variance.

5. STATISTICAL EVALUATION

The following subsections describe the statistical methods used to evaluate the lead data set for the site.

5.1. Statistical Evaluation Methods

The analytical results were evaluated statistically to recommend the appropriate method of on-site reuse or off-site disposal of excavated soil. Prior to calculations, concentrations less than the laboratory reporting limit were assigned values equal to half the reporting limit. Statistical methods were applied to the data set to evaluate:

- The total lead data population distribution;
- The one-sided upper confidence limits (UCLs) of the true means of the total lead concentrations; and
- If there is an acceptable correlation between total and soluble lead concentrations that would allow prediction of soluble lead concentrations based on calculated UCLs.

5.2. Population Distribution

A test for population distribution is necessary in order to apply the appropriate evaluation methods when examining the UCLs of the total lead means. When evaluating the distribution of total lead concentrations, total lead data are treated as one data set. Distribution was evaluated in accordance with EPA SW-846, Chapter Nine (1986) by comparing the mean versus the variance of the total lead data sets. If the mean is greater than the variance, the data set is normally distributed and no transformation is performed. If the mean is less than the variance, the data set is transformed using an arcsine conversion. If the mean is ap-

proximately equal to the variance, the data set is transformed using a square-root conversion. A histogram of the data is presented in Appendix C.

5.3. Upper Confidence Limits

The UCLs are used to address the uncertainty associated with estimated the true mean concentration of a population. As more data become available for a given site, the uncertainty of a true statistical mean decreases and the UCLs move closer to the true mean of the population.

For this project, a 90 percent UCL is calculated for soil to be reused on site, while a 95 percent UCL is calculated for soil to be disposed off site. As described in Section 2.3.2, the maximum 90 percent UCL allowed for soil reuse on site is 3,397 mg/kg. A total lead concentration greater than 1,000 mg/kg is classified as hazardous for soil not reused on site, corresponding to a 95 percent UCL greater than or equal to 1,000 mg/kg.

One-sided 90 and 95 percent UCLs of the true mean are defined as values that, when calculated repeated for randomly drawn subsets of data, equal or exceed the true mean 90 and 95 percent of the time, respectively. The following equation (EPA, 1986) was used to calculate the UCLs:

$$UCL = x + t_p \frac{S}{sqrt(n)}$$

Where:

x = sample mean
t_p = student's t for a one-tailed confidence interval and a probability of p
S = standard deviation
N = number of samples

The samples in this study were collected using a systematic random sampling approach. SW-846 Chapter Nine indicates that statistical transformation should be used if the data set is not normally distributed and that statistical evaluations should be performed on the trans-

formed scale. The data for this project are not normally distributed and therefore must be transformed using the arcsine function.

Transformation using the arcsine function is accomplished by calculating the arcsine of the concentration normalized to the maximum concentration in the population. That is:

$$y_i = \text{arcsine} \frac{x_i}{x_{max}}$$

Where:

y_i = transformed value sample mean
x_i = reported concentration
x_{max} = maximum concentration reported for the data set

The final result is transformed back to a concentration by multiplying the sine of the transformed nurnber by the maximum concentration:

$$z_i = x_{max} \sin y_i$$

In order to evaluate four of the possible soil excavation depth scenarios, several different UCLs for total lead concentrations were calculated:

- Scenario A: the entire 4 foot soil column
- Scenario B: each layer separated: 0.0 to 0.5 (surface) layer; 0.5 to 1.5 (1.5 foot) layer; 1.5 to 3.0 (3 foot) layer; 3.0 to 4.0 (4 foot) layer

Results of this exercise are presented in Appendix B and are shown graphically on the block diagrams presented in Appendix E.

5.4. Regression Analysis

A linear regression analysis is used to create a soluble lead prediction model for use with the 90 and 95 percent UCLs. A line fit to the data using the equation:

$$y = mx + b$$

Where:

y = soluble lead by WET-citric acid, mg/l
x = total lead concentration, mg/kg
b = y-intercept
m = slope

$$\text{slope} = \frac{r \times s_t}{s_s}$$

Where:

r = correlation coefficient
s_t = standard deviation of the total lead concentrations
s_s = standard deviation of the soluble lead concentrations

The linear equation from the regression is used to predict soluble lead concentrations for the statistical total lead UCLs. The integrity of the equation is directly related to the 'r', the correlation coefficient, which should be greater than or equal to 0.8.

A regression analysis was performed for this data set and the correlation coefficient was 0.91. The regression analysis is included as Appendix D.

6. CONCLUSIONS

Based on the analytical results, the conclusions for the site are summarized below.

6.1. Conclusion for Soil for Reuse by the Department

Soil at the site is suitable for on-site reuse by the Department with respect to total and soluble lead concentrations. Soil from the layers combined (surface to 4-foot layer) 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. Soil from the surface and 1.5-foot layers separated 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 3- and 4-foot layers has no restrictions based on total and soluble lead concentrations.

6.2. Conclusion for Soil to be Disposed Off Site

If the Department elects to dispose the soil off site, soil from the layers combined (surface to 4-foot layers) is classified as hazardous and should be disposed at a Class 1 disposal site in accordance with Title 22 CCR requirements. Soil from the surface and 1.5-foot layers separated is classified as hazardous and should be disposed at a Class 1 disposal site in accordance: with Title 22 CCR requirements. The remaining soil from the 3- and 4-foot layers is classified as non-hazardous and may be disposed off site with no restrictions based on total and soluble lead.

The laboratory results are presented in Table 1 and shown on Figure 3.

7. RECOMMENDATIONS

Based on the findings of this study, recommendations (based on the ADL sampling) are summarized on block diagrams in Appendix E and are discussed below:

7.1. Recommendations for Soil for Reuse by the Department

Soil at the site is suitable for on-site reuse by the Department with respect to total and soluble lead concentrations. Soil from the layers combined (surface to 4-foot layer) 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. Soil from the surface and 1.5-foot layers separated 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 3- and 4-foot layers has no restrictions based on total and soluble lead concentrations.

7.2. Recommendations for Soil to be Disposed Off Site

If the Department elects to dispose the soil off site, soil from the layers combined (surface to 4-foot layers) is classified as hazardous and should be disposed at a Class 1 disposal site in accordance with Title 22 CCR requirements. Soil from the surface and 1.5-foot layers separated is classified as hazardous and should be disposed at a Class l disposal site in accordance with Title 22 CCR requirements. The remaining soil from the 3- and 4-foot layers is classified as non-hazardous and may be disposed off site with no restrictions based on total and soluble lead.

The Department should notify the contractors performing the construction activities that hazardous concentrations of lead could be present in isolated on-site locations, but as a whole the site would be: considered non-hazardous. 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 (PEL) for lead is 0.05 milligrams per cubic meter (mg/m^3) in air based on an eight-hour time-weighted average (TWA); Immediately Dangerous to Life and Health (IDLH) exposure limit is 100 mg/m^3 as established by the National Institute of Occupational Safety and Health (NIOSH). Exposure may produce several symptoms including weakness, eye irritation, facial pallor, pale eyes, lassitude, insomnia, anemia, 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/910.120 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. LIMITA'TIONS

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 Mitch Khalilifar, Environmental Engineering.,3337 Michelson Drive, Suite 380, Irvine, California 92612-8894. Phone Number (949) 756-7649.

10. REFERENCES

Department of Toxic Substance Control (DTSC), 2000, Variance (no 00-H-VAR-02), dated September 2.2.

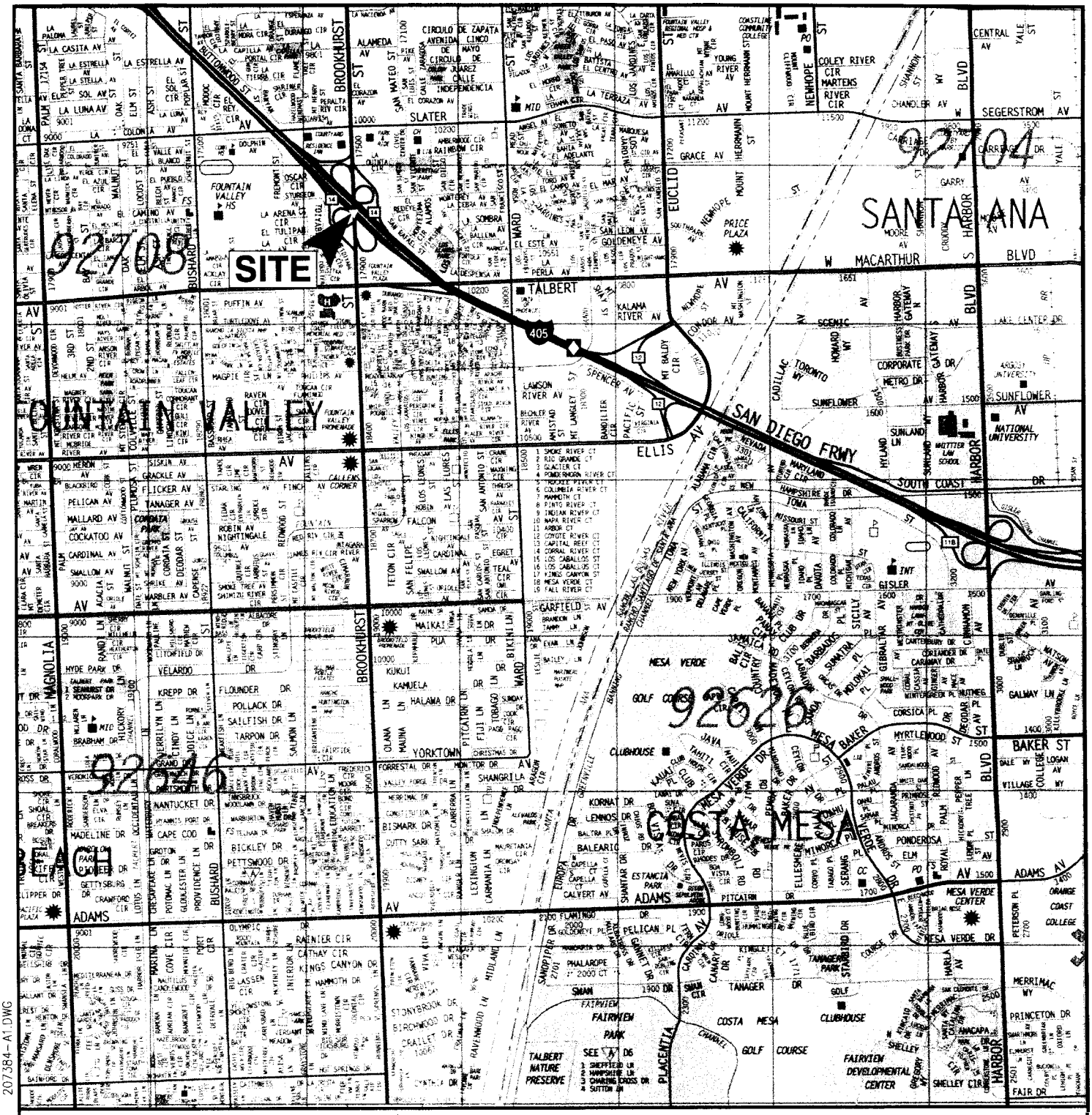
Department of Toxic Substance Control (DTSC), 2002, Lead Contaminated Soil Variance Modification, Caltrans District 12, dated December 13.

