Rte 78 KP 5.31
PM 3.32

SITE INVESTIGATION REPORT
COLLEGE BOULEVARD/STATE ROUTE 78
INTERCHANGE IMPROVEMENTS
OCEANSIDE, CALIFORNIA

AGRA
Earth & Environmental

AGRA
Earth & Environmental

AGRA Earth &
Environmental, Inc.
16760 West Bernardo Drive
San Diego, CA 92127
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Rte 78 KP 5.31
PM 3.32

SITE INVESTIGATION REPORT
COLLEGE BOULEVARD/STATE ROUTE 78
INTERCHANGE IMPROVEMENTS
OCEANSIDE, CALIFORNIA

Submitted To:

DOKKEN ENGINEERING
3914 MURPHY CANYON ROAD, SUITE A-153
SAN DIEGO, CALIFORNIA 92123

Submitted By:

AGRA EARTH & ENVIRONMENTAL
16760 WEST BERNARDO DRIVE
SAN DIEGO, CALIFORNIA 92127-1904

October 28, 1996

Job No. 6-252-101200

Engineering & Environmental Services

Recycled Paper

AGRA
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16760 West Bernardo Drive
San Diego, CA 92127
Tel (619) 487-2113
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October 28, 1996
Job No. 6-252-101200

Dokken Engineering
3914 Murphy Canyon Road, Suite A-153
San Diego, California 92123

Attention: Mr. Richard Liptak

Re: Lead Testing for College Boulevard/SR78 Interchange

This letter transmits AGRA Earth & Environmental's site investigation report for the improvements to the College Boulevard at State Route 78 interchange in Oceanside, California. This site investigation for lead contamination was conducted in general conformance with the scope of work contained in our proposal dated July 15, 1996.

We appreciate this opportunity to be of service. Should you have question concerning this report, please feel free to call on us.

Yours truly,

AGRA Earth & Environmental

James J. Stone

James J. Stone, GE No. 808
Supervising Engineer

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EXECUTIVE SUMMARY

This executive summary presents a brief description of the prominent conditions, conclusions and recommendations from the site investigation performed by AGRA Earth & Environmental, Inc. for the interchange at College Boulevard and State Route 78 in Oceanside, California.

The major components of the planned improvements are widening of the existing undercrossing structure, widening of College Boulevard, realigning Vista Way and closure of the westbound exit ramp and construction of a new westbound exit ramp and westbound entrance ramp.

The project is located in Oceanside, north of Buena Vista Creek. In general, the interchange area consists of sedimentary rock with isolated areas consisting of fill overlying the sedimentary rock. The fill varies up to a thickness of 7.6 meters at the west bridge abutment.

A total of 6 borings were drilled and 18 samples were obtained to test for lead content. Samples were obtained from various depths ranging from the ground surface to a maximum of 600 mm. Borings were drilled from 0.3 meter to 2.4 meters beyond the edge of the pavement. All the samples were tested for total lead concentration. Five samples were tested for soluble lead using deionized water as the extractant. Five samples were also tested for pH.

The total lead concentrations varied from 1.1 to 513 mg/kg. Soluble lead concentrations using deionized water as the extractant varied from less than 30 ug/L to 860 ug/L. The data showed total lead concentrations decrease with increasing distance from the roadway surface and with increasing depth. In addition, soluble lead concentrations increased with increasing total lead concentrations.

The data indicate that soils below a depth of 0.6 meter or at any depth when farther than 3.0 meters from the existing pavement, will, on average, meet the criteria for soil usable as fill without restriction. Soils above a depth of 0.6 meters and less than 3.0 meters from the pavement may be reused as fill, provided they are placed at least 1.5 meters above the water table (per Water Board) and covered by 0.3 meter of clean soil.

1.0 INTRODUCTION

1.1 GENERAL

This report presents the results of the site investigation for lead contamination performed for the College Boulevard/State Route 78 Interchange Improvements. The purpose of the investigation was to evaluate on-site soils for the presence of aerially-deposited lead and make recommendations for appropriate placement of soils containing lead to aid in project design. The study focused on the evaluation of lead concentrations of on-site soils from vehicle emissions within the interchange corridor. This report has been prepared for Dokken Engineering, Caltrans and the City of Oceanside to be used solely for the design of the proposed improvements as described in subsequent sections.

AGRA Earth & Environmental, Inc. (AEE) is concurrently preparing a Geotechnical Design Report and a Structure Foundation Report for the interchange.

