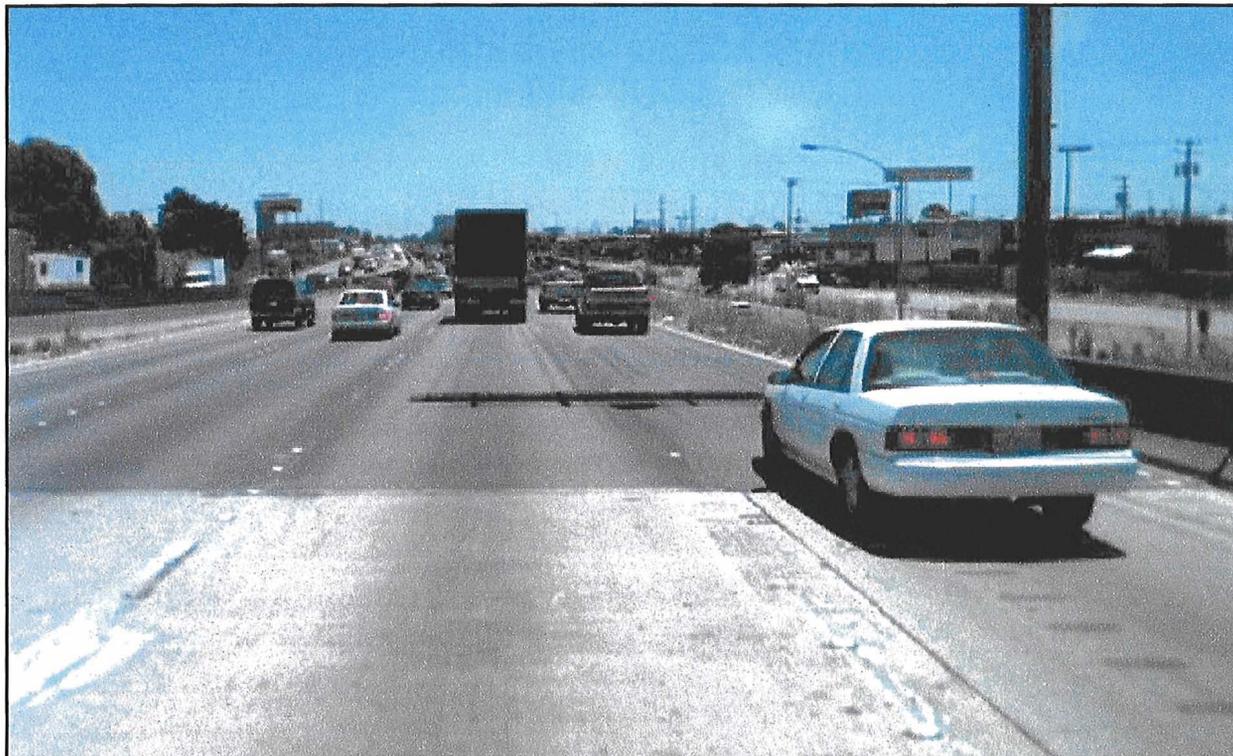


**SITE INVESTIGATION REPORT
STATE ROUTE 880, OAKLAND, ALAMEDA COUNTY, CALIFORNIA**



PREPARED FOR:

CALIFORNIA DEPARTMENT OF TRANSPORTATION
DISTRICT 4
OFFICE OF ENVIRONMENTAL ENGINEERING, HAZARDOUS WASTE BRANCH
111 W. GRAND AVE
OAKLAND, CALIFORNIA



PREPARED BY:

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SACRAMENTO, CALIFORNIA



TASK ORDER No.: 04-165421-5C

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SITE INVESTIGATION REPORT

CONTRACT NO.: **43A0078**

STATE **ROUTE** 880
FROM LESSER **STREET** TO **37TH** AVENUE
OAKLAND, ALAMEDA COUNTY, CALIFORNIA

June 7, 2004

Prepared for:

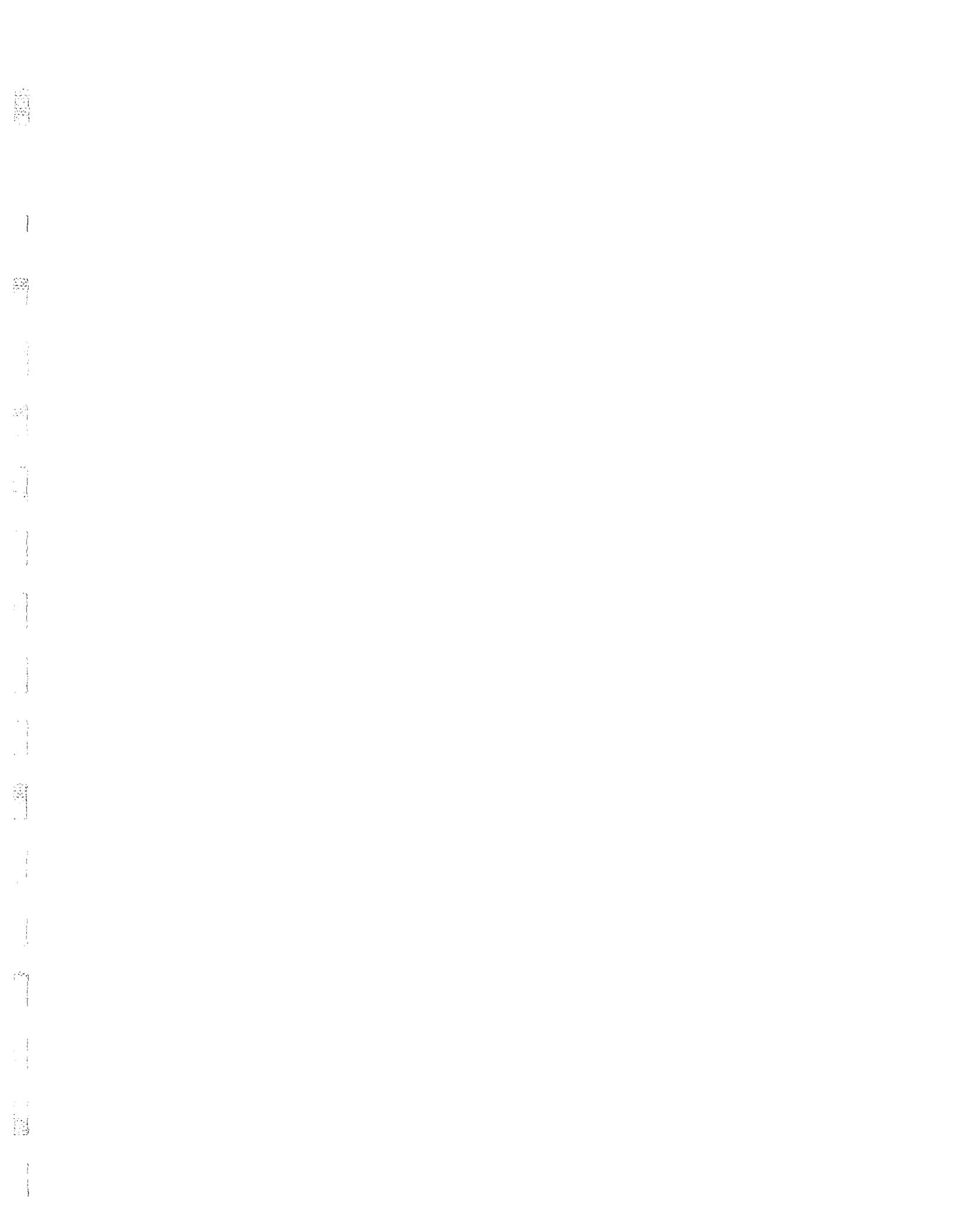
California Department of Transportation
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Task Order No. 04-165421-5C
Caltrans Contract No.: 43A0078

Shaw Project No.: 108408



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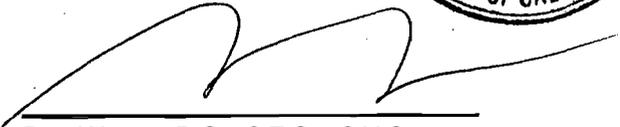
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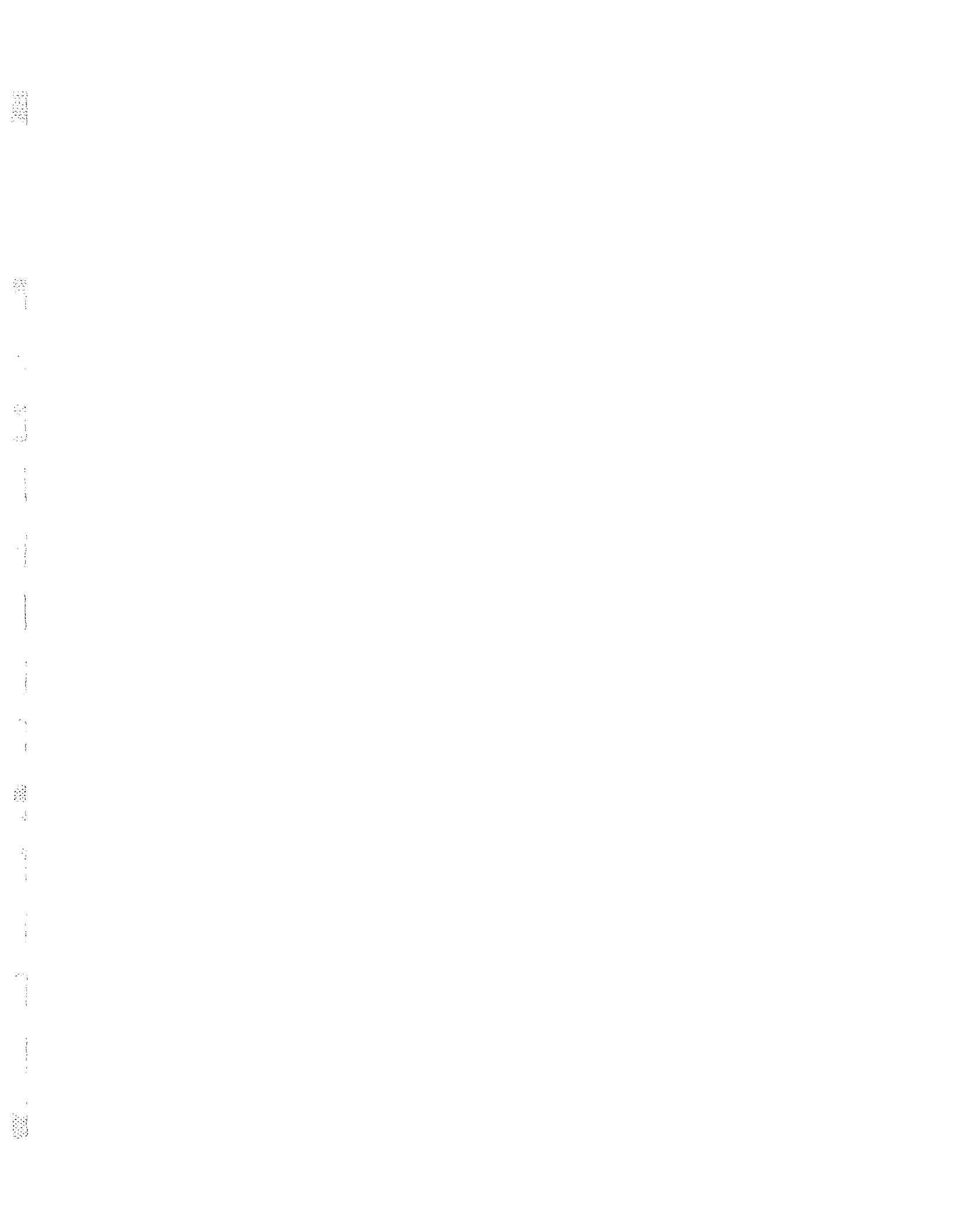


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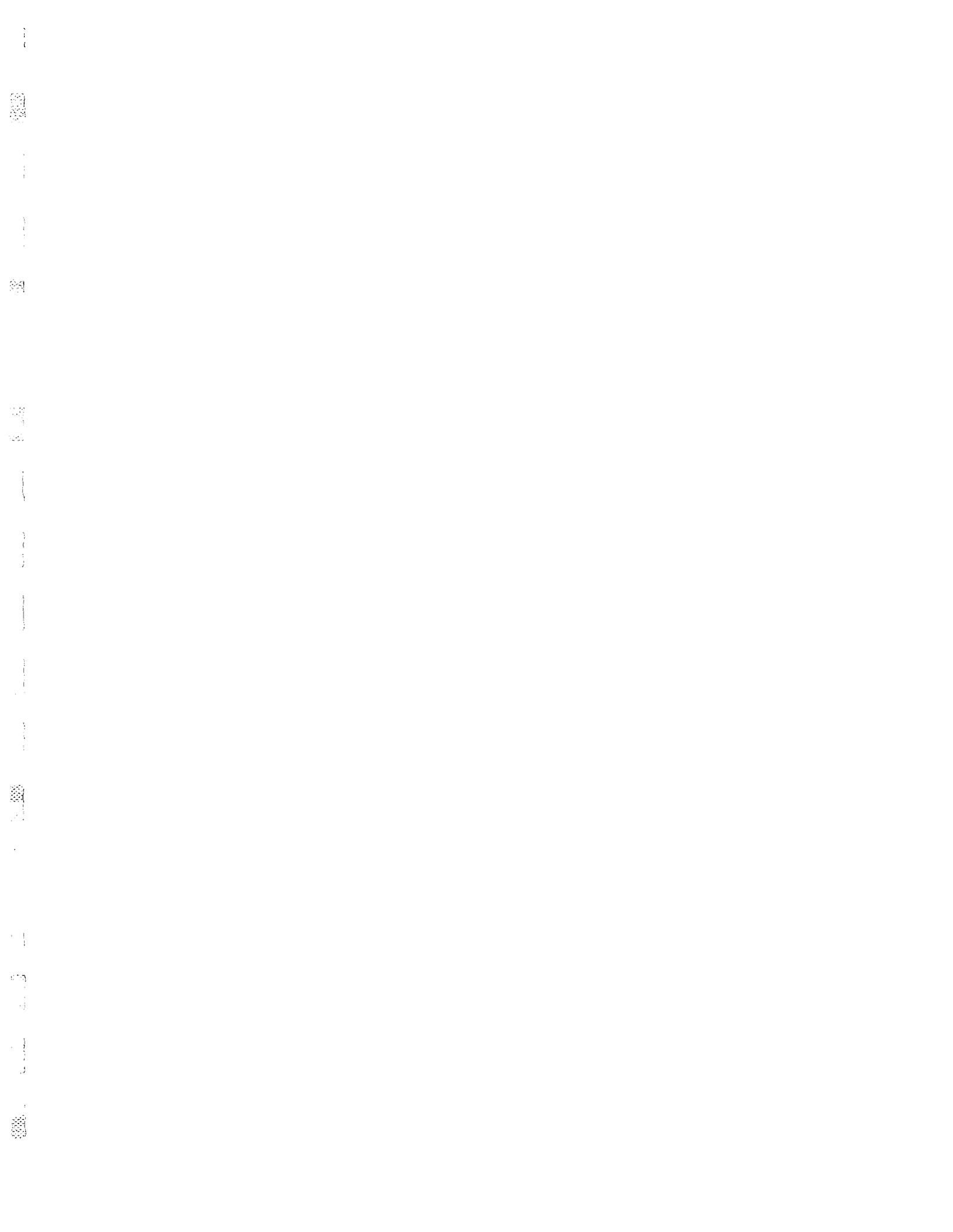
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Report Limitations

This report has been prepared in accordance with generally accepted practices using standards of care and diligence normally practiced by recognized consulting firms performing services of a similar nature. This report presents our professional judgment based upon data and findings identified in this report and the interpretation of such data based on our experience and background, and no warranty, either expressed or implied, is made. The conclusions presented are based on the current regulatory climate and may require revision if future regulatory changes occur.