Department of Toxic Substance Control (DTSC), 2008, Lead Contaminated Soil Variance Modification, Caltrans District 12, dated June 17.

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

Sample	Sample Depth (feet)	Sample Date	TTLC (mg/kg)	WET-citric (mg/l)	WET-DI (mg/l)	TCLP (mg/l)	pH	Latitude	Longitude
B1-0.5	0.5	6/2/09	170	13	ND<0.25	0.43	8.0	6043293.21738	2204088.74188
B1-1.5	1.5	6/2/09	76	12	ND<0.25	0.49			
Bl-3	3.0	6/2/09	ND<5.0						
B1-4	4.0	6/2/09	ND<5.0						
B2-0.5	0.5	6/2/09	68	7.8	ND<0.25	0.53		6043201.31443	2204176.52106
B2-1.5	1.5	6/2/09	6.4						
B2-3	3.0	6/2/09	ND<5.0						
B2-4	4.0	6/2/09	ND<5.0				7.9		
B3-0.5	0.5	6/2/09	52	4.2				6043292.04089	2204226.83008
B3-1.5	1.5	6/2/09	34						
B3-3	3.0	6/2/09	ND<5.0						
B3-4	4.0	6/2/09	ND<5.0						
B4-0.5	0.5	6/2/09	ND<5.0					6043220.55600	2204219.43185
B4-1.5	1.5	6/2/09	8.5						
B4-3	3.0	6/2/09	15						
B4-4	4.0	6/2/09	ND<5.0						
B5-0.5	0.5	6/2/09	230	20	ND<0.25	0.39		6043283.02001	2204320.09542
B5-1.5	1.5	6/2/09	17						
B5-3	3.0	6/2/09	ND<5.0						
B5-4	4.0	6/2/09	ND<5.0						
Maximum			230	20	ND<0.25	0.53	8.0		
Average			35.1	11.4	ND<0.25	0.46	8.0		
Minimum			ND<5.0	4.2	ND<0.25	0.39	7.9		
Regulatory Limits			1411[1]	5[2]	0.5[3]	5[4]	5[5]		
Decontamination Water (mg/l)									
Decon		6/2/09	ND<0.25						

Notes:
mg/kg – milligrams per kilogram
mg/l – milligrams per liter
TTLC – total lead for comparison to the Total Threshold Limit Concentration
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
TCLP – soluble lead by the Toxicity Characteristic Leaching Procedure
ND – not detected above reporting limits presented in Appendix A
1 – Limit specified in addendum to Variance issued by the Department of Toxic Substance Control to Caltrans (DTSC) Variance, September 22,2000; Addendum, December 2002; Addendum June 2008)
2 – STLC for California Hazardous Waste (California Code of Regulations [CCR] Title 22, Section 66261.24)
3 – Limit Specified by DTSC Variance
4 – Maximum conceritration 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
* Data removed as hot spots and not used in statistics.
A The laboratory report for this data is presented in the Aerially Deposited Lead Investigation Report, dated January 22,