The findings identified in this report are predicated on the results of the limited sampling and laboratory testing performed. This report does not address impacts related to sources other than those specified herein.

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

SHAW ENVIRONMENTAL, INC.

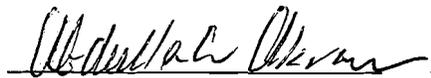
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CALIFORNIA DEPARTMENT OF TRANSPORTATION OFFICE OF ENVIRONMENTAL ENGINEERING - HAZARDOUS WASTE BRANCH

Reviewed by:

Recommended by:

Approved by:



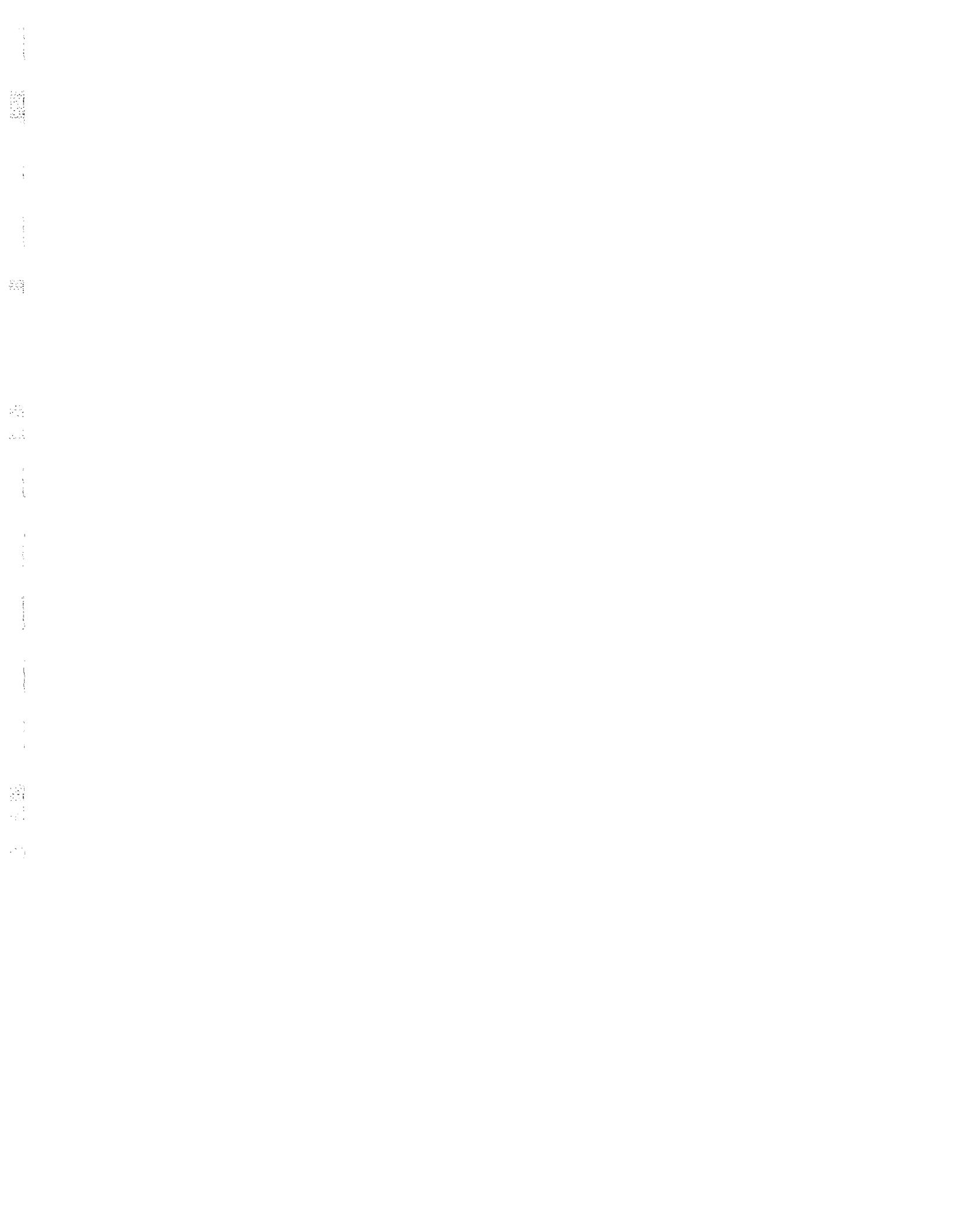
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Executive Summary

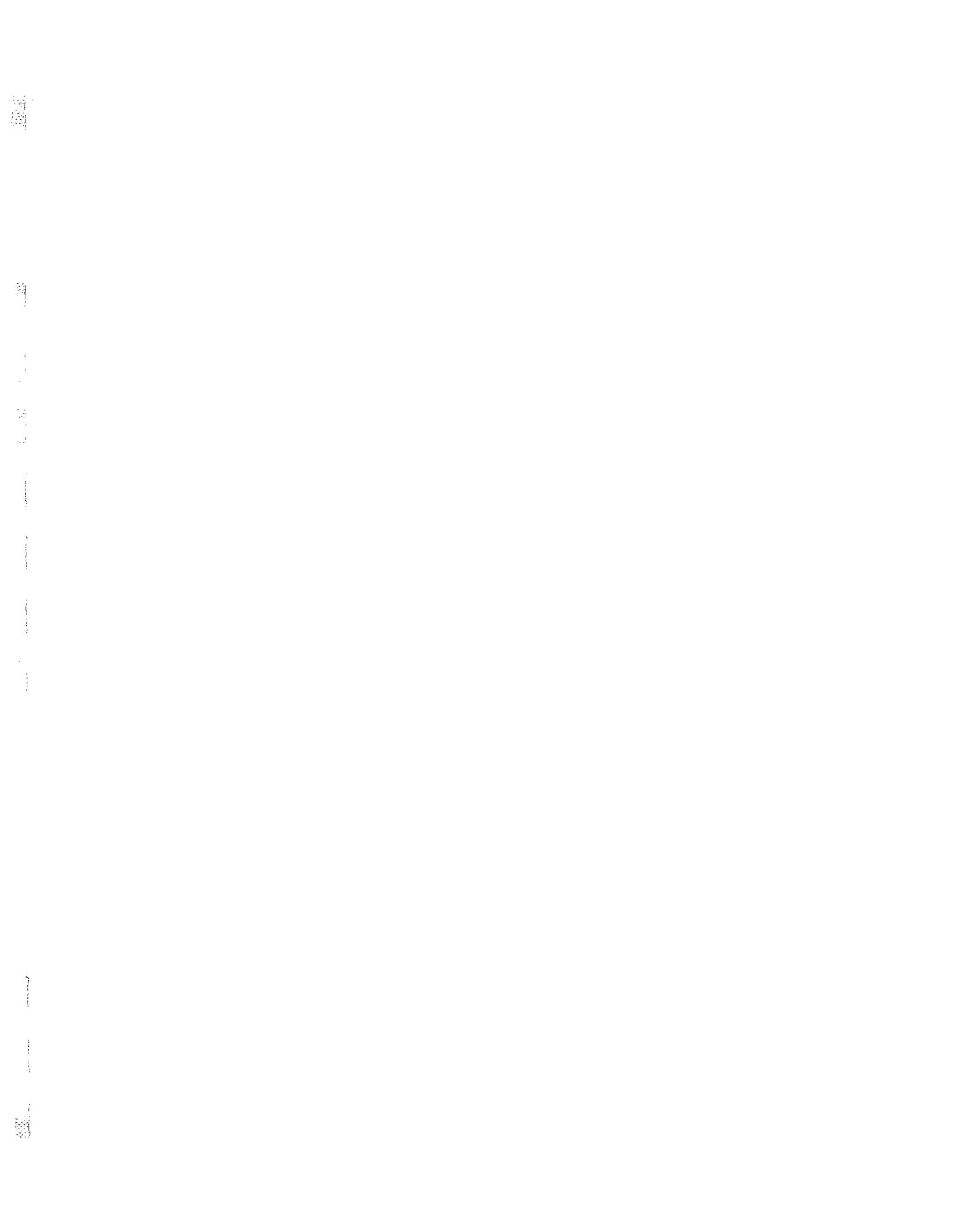
Shaw Environmental, Inc. conducted a lead in soil investigation along State Route 880 (SR-880) onramps from Lesser Street to 37th Avenue in Oakland, Alameda County, California. Work was conducted within the unpaved portions of the SR-880 shoulder. The investigation was conducted to evaluate the presence and concentration of lead in shallow soil prior to construction of retaining walls along portions of SR-880.

The original work plan included five additional soil borings to be advanced on land currently owned by Union Pacific. That component of the work has been postponed pending approval of the right of entry agreement for the parcel.

Lead was reported in all soil samples collected from the site. The source for the lead is not known, however, it is thought to be related to accumulation of dust and debris containing lead from leaded gasoline emissions.

Lead concentrations were compared to Total Threshold Limit Concentration (TTLC), Soluble Threshold Limit Concentration (STLC), and Toxicity Characteristic Leaching Procedure (TCLP) values to evaluate whether the soil would be considered a hazardous waste, should it become a waste, and whether it could be reused by California Department of Transportation. Four soil samples were reported to contain lead at concentrations exceeding the TTLC. Thirty soil samples were reported to contain lead at concentrations exceeding the STLC. No soil samples from the site were reported to contain lead at concentrations that exceeded the TCLP value. Fifteen soil samples from numerous locations were reported to contain lead at concentrations in excess of 350 milligrams per kilograms (mg/kg), a level normally requiring waste disposal in a Class I facility.

Statistical evaluation of the data found that the arithmetic mean of total lead concentration in the entire data set was 447 mg/kg with a corresponding 90 percent Upper Confidence Level (UCL) value of 578 mg/kg. As an acceptable correlation exists between the total lead data and soluble lead data by the Waste Extraction Test (WET), the expected soluble lead concentration by WET analysis at the total lead 90 percent UCL was obtained from regression analysis. This value is 21.2 milligrams per liter. Based on the statistical analysis, the waste soil would likely be considered a California hazardous waste but not a Resource Conservation and Recovery Act (federal) hazardous waste. It is likely however, that the waste soil could be managed under Condition 2 of the California Environmental Protection Agency, Department of Toxic Substances Control's variance for waste soil considered hazardous due to the presence of elevated lead concentrations. Condition 2 includes re-use as fill beneath a pavement structure designated to protect the soil from water infiltration and five feet above the water table.



1.0 Introduction

This report presents the results of the soil investigation conducted along State Route 880 (SR-880) in Oakland, Alameda County, California (Figure 1). The investigation was conducted by Shaw Environmental, Inc. (Shaw) on May 11, 2004. This investigation was conducted at the request and authorization of Mr. Abdullah Akram of the California Department of Transportation (Caltrans) under Task Order No. 04-165421-5C (Caltrans, 2004). The investigation was conducted to characterize soil prior to planned excavation along portions of SR-880.

1.1 Project Description

Caltrans proposes to construct four retaining walls along SR-880. The retaining walls will be constructed at the following locations:

- 1) The southbound SR-880 onramp from Oakport Street. The retaining wall will be built between the onramp and SR-880.
- 2) Southbound SR-880 from near 37th Avenue extending to just past 42nd Street. The retaining wall will be built between the shoulder of SR-880 and East 8th Street.
- 3) The northbound SR-880 onramp from 42nd Street. The retaining wall will be built between the onramp and SR-880.
- 4) The southbound SR-880 onramp from Oakport Street. The retaining wall will be built between the onramp and Oakport Street.

All Shaw fieldwork was conducted within Caltrans right-of-way, in areas of proposed construction.

1.2 Project Objective

The objective of this investigation was to evaluate the presence and concentrations of aerially deposited lead (ADL) within the proposed area of excavation so that Caltrans may appropriately plan for handling and disposition of the soil.

The analytical data obtained from this investigation will be used to assess worker health and safety issues, predict potential waste classification of the soil, and determine the applicability of the Department of Toxic Substance Control (DTSC) variance for re-use of lead contaminated soil.

2.0 Scope of Work

The scope of work for the investigation was presented in Shaw's workplan dated May 3, 2004, which was approved for implementation by Caltrans (Shaw, 2004a). The following scope of work was conducted:

1. Permitting and Mobilization
2. Field Investigation
3. Laboratory Analyses
4. Site Investigation Report Preparation

2.1 Planning and Permitting

Planning and permitting included a pre-work site visit, preparation of a workplan and health and safety plan, and acquisition of required permits.

A pre-work site visit was conducted at the site on April 22, 2004, by Mr. Ben Chevlen and Mr. Dan Wynne of Shaw and Mr. Naveen Aachi and Mr. Abdullah Akram of Caltrans. Locations for soil borings were observed, and the scope of work and objectives were discussed.

A site-specific health and safety plan (Shaw, 2004b) was prepared for the site in general accordance with 29 CFR 1910.120 and Title 8, California Code of Regulations, Section 5192. The health and safety plan included safety procedures for work to be performed at the site, chemical hazard information, site safety officers, and preferred medical emergency locations.

No permits were required for the fieldwork.

2.2 Field Investigation

The field investigation was conducted on May 11, 2004. The investigation consisted of the advancement of 17 borings using hand-auger sampling equipment, and the collection of soil samples for laboratory analysis.

The soil borings were advanced to depths of approximately 0.75 meters (2.5 feet) below the ground surface (BGS). Soil samples were collected from depths of 0.0 to 0.15 meters (0 to 0.5 foot), 0.3 to 0.45 meters (1.0 to 1.5 feet), and 0.6 to 0.75 meters (2.0 to 2.5 feet). Soil samples collected were stored in plastic bags. The soil samples were labeled, packaged, and stored in an insulated chest for transport under chain-of-custody manifest to the laboratory.

Boring locations were selected by Caltrans (Figures 2 through 4). The horizontal and vertical locations of the borings were established using a Trimble GPS Pathfinder™ Pro XRS global positioning system (GPS). The GPS utilized a GPS receiver and MSK radio beacon differential receiver. The GPS is reported to have sub-meter precision for horizontal location of the borings. The vertical precision is reported to be 2 to 5 times that of the horizontal precision. The GPS data were downloaded in the office and Trimble software utilized to provide differential corrections to the coordinates.

The borings were backfilled with excess soil cuttings. Drilling and sampling procedures are presented in Appendix A.

2.3 Laboratory Analysis

The soil samples collected and retained for analysis were submitted to Sparger Technology, Inc. (Sparger), of Sacramento, California, a California-certified analytical laboratory. Chain-of-custody procedures, including the use of chain-of-custody forms, were used to document sample handling and transport from the time of collection to delivery to the laboratory for analysis. The chain-of-custody forms and laboratory analytical reports are included in Appendix B.

Forty-one soil samples were analyzed for total lead in general accordance with U.S. Environmental Protection Agency (EPA) method 6010, with a reporting limit of 1.0 milligram per kilogram (mg/kg).

- Soil samples reported to contain total lead at concentrations that between 50 mg/kg and 1,000 mg/kg were analyzed for soluble lead concentrations using the Waste Extraction Test (WET).
- Soil samples reported to contain soluble lead at concentrations greater than 5 milligrams per liter (mg/L) were further analyzed for soluble lead using a deionized WET (DIWET).
- Soil samples reported to contain total lead at a concentrations exceeding 1,000 mg/kg were analyzed for soluble lead concentrations using the Toxicity Characteristic Leaching Procedure (TCLP).

Soluble lead analyses by the WET were conducted on 26 soil samples. Soluble lead analyses by the DIWET were conducted on 10 soil samples. Soluble lead analysis by TCLP was conducted on four soil samples. Five soil samples were tested for pH. Analytical results reported for the soil samples analyzed are presented on Table 1.

3.0 Site Investigation Results

Lead analyses were conducted on 41 soil samples. A summary of lead results compared to 10 times soluble threshold limit concentration (STLC) and total threshold limit concentration (TTLC) values are presented below. Results are presented on Table 1.

10 Times STLC (mg/kg)	No. Samples Exceeding 10 Times STLC	TTLC (mg/kg)	No. Samples Exceeding TTLC	Concentration Range (mg/kg)
50	30	1,000	4	5.24 to 3,780

In the 26 soil samples tested by the WET, soluble lead concentrations ranged from 1.18 to 42.6 mg/L. Of the 17 soil samples with soluble lead concentrations greater than 5 mg/L by the WET, the 10 soil samples with the highest WET concentrations were analyzed for soluble lead by the DIWET. In the 10 soil samples tested by the DIWET, soluble lead concentrations ranged from 0.19 to 1.57 mg/L. In the four soil samples analyzed for soluble lead by the TCLP, soluble lead concentrations ranged from 0.341 to 3.80 mg/L.

The pH of five soil samples tested, ranged from 7.0 to 8.6 (Table 1).

4.0 Data Evaluation

4.1 Lead Concentration and Distribution

Soil samples collected from the site were reported to contain lead (Table 1). The source for the lead is not known. However, studies along the transportation corridors have attributed elevated lead concentrations within soil to accumulation of dust and debris containing lead from leaded gasoline emissions (Coltrin, et al., 1993).

A summary of the distribution of the elevated lead concentrations is presented below. The data set is restricted to those samples reported to contain greater than or equal to 50 mg/kg lead, a level selected because it is 10 times the STLC. Data from all the proposed retaining wall construction areas are treated as a single population

Sample Area	Depth Interval	Distribution of Samples from Total Sample Population with Greater Than 50 mg/kg Lead		Distribution of Samples from This Depth with Greater Than 50 mg/kg Lead		Distribution of Samples from All Samples with Greater Than 50 mg/kg Lead	
		Number	Percentage	Number	Percentage	Number	Percentage
SR 880	0.0 to 0.15 m	14 of 41	34.15	14 of 17	82.35	14 of 30	46.67
SR 880	0.3 to 0.45 m	9 of 41	21.95	9 of 14	64.29	9 of 30	30.00
SR 880	0.6 to 0.75 m	7 of 41	17.07	7 of 10	70.00	7 of 30	23.33

As shown above, the number of samples containing elevated lead concentrations decreased with depth. This is typical of accumulations of ADL, as reported by Coltrin and others (1993), where concentrations of lead were observed to decrease with depth. An exception to this was in areas where accumulation of urban dust and debris continued following cessation of leaded gasoline use resulting in lower lead concentrations at shallower depths (Coltrin, et al., 1993). This may explain the results at some locations where elevated concentrations of lead were present in the deeper soil samples.

Lead concentrations were compared to TTLC and STLC values to evaluate whether the soil would be considered a California hazardous waste, should it become a waste. Generally, TTLC and STLC values for lead are used to judge whether a waste is a California hazardous waste based on the total and soluble concentration of lead within the waste. The TCLP values are used to judge whether a waste is a Resource Conservation and Recovery Act (RCRA) hazardous waste (also known as a Federal hazardous waste) based on the soluble concentration of lead within the waste.

Four soil samples were reported to contain total lead at a concentration in excess of the TTLC of 1,000 mg/kg. Soil samples reported to contain total lead exceeding the TTLC would be considered a California hazardous waste, should the soil become a waste.

Soil samples reported to contain total lead in excess of 1,000 mg/kg were further analyzed using the TCLP to determine if the soil would be considered a federal hazardous waste under RCRA. None of the four samples analyzed by the TCLP method exceeded 5.0 mg/L, and hence none of the soil would be considered a RCRA waste.

Seventeen soil samples tested had soluble lead at concentrations in excess of the STLC of 5.0 mg/L by WET analysis. Soil samples reported to contain soluble lead exceeding the STLC would be considered a California hazardous waste, should the soil become a waste. Of the 17 soil samples reported to contain soluble lead by the WET method exceeding the STLC, the 10 soil samples with highest WET values were further analyzed by the DIWET method to evaluate applicability of the DTSC.

Nine soil samples exceeded total lead concentrations of 750 mg/kg and would require disposal at a Class 1 landfill should the soil at these locations become a waste.

The California Environmental Protection Agency, DTSC, granted Caltrans a variance for waste soil considered hazardous due to the presence of elevated lead concentrations (DTSC, 2000). The variance allows Caltrans to reuse lead-contaminated soil within Caltrans right-of-way in the roadway corridor boundaries under certain conditions if the soil is considered a non-RCRA waste. In accordance with the variance and Health and Safety Code Section (HSC) 25157.8, the following conditions apply to Caltrans' re-use and management of soil impacted by ADL as fill material for construction and maintenance operations (DTSC, 2000):

1. As fill beneath at least two feet (Caltrans National Pollutant Discharge Elimination System permit workplan modification to conditions in variance; Caltrans, 2000a) of clean (non-hazardous) soil and five feet above the water table if the soluble lead concentration reported by the DIWET analysis is less than 0.5 mg/L and the total lead concentration is less than 750 mg/kg. This condition applies only if the soil is not a RCRA waste.
2. As fill beneath a pavement structure designated to protect the soil from water infiltration and five feet above the water table if the soluble lead concentration reported by DI WET analysis is greater than 0.5 mg/L but less than 50 mg/L, and the total lead concentration is less than 750 mg/kg. This condition applies only if the soil is not a RCRA waste.

3. Lead-contaminated soil with a pH below 5 shall only be used as fill beneath the paved portion of the roadway. This condition applies only if the soil is not a RCRA waste.

4.2 Lead Data Statistical Analysis

A statistical evaluation was conducted to further evaluate the concentration of lead within soil at the site. The statistical evaluation addressed the following items:

- Calculation of arithmetic mean;
- Determination of normal or lognormal distribution of the sample data; and
- Calculation of the 80 percent Confidence Interval (CI) which provides a corresponding 90 percent Upper Confidence Level (UCL), interpreted as a 0.90 probability that the true mean for a given population is no higher than the calculated UCL.

At the request of Caltrans, the data was evaluated as a whole. The samples from all depths were combined for analysis as Caltrans construction plans typically call for excavation of soil to 0.75 to 0.9 meters (2.5 to 3 feet) for road base preparation. Evaluation of the soil data resulted in an arithmetic mean (average) concentration of total lead of 447 mg/kg (Appendix C).

A histogram of the total lead results was constructed to evaluate the distribution of the total lead concentrations within the data set. The data were found to be heavily skewed to lower concentrations (Appendix C). Therefore, statistical analysis was conducted using non-parametric techniques, which do not require that the data be drawn from a specific distribution (Gilbert, 1987).

The statistical analysis for the total lead data was conducted using the Bootstrap method (Efron, 1982) to estimate the 90 percent UCL for the mean of the total lead data. Bootstrap methods are non-parametric techniques to infer the distribution of a statistic derived from a data set. Bootstrap methods construct a "distribution" for a statistic (in this case the mean) by resampling with replacement from the data set. A large number (B) of data subsets of size n (where n is the size of the data subset) are selected. The statistic is computed for each of the B data subsets of size n . This gives a sample of values of the statistic, rather than one value. Confidence limits for the population parameter that is estimated by the Bootstrapped statistic are then constructed using percentiles of the sampled distribution of the statistic. Nondetects have been handled using a value of one-half the detection limit.

The nonparametric bootstrap was used to compute the 90 percent UCL for the mean. There are several variations on the nonparametric Bootstrap. Efron's empirical quantile method

(Efron, 1982) applied to the mean was used to estimate the 90 percent UCL for the mean for this data set. The 90 percent UCL calculated for total lead data is 578 mg/kg (Appendix C).

Pearson (product moment) correlation coefficients (Pearson values) were obtained from regression analysis for regression lines fit to the soluble lead data (Appendix C). Prior to calculation of the correlation coefficients, the total/soluble lead bivariate data were visually inspected for outliers. Scatter plots were generated for the total/soluble lead data pairs. No outliers were deemed present.

The correlation coefficient for the total/WET lead data was 0.950. The correlation coefficient for the WET data indicates that acceptable correlation between total and WET soluble data exists and that the relationship is linear. An expected soluble (WET) lead concentration was obtained from regression analysis (model fit to data) developed from the total and WET soluble lead data. The coefficient for the dependant variable (slope of regression line) used in the regression analysis and the total lead versus soluble lead concentration plot is presented in Appendix C. The soluble lead concentration for WET data corresponding to the total lead 90 percent UCL is 21.2 mg/L.

The correlation coefficient for the total/DIWET lead data was 0.133. The correlation coefficient for the DIWET data indicates an unacceptable correlation between total and DIWET soluble data. This is likely to have been caused by the variability of the soil conditions affected lead solubility. An expected soluble (DIWET) lead concentration was obtained from regression analysis (model fit to data) developed from the total and DIWET soluble lead data. The coefficient for the dependant variable (slope of regression line) used in the regression analysis and the total lead versus soluble lead concentration plot is presented in Appendix C. The soluble lead concentration for DIWET data corresponding to the total lead 90 percent UCL is 0.82 mg/L.

4.3 Summary

Soil at 21 locations would be considered a California hazardous waste based on the total and soluble lead (by WET) concentrations. Soil in none of the locations would be considered a RCRA waste based on the soluble lead (by TCLP) concentrations. Shaw conducted statistical analyses on the total and soluble lead data. The statistical analyses assume that the soil will be handled as one waste stream. The results of the statistical analysis are presented below:

- Mean and 90% UCL of total lead are less than TTLC of 1,000 mg/kg;
- Expected soluble lead by WET is greater than STLC of 5 mg/l;
- Based on predicted soluble lead, the waste soil would be classified as hazardous; and

The soil could be managed under condition 2 of the DTSC variance since the predicted DIWET value is between 0.5 and 50 mg/l, and the total lead 90% UCL is less than 750 mg/kg. Condition 2 includes re-use as fill beneath a pavement structure designated to protect the soil from water infiltration and five feet above the water table.

5.0 Conclusions and Recommendations

Based on the laboratory results, current regulatory guidelines, and the judgment of Shaw, the following conclusions and recommendations are offered.

Lead was reported in soil samples collected from the site. The source for the lead is not known. However, studies along the transportation corridors have attributed elevated lead concentrations within soil to accumulation of dust and debris containing lead from leaded gasoline emissions (Coltrin, et al., 1993).

- Nine soil samples were reported to contain total lead concentrations in excess of 750 mg/kg, a level normally requiring waste disposal in a Class I facility.

The statistical evaluation resulted in the following data.

Sample Population	Total Lead Mean Concentration (mg/kg)	Total Lead 90% UCL (mg/kg)	Expected Soluble Lead (WET) (mg/L)	Expected Soluble Lead (DIWET) (mg/L)
All Samples	446.94	578.22	21.17	0.82

Based on the statistical analysis, it is likely that the waste soil generated by the proposed construction would be considered a California hazardous waste if managed as a single waste stream, but could be reused under condition 2 of the DTSC variance.

6.0 References

Caltrans (California Department of Transportation, District 4), 1998, Memorandum on guidance for conducting statistical evaluation of lead data; Noise, Air, and Hazardous Waste Management Office: February 4, 1998.

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Gilbert, R.O., *Statistical methods for environmental pollution monitoring*: Van Nostrand Reinhold, New York, New York, 1987.

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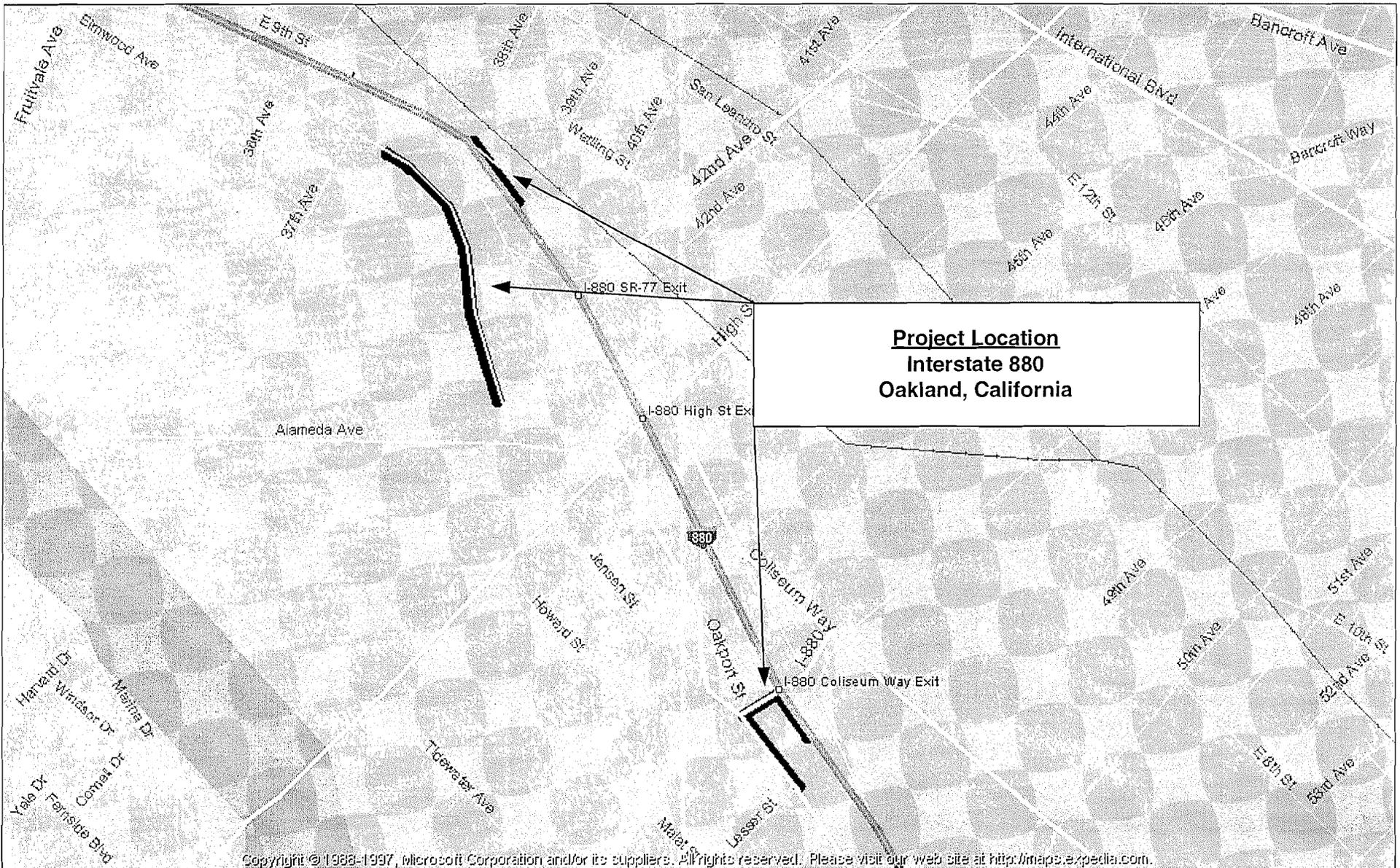
Shaw (Shaw Environmental, Inc), 2004b, Health and Safety Plan, Soil and Groundwater Investigation, Interstate 880, Alameda County, California: dated May 12, 2004.