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

APPROXIMATE SCALE IN FEET

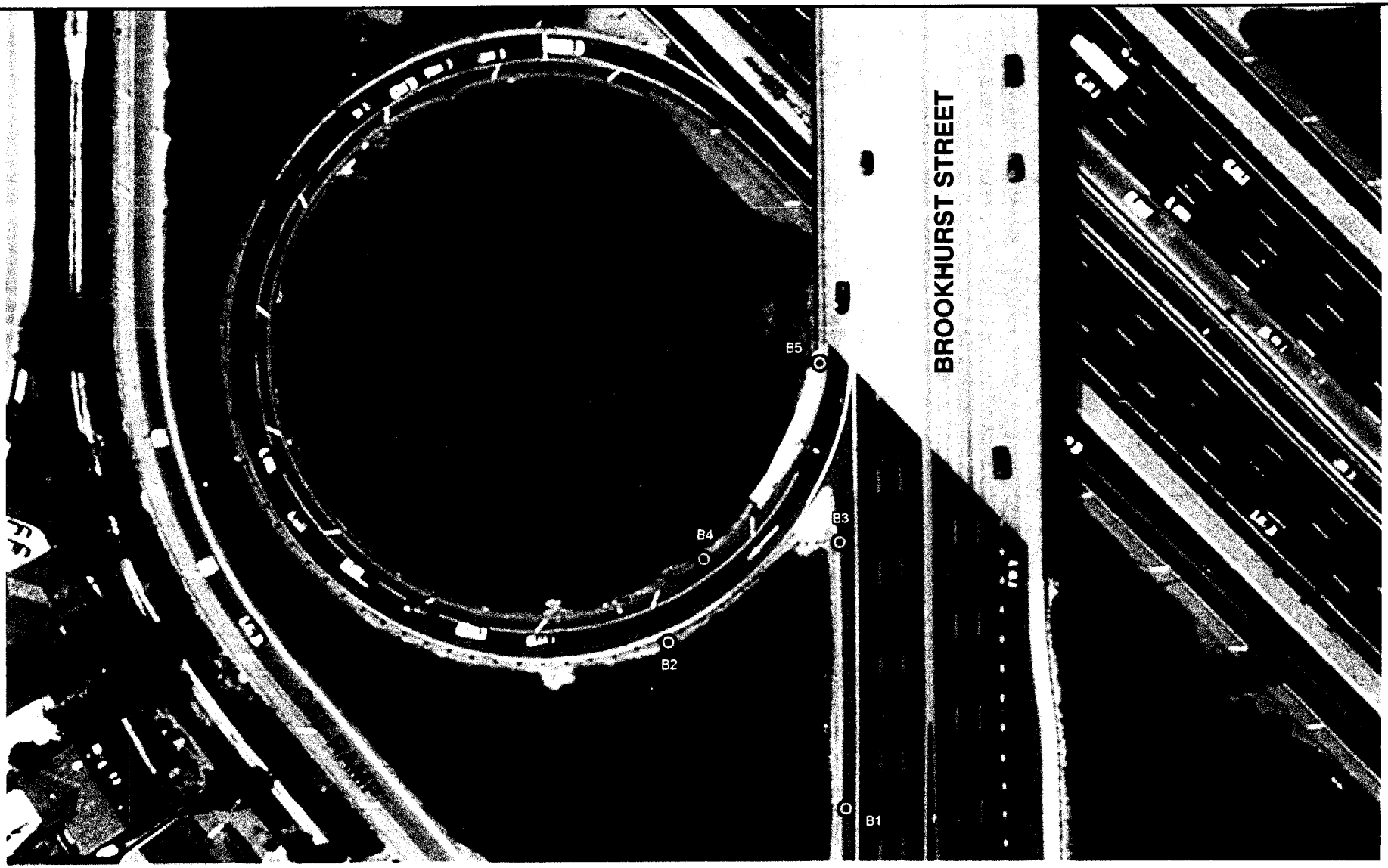
0 2400 4800

N

NOTE ALL DIMENSIONS DIRECTIONS AND LOCATIONS ARE APPROXIMATE

207384-A1.DWG

Ninyo & Moore	SITE LOCATION	FIGURE
PROJECT NO. 207384019	DATE 6/09	BROOKHURST STREET FOUNTAIN VALLEY, CALIFORNIA	1



N

APPROXIMATE SCALE IN FEET

0 80 160

NOTE ALL DIMENSIONS DIRECTIONS AND LOCATIONS ARE APPROXIMATE

LEGEND

B2 APPROXIMATE BORING LOCATION

REFERENCE GOGGLE AERIAL PHOTO, 2009

Ninyo & Moore

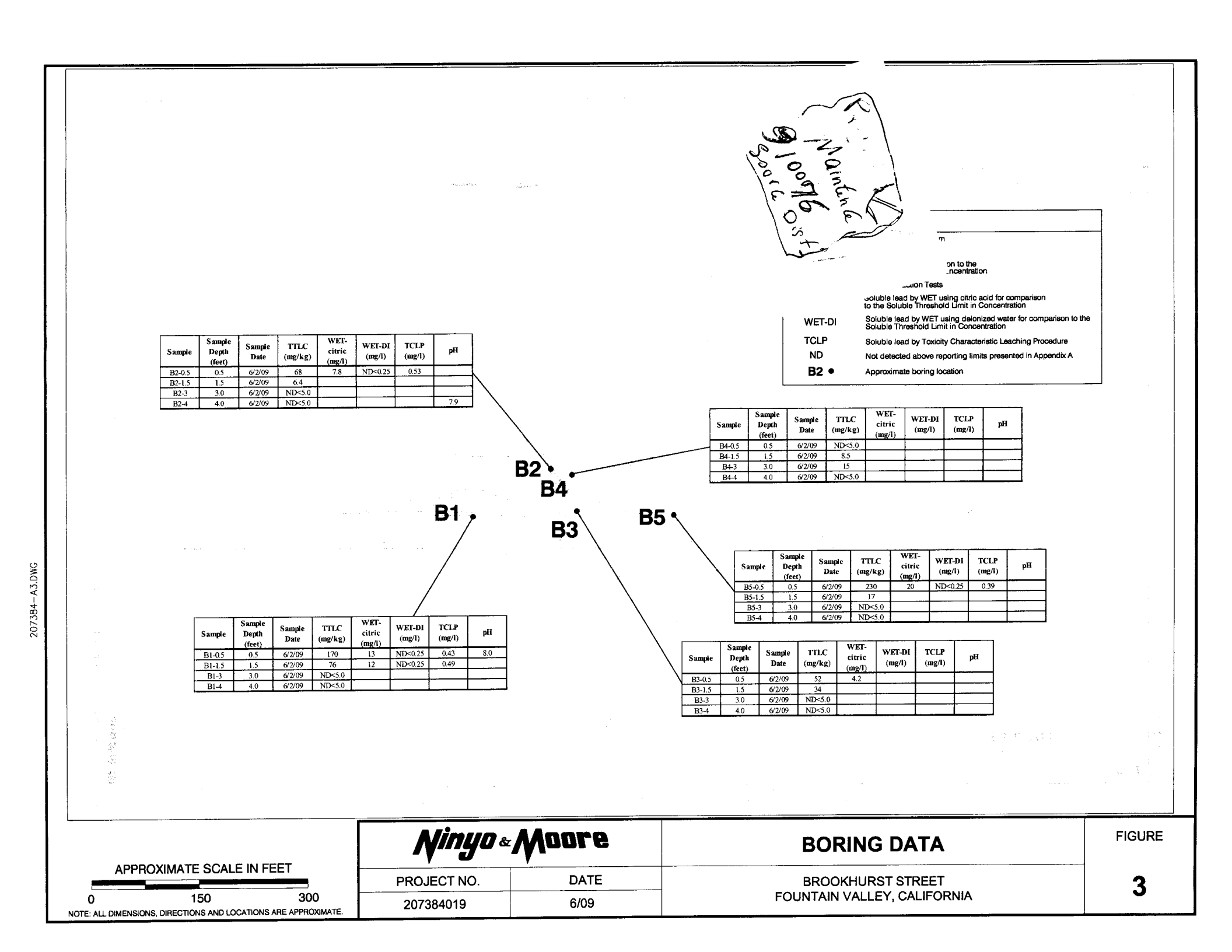
PROJECT NO.	DATE
207384019	6/09

BORING LOCATIONS

BROOKHURST STREET
FOUNTAIN VALLEY, CALIFORNIA

FIGURE

2



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	6/2/09	68	7.8	ND<0.25	0.53	
B2-1.5	1.5	6/2/09	6.4				
B2-3	3.0	6/2/09	ND<5.0				
B2-4	4.0	6/2/09	ND<5.0				7.9

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	6/2/09	ND<5.0				
B4-1.5	1.5	6/2/09	8.5				
B4-3	3.0	6/2/09	15				
B4-4	4.0	6/2/09	ND<5.0				

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	6/2/09	170	13	ND<0.25	0.43	8.0
B1-1.5	1.5	6/2/09	76	12	ND<0.25	0.49	
B1-3	3.0	6/2/09	ND<5.0				
B1-4	4.0	6/2/09	ND<5.0				

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	6/2/09	230	20	ND<0.25	0.39	
B5-1.5	1.5	6/2/09	17				
B5-3	3.0	6/2/09	ND<5.0				
B5-4	4.0	6/2/09	ND<5.0				

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	6/2/09	52	4.2			
B3-1.5	1.5	6/2/09	34				
B3-3	3.0	6/2/09	ND<5.0				
B3-4	4.0	6/2/09	ND<5.0				

on to the
ncentration

ion Tests

oluble lead by WET using citric acid for comparison to the Soluble Threshold Limit in Concentration

WET-DI	Soluble lead by WET using deionized water for comparison to the Soluble Threshold Limit in Concentration
TCLP	Soluble lead by Toxicity Characteristic Leaching Procedure
ND	Not detected above reporting limits presented in Appendix A
B2 ●	Approximate boring location

APPROXIMATE SCALE IN FEET

0 150 300

NOTE: ALL DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

Ninyo & Moore

PROJECT NO.	DATE
207384019	6/09

BORING DATA

BROOKHURST STREET
FOUNTAIN VALLEY, CALIFORNIA

FIGURE

3

207384-A3.DWG

APPENDIX A

LABORATORY REPORTS AND CHAIN-OF-CUSTODY DOCUMENTATION

June 22,20013

Nancy Anglin
Ninyo & Moore
475 Goddard Suite 200
Irvine, CA 92618
TEL: (949) 753-7070
FAX: (949) 753-7071

ELAP No.: 1838
NELAP No.: 02107CA
NEVADA.: CA-401
CSDLAC No.: 10196

Workorder No.: 105760

RE: 20738,4019, Southbound Brookhurst on-ramp to

Attention: Nancy Anglin

Enclosed are the results for sample(s) received on June 02,2009 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me: at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory :Director

Advanced Technology Laboratories

Date: *22-Jun-09*

CLIENT: Ninyo & Moore
Project: 207384019, Southbound Brookhurst on-ramp to
Lab Order: 105760
Contract No:

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
105760-001A	B1-0.5	Soil	6/2/2009 9:25:00 AM	6/2/2009	6/22/2009
105760-002A	B1-1.5	Soil	6/2/2009 9:27:00 AM	6/2/2009	6/22/2009
105760-003A	B1-3	Soil	6/2/2009 9:29:00 AM	6/2/2009	6/22/2009
105760-004A	B1-4	Soil	6/2/2009 9:33:00 AM	6/2/2009	6/22/2009
105760-005A	B2-0.5	Soil	6/2/2009 9:40:00 AM	6/2/2009	6/22/2009
105760-006A	B2-1.5	Soil	6/2/2009 9:42:00 AM	6/2/2009	6/22/2009
105760-007A	B2-3	Soil	6/2/2009 9:45:00 AM	6/2/2009	6/22/2009
105760-008A	B2-4	Soil	6/2/2009 9:47:00 AM	6/2/2009	6/22/2009
105760-009A	B3-0.5	Soil	6/2/2009 9:55:00 AM	6/2/2009	6/22/2009
105760-010A	B3-1.5	Soil	6/2/2009 9:57:00 AM	6/2/2009	6/22/2009
105760-011A	B3-3	Soil	6/2/2009 10:00:00 AM	6/2/2009	6/22/2009
105760-012A	B3-4	Soil	6/2/2009 10:02:00 AM	6/2/2009	6/22/2009
105760-013A	B5-0.5	Soil	6/2/2009 10:15:00 AM	6/2/2009	6/22/2009
105760-014A	B5-1.5	Soil	6/2/2009 10:17:00 AM	6/2/2009	6/22/2009
105760-015A	B5-3	Soil	6/2/2009 10:22:00 AM	6/2/2009	6/22/2009
105760-016A	B5-4	Soil	6/2/2009 10:25:00 AM	6/2/2009	6/22/2009
105760-017A	B4-0.5	Soil	6/2/2009 10:35:00 AM	6/2/2009	6/22/2009
105760-018A	B4-1.5	Soil	6/2/2009 10:37:00 AM	6/2/2009	6/22/2009
105760-019A	B4-3	Soil	6/2/2009 10:40:00 AM	6/2/2009	6/22/2009
105760-020A	B4-4	Soil	6/2/2009 10:42:00 AM	6/2/2009	6/22/2009
105760-021A	Decon	Water	6/2/2009 11:00:00 AM	6/2/2009	6/22/2009

Advanced Technology Laboratories
3275 Walnut Avenue, Signal Hill, CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

CLIENT:	Ninyo & Moore	**Client Sample ID:**	B1-0.5
Lab Order:	105'760	**Collection Date:**	6/2/2009 9:25:00 **AM**
Project:	207 384019, Southbound Brookhurst on-ramp t	**Matrix:**	SOIL
Lab ID:	105760-001A		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3050M				**EPA 6010B**		
RunID: **ICP8_090608B**	QC Batch: **55681**				PrepDate: **61312009**		**Analyst: CL**
Lead	170	0.11	5.0		mg/Kg	1	6/8/2009 01:15 PM
LEAD BY ATOMIC ABSORPTION							
	WET				**WET DI/ EPA 7420**		
RunID: **AA2_090619A**	QC Batch: **55970**				PrepDate: **611712009**		**Analyst: W**
Lead	ND	0.21	0.25		mg/L	1	6/19/2009 12:20 PM
LEAD BY ATOMIC ABSORPTION (STLC)							
	WET				**WET/ EPA 7420**		
RunID: **AA2_090612A**	QC Batch: **55799**				PrepDate: **611012009**		**Analyst: W**
Lead	13	0.41	0.50		mg/L	2	6/12/2009 04:04 PM
LEAD BY ATOMIC ABSORPTION (TCLP)							
	EPA3010A				**EPA 1311/ 7420**		
RunID: **AA2_090619B**	QC Batch: **56011**				PrepDate: **611812009**		**Analyst: W**
Lead	0.43	0.21	0.25		mg/L	1	6/19/2009 12:12 PM
PH							
					EPA 9045C		
RunID: **WETCHEM_090604B**	QC Batch: **R109594**				PrepDate:		**Analyst: DDL**
pH	8.0	0.10	0.10		pH Units	1	6/4/2009