Table 1
 State Route 880 Between Lesser Street and 37th Avenue, Oakland, Alameda County, California
 Analytical Data Table
 Task Order 04-165421-5C

Boring	Sample Designation (site - boring - depth) Units	Northing	Easting	Elevation MSL m	Sample Depth m	Sample Depth ft	Total Lead mg/kg	Soluble Lead			pH
								by WET mg/L	by DIWET mg/L	by TCLP mg/L	
1	B-01-0.15	641821.314	1848618.591	4.853	0.0 - 0.15	0 - 0.5	621	31.5	1.15		
	B-01-0.45				0.3 - 0.45	1.0 - 1.5	263	9.10			
2	B-02-0.15	641835.666	1848606.628	4.362	0.0 - 0.15	0.0 - 0.5	959	42.6	1.57		
	B-02-0.45				0.3 - 0.45	1.0 - 1.5	249	9.52			
	B-02-0.75				0.6 - 0.75	2.0 - 2.5	162	2.99			
3	B-03-0.15	641850.581	1848598.635	5.110	0.0 - 0.15	0.0 - 0.5	748	31.4	1.15		
	B-03-0.45				0.3 - 0.45	1.0 - 1.5	1190		0.341		
	B-03-0.75				0.6 - 0.75	2.0 - 2.5	483	20.8	1.40		
4	B-04-0.15	641858.190	1848593.896	5.048	0.0 - 0.15	0.0 - 0.5	766	23.7	0.765		
	B-04-0.45				0.3 - 0.45	1.0 - 1.5	57.4	1.18			
	B-04-0.75				0.6 - 0.75	2.0 - 2.5	99.8	2.40			
5	B-05-0.15	642180.958	1848356.690	5.092	0.0 - 0.15	0.0 - 0.5	128	4.77			
	B-05-0.45				0.3 - 0.45	1.0 - 1.5	3780		1.08		
	B-05-0.75				0.6 - 0.75	2.0 - 2.5	189	2.58			
6	B-06-0.15	642213.683	1848349.132	5.397	0.0 - 0.15	0.0 - 0.5	43.3				
	B-06-0.45				0.3 - 0.45	1.0 - 1.5	42.7				
	B-06-0.75				0.6 - 0.75	2.0 - 2.5	79.6	1.65			
7	B-07-0.15	642282.986	1848309.687	4.723	0.0 - 0.15	0.0 - 0.5	933	29.9	0.932		7.6
	B-07-0.45				0.3 - 0.45	1.0 - 1.5	87.8	3.04			7.5
	B-07-0.75				0.6 - 0.75	2.0 - 2.5	7.68				
8	B-08-0.15	642367.013	1848286.829	7.177	0.0 - 0.15	0.0 - 0.5	788	18.5	0.190		
	B-08-0.45				0.3 - 0.45	1.0 - 1.5	5.24				
	B-08-0.75				0.6 - 0.75	2.0 - 2.5	58.5	1.51			
9	B-09-0.15	642393.915	1848278.397	7.367	0.0 - 0.15	0.0 - 0.5	146	5.44			7.4
	B-09-0.45				0.3 - 0.45	1.0 - 1.5	6.83				
	B-09-0.75				0.6 - 0.75	2.0 - 2.5	14.3				
10	B-10-0.15	642424.493	1848255.201	7.403	0.0 - 0.15	0.0 - 0.5	425	10.8			
	B-10-0.45				0.3 - 0.45	1.0 - 1.5	24.0				
	B-10-0.75				0.6 - 0.75	2.0 - 2.5	7.15				
11	B-11-0.15	642487.019	1848272.763	8.546	0.0 - 0.15	0.0 - 0.5	33.9				
	B-11-0.45				0.3 - 0.45	1.0 - 1.5	1350		3.80		
	B-11-0.75				0.6 - 0.75	2.0 - 2.5	382	12.1	0.285		
12	B-12-0.15	642504.079	1848249.507	9.455	0.0 - 0.15	0.0 - 0.5	909	40.0	0.471		
	B-12-0.45				0.3 - 0.45	1.0 - 1.5	264	8.86			
13	B-13-0.15	642519.574	1848225.136	8.855	0.0 - 0.15	0.0 - 0.5	336	11.8			
	B-13-0.45				0.3 - 0.45	1.0 - 1.5	737	25.2	0.788		
14	B-14-0.15	641772.777	1848635.341	6.707	0.0 - 0.15	0.0 - 0.5	227	7.36			
15	B-15-0.15	641788.403	1848623.397	5.358	0.0 - 0.15	0.0 - 0.5	164	4.57			
16	B-16-0.15	641813.714	1848609.622	4.107	0.0 - 0.15	0.0 - 0.5	1500			0.808	8.6
	B-16-0.45				0.3 - 0.45	1.0 - 1.5	16.8		7.0		
17	B-17-0.15	641829.499	1848599.786	5.172	0.0 - 0.15	0.0 - 0.5	40.4				
TTL							1,000				
STLC								5.0			
TCLP									5.0		
Reporting Limits							1.0	0.050	0.010	10.050	0.1

Notes:

- Analyses conducted in general accordance with EPA Method 6010 for lead and EPA Method 9045 for soil pH.
- TTL = total threshold limit concentration. STLC = soluble threshold limit concentration. WET = waste extraction test
- DI WET = WET with deionized water extraction solution. TCLP = toxicity characteristic leaching procedure.
- WET conducted in general accordance with California Title 22 procedures.
- Soil samples labeled as follows: boring no.-depth. Ex.: B-01-0.15, boring 01. 0.15-meter depth.
- For total results, bold results exceed 10 times the STLC.
- For WET results, bold results exceed the STLC.
- ND = not detected above reporting limit.
- Latitude and longitude converted to decimal format.
- GPS coordinates calculated using US State Planes 1983 and California Zone 3



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Reference:
Microsoft Expedia, Streets 98

Not to Scale

Figure 1

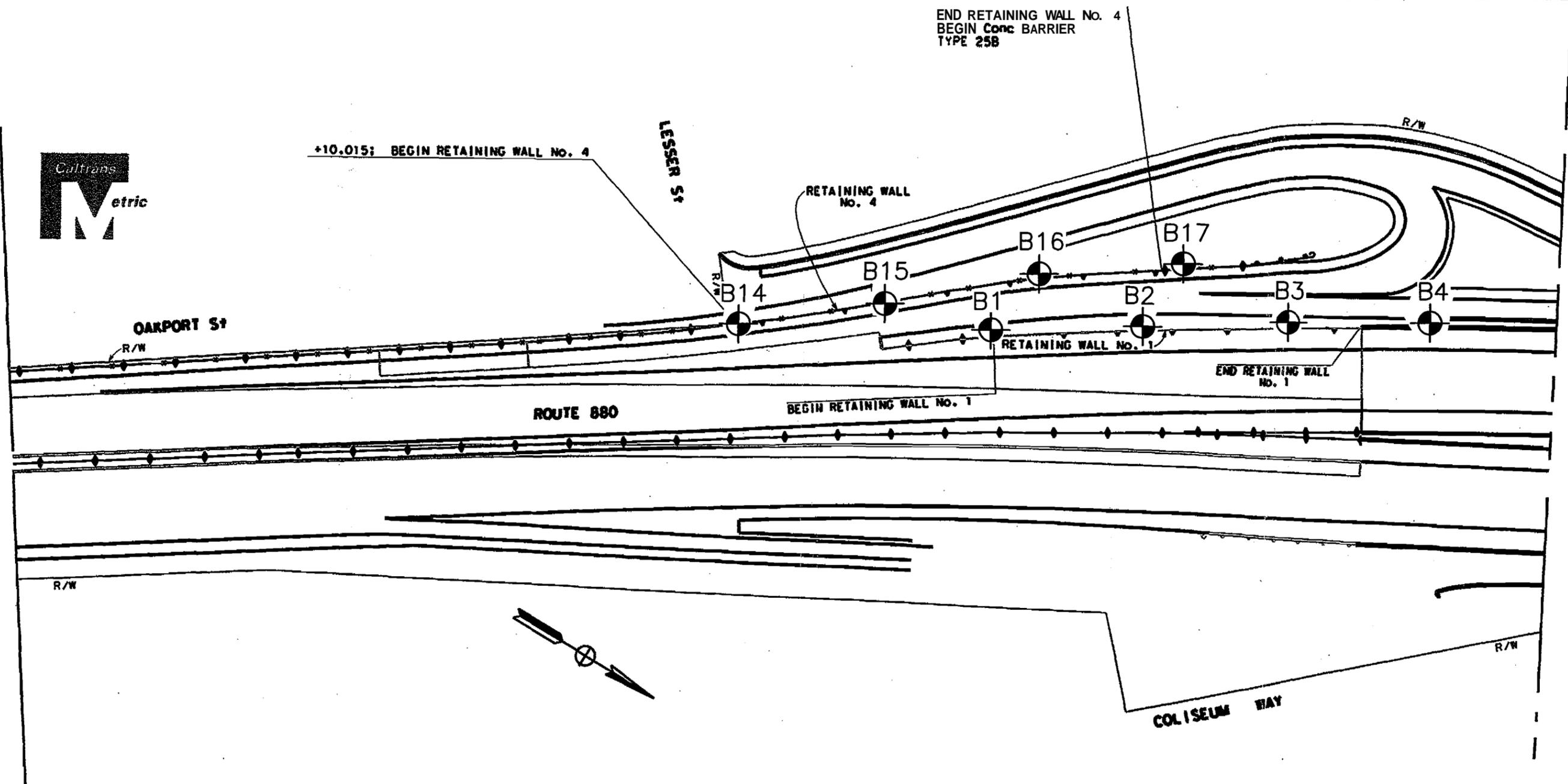
SITE LOCATION MAP

PROJECT NUMBER 108408

APPROVED BY

CHECKED BY

DRAWN BY C Douglas May 2004



STATE ROUTE 880
OAKLAND, CALIFORNIA

FIGURE 2
BORING LOCATIONS

Dan Wynne
Shaw Environmental & Infrastructure
1326 N. Market Blvd.
Sacramento, CA 95826

Client	Shaw Environmental & Infrastructure	
Workorder	16313	Route 880 at 42nd Street
Received	05/12/04	

The samples were received in EPA specified containers. The samples were transported and received under documented chain of custody and stored at four (4) degrees C until analysis was performed.

Sparger Technology, Inc. ID Suffix Keys - These descriptors will follow the Sparger Technology, Inc. ID numbers and help identify the specific sample and clarify the report.

- DUP - Matrix Duplicate
- MS - Matrix Spike
- MSD - Matrix Spike Duplicate
- LCS - Lab Control Sample
- LCSD - Lab Control Sample Duplicate
- RPD - Relative Percent Difference
- QC - Additional Quality Control
- DIL - Results from a diluted sample
- ND - None Detected
- RL - Reporting Limit

Note: In an effort to conserve paper, the results are printed on both sides of the paper.



Ray James
Laboratory Director



Environmental Laboratories

Analytical Laboratory Division
 Mobile Laboratory Division
 Scientific Division

Test Certificate of Analysis

Client ID Shaw Environmental & Infrastructure
 Workorder # 16313

Workorder ID Route 880 at 42nd Street

Parameter Method Lead 6010B

Lab ID	Sample ID	Result	RL	Units	Collected	Analyzed	Matrix	Dilution
16313001	B-1-0.15	621	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313002	B-1-0.45	263	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313003	B-2-0.15	959	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313004	B-2-0.45	249	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313005	B-2-0.75	162	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313006	B-3-0.15	748	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313007	B-3-0.45	1190	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313008	B-3-0.75	483	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313009	B-4-0.15	766	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313010	B-4-0.45	57.4	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313011	B-4-0.75	99.8	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313012	B-5-0.15	128	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313013	B-5-0.45	3780	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313014	B-5-0.75	189	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313015	B-6-0.15	43.3	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313016	B-6-0.45	42.7	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313017	B-6-0.75	79.6	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313018	B-7-0.15	933	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313019	B-7-0.45	87.8	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313020	B-7-0.75	7.68	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313021	B-8-0.15	788	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313022	B-8-0.45	5.24	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313023	B-8-0.75	58.5	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313024	B-9-0.15	146	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313025	B-9-0.45	6.83	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313026	B-9-0.75	14.3	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313027	B-10-0.15	425	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313028	B-10-0.45	24.0	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313029	B-10-0.75	7.15	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313030	B-11-0.15	33.9	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313031	B-11-0.45	1350	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313032	B-11-0.75	382	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313033	B-12-0.15	909	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313034	B-12-0.45	264	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1

Test Certificate of Analysis

Client ID Shaw Environmental & Infrastructure
 Workorder # 16313

Workorder ID Route 880 at 42nd Street

Parameter Lead (continued)
 Method 6010B

Lab ID	Sample ID	Result	RL	Units	Collected	Analyzed	Matrix	Dilution
16313035	B-13-0.15	336	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313036	B-13-0.45	737	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313037	B-14-0.15	227	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313038	B-15-0.15	164	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313039	B-16-0.15	27.1	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313040	B-16-0.45	1500	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313041	B-16-0.75	16.8	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1
16313042	B-17-0.15	40.4	1.0	mg/Kg	05/11/04	05/13/04	Soil	1:1

Test Certificate of Analysis

Client ID Shaw Environmental & Infrastructure
 Workorder # 16313

Workorder ID Route 880 at 42nd Street

Parameter pH
 Method 9045 PH

Lab ID	Sample ID	Result	RL	Units	Collected	Analyzed	Matrix	Dilution
16313018	B-7-0.15	7.6	0.10	SU	05/11/04	05/12/04	Soil	1:1
16313019	B-7-0.45	7.5	0.10	SU	05/11/04	05/12/04	Soil	1:1
16313024	B-9-0.15	7.4	0.10	SU	05/11/04	05/12/04	Soil	1:1
16313039	B-16-0.15	8.6	0.10	SU	05/11/04	05/12/04	Soil	1:1
16313041	B-16-0.75	7.0	0.10	SU	05/11/04	05/12/04	Soil	1:1

Duplicate Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63551
Sample ID DUP for HBN 238850 [PHV/1538]
Matrix Soil

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
pH	9045 PH	05/12/04	05/12/04	7.7	0.10	SU	1:1

Method Blank Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63564
Sample ID MB for HBN 239052 [ICPV/4947]
Matrix Soil

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B	05/12/04	05/13/04	ND	1.0	mg/Kg	1:1

Lab Control Sample Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63565
Sample ID LCS for HBN 239052 [ICPV/4947]
Matrix Soil

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B	05/12/04	05/13/04	53.2	1.0	mg/Kg	1:1

Lab Control Sample Duplicate Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63566
Sample ID LCSD for HBN 239052 [ICPV/4947
Matrix Soil

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B	05/12/04	05/13/04	54.0	1.0	mg/Kg	1:1

Matrix Spike Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63567
Sample ID MS for HBN 239052 [ICPV/4947]
Matrix Soil

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B	05/12/04	05/13/04	752	1.0	mg/Kg	1:1

Matrix Spike Duplicate Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63568
Sample ID MSD for HBN 239052 [ICPV/4947]
Matrix Soil

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B	05/12/04	05/13/04	867	1.0	mg/Kg	1:1

Duplicate Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63569
Sample ID DUP for HBN 239052 [ICPV/4947]
Matrix Soil

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B	05/12/04	05/13/04	589	1.0	mg/Kg	1:1

Method Blank Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63570
Sample ID MB for HBN 239055 [ICPV/4948]
Matrix Soil

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B	05/12/04	05/13/04	ND	1.0	mg/Kg	1:1

Lab Control Sample Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63571
Sample ID LCS for HBN 239055 [ICPV/4948]
Matrix Soil

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B	05/12/04	05/13/04	53.2	1.0	mg/Kg	1:1



Analytical Laboratory Division
Mobile Laboratory Division
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Lab Control Sample Duplicate Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63572
Sample ID LCSD for HBN 239055 [ICPV/4948
Matrix Soil

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B	05/12/04	05/13/04	54.0	1.0	mg/Kg	1:1

Matrix Spike Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63573
Sample ID MS for HBN 239055 [ICPV/4948]
Matrix Soil

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B	05/12/04	05/13/04	799	1.0	mg/Kg	1:1

Matrix Spike Duplicate Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63574
Sample ID MSD for HBN 239055 [ICPV/4948]
Matrix Soil

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B	05/12/04	05/13/04	877	1.0	mg/Kg	1:1

Duplicate Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63575
Sample ID DUP for HBN 239055 [ICPV/4948]
Matrix Soil

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B	05/12/04	05/13/04	686	1.0	mg/Kg	1:1

Method Blank Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63576
Sample ID MB for HBN 239058 [ICPV/4949]
Matrix Soil

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B	05/12/04	05/13/04	ND	1.0	mg/Kg	1:1

Lab Control Sample Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63577
Sample ID LCS for HBN 239058 [ICPV/4949]
Matrix Soil

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B	05/12/04	05/13/04	53.4	1.0	mg/Kg	1:1

Lab Control Sample Duplicate Report

Client ID Shaw Environmental & Infrastructure
 Workorder ID Route 880 at 42nd Street
 Laboratory ID 63578
 Sample ID LCSD for HBN 239058 [ICPV/4949
 Matrix Soil

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B	05/12/04	05/13/04	52.0	1.0	mg/Kg	1:1

Matrix Spike Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63579
Sample ID MS for HBN 239058 [ICPV/4949]
Matrix Soil

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B	05/12/04	05/13/04	52.2	1.0	mg/Kg	1:1

Matrix Spike Duplicate Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63580
Sample ID MSD for HBN 239058 [ICPV/4949]
Matrix Soil

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B	05/12/04	05/13/04	53.7	1.0	mg/Kg	1:1

Duplicate Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63581
Sample ID DUP for HBN 239058 [ICPV/4949]
Matrix Soil

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B	05/12/04	05/13/04	6.35	1.0	mg/Kg	1:1



Analytical Laboratory Division
Mobile laboratory Division
Scientific Division

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QC SUMMARY

Client ID	Shaw Environmental & Infrastructure		
Workorder ID	Route 880 at 42nd Street		
QC Batch	PHX 1491	Original	16313018
Matrix	Soil	Sample	Duplicate [63551]

Parameter	RPD	RPD Limits
pH	0.390	(35)

QC SUMMARY

Client ID	Shaw Environmental & Infrastructure		
Workorder ID	Route 880 at 42nd Street		
QC Batch	ICPP 4973	Original	16313001
Matrix	Soil	Sample	Duplicate [63569]

Parameter	RPD	RPD Limits
Lead	5.29	(35)

QC SUMMARY

Client ID	Shaw Environmental & Infrastructure		
Workorder ID	Route 880 at 42nd Street		
QC Batch	ICPP	Original	16313021
Matrix	Soil	Sample	Duplicate [63575]

Parameter	RPD	RPD Limits
Lead	13.8	(35)

QC SUMMARY

Client ID	Shaw Environmental & Infrastructure		
Workorder ID	Route 880 at 42nd Street		
QC Batch	ICPP 4975	Original	16304001
Matrix	Soil	Sample	Duplicate [63581]

Parameter	RPD	RPD Limits
Lead	4.16	(35)



Environmental Laboratories

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QC SUMMARY

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
QC Batch ICPP 4973
Matrix Soil

Original Samples 16313001
 Matrix Spike [63567]
 Matrix Spike Duplicate [63568]

Parameter	Spike %Recovery	Spike Dup %Recovery	Recovery Limits	RPD	RPD Limits
* Lead	262	492	(75 - 125)	61.0	(35 MAX)

* High MS/MSD recoveries and RPD due to sample being 12 times the spike concentration..



Environmental Laboratories

Analytical Laboratory Division
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QC SUMMARY

Client ID	Shaw Environmental & Infrastructure		
Workorder ID	Route 880 at 42nd Street		
QC Batch	ICPP 4974	Original	16313021
Matrix	Soil	Samples	Matrix Spike [63573] Matrix Spike Duplicate [63574]

Parameter	Spike %Recovery	Spike Dup %Recovery	Recovery Limits	RPD	RPD Limits
* Lead	22.0	178	(75 - 125)	156	(35 MAX)

* High MSD recovery and RPD due to sample being 16 times the spike concentration.

QC SUMMARY

Client ID	Shaw Environmental & Infrastructure	Original	16304001
Workorder ID	Route 880 at 42nd Street	Samples	Matrix Spike [63579]
Q C Batch	ICPP 4975		Matrix Spike Duplicate [63580]
Matrix	Soil		

Parameter	Spike %Recovery	Spike Dup %Recovery	Recovery Limits	RPD	RPD Limits
Lead	91.2	94.2	(75 - 125)	3.24	(35 MAX)

QC SUMMARY

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
QC Batch ICPP 4973
Matrix Soil

Samples Lab Control Sample [63565]
 Lab Control Sample Duplicate [63566]

Parameter	Check %Recovery	Check Dup %Recovery	Recovery Limits	RPD	RPD Limits
Lead	106	108	(80-120)	1.87	(20 MAX)



Environmental Laboratories

Analytical laboratory Division
 Mobile Laboratory Division
 Scientific Division

QC SUMMARY

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
QC Batch ICPP 4974
Matrix Soil

Samples Lab Control Sample [63571]
 Lab Control Sample Duplicate [63572]

Parameter	Check %Recovery	Check Dup %Recovery	Recovery Limits	RPD	RPD Limits
Lead	106	108	(80-120)	1.87	(20 MAX)

QC SUMMARY

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
QC Batch ICPP 4975
Matrix Soil

Samples Lab Control Sample [63577]
 Lab Conttol Sample Duplicate [63578]

Parameter	Check %Recovery	Check Dup %Recovery	Recovery Limits	RPD	RPD Limits
Lead	107	104	(80-120)	2.84	(20 MAX)

Dan Wynne
Shaw Environmental & Infrastructure
1326 N. Market Blvd.
Sacramento, CA 95826

Client	Shaw Environmental & Infrastructure
Workorder	16325 Route 880 at 42nd Street
Received	05/14/04

The samples were received in EPA specified containers. The samples were transported and received under documented chain of custody and stored at four (4) degrees C until analysis was performed.

Sparger Technology, Inc. ID Suffix Keys - These descriptors will follow the Sparger Technology, Inc. ID numbers and help identify the specific sample and clarify the report.

- DUP - Matrix Duplicate
- MS - Matrix Spike
- MSD - Matrix Spike Duplicate
- LCS - Lab Control Sample
- LCSD - Lab Control Sample Duplicate
- RPD - Relative Percent Difference
- QC - Additional Quality Control
- DIL - Results from a diluted sample
- ND - None Detected
- RL - Reporting Limit

Note: In an effort to conserve paper, the results are printed on both sides of the paper.



Ray James
Laboratory Director



Environmental Laboratories

Analytical Laboratory Division
 Mobile Laboratory Division
 Scientific Division

Test Certificate of Analysis

Client ID Shaw Environmental & Infrastructure
 Workorder # 16325

Workorder ID Route 880 at 42nd Street

Parameter Method Lead
 6010B STLC Pb

Lab ID	Sample ID	Result	RL	Units	Collected	Analyzed	Matrix	Dilution
16325001	B-1-0.15	31.5	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325002	B-1-0.45	9.10	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325003	B-2-0.15	42.6	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325004	B-2-0.45	9.52	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325005	B-2-0.75	2.99	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325006	B-3-0.15	31.4	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325007	B-3-0.75	20.8	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325008	B-4-0.15	23.7	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325009	B-4-0.45	1.18	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325010	B-4-0.75	2.40	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
1632501.1	B-5-0.15	4.77	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325012	B-5-0.75	2.58	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325013	B-6-0.75	1.65	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325014	B-7-0.15	29.9	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325015	B-7-0.45	3.04	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325016	B-8-0.15	18.5	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325017	B-8-0.75	1.51	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325018	B-9-0.15	5.44	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325019	B-10-0.15	10.8	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325020	B-11-0.75	12.1	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325021	B-12-0.15	40.0	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325022	B-12-0.45	8.86	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325023	B-13-0.15	11.8	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325024	B-13-0.45	25.2	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325025	B-14-0.15	7.36	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325026	B-15-0.15	4.57	0.050	mg/L	05/11/04	05/21/04	Soil	1:1



Environmental Laboratories

Analytical Laboratory Division
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Test Certificate of Analysis

Client ID Shaw Environmental & Infrastructure
Workorder# 16325

Workorder ID Route 880 at 42nd Street

Parameter Method Lead
6010B TCLP Pb

Lab ID	Sample ID	Result	RL	Units	Collected	Analyzed	Matrix	Dilution
16325027	B-3-0.45	0.341	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325028	B-5-0.45	1.08	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325029	B-11-0.45	3.80	0.050	mg/L	05/11/04	05/21/04	Soil	1:1
16325030	B-16-0.45	0.808	0.050	mg/L	05/11/04	05/21/04	Soil	1:1

Method Blank Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63860
Sample ID MB for HBN 240556 [ICPV/4963]
Matrix TCLP Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B TCLP Pb	05/17/04	05/21/04	ND	0.050	mg/L	1:1



Analytical Laboratory Division
 Mobile Laboratory Division
 Scientific Division

Lab Control Sample Report

Client ID Shaw Environmental & Infrastructure
 Workorder ID Route 880 at 42nd Street
 Laboratory ID 63861
 Sample ID LCS for HBN 240556 [ICPV/4963]
 Matrix TCLP Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B TCLP Pb	05/17/04	05/21/04	2.40	0.050	mg/L	1:1

Lab Control Sample Duplicate Report

Client ID Shaw Environmental & Infrastructure
 Workorder ID Route 880 at 42nd Street
 Laboratory ID 63862
 Sample ID LCSD for HBN 240556 [ICPV/4963
 Matrix TCLP Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B TCLP Pb	05/17/04	05/21/04	2.51	0.050	mg/L	1:1

Duplicate Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63863
Sample ID DUP for HBN 240556 [ICPV/4963]
Matrix TCLP Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B TCLP Pb	05/17/04	05/21/04	0.346	0.050	mg/L	1:1

Matrix Spike Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63864
Sample ID MS for HBN 240556 [ICPV/4963]
Matrix TCLP Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B TCLP Pb	05/17/04	05/21/04	2.92	0.050	mg/L	1:1

Matrix Spike Duplicate Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63865
Sample ID MSD for HBN 240556 [ICPV/4963]
Matrix TCLP Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B TCLP Pb	05/17/04	05/21/04	2.81	0.050	mg/L	1:1

Method Blank Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63867
Sample ID MB for HBN 240560 [ICPV/4964]
Matrix STLC Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B STLC Pb	05/17/04	05/21/04	ND	0.050	mg/L	1:1

Lab Control Sample Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63868
Sample ID LCS for HBN 240560 [ICPV/4964]
Matrix STLC Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B STLC Pb	05/17/04	05/21/04	2.64	0.050	mg/L	1:1

Lab Control Sample Duplicate Report

Client ID Shaw Environmental & Infrastructure
 Workorder ID Route 880 at 42nd Street
 Laboratory ID 63869
 Sample ID LCSD for HBN 240560 [ICPV/4964
 Matrix STLCLeachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B STLCL Pb	05/17/04	05/21/04	2.69	0.050	mg/L	1:1

Duplicate Report

Client ID Shaw Environmental & Infrastructure
 Workorder ID Route 880 at 42nd Street
 Laboratory ID 63870
 Sample ID DUP for HBN 240560 [ICPV/4964]
 Matrix STLCLeachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B STLCL Pb	05/17/04	05/21/04	31.1	0.050	mg/L	1:1

Matrix Spike Report

Client ID Shaw Environmental & Infrastructure
 Workorder ID Route 880 at 42nd Street
 Laboratory ID 63871
 Sample ID MS for HBN 240560 [ICPV/4964]
 Matrix STLC Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B STLC Pb	05/17/04	05/21/04	33.7	0.050	mg/L	1:1

Matrix Spike Duplicate Report

Client ID Shaw Environmental & Infrastructure
 Workorder ID Route 880 at 42nd Street
 Laboratory ID 63872
 Sample ID MSD for HBN 240560 [ICPV/4964]
 Matrix STLC Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B STLC Pb	05/17/04	05/21/04	34.3	0.050	mg/L	1:1