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Ninyo & Moore	**Client Sample ID:**	B1-1.5
Lab Order:	105'760	**Collection Date:**	6/2/2009 9:27:00 AM
Project:	207384019, Southbound Brookhurst on-ramp t	**Matrix:**	SOIL
Lab ID:	105'760-002A		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3050M				**EPA 6010B**		
RunID: **ICP8_090608B**	QC Batch: **55681**				PrepDate: **6/3/2009**		**Analyst: CL**
Lead	76	0.11	5.0		mg/Kg	1	6/8/2009 01:18 PM
LEAD BY ATOMIC ABSORPTION							
	WET				**WET DI/ EPA 7420**		
RunID: **AA2_090619A**	C!C Batch: **55970**				PrepDate: **611712009**		**Analyst: W**
Lead	ND	0.21	0.25		mg/L	1	6119/2009 12:20 PM
LEAD BY ATOMIC ABSORPTION (STLC)							
	WET'				**WET/ EPA 7420**		
RunID: **AA2_090612A**	QC Batch: **55799**				PrepDate: **611012009**		**Analyst: W**
Lead	12	0.41	0.50		mg/L	2	611212009 04:04 PM
LEAD BY ATOMIC ABSORPTION (TCLP)							
	EPA3010A				**EPA 1311/ 7420**		
RunID: **AA2_090619B**	QC Batch: **56011**				PrepDate: **611812009**		**Analyst: W**
Lead	0.49	0.21	0.25		mg/L	1	6/19/2009 12:12 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Ninyo & Moore	**Client Sample ID:**	**B1-3**
Lab Order:	105760	**Collection Date:**	6/2/2009 9 29:00 AM
Project:	207384019, Southbound Brookhurst on-ramp t	**Matrix:**	**SOIL**
Lab ID:	105760-003A		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3050M				**EPA 6010B**		
RunID: **ICP8_090608B**	QC Batch: **55681**				PrepDate:	**6/3/2009**	Analyst: **CL**
Lead	**ND**	0.11	5.0		mg/Kg	1	6/8/2009 01:23 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: 22-Jun-09

CLIENT:	Ninyo & Moore	**Client Sample ID:**	B1-4
Lab Order:	105760	**Collection Date:**	61212009 9:33:00 AM
Project:	207384019, Southbound Brookhurst on-ramp t	**Matrix:**	SOIL
Lab ID:	105760-004A		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3050M				**EPA 6010B**		
RunID: **ICP8_090608B**	QC Batch: 55681				PrepDate: 6/3/2009		Analyst: CL
Lead	ND	0.11	5.0		mg/Kg	1	6/8/2009 01:27 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT:	Ninyo & Moore	**Client Sample ID:**	B2-0.5
Lab Order:	105'760	**Collection Date:**	6/2/2009 9:40:00 AM
Project:	207384019, Southbound Brookhurst on-ramp t	**Matrix:**	SOIL
Lab ID:	105760-005A		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3050M				**EPA 6010B**		
RunID: **ICP8_090608B**	**QC Batch: 55681**				**PrepDate:**	**61312009**	**Analyst: CL**
Lead	68	0.11	5.0		mg/Kg	1	61812009 01:30 **PM**
LEAD BY ATOMIC ABSORPTION							
	WET				**WET DI/ EPA 7420**		
RunID: **AA2_090619A**	**QC Batch: 55970**				**PrepDate:**	**611712009**	**Analyst: W**
Lead	**ND**	0.21	0.25		mg/L	1	611912009 12:21 **PM**
LEAD BY ATOMIC ABSORPTION (STLC)							
	WET				**WET/ EPA 7420**		
RunID: **AA2_090612A**	**QC Batch: 55799**				**PrepDate:**	**611012009**	**Analyst: W**
Lead	7.8	0.21	0.25		mg/L	1	6/12/2009 04:05 **PM**
LEAD BY ATOMIC ABSORPTION (TCLP)							
	EPA3010A				**EPA 1311/ 7420**		
RunID: **AA2_090619B**	**QC Batch: 56011**				**PrepDate:**	**611812009**	**Analyst: W**
Lead	0.53	0.21	0.25		mg/L	1	6/1912009 12:13 **PM**

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected *at the* Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: *22-Jun-09*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	B2-1.5
Lab Order:	105'760	**Collection Date:**	6/2/2009 9:42:00 AM
Project:	207384019, Southbound Brookhurst on-ramp t	**Matrix:**	SOIL
Lab ID:	105'760-006A		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3050M				**EPA 6010B**		
RunID: **ICP8_090608B**	**QC** Batch: **55681**				PrepDate: **6/3/2009**		Analyst: **CL**
Lead	6.4	0.11	5.0		mg/Kg	1	6/8/2009 01:34 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

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3275 *Walnut Avenue, Signal Hill, CA* **90755** **Tel:** **562.** *989.4045* **Fax:** *562.989.4040*

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ANALYTICAL RESULTS

Print Date: *22-Jun-09*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	B2-3
Lab Order:	105760	**Collection Date:**	6/2/2009 9:45:00 **AM**
Project:	207384019, Southbound Brookhurst on-ramp t	**Matrix:**	SOIL
Lab ID:	105'760-007A		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3050M				**EPA 6010B**		
RunID: **ICP8_090608B**	QC Batch: **55681**				PrepDate: **61312009**		Analyst: **CL**
Lead	ND	0.11	5.0		mg/Kg	1	6/8/2009 01:38 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: 22-Jun-09

CLIENT:	Ninyo & Moore	**Client Sample ID:**	B2-4
Lab Order:	105'760	**Collection Date:**	61212009 9:47:00 AM
Project:	207384019, Southbound Brookhurst on-ramp t	**Matrix:**	SOIL
Lab ID:	105760-008A		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3050M				**EPA 6010B**		
RunID: **ICP8_090608B**	**QC Batch: 55681**				PrepDate:	**61312009**	**Analyst: CL**
Lead	**ND**	**0.11**	**5.0**		mg/Kg	**1**	**6/8/2009 01:41 PM**
PH							
					EPA 9045C		
RunID: **WETCHEM_090604B**	**QC Batch: R109594**				PrepDate:		**Analyst: DDL**
pH	**7.9**	0.10	**0.10**		**pH Units**	**1**	**6/4/2009**

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless othenvise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: 22-Jun-09

CLIENT:	Ninyo & Moore	**Client Sample ID:**	B3-0.5
Lab Order:	105'760	**Collection Date:**	61212009 9:55:00 AM
Project:	207.384019, Southbound Brookhurst on-ramp t	**Matrix:**	SOIL
Lab ID:	105'760-009A		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3050M				**EPA 6010B**		
RunID: **ICP8_090608B**	*QC* **Batch: 55681**				PrepDate:	**61312009**	**Analyst: CL**
Lead	52	0.11	5.0		mg/Kg	1	6/8/2009 01:45 PM
LEAD BY ATOMIC ABSORPTION (STLC)							
	WET				**WET/ EPA 7420**		
RunID: **AA2_090612A**	*QC* **Batch: 55799**				PrepDate:	**611012009**	**Analyst: VV**
Lead	**4.2**	0.21	0.25		mg/L	1	6/12/2009 04:05 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: 22-Jun-09

CLIENT:	Ninyo & Moore	**Client Sample ID:**	B3-1 5
Lab Order:	105'760	**Collection Date:**	6/2/2009 9 57 00 AM
Project:	207.384019, Southbound Brookhurst on-ramp t	**Matrix:**	SOIL
Lab ID:	105760-01OA		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3050M				**EPA 6010B**		
RunID: **ICP8_090608B**	QC Batch: **55681**				PrepDate:	**6/3/2009**	Analyst: **CL**
Lead	34	0.11	5.0		mg/Kg	1	6/8/2009 01:56 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: *22-Jun-09*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	**B3-3**
Lab Order:	105760	**Collection Date:**	6/2/2009 10 00 00 AM
Project:	207384019, Southbound Brookhurst on-ramp t	**Matrix:**	SOIL
Lab ID:	105760-011A		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3050M				**EPA 6010B**		
RunID: **ICP8_090608B**	QC Batch: **55681**				PrepDate:	**6/3/2009**	Analyst: **CL**
Lead	ND	0.11	5.0		mg/Kg	1	6/8/2009 02:12 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: 22-Jun-09

CLIENT:	Ninyo & Moore	**Client Sample ID:**	**B3-4**
Lab Order:	105'760	**Collection Date:**	6/2/2009 10:02:00 **AM**
Project:	207.384019,Southbound Brookhurst on-ramp t	**Matrix:**	SOIL
Lab ID:	105760-012A		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3050M				**EPA 60108**		
RunID: **ICP8_090608B**	QC Batch: **55681**				PrepDate:	**61312009**	Analyst: **CL**
Lead	ND	0.11	5.0		mg/Kg	1	6/8/2009 02:15 PM

Qualifiers:				
	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		

Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: 22-Jun-09

CLIENT:	Ninyo & **Moore**	**Client Sample ID:**	B5-0.5
Lab Order:	**105760**	**Collection Date:**	**6/2/2009 10 15.00 AM**
Project:	**207 384019,** Southbound **Brookhurst on-ramp t**	**Matrix:**	**SOIL**
Lab ID:	**105760-013A**		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3050M				**EPA 6010B**		
RunID: **ICP8_090608B**	QC Batch: **55681**				PrepDate:	**6/3/2009**	**Analyst: CL**
Lead	230	0.11	5.0		mg/Kg	1	6/8/2009 02:19 PM
LEAD BY ATOMIC ABSORPTION							
	WET				**WET DI/ EPA 7420**		
RunID: **AA2_090619A**	QC Batch: **55970**				PrepDate:	**6/17/2009**	**Analyst: VV**
Lead	ND	0.21	0.25		mg/L	1	6/19/2009 12:21 PM
LEAD BY ATOMIC ABSORPTION (STLC)							
	WET				**WET/ EPA 7420**		
RunID: **AA2_090612A**	QC Batch: **55799**				PrepDate:	**611012009**	**Analyst: VV**
Lead	20	0.83	1.0		mg/L	4	6/12/2009 04:08 PM
LEAD BY ATOMIC ABSORPTION (TCLP)							
	EPA3010A				**EPA 1311/ 7420**		
RunID: **AA2_090619B**	QC Batch: **56011**				PrepDate:	**6/18/2009**	**Analyst: VV**
Lead	0.39	0.21	0.25		mg/L	1	6/19/2009 12:15 PM

Qualifiers:

B	Analyte **detected in the associated Method Blank**	**E**	**Value above quantitation range**
H	**Holding times for preparation or analysis exceeded**	**ND**	**Not Detected at the Reporting Limit**
S	Spike/Surrogate **outside of limits due to matrix interference**		**Results are wet unless otherwise specified**
DO	**Surrogate Diluted Out**		

Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: *22-Jun-09*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	B5-1 5
Lab Order:	105760	**Collection Date:**	61212009 10 17 00 AM
Project:	207384019, Southbound Brookhurst on-ramp t	**Matrix:**	SOIL
Lab ID:	105'760-014A		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3050M				**EPA 60108**		
RunID: **ICP8_090608B**	**QC** Batch: **55681**				PrepDate:	**61312009**	Analyst: **CL**
Lead	17	0.11	5.0		mg/Kg	1	6/8/2009 02:23 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: 22-Jun-09

CLIENT:	Ninyo & Moore	**Client Sample ID:**	B5-3
Lab Order:	105760	**Collection Date:**	6/2/2009 10:22:00 AM
Project:	207384019, Southbound Brookhurst on-ramp t	**Matrix:**	SOIL
Lab ID:	105760-015A		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3050M				**EPA 6010B**		
RunID: **ICP8_090608B**	QC Batch: **55681**				PrepDate:	**6/3/2009**	Analyst: **CL**
Lead	ND	0.11	5.0		mg/Kg	1	6/8/2009 02:26 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: 22-Jun-09

CLIENT:	Ninyo & Moore	**Client Sample ID:**	B5-4
Lab Order:	105'760	**Collection Date:**	6/2/2009 10:25:00 AM
Project:	207384019, Southbound Brookhurst on-ramp t	**Matrix:**	SOIL
Lab ID:	105760-016A		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3050M				**EPA 6010B**		
RunID: **ICP8_090608B**	**G!C** Batch: **55681**				PrepDate: **6/3/2009**		Analyst: **CL**
Lead	ND	0.11	5.0		mg/Kg	1	6/8/2009 02:30 **PM**

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: 22-Jun-09

CLIENT:	Ninyo & Moore	**Client Sample ID:**	B4-0.5
Lab Order:	105'760	**Collection Date:**	6/2/2009 10:35:00 AM
Project:	207384019, Southbound Brookhurst on-ramp t	**Matrix:**	SOIL
Lab ID:	105760-017A		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3050M				**EPA 6010B**		
RunID: **ICP8_090608B**	*QC* Batch: **55681**				PrepDate: **6/3/2009**		Analyst: **CL**
Lead	ND	0.11	5.0		mg/Kg	1	6/8/2009 02:41 PM

Qualifiers:			
	B	Analyte detected in the associated Method Blank	E Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference	Results are wet unless otherwise specified
	DO	Surrogate Diluted Out	

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ANALYTICAL RESULTS

Print Date: *22-Jun-09*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	B4-1.5
Lab Order:	105760	**Collection Date:**	6/2/2009 10:37:00 AM
Project:	207384019, Southbound Brookhurst on-ramp t	**Matrix:**	SOIL
Lab ID:	105760-018A		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3050M				**EPA 60108**		
RunID: **ICP8_090608B**	**C!C**Batch: **55681**				PrepDate:	**61312009**	Analyst: **CL**
Lead	8.5	0.11	5.0		mg/Kg	1	6/8/2009 02:45 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: *22-Jun-09*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	B4-3
Lab Order:	105760	**Collection Date:**	6/2/2009 10:40:00 AM
Project:	207084019, Southbound Brookhurst on-ramp t	**Matrix:**	SOIL
Lab ID:	105'760-019 A		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3050M				**EPA 6010B**		
RunID: **ICP8_090608B**	QC Batch: **55681**				PrepDate: **6/3/2009**		Analyst: **CL**
Lead	15	0.11	5.0		mg/Kg	1	6/8/2009 02:49 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

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3'275 *Walnut Avenue,* *Signal* **Hill,** *90755* *Tel:* **562.** *989.4045* **Fax:** *562.989.4040*

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ANALYTICAL RESULTS

Print Date: 22-Jun-09

CLIENT:	Ninyo & Moore	**Client Sample ID:**	B4-4
Lab Order:	105760	**Collection Date:**	6/2/2009 10:42:00 AM
Project:	207384019, Southbound Brookhurst on-ramp t	**Matrix:**	SOIL
Lab ID:	105760-020A		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3050M				**EPA 6010B**		
RunID: **ICP8_090608B**	QC Batch: **55681**				PrepDate:	**6/3/2009**	Analyst: CL
Lead	ND	0.11	5.0		mg/Kg	1	6/8/2009 02:52 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

Advanced Technology Laboratories

ANALYTICAL RESULTS

Print Date: 22-Jun-09

CLIENT:	Ninyo & Moore	**Client Sample ID:**	Decon
Lab Order:	105760	**Collection Date:**	61212009 11 00.00 AM
Project:	207 **58401 9,** Southbound Brookhurst on-ramp t	**Matrix:**	WATER
Lab ID:	105'760-021A		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
LEAD BY ICP							
	EPA 3010A				**EPA 6010B**		
RunID ***ICP8_090603D***	QC Batch ***55679***				*PrepDate*	***6/3/2009***	*Analyst:* CL
Lead	ND	0 0046	0 25		mg/L	1	6/3/2009 01 02 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

CLIENT: Ninyo & Moore
Work Order: 105760
Project: 207384019, Southbound Brookhurst on-ramp to

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010–SPB

Sample ID: **MB-5568IA**	SampType: **MBLK**	TestCode: **6010–SPB**	Units: **mg/Kg**	Prep Date: **61312009**	RunNo: **109657**
Client ID: **PBS**	Batch ID: **55681**	TestNo: **EPA 60108**	**EPA 3050M**	Analysis Date: **6/8/2009**	SeqNo: **1722133**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.169	5.0									

Sample ID: **LCS-55681**	SampType: **LCS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **6/3/2009**	RunNo: **109657**
Client ID: **LCSS**	Batch ID: **55681**	TestNo: **EPA 60109**	**EPA 3050M**	Analysis Date: **61812009**	SeqNo: **1722134**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	261.527	5.0	250.0	0.1694	105	80	120				

Sample ID: **105760-010ADUP**	SampType: **DUP**	TestCode: **6010–SPB**	Units: **mg/Kg**	Prep Date: **6/3/2009**	RunNo: **109657**
Client ID: **B3-1.5**	Batch ID: **55681**	TestNo: **EPA 60108**	**EPA 3050M**	Analysis Date: **6/8/2009**	SeqNo: **1722145**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	28.258	5.0						34.03	18.5	20	

Sample ID: **105760-010AMS**	SampType: **MS**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **6/3/2009**	RunNo: **109657**
Client ID: **B3-1.5**	Batch ID: **55681**	TestNo: **EPA 60108**	**EPA 3050M**	Analysis Date: **61812009**	SeqNo: **1722146**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	231.346	5.0	250.0	34.03	78.9	33	120				

Sample ID: **MB-55681B**	SampType: **MBLK**	TestCode: **6010–SPB**	Units: **mg/Kg**	Prep Date: **6/3/2009**	RunNo: **109657**
Client ID: **PBS**	Batch ID: **55681**	TestNo: **EPA 60109**	**EPA 3050M**	Analysis Date: **61812009**	SeqNo: **1722147**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.211	5.0									

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
  Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Ninyo & Moore
Work Order: 105760
Project: 207384019, Southbound Brookhurst on-ramp to

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010–SPB

Sample ID: **105760-020ADUP**	SampType: **DUP**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **6/3/2009**	RunNo: **109657**
Client ID: **6 4 4**	Batch ID: **55681**	TestNo: **EPA 60106**	**EPA 3050M**	Analysis Date: **6/8/2009**	SeqNo: **1722158**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	1.537	5.0						1.452	0	20	

Sample ID: **105760-020AMS**	SampType: **MS**	TestCode: **6010–SPB**	Units: **mg/Kg**	Prep Date: **6/3/2009**	RunNo: **109657**
Client ID: **6 4 4**	Batch ID: **55681**	TestNo: **EPA 60108**	**EPA 3050M**	Analysis Date: **6/8/2009**	SeqNo: **1722159**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	173.261	5.0	250.0	1.452	68.7	33	120				

Sample ID: **105760-020AMSD**	SampType: **MSD**	TestCode: **6010_SPB**	Units: **mg/Kg**	Prep Date: **6/3/2009**	RunNo: **109657**
Client ID: **B4-4**	Batch ID: **55681**	TestNo: **EPA 60106**	**EPA 3050M**	Analysis Date: **6/8/2009**	SeqNo: **1722160**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	185.637	5.0	250.0	1.452	73.7	33	120	173.3	6.90	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits

Calculations are based on raw values

- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Ninyo & Moore
Work Order: 105760
Project: 207384019, Southbound Brookhurst on-ramp to

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010–WPB

Sample ID: **MB-55679**	SampType: **MBLK**	TestCode: **6010–WPB**	Units: **mg/L**	Prep Date: **6/3/2009**	RunNo: **109543**
Client ID: **PBW**	Batch ID: **55679**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **6/3/2009**	SeqNo: **1720395**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-55679**	SampType: LCS	TestCode: **6010–WPB**	Units: **mg/L**	Prep Date: **6/3/2009**	RunNo: **109543**
Client ID: **LCSW**	Batch ID: **55679**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **6/3/2009**	SeqNo: **1720396**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	1.119	0.25	1.000	0	112	85	115				

Sample ID: **105760-021ADUP**	SampType: **DUP**	TestCode: **6010–WPB**	Units: **mg/L**	Prep Date: **6/3/2009**	RunNo: **109543**
Client ID: **Decon**	Batch ID: **55679**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **6/3/2009**	SeqNo: **1720399**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.016	0.25						0.01520	0	20	

Sample ID: **105760-021AMS**	SampType: **MS**	TestCode: **6010–WPB**	Units: **mg/L**	Prep Date: **6/3/2009**	RunNo: **109543**
Client ID: **Decon**	Batch ID: **55679**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **6/3/2009**	SeqNo: **1720400**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.727	0.25	2.500	0.01520	108	71	121				

Sample ID: **105760-021AMSD**	SampType: **MSD**	TestCode: **6010_WPB**	Units: **mg/L**	Prep Date: **6/3/2009**	RunNo: **109543**
Client ID: **Decon**	Batch ID: **55679**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **6/3/2009**	SeqNo: **1720401**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.678	0.25	2.500	0.01520	106	71	121	2.727	1.82	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits

Calculations are based on raw values

- **H** Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Ninyo & Moore
Work Order: 105760
Project: 207384019, Southbound Brookhurst on-ramp to

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420–DI

Sample ID: MB-55970A	SampType: MBLK	TestCode: 7420–DI	Units: mg/L	Prep Date: 6/17/2009	RunNo: 110058
Client ID: PBS	Batch ID: 55970	TestNo: WET DI/ EPA WET		Analysis Date: 6/19/2009	SeqNo: 1728758

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: LCS-55970	SampType: LCS	TestCode: 7420–DI	Units: mg/L	Prep Date: 6/17/2009	RunNo: 110058
Client ID: LCSS	Batch ID: 55970	TestNo: WET DI/ EPA WET		Analysis Date: 6/19/2009	SeqNo: 1728759

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4.961	0.25	5.000	0	99.2	80	120				

Sample ID: 105760-013A-DUP	SampType: DUP	TestCode: 7420–DI	Units: mg/L	Prep Date: 6/17/2009	RunNo: 110058
Client ID: B5-0.5	Batch ID: 55970	TestNo: WET DI/ EPA WET		Analysis Date: 6/19/2009	SeqNo: 1728765

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25						0	0	20	

Sample ID: 105760-013A-MS	SampType: MS	TestCode: 7420–DI	Units: mg/L	Prep Date: 6/17/2009	RunNo: 110058
Client ID: B5-0.5	Batch ID: 55970	TestNo: WET DI/ EPA WET		Analysis Date: 6/19/2009	SeqNo: 1728766

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.275	0.25	5.000	0	105	70	130				

Sample ID: 105760-013A-MSD	SampType: MSD	TestCode: 7420–DI	Units: mg/L	Prep Date: 6/17/2009	RunNo: 110058
Client ID: B5-0.5	Batch ID: 55970	TestNo: WET DI/ EPA WET		Analysis Date: 6/19/2009	SeqNo: 1728767

Anaiyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.351	0.25	5.000	0	107	70	130	5.275	1.43	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Ninyo & Moore
Work Order: 105760
Project: **207384019,** Southbound Brookhurst on-ramp to

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420–ST

Sample ID: **MB-55799A**	SampType: **MBLK**	TestCode: **7420–ST**	Units: **mg/L**	Prep Date: **6/10/2009**	RunNo: **109814**
Client ID: **PBS**	Batch ID: **55799**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **6/12/2009**	SeqNo: **1724378**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.209	0.25									

Sample ID: **LCS-55799**	SampType: **LCS**	TestCode: **7420–ST**	Units: **mg/L**	Prep Date: **611012009**	RunNo: **109814**
Client ID: **LCSS**	Batch ID: **55799**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **6/12/2009**	SeqNo: **1724379**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.326	0.25	5.000	0.2090	102	80	120				

Sample ID: **105760-013A-DUP**	SampType: **DUP**	TestCode: **7420–ST**	Units: **mg/L**	Prep Date: **6/10/2009**	RunNo: **109814**
Client ID: **B5-0.5**	Batch ID: **55799**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **6/12/2009**	SeqNo: **1724385**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	20.698	1.0						20.30	1.95	20	

Sample ID: **105760-013A-MS**	SampType: **MS**	TestCode: **7420–ST**	Units: **mg/L**	Prep Date: **6/10/2009**	RunNo: **109814**
Client ID: **B5-0.5**	Batch ID: **55799**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **6/12/2009**	SeqNo: **1724386**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	25.323	1.2	5.000	20.30	100	80	120				

Sample ID: **105760-013A-MSD**	SampType: **MSD**	TestCode: **7420–ST**	Units: **mg/L**	Prep Date: **6/10/2009**	RunNo: **109814**
Client ID: **B5-0.5**	Batch ID: **55799**	TestNo: **WET/ EPA 74 WET**		Analysis Date: **6/12/2009**	SeqNo: **1724387**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	25.652	1.2	5.000	20.30	107	80	120	25.32	1.29	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Ninyo & Moore
Work Order: **105760**
Project: **207384019,** Southbound Brookhurst on-ramp to

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420–TC

Sample ID: **ME-56011A**	SampType: **MBLK**	TestCode: **7420–TC**	Units: **mg/L**	Prep Date: **6/18/2009**	RunNo: **110059**
Client ID: **PBS**	Batch ID: **56011**	TestNo: **EPA 1311/74 EPA3010A**		Analysis Date: **6/19/2009**	SeqNo: **1728768**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **MB-55987 TCLP**	SampType: **MBLK**	TestCode: **7420–TC**	Units: **mg/L**	Prep Date: **6/18/2009**	RunNo: **110059**
Client ID: **PBS**	Batch ID: **56011**	TestNo: **EPA 1311 74 EPA3010A**		Analysis Date: **6/19/2009**	SeqNo: **1728769**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.25									

Sample ID: **LCS-56011**	SampType: **LCS**	TestCode: **7420–TC**	Units: **mg/L**	Prep Date: **6/18/2009**	RunNo: **110059**
Client ID: **LCSS**	Batch ID: **56011**	TestNo: **EPA 1311 74 EPA3010A**		Analysis Date: **6/19/2009**	SeqNo: **1728770**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	1.082	0.25	1.000	0	108	80	120				

Sample ID: **105760-013A-DUP**	SampType: **DUP**	TestCode: **7420–TC**	Units: **mg/L**	Prep Date: **6/18/2009**	RunNo: **110059**
Client ID: **B5-0.5**	Batch ID: **56011**	TestNo: **EPA 1311 74 EPA3010A**		Analysis Date: **6/19/2009**	SeqNo: **1728776**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.394	0.25						0.3939	0	20	

Sample ID: **105760-013A-MS**	SampType: **MS**	TestCode: **7420–TC**	Units: **mg/L**	Prep Date: **6/18/2009**	RunNo: **110059**
Client ID: **B5-0.5**	Batch ID: **56011**	TestNo: **EPA 1311/74 EPA3010A**		Analysis Date: **6/19/2009**	SeqNo: **1728777**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	3.051	0.25	2.500	0.3939	106	70	130				

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Ninyo & Moore
Work Order: 105760
Project: 207384019, Southbound Brookhurst on-ramp to

ANALYTICAL QC SUMMARY REPORT

TestCode: 7420–TC

Sample ID: **105760-013A-MSD**	SampType: **MSD**	TestCode: **7420–TC**	Units: **mg/L**	Prep Date: **6/18/2009**	RunNo: **110059**
Client ID: **B5-0.5**	Batch ID: **56011**	TestNo: **EPA 1311 74 EPA3010A**		Analysis Date: **611912009**	SeqNo: **1728778**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	3.006	0.25	2.500	0.3939	104	70	130	3.051	1.49	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

CLIENT: Ninyo & Moore
Work Order: 105760
Project: 207384019, Southbound Brookhurst on-ramp to

ANALYTICAL QC SUMMARY REPORT

TestCode: 9045–S

Sample ID: **105697-027ADUP** SampType: DUP TestCode: **9045–S** Units: **pH Units** Prep Date: RunNo: **109594**
Client ID: ***777777*** Batch ID: **R109594** TestNo: **EPA 9045C** Analysis Date: **6/4/2009** SeqNo: **1721151**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.980	0.10						7.970	0.125	20	

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out
E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference

Advanced Technology Laboratories 3275 Walnut Avenue, Signal Hill. CA 90755 Tel: 562. 989.4045 Fax: 562.989.4040

LABORATORY:	SITE:	CONSULTANT:
Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90807 (562) 989-4045 / fax (562) 989-4040	Southbound Brookhurst on-ramp to Southbound 405 Fountain Valley, CA EA 0K6300 Project Number 207384019	Ninyo & Moore 475 Goddard, Suite 200 Irvine, CA 92618 (949) 753-7070/fax (949) 753-7071

Special Instructions: Sampler (Print/sign) Tommy Mitter [signature]

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)

Relinquished by (name/date and time): [signature] 6/2/09 16:00	Received by (name/date and time): [signature] 6/2/09 1600
Relinquished by (name/date and time): [signature] 6/2/09 1655	Received by (name/date and time): [signature] 6/2/09 1655
Relinquished by (name/date and time):	Received by (name/date and time):
Relinquished by (name/date and time):	Received by (name/date and time):

Lab No.	Sample I. D.	Date	Time	Total Lead EPA Method 6010	pH EPA Method 9045	Sample Type	Turn-Around Time	Container Type
	B1-0.5	6/2/09	9:25	X	X	Soil	Normal	Glass Jar
	B1-1.5	↓	9:27	↓		Soil	Normal	Glass Jar
	B1-3		9:29			Soil	Normal	Glass Jar
	B1-4		9:33			Soil	Normal	Glass Jar
	B2-0.5		9:40			Soil	Normal	Glass Jar
	B2-1.5		9:42			Soil	Normal	Glass Jar
	B2-3		9:45			Soil	Normal	Glass Jar
	B2-4		9:47		X	Soil	Normal	Glass Jar
	B3-0.5		955			Soil	Normal	Glass Jar
	B3-1.5		957			Soil	Normal	Glass Jar
	B3-3		10:00			Soil	Normal	Glass Jar
	B3-4		10:02			Soil	Normal	Glass Jar
	B5-0.5		10:15			Soil	Normal	Glass Jar
	B5-1.5		10:17			Soil	Normal	Glass Jar
	B5-3		10:22			Soil	Normal	Glass Jar
	B5-4		10:25			Soil	Normal	Glass Jar
	B4-0.5		10:35			Soil	Normal	Glass Jar
	B4-1.5		10:37			Soil	Normal	Glass Jar
	B4-3		10:40			Soil	Normal	Glass Jar
	B4-4	↓	10:42	↓		Soil	Normal	Glass Jar
	DECON	6/2/09	11:00	X		water	Normal	Plastic