Method Blank Report

Client ID Shaw Environmental & Infrastructure
 Workorder ID Route 880 at 42nd Street
 Laboratory ID 63873
 Sample ID MB for HBN 240563 [ICPV/4965]
 Matrix STLCLeachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B STLCL Pb	05/17/04	05/21/04	ND	0.050	mg/L	1:1



Analytical Laboratory Division
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Lab Control Sample Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63874
Sample ID LCS for HBN 240563 [ICPV/4965]
Matrix STLC Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B STLC Pb	05/17/04	05/21/04	2.64	0.050	mg/L	1:1

Lab Control Sample Duplicate Report

Client ID Shaw Environmental & Infrastructure
 Workorder ID Route 880 at 42nd Street
 Laboratory ID 63875
 Sample ID LCSD for HBN 240563 [ICPV/4965]
 Matrix STLC Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B STLC Pb	05/17/04	05/21/04	2.69	0.050	mg/L	1:1

Duplicate Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63876
Sample ID DUP for HBN 240563 [ICPV/4965]
Matrix STLC Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B STLC Pb	05/17/04	05/21/04	41.1	0.050	mg/L	1:1

Matrix Spike Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 63877
Sample ID MS for HBN 240563 [ICPV/4965]
Matrix STLC Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B STLC Pb	05/17/04	05/21/04	41.3	0.050	mg/L	1:1

Matrix Spike Duplicate Report

Client ID Shaw Environmental & Infrastructure
 Workorder ID Route 880 at 42nd Street
 Laboratory ID 63878
 Sample ID MSD for HBN 240563 [ICPV/4965]
 Matrix STLC Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B STLC Pb	05/17/04	05/21/04	41.2	0.050	mg/L	1:1

QC SUMMARY

Client ID Shaw Environmental & Infrastructure
 Workorder ID Route 880 at 42nd Street
 QC Batch ICPP 4989
 Matrix TCLP Leachate

Original Sample 16325027
 Duplicate [63863]

Parameter	RPD	RPD Limits
Lead	1.46	(35)

QC SUMMARY

Client ID	Shaw Environmental & Infrastructure		
Workorder ID	Route 880 at 42nd Street		
QC Batch	ICPP 4990	Original	16325001
Matrix	STLC Leachate	Sample	Duplicate [63870]

Parameter	RPD	RPD Limits
Lead	1.3	(35)

QC SUMMARY

Client ID	Shaw Environmental & Infrastructure		
Workorder ID	Route 880 at 42nd Street		
QC Batch	ICPP 4991	Original	16325021
Matrix	STLC Leachate	Sample	Duplicate [63876]

Parameter	RPD	RPD Limits
Lead	2.7	(35)

QC SUMMARY

Client ID	Shaw Environmental & Infrastructure	Original	16325027
Workorder ID	Route 880 at 42nd Street	Samples	Matrix Spike [63864]
QC Batch	ICPP 4989		Matrix Spike Duplicate [63865]
Matrix	TCLP Leachate		

Parameter	Spike %Recovery	Spike Dup %Recovery	Recovery Limits	RPD	RPD Limits
Lead	103	98.8	(75-125)	4.16	(35 MAX)



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QC SUMMARY

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
QC Batch ICPP 4990
Matrix STLCLeachate

Original Samples 16325001
 Matrix Spike [63871]
 Matrix Spike Duplicate [63872]

Parameter	Spike %Recovery	Spike Dup %Recovery	Recovery Limits	RPD	RPD Limits
Lead	88	112	(60-125)	24	(35 MAX)

QC SUMMARY

Client ID	Shaw Environmental & Infrastructure	Original	16325021
Workorder ID	Route 880 at 42nd Street	Samples	Matrix Spike [63877]
QC Batch	ICPP 4991		Matrix Spike Duplicate [63878]
Matrix	STLC Leachate		

Parameter	Spike %Recovery	Spike Dup %Recovery	Recovery Limits	RPD	RPD Limits
Lead	52	48	(60 - 125)	8.0	(35 MAX)



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QC SUMMARY

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
QC Batch ICPP 4989
Matrix TCLP Leachate

Samples Lab Control Sample [63861]
 Lab Control Sample Duplicate [63862]

Parameter	Check %Recovery	Check Dup %Recovery	Recovery Limits	RPD	RPD Limits
Lead	96.0	100	(80 - 120)	4.08	(20 MAX)



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QC SUMMARY

Client ID Shaw Environmental & Infrastructure
 Workorder ID Route 880 at 42nd Street
 QC Batch ICPP 4990
 Matrix STLC Leachate

Samples Lab Control Sample [63868]
 Lab Control Sample Duplicate [63869]

Parameter	Check %Recovery	Check Dup %Recovery	Recovery Limits	RPD	RPD Limits
Lead	106	108	(80 - 120)	1.9	(20 MAX)



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QC SUMMARY

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
QC Batch ICPP 4991
Matrix STLCLeachate

Samples Lab Control Sample [63874]
 Lab Control Sample Duplicate [63875]

Parameter	Check %Recovery	Check Dup %Recovery	Recovery Limits	RPD	RPD Limits
Lead	106	108	(80-120)	1.9	(20 MAX)

Dan Wynne
Shaw Environmental & Infrastructure
1326 N. Market Blvd.
Sacramento, CA 95826

Client	Shaw Environmental & Infrastructure	
Workorder	16337	Route 880 at 42nd Street
Received	05/24/04	

The samples were received in EPA specified containers. The samples were transported and received under documented chain of custody and stored at four (4) degrees C until analysis was performed.

Sparger Technology, Inc. ID Suffii Keys - These descriptors will follow the Sparger Technology, Inc. ID numbers and help identify the specific sample and clarify the report.

- DUP - Matrix Duplicate
- MS - Matrix Spike
- MSD - Matrix Spike Duplicate
- LCS - Lab Control Sample
- LCSD - Lab Control Sample Duplicate
- RPD - Relative Percent Difference
- QC - Additional Quality Control
- DIL - Results from a diluted sample
- ND - None Detected
- RL - Reporting Limit

Note: In an effort to conserve paper, the results are printed on both sides of the paper.



Ray James
Laboratory Director

Test Certificate of Analysis

Client ID Shaw Environmental & Infrastructure
 Workorder # 16337

Workorder ID Route 880 at 42nd Street

Parameter Lead
 Method 6010B STLC-DI

Lab ID	Sample ID	Result	RL	Units	Collected	Analyzed	Matrix	Dilution
16337001	B-01-0.15	1.15	0.010	mg/L	05/11/04	05/28/04	Soil	1:1
16337002	B-02-0.15	1.57	0.010	mg/L	05/11/04	05/28/04	Soil	1:1
16337003	B-03-0.15	1.15	0.010	mg/L	05/11/04	05/28/04	Soil	1:1
16337004	B-03-0.75	1.40	0.010	mg/L	05/11/04	05/28/04	Soil	1:1
16337005	B-04-0.15	0.765	0.010	mg/L	05/11/04	05/28/04	Soil	1:1
16337006	B-07-0.15	0.932	0.010	mg/L	05/11/04	05/28/04	Soil	1:1
16337007	B-08-0.15	0.190	0.010	mg/L	05/11/04	05/28/04	Soil	1:1
16337008	B-11-0.75	0.285	0.010	mg/L	05/11/04	05/28/04	Soil	1:1
16337009	B-12-0.15	0.471	0.010	mg/L	05/11/04	05/28/04	Soil	1:1
16337010	B-13-0.45	0.788	0.010	mg/L	05/11/04	05/28/04	Soil	1:1

Method Blank Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 64079
Sample ID MB for HBN 241954 [ICPV/4972]
Matrix STLC-DI Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B STLC-DI	05/26/04	05/28/04	ND	0.010	mg/L	1:1

Lab Control Sample Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 64080
Sample ID LCS for HBN 241954 [ICPV/4972]
Matrix STLC-DI Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B STLC-DI	05/26/04	05/28/04	0.520	0.010	mg/L	1:1

Lab Control Sample Duplicate Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 64081
Sample ID LCSD for HBN 241954 [ICPV/4972
Matrix STLC-DI Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B STLC-DI	05/26/04	05/28/04	0.520	0.010	mg/L	1:1

Duplicate Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 64082
Sample ID DUP for HBN 241954 [ICPV/4972]
Matrix STLC-DI Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B STLC-DI	05/26/04	05/28/04	1.01	0.010	mg/L	1:1 ⁵

Matrix Spike Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 64083
Sample ID MS for HBN 241954 [ICPV/4972]
Matrix STLC-DI Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B STLC-DI	05/26/04	05/28/04	1.59	0.010	mg/L	1:1

Matrix Spike Duplicate Report

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
Laboratory ID 64084
Sample ID MSD for HBN 241954 [ICPV/4972]
Matrix STLC-DI Leachate

Parameter	Method	Prep Date	Analyzed	Result	RL	Units	Dilution
Lead	6010B STLC-DI	05/26/04	05/28/04	1.57	0.010	mg/L	1:1

QC SUMMARY

Client ID	Shaw Environmental & Infrastructure		
Workorder ID	Route 880 at 42nd Street		
QC Batch	ICPP 4998	Original	16337001
Matrix	STLC-DI Leachate	Sample	Duplicate [64082]

Parameter	RPD	RPD Limits
Lead	13	(35)



Environmental Laboratories

Analytical Laboratory Division
 Mobile Laboratory Division
 Scientific: Division

QC SUMMARY

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
QC Batch ICPP 4998
Matrix STLC-DI Leachate

Original Samples 16337001
 Matrix Spike [64083]
 Matrix Spike Duplicate [64084]

Parameter	Spike %Recovery	Spike Dup %Recovery	Recovery Limits	RPD	RPD Limits
Lead	88	84	(75-125)	4.7	(35 MAX)

QC SUMMARY

Client ID Shaw Environmental & Infrastructure
Workorder ID Route 880 at 42nd Street
QC Batch ICPP 4998
Matrix STLC-DI Leachate

Samples Lab Control Sample [64080]
 Lab Control Sample Duplicate [64081]

Parameter	Check %Recovery	Check Dup %Recovery	Recovery Limits	RPD	RPD Limits
Lead	104	104	(80 - 120)	00	(20 MAX)

CHAIN OF CUSTODY and Analysis Request Form

Company:

Shaw Environmental
1326 North Market Boulevard
Sacramento, CA 95834
Phone: (916) 928-3300 Fax: (916) 928-3341

Laboratory:

Sparger Technology, Inc.
3050 Fite Circle, Suite 112, Sacramento, CA 95827
Phone: (916) 362-8947
Fax: (916) 362-0947

Send Results To:

Dan Wynne (Direct Ph. 565-4184)
Shaw Environmental
1326 North Market Boulevard
Sacramento, CA 95834

Project:

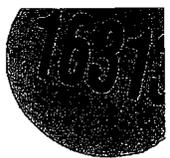
Route 880 at 42nd Street
Location: Oakland, Alameda County
Project #: 108408.01010000
Contract: 43A0078

No.	Sample ID:	Depth (meters)	Date	Time	Container	Preservative Used	Matrix	Test:		Total	TAT
								6010: Lead Only	9450: Soil pH		
1	B-1-0.15	0.0 - 0.15	5/11/04	1255	Plastic Bag	None	Soil	X		1	48 hour
2	B-1-0.45	0.3 - 0.45	5/11/04	1300	Plastic Bag	None	Soil	X		1	48 hour
3	B-1-0.75	0.6 - 0.75			Plastic Bag	None	Soil	X		1	48 hour
4	B-2-0.15	0.0 - 0.15	5/11/04	1240	Plastic Bag	None	Soil	X		1	48 hour
5	B-2-0.45	0.3 - 0.45		1245	Plastic Bag	None	Soil	X		1	48 hour
6	B-2-0.75	0.6 - 0.75		1250	Plastic Bag	None	Soil	X		1	48 hour
7	B-3-0.15	0.0 - 0.15		1230	Plastic Bag	None	Soil	X		1	48 hour
8	B-3-0.45	0.3 - 0.45		1235	Plastic Bag	None	Soil	X		1	48 hour
9	B-3-0.75	0.6 - 0.75		1237	Plastic Bag	None	Soil	X		1	48 hour
10	B-4-0.15	0.0 - 0.15		1215	Plastic Bag	None	Soil	X		1	48 hour
11	B-4-0.45	0.3 - 0.45		1220	Plastic Bag	None	Soil	X		1	48 hour
12	B-4-0.75	0.6 - 0.75		1225	Plastic Bag	None	Soil	X		1	48 hour
13	B-5-0.15	0.0 - 0.15		1110	Plastic Bag	None	Soil	X		1	48 hour
14	B-5-0.45	0.3 - 0.45		1115	Plastic Bag	None	Soil	X		1	48 hour
15	B-5-0.75	0.6 - 0.75		1120	Plastic Bag	None	Soil	X		1	48 hour
16	B-6-0.15	0.0 - 0.15		1055	Plastic Bag	None	Soil	X		1	48 hour
17	B-6-0.45	0.3 - 0.45		1100	Plastic Bag	None	Soil	X		1	48 hour
18	B-6-0.75	0.6 - 0.75		1105	Plastic Bag	None	Soil	X		1	48 hour
19	B-7-0.15	0.0 - 0.15		1035	Plastic Bag	None	Soil	X	X	1	48 hour
20	B-7-0.45	0.3 - 0.45		1040	Plastic Bag	None	Soil	X	X	1	48 hour
21	B-7-0.75	0.6 - 0.75		1045	Plastic Bag	None	Soil	X		1	48 hour
22	B-8-0.15	0.0 - 0.15		1020	Plastic Bag	None	Soil	X		1	48 hour
23	B-8-0.45	0.3 - 0.45		1025	Plastic Bag	None	Soil	X		1	48 hour
24	B-8-0.75	0.6 - 0.75		1030	Plastic Bag	None	Soil	X		1	48 hour
25	B-9-0.15	0.0 - 0.15		1005	Plastic Bag	None	Soil	X	X	1	48 hour
26	B-9-0.45	0.3 - 0.45		1010	Plastic Bag	None	Soil	X		1	48 hour
27	B-9-0.75	0.6 - 0.75		1015	Plastic Bag	None	Soil	X		1	48 hour

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Relinquished by: *[Signature]*
Print Name: BEN CHELON
Time: 1615
Date: 5/11/04

Received by: *[Signature]*
Print Name: *[Signature]*
Time: 1615
Date: 5/11/04



CHAIN OF CUSTODY and Analysis Request Form

Company:
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Send Results To:
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Shaw Environmental
1326 North Market Boulevard
Sacramento, CA 95834

Project:
Route 880 at 42nd Street
Location: Oakland, Alameda County
Project #: 108408.01010000
Contract: 43A0078