AF'PENDIX B

STATISTICALANALYSES

TABLE B-1
LEAD ANALYSES – COMBINED LAYERS

Sample ID	Depth (feet bgs)	Total Lead (mg/kg)	Total Lead % of Maximum	Transformed Data Arcsine
B1-0.5	0.5	170	0.7391	0.831778448
B1-1.5	1.5	76	0.3304	0.336764196
B1-3	3.0	2.5	0.0109	0.010869779
Bl-4	4.0	2.5	0.0109	0.010869779
B2-0.5	0.5	68	0.2957	0.300138140
B2-1.5	1.5	6.4	0.0278	0.027829679
B2-3	3.0	2.5	0.0109	0.010869779
B2-4	4.0	2.5	0.0109	0.010869779
B3-0.5	0.5	52	0.2261	0.228058741
B3-1.5	1.5	34	0.1478	0.148369847
B3-3	3.0	2.5	0.0109	0.010869779
B3-4	4.0	2.5	0.0109	0.010869779
B4-0.5	0.5	2.5	0.0109	0.010869779
B4-1.5	1.5	8.5	0.0370	0.036964939
B4-3	3.0	15	0.0652	0.065263712
B4-4	4.0	2.5	0.0109	0.010869779
B5-0.5	0.5	230	1.0000	1.570796327
B5-1.5	1.5	17	0.0739	0.073980509
B5-3	3.0	2.5	0.0109	0.010869779
B5-4	4.0	2.5	0.0109	0.010869779

Total Lead	Max TTLC:	230	Transformed Data		Soluble Data
Number of Samples:	20		20		
Sample Mean:	35		0.186		
Delta = RT - mean	965				
Appropriate Number of Samples:	0.01				
Standard Deviation of Sample:	62		0.381		
Standard Deviation of Mean:	14		0.085		
Sample Variance:	3796		0.145		
t-value for 90%:	1.328	Need to Transform Data	1.328		
Upper Confidence Limit for 90%:			0.300		
Reverse Transformation for 90%			68	mg/kg	7.8 mg/l
t-value for 95%:	1.729		1.729		
Upper Confidence Limit for 95%:			0.334		
Reverse Transformation for 95%			75	mg/kg	8.3 mg/l

TABLE B-2
LEAD ANALYSES – SURFACE LAYER

Sample ID	Depth (feet bgs)	Total Lead (mg/kg)	Total Lead % of Maximum	Transformed Data Arcsine
B1-0.5	0.5	170	0.7391	0.831778448
B2-0.5	0.5	68	0.2957	0.300138140
B3-0.5	0.5	52	0.2261	0.228058741
B4-0.5	0.5	2.5	0.0109	0.010869779
B5-0.5	0.5	230	1.0000	1.570796327

Total Lead	Max TTLC:	230	Transformed Data		Soluble Data
Number of Samples:	5		5		
Sample Mean:	105		0.588		
Delta = RT - mean	896				
Appropriate Number of Samples:	0.03				
Standard Deviation of Sample:	93		0.627		
Standard Deviation of Mean:	42		0.280		
Sample Variance:	8633		0.393		
t-value for 90%:	1.533	Need to Transform Data	1.533		
Upper Confidence Limit for 90%:			1.190		
Reverse Transformation for 90%			214	mg/kg	18 mg/l
t-value for 95%:	2.132		2.132		
Upper Confidence Limit for 95%:			1.186		
Reverse Transformation for 95%			213	mg/kg	18 mg/l

TABLE B-3
LEAD ANALYS'ES – 1.5 FOOT LAYER

Sample ID	Depth (feet bgs)	Total Lead (mg/kg)	Total Lead % of Maximum	Transformed Data Arcsine
B1-1.5	1.5	76	1.0000	1.570796327
B2-1.5	1.5	6.4	0.0842	0.084310374
B3-1.5	1.5	34	0.4474	0.463820717
B4-1.5	1.5	8.5	0.1118	0.112076593
B5-1.5	1.5	17	0.2237	0.225592830

Total Lead	Max TTLC:	76	**Transformed Data**		**Soluble Data**
Number of Samples:	5		5		
Sample Mean:	28		0.491		
Delta = RT - mean	972				
Appropriate Number of Samples:	0.00				
Standard Deviation of Sample:	29		0.622		
Standard Deviation of Mean:	13		0.278		
Sample Variance:	827		0.387		
t-value for 90%:	1.533	Need to Transform Data	1.533		
Upper Confidence Limit for 90%:			0.918		
Reverse Transformation for 90%			60	mg/kg	7.3 mg/l
t-value for 95%:	2.132		2.132		
Upper Confidence Limit for 95%:			1.084		
Reverse Transformation for 95%			67	mg/kg	7.7 mg/l

TABLE B-4
LEAD ANALYSES – 3 FOOT LAYER

Sample ID	Depth (feet bgs)	Total Lead (mg/kg)	Total Lead % of Maximum	Transformed Data Arcsine
B1-3	3.0	2.5	0.1667	0.167448079
B2-3	3.0	2.5	0.1667	0.167448079
B3-3	3.0	2.5	0.1667	0.167448079
B4-3	3.0	15	1.0000	1.570796327
B5-3	3.0	2.5	0.1667	0.167448079

Total Lead	Max TTLC:	15	**Transformed Data**		**Soluble Data**
Number of Samples:	5		5		
Sample Mean:	5		0.448		
Delta = RT - mean	995				
Appropriate Number of Samples:	0.00				
Standard Deviation of Sample:	6		0.628		
Standard Deviation of Mean:	3		0.281		
Sample Variance:	31		0.394		
t-value for 90%:	1.533	Need to Transform Data	1.533		
Upper Confidence Limit for 90%:			0.878		
Reverse Transformation for 90%			11.5	mg/kg	3.8 mg/l
t-value for 95%:	2.132		2.132		
Upper Confidence Limit for 95%:			1.047		
Reverse Transformation for 95%			13	mg/kg	3.9 mg/l

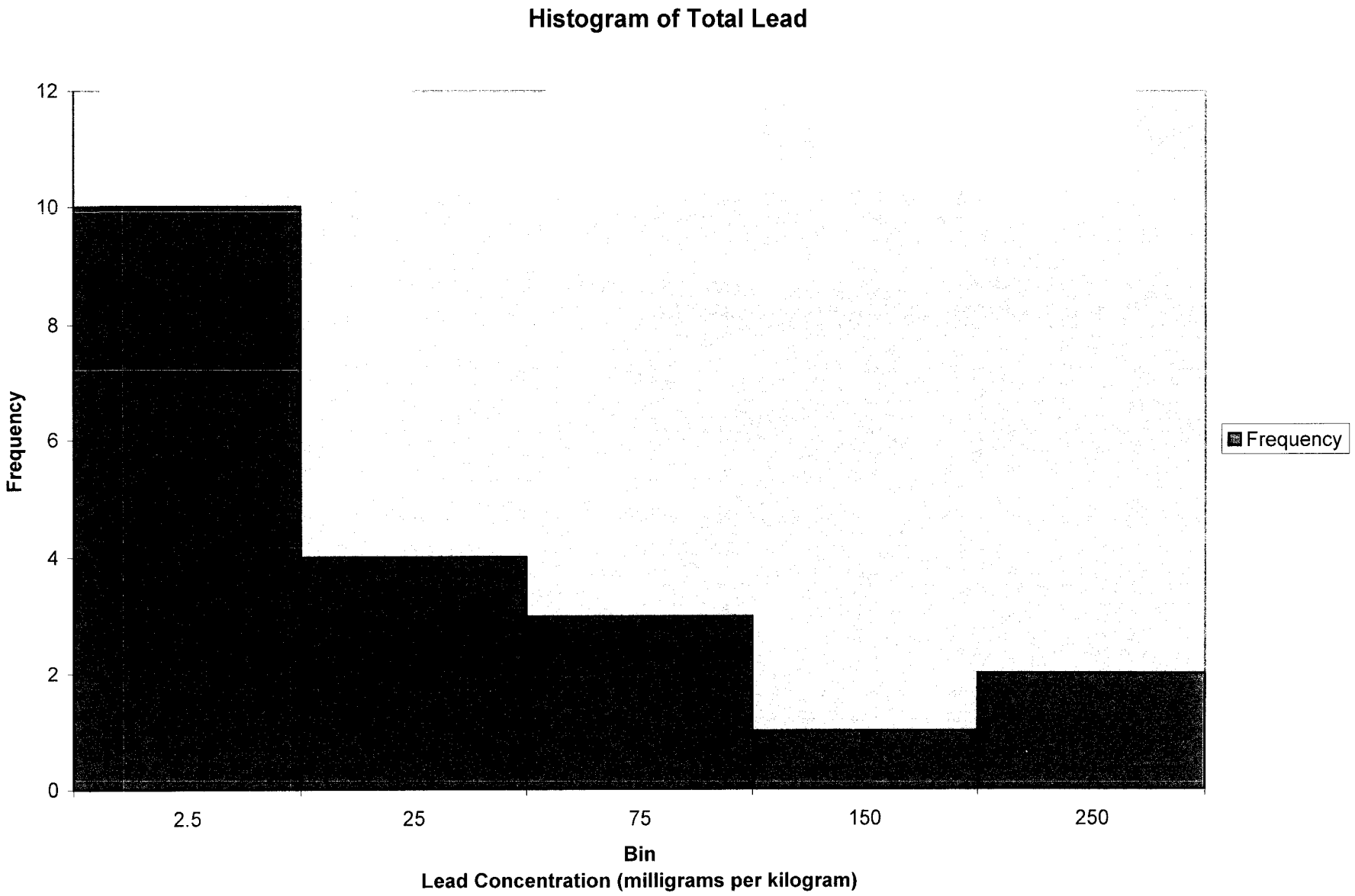
TABLE B-5
LEAD ANALYSES – 4 FOOT LAYER

Sample ID	Depth (feet bgs)	Total Lead (mg/kg)	Total Lead % of Maximum	Transformed Data Arcsine
B1-4	4.0	2.5	1.0000	1.570796327
B2-4	4.0	2.5	1.0000	1.570796327
B3-4	4.0	2.5	1.0000	1.570796327
B4-4	4.0	2.5	1.0000	1.570796327
B5-4	4.0	2.5	1.0000	1.570796327