No.	Sample ID:	Depth	Date	Time	Container	Preservative Used	Matrix	Test:		Total	TAT
								6010: Lead Only	9450: Soil pH		
28	B-10-0.15	0.0 - 0.15	5/11/04	0950	Plastic Bag	None	Soil	X		1	48 hour
29	B-10-0.45	0.3 - 0.45		0955	Plastic Bag	None	Soil	X		1	48 hour
30	B-10-0.75	0.6 - 0.75		1000	Plastic Bag	None	Soil	X		1	48 hour
31	B-11-0.15	0.0 - 0.15		1320	Plastic Bag	None	Soil	X		1	48 hour
32	B-11-0.45	0.3 - 0.45		1325	Plastic Bag	None	Soil	X		1	48 hour
33	B-11-0.75	0.6 - 0.75		1330	Plastic Bag	None	Soil	X		1	48 hour
34	B-12-0.15	0.0 - 0.15	1367	1330	Plastic Bag	None	Soil	X		1	48 hour
35	B-12-0.45	0.3 - 0.45	0202	1335	Plastic Bag	None	Soil	X		1	48 hour
36	B-12-0.75	0.6 - 0.75			Plastic Bag	None	Soil	X		1	48 hour
37	B-13-0.15	0.0 - 0.15	5/11/04	1305	Plastic Bag	None	Soil	X		1	48 hour
38	B-13-0.45	0.3 - 0.45	5/11/04	1310	Plastic Bag	None	Soil	X		1	48 hour
39	B-13-0.75	0.6 - 0.75			Plastic Bag	None	Soil	X		1	48 hour
40	B-14-0.15	0.0 - 0.15	5/11/04	1135	Plastic Bag	None	Soil	X		1	48 hour
41	B-14-0.45	0.3 - 0.45			Plastic Bag	None	Soil	X		1	48 hour
42	B-14-0.75	0.6 - 0.75			Plastic Bag	None	Soil	X		1	48 hour
43	B-15-0.15	0.0 - 0.15	5/11/04	1145	Plastic Bag	None	Soil	X		1	48 hour
44	B-15-0.45	0.3 - 0.45			Plastic Bag	None	Soil	X		1	48 hour
45	B-15-0.75	0.6 - 0.75			Plastic Bag	None	Soil	X		1	48 hour
46	B-16-0.15	0.0 - 0.15	5/11/04	1155	Plastic Bag	None	Soil	X	X	1	48 hour
47	B-16-0.45	0.3 - 0.45		1200	Plastic Bag	None	Soil	X		1	48 hour
48	B-16-0.75	0.6 - 0.75		1205	Plastic Bag	None	Soil	X	X	1	48 hour
49	B-17-0.15	0.0 - 0.15		1210	Plastic Bag	None	Soil	X		1	48 hour
50	B-17-0.45	0.3 - 0.45			Plastic Bag	None	Soil	X		1	48 hour
51	B-17-0.75	0.6 - 0.75			Plastic Bag	None	Soil	X		1	48 hour

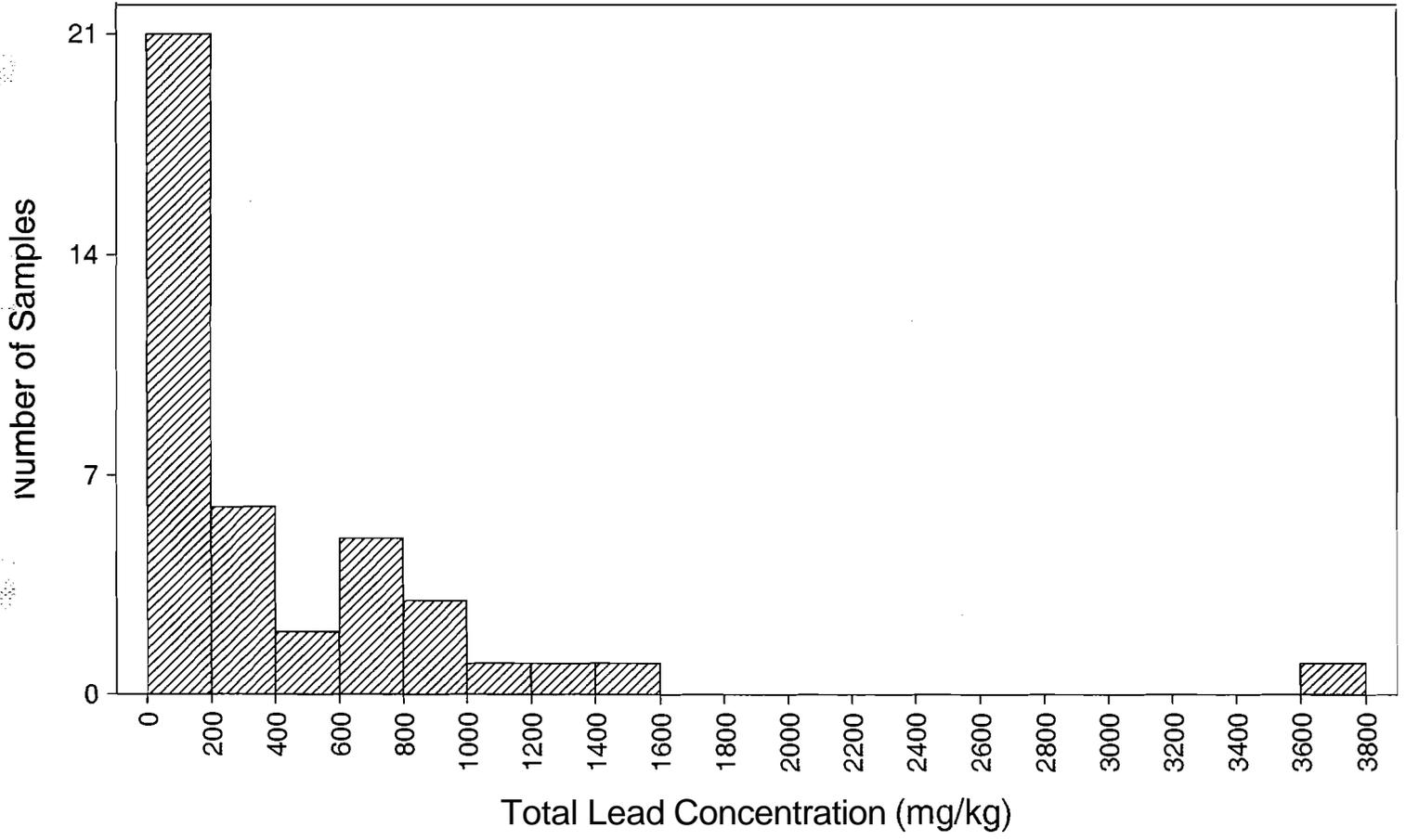
DC
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Relinquished by:
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Time: 1615
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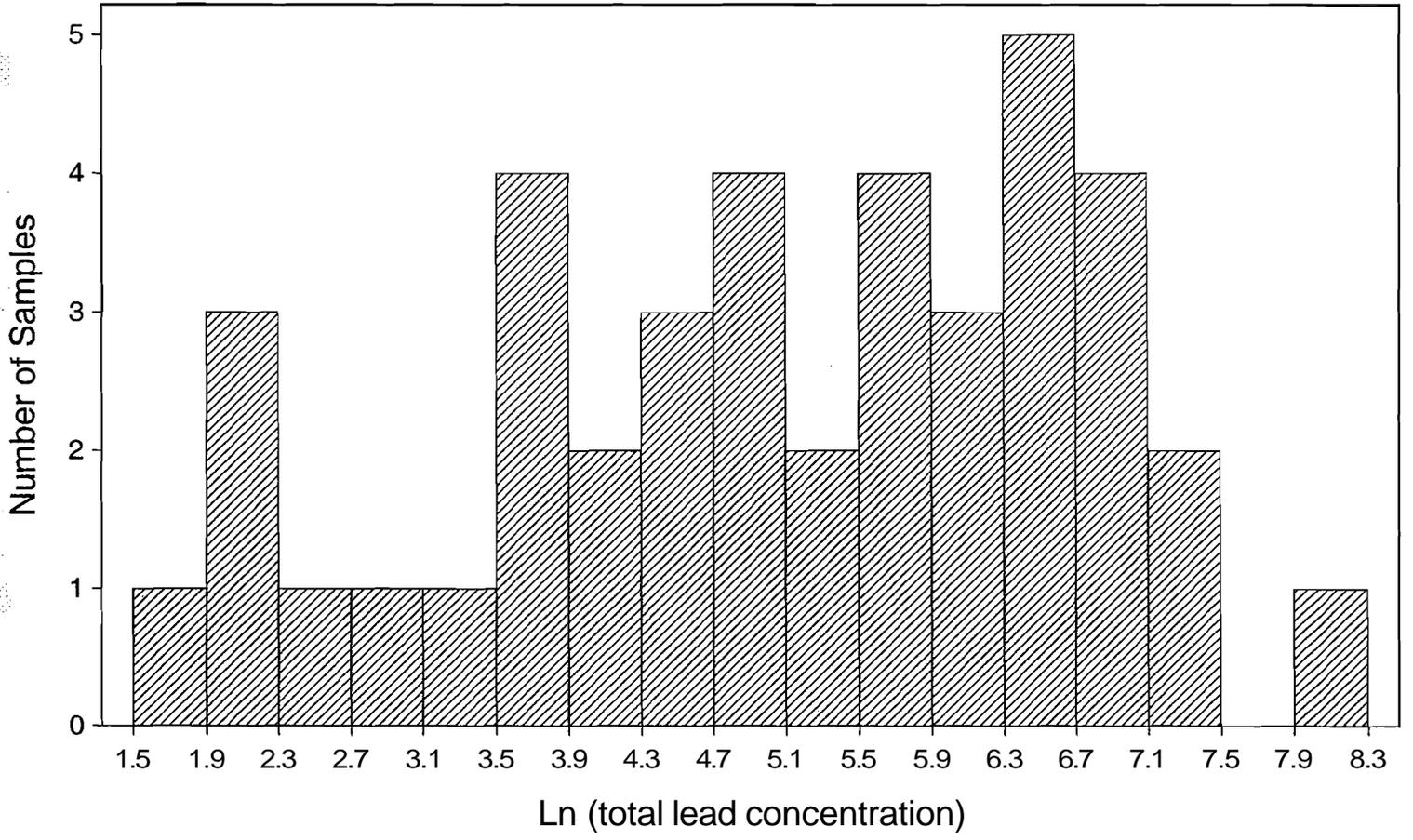
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APPENDIX C
STATISTICAL ANALYSIS SPREADSHEETS

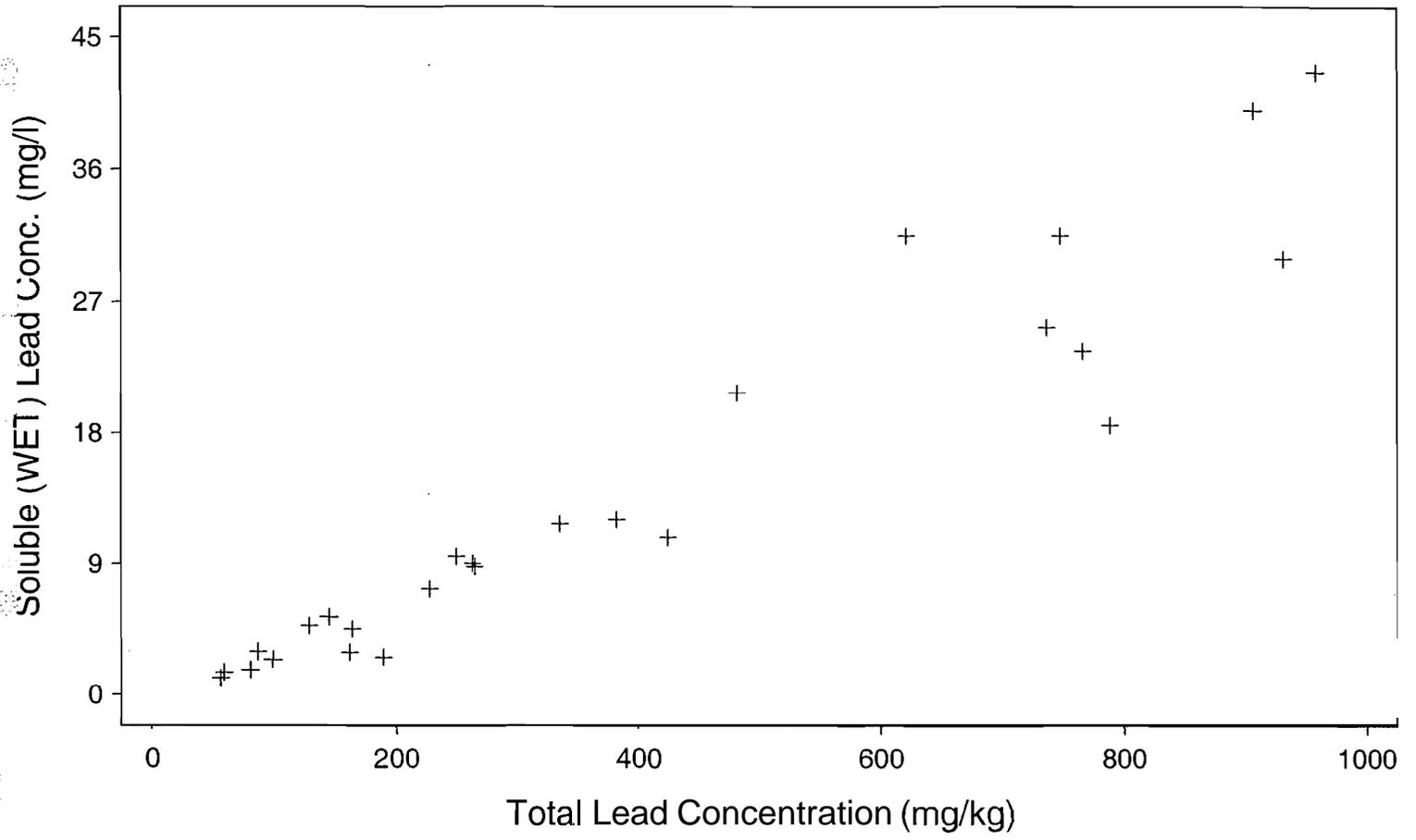
Histogram



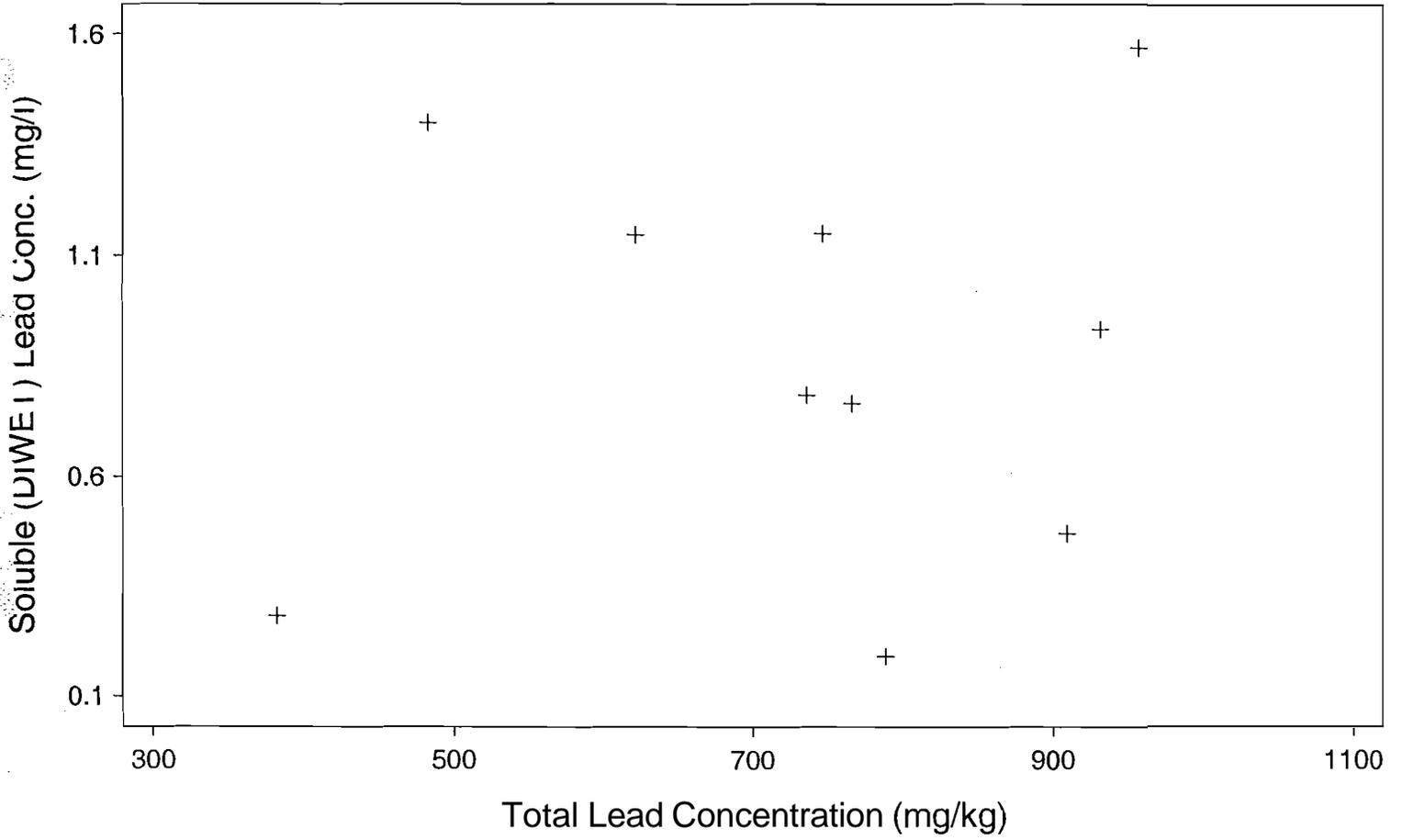
Histogram



Scatter Plot of WET vs TOTAL



Scatter Plot of DIWET vs TOTAL



STATISTIX 7.0

6/1/2004, 8:05:43 AM

DESCRIPTIVE STATISTICS

	TOTAL	WET	DIWET	TCLP	PH
N	41	26	10	4	5
MEAN	446.94	13.972	0.8701	1.5072	7.6200
SD	670.63	12.652	0.4611	1.5587	0.5933
VARIANCE	449744	160.07	0.2126	2.4294	0.3520
C.V.	150.05	90.551	52.988	103.41	7.7860
MINIMUM	5.2400	1.1800	0.1900	0.3410	7.0000
MEDIAN	189.00	9.3100	0.8600	0.9440	7.5000
MAXIMUM	3780.0	42.600	1.5700	3.8000	8.6000
SKEW	3.2360	0.8883	-0.0531	1.0211	0.9241

STATISTIX 7.0

6/7/2004, 8:52:10 AM

CORRELATIONS (PEARSON)

	TOTAL
WET	0.9498

CASES INCLUDED 26 MISSING CASES 30

STATISTIX 7.0

6/7/2004, 8:52:43 AM

UNWEIGHTED LEAST SQUARES LINEAR REGRESSION OF WET

PREDICTOR VARIABLES	COEFFICIENT	STD ERROR	STUDENT'S T	P	
CONSTANT	-1.51635	1.30819	-1.16	0.2578	
TOTAL	0.03924	0.00264	14.88	0.0000	
R-SQUARED	0.9022	RESID. MEAN SQUARE (MSE)	16.3126		
ADJUSTED R-SQUARED	0.8981	STANDARD DEVIATION	4.03889		
SOURCE	DF	SS	MS	F	P
REGRESSION	1	3610.14	3610.14	221.31	0.0000
RESIDUAL	24	391.503	16.3126		
TOTAL	25	4001.64			

CASES INCLUDED 26 MISSING CASES 30

STATISTIX 7.0

6/7/2004, 8:53:57 AM

PREDICTED/FITTED VALUES OF WET

LOWER PREDICTED BOUND	15.712	LOWER FITTED BOUND	19.950
PREDICTED VALUE	21.174	FITTED VALUE	21.174
UPPER PREDICTED BOUND	26.635	UPPER FITTED BOUND	22.397
SE (PREDICTED VALUE)	4.1442	SE (FITTED VALUE)	0.9283
UNUSUALNESS (LEVERAGE)	0.0528		
PERCENT COVERAGE	80.0		
CORRESPONDING T	1.32		

PREDICTOR VALUES: TOTAL = 578.22

STATISTIX 7.0

6/7/2004, 8:54:17 AM

CORRELATIONS (PEARSON)

DIWET TOTAL
 0.1331

CASES INCLUDED 10 MISSING CASES 46

STATISTIX 7.0

6/7/2004, 8:54:33 AM

UNWEIGHTED LEAST SQUARES LINEAR REGRESSION OF DIWET

PREDICTOR VARIABLES	COEFFICIENT	STD ERROR	STUDENT'S T	P
CONSTANT	0.63348	0.64174	0.99	0.3525
TOTAL	3.230E-04	8.506E-04	0.38	0.7140
R-SQUARED	0.0177	RESID. MEAN SQUARE (MSE)		0.23491
ADJUSTED R-SQUARED	-0.1051	STANDARD DEVIATION		0.48467

SOURCE	DF	SS	MS	F	P
REGRESSION	1	0.03387	0.03387	0.14	0.7140
RESIDUAL	8	1.87925	0.23491		
TOTAL	9	1.91312			

CASES INCLUDED 10 MISSING CASES 46

STATISTIX 7.0

6/7/2004, 8:55:33 AM

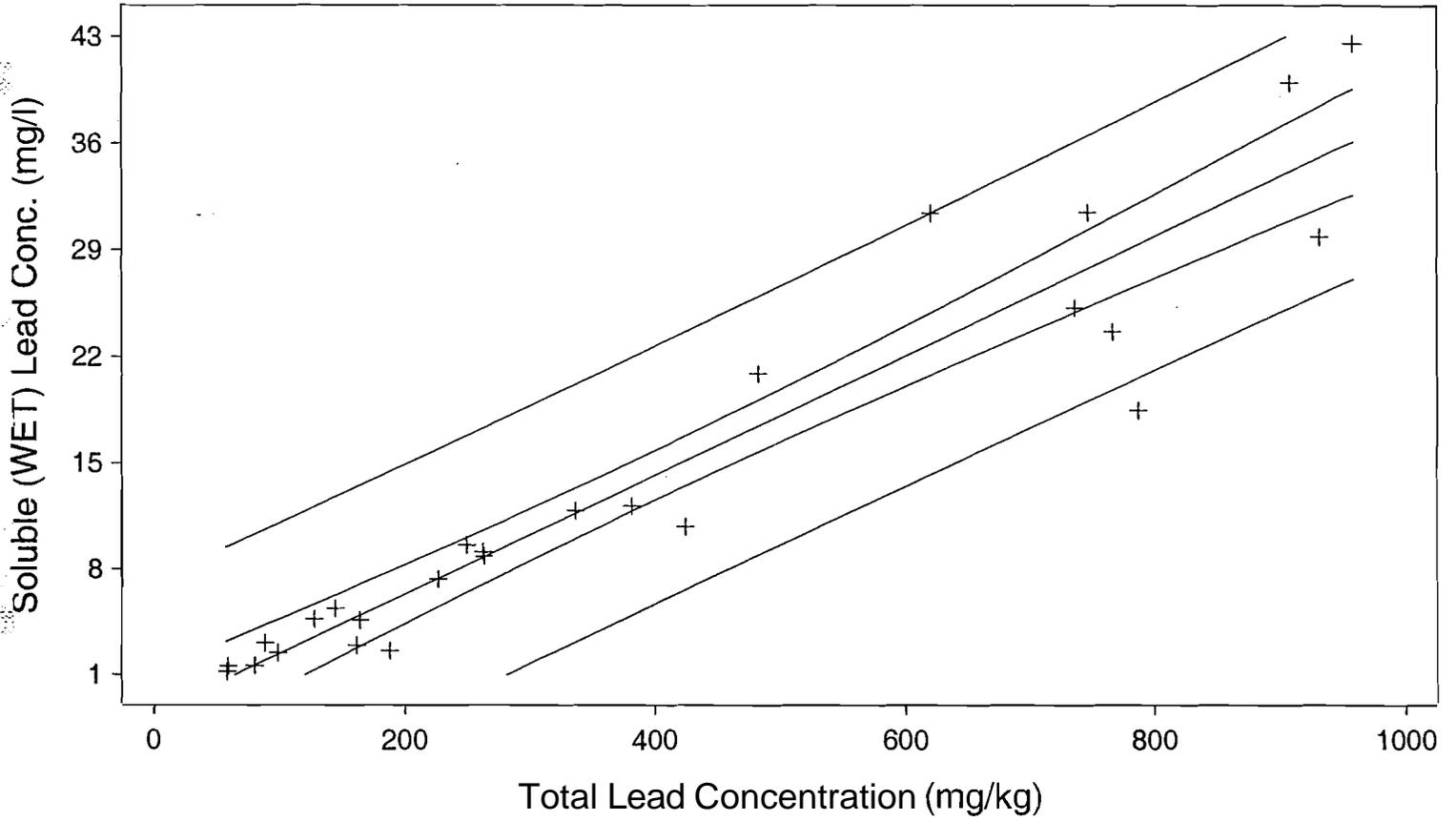
PREDICTED/FITTED VALUES OF DIWET

LOWER PREDICTED BOUND	0.0869	LOWER FITTED BOUND	0.5383
PREDICTED VALUE	0.8202	FITTED VALUE	0.8202
UPPER PREDICTED BOUND	1.5536	UPPER FITTED BOUND	1.1022
SE (PREDICTED VALUE)	0.5250	SE (FITTED VALUE)	0.2018

UNUSUALNESS (LEVERAGE) 0.1734
PERCENT COVERAGE 80.0
CORRESPONDING T 1.40

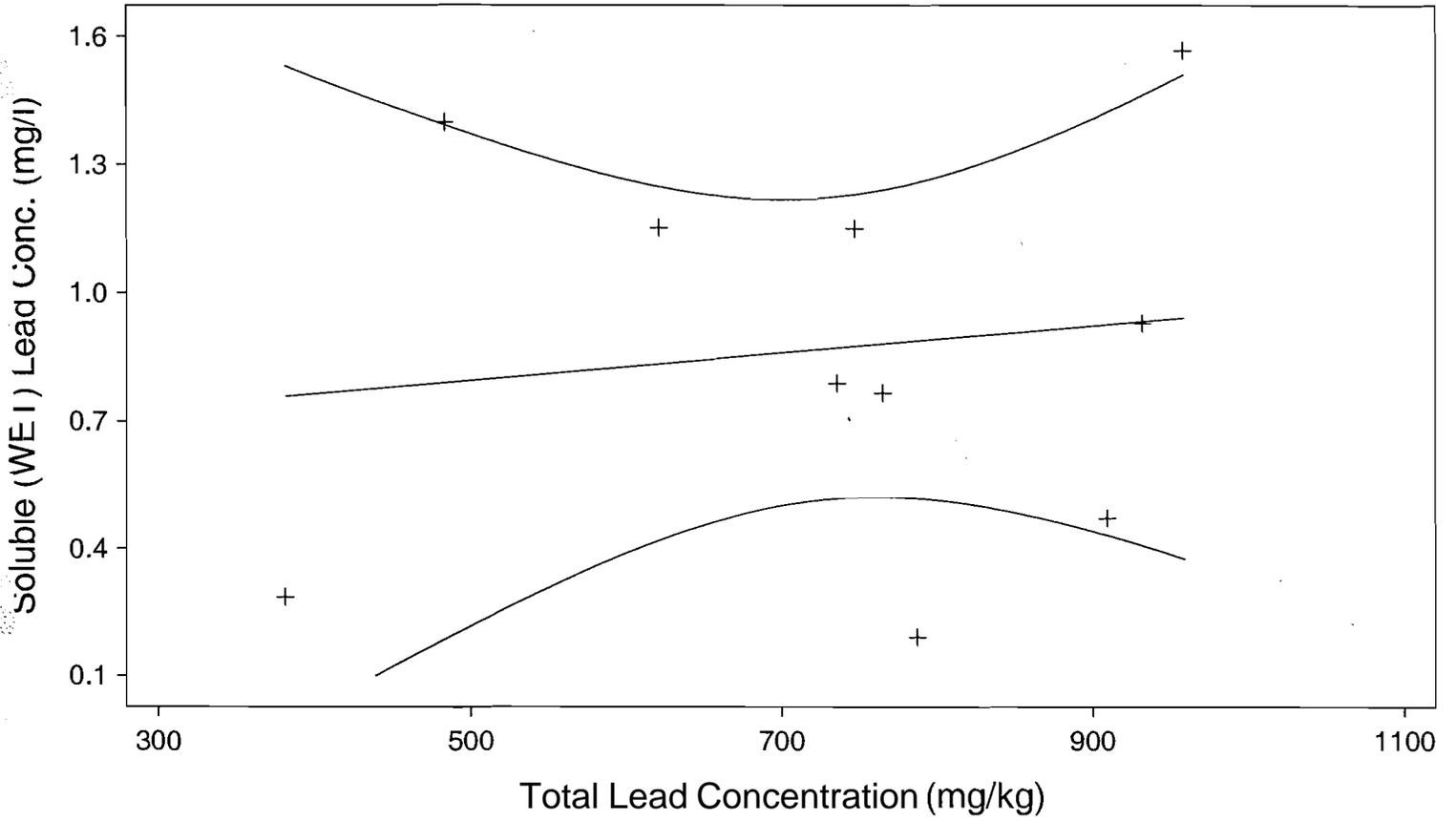
PREDICTOR VALUES: TOTAL = 578.22

Simple Regression Plot



$$\text{WET} = -1.5164 + 0.0392 * \text{TOTAL} \quad 95\% \text{ conf and pred intervals}$$

Simple Regression Plot



DIWET = 0.6335 + 3.23E-04 * TOTAL 95% conf and pred intervals