Total Lead	Max TTLC:	2.5	**Transformed Data**		**Soluble Data**
Number of Samples:	5		5		
Sample Mean:	2.5		1.571		
Delta = RT - mean	998				
Appropriate Number of Samples:	0.00				
Standard Deviation of Sample:	0		0.000		
Standard Deviation of Mean:	0		0.000		
Sample Variance:	0		0.000		
t-value for 90%:	1.533	Need to Transform Data	1.533		
Upper Confidence Limit for 90%:			1.571		
Reverse Transformation for 90%			2.5	mg/kg	3.2 mg/l
t-value for 95%:	2.132		2.132		
Upper Confidence Limit for 95%:			1.571		
Reverse Transformation for 95%			2.5	mgkg	3.2 mg/l

APPENDIX C

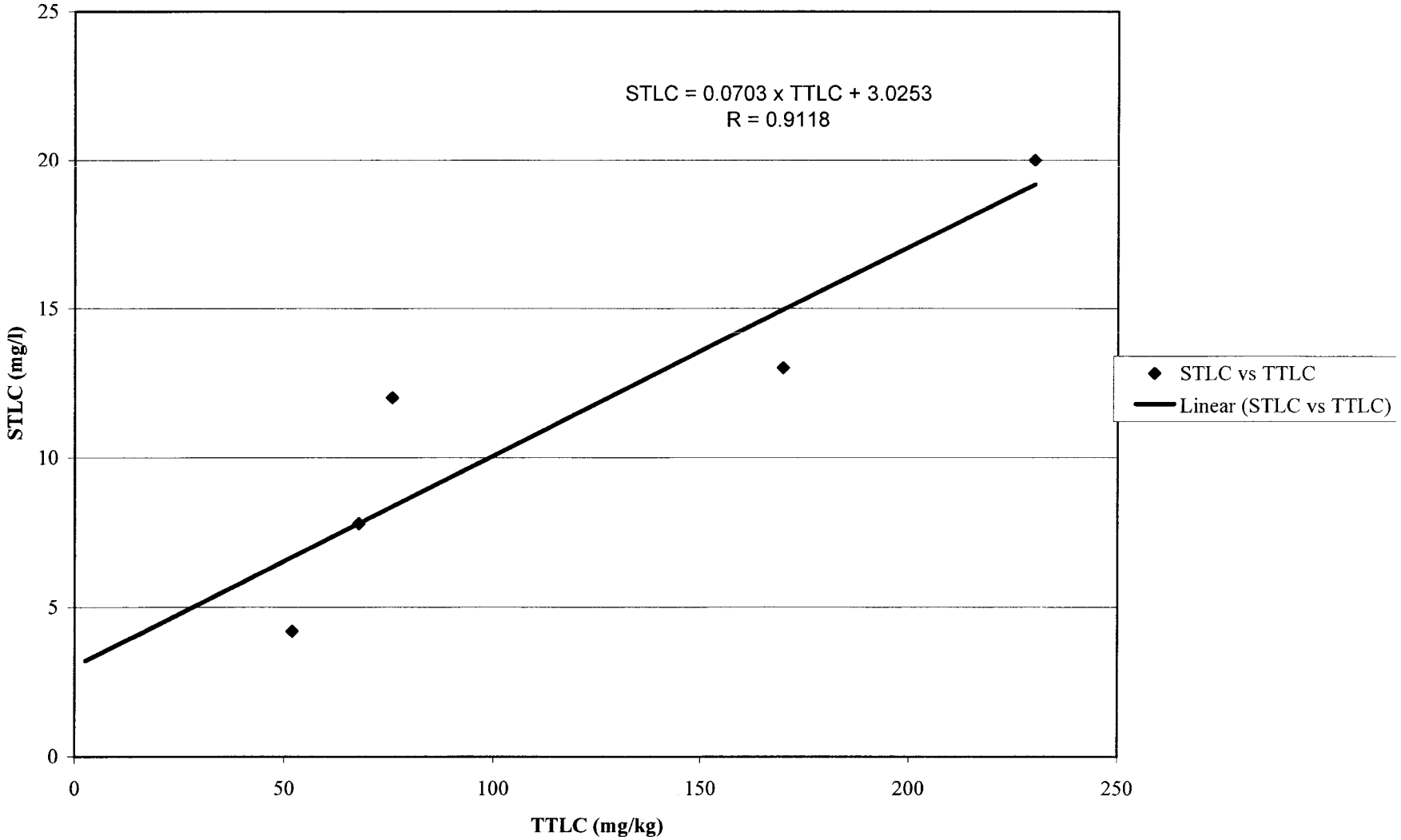
HISTOGRAM


Histogram of Total Lead
12
10
8
6
4
2
0
Frequency
2.5
25
75
150
250
Bin
Lead Concentration (milligrams per kilogram)
Frequency

APPENDIX D

CORRELATION OF TOTAL LEAD TO SOLUBLE LEAD

CORRELATION OF TOTAL LEAD TO SOLUBLE LEAD

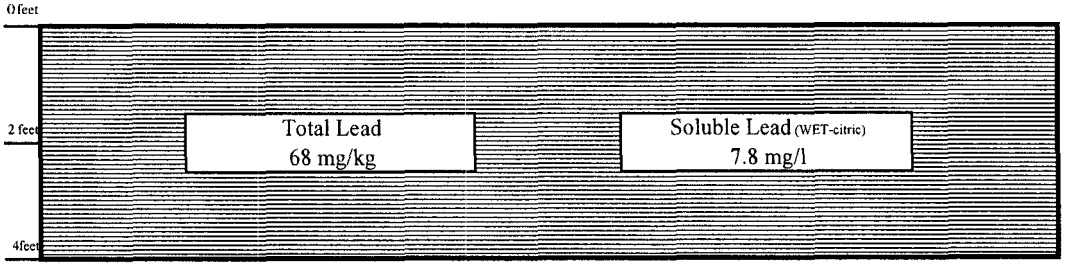


AP'PENDIX E

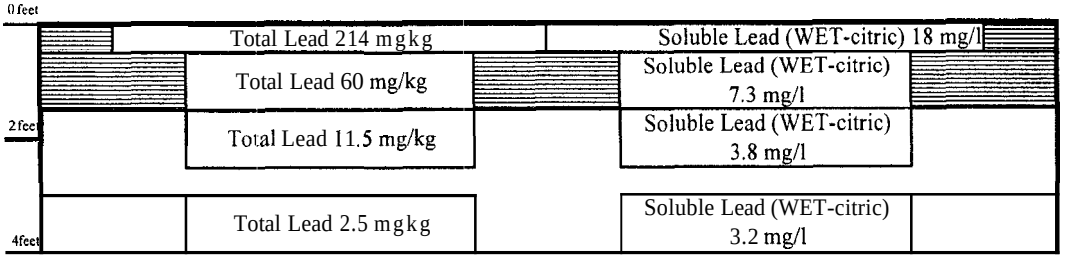
BLOCK DIAGRAMS

FIGURE E1 – BLOCK DIAGRAM FOR POTENTIAL CALTRANS RIGHT-OF-WAY RE-USE ONE-TAILED 90 PERCENT UCLs FOR ARCSINE TRANSFORMATION

Layers Combined



Layers Separated



– 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 Departmer

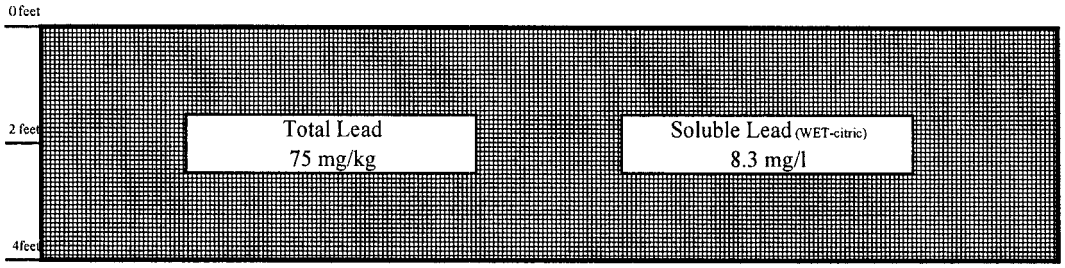
– Hazardous. Class 1 disposal site, all other Title 22 CCR requirements apply

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

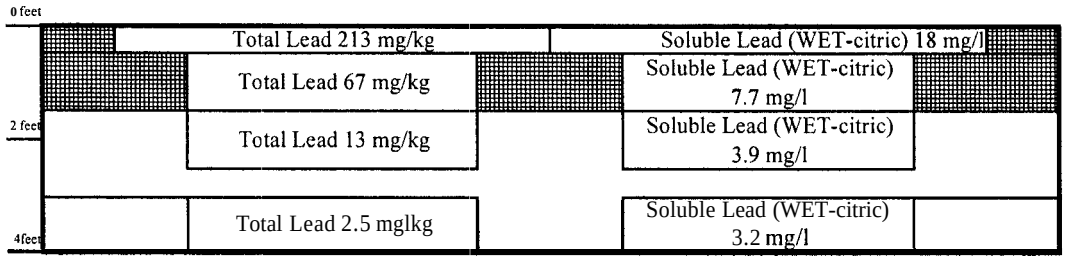
UCL – upper confidence limit
WET-Dl – soluble lead using the Waste Extraction Test with deionized wate
WET-citric acid – soluble lead using the Waste Extraction Test with citric aci
TCLP – Toxicity Characteristic Leaching Procedur
mg/kg – milligrams per kilogram
mg/l – milligrams per liter
CCR – California Code of Regulations
RCRA – Resource, Conservation, and Recovery Act

FIGURE E2 – BLOCK DIAGRAM FOR POTENTIAL CALTRANS OFF SITE DISPOSAL
ONE-TAILED 95 PERCENT UCLs FOR ARCSINE TRANSFORMATION

Layers Combined



Layers Separated



– 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 Departmer

– Hazardous. Class I 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 wate
WET-citric acid – soluble lead using the Waste Extraction Test with citric aci
TCLP – Toxicity Characteristic Leaching Procedur
mg/kg – milligrams per kilogran
mg/l – milligrams per liter
CCR – California Code of Regulations
RCRA – Resource, Conservation, and Recovery Act