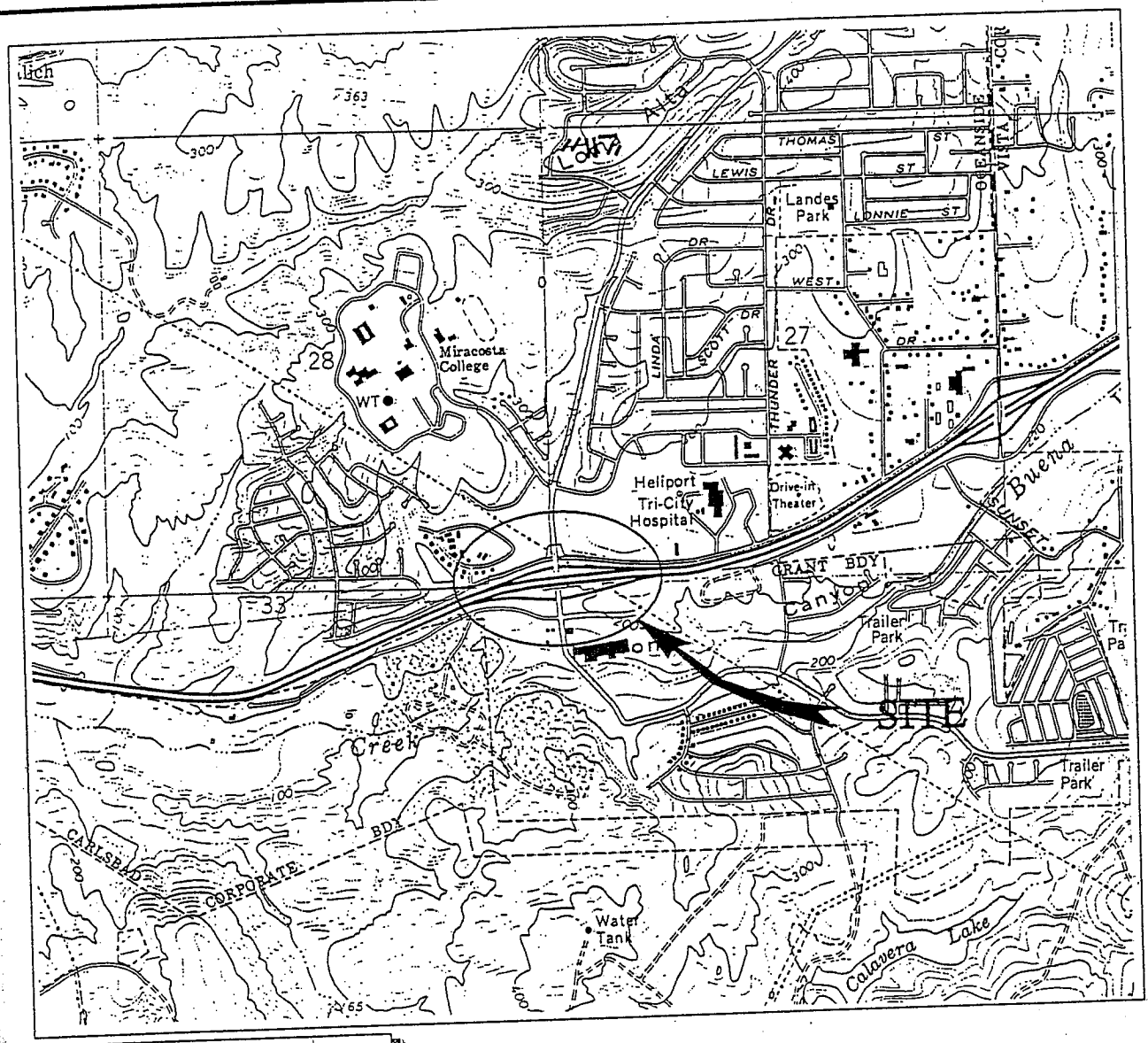
1.2 SCOPE OF WORK

The investigation performed by AEE included review of available published data and previous studies, soil sampling, laboratory testing, engineering analyses and preparation of this report. The scope of work for the project was described in AEE's proposal dated July 15, 1996.

1.3 PROPOSED CONSTRUCTION

Present plans envision widening the existing College Boulevard Undercrossing at SR 78, widening College Boulevard, realigning Vista Way and replacing the westbound exit ramp with a new westbound exit ramp and westbound entrance ramp. The project location is shown on Figure 1.

The proposed improvements will maintain the existing diamond interchange configuration except in the northeast quadrant where the new westbound exit and entrance ramps will be located. Additional improvements will include construction of 2 retaining walls for the widening of College Boulevard and 4 retaining walls for the realignment of Vista Way.



North

Approximate
Graphic Scale, 1 inch = 2000 feet

Reference:
U.S.G.S. 7.5 minute Quadrangle Series
San Luis Rey Quadrangle

COLLEGE BLVD/SR78 INTERCHANGE
OCEANSIDE, CALIFORNIA

FIGURE 1 - VICINITY MAP

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DRAFT	APPROVED	DATE	JOB NO.
JJV	JS	8/6/96	2-252-101200

Job No. 6-252-101200

2.0 DATA ACQUISITION

2.1 FIELD EXPLORATION

The field exploration program consisted of 6 test borings drilled to a depth of 600 mm with a 100-mm diameter hand auger. The borings, were located at staggered distances from the edge of the pavement, varying from 0.3 meter to 2.4 meters, as shown on Figure 2. Bulk samples were obtained at the surface, and at 300 mm and 600 mm depths. The drilling and sampling operations were performed under the supervision of an AEE geologist. Upon completion of the field exploration program, the borings were backfilled with cuttings. The sampling equipment was washed with a trisodium phosphate solution followed by tap water and deionized water rinses prior to drilling each boring. The samples were placed in a cooler for transport to the laboratory. Chain of custody documentation was completed for each sample.

2.2 LABORATORY TESTING

Laboratory tests were performed to provide a basis for engineering recommendations. The following tests were performed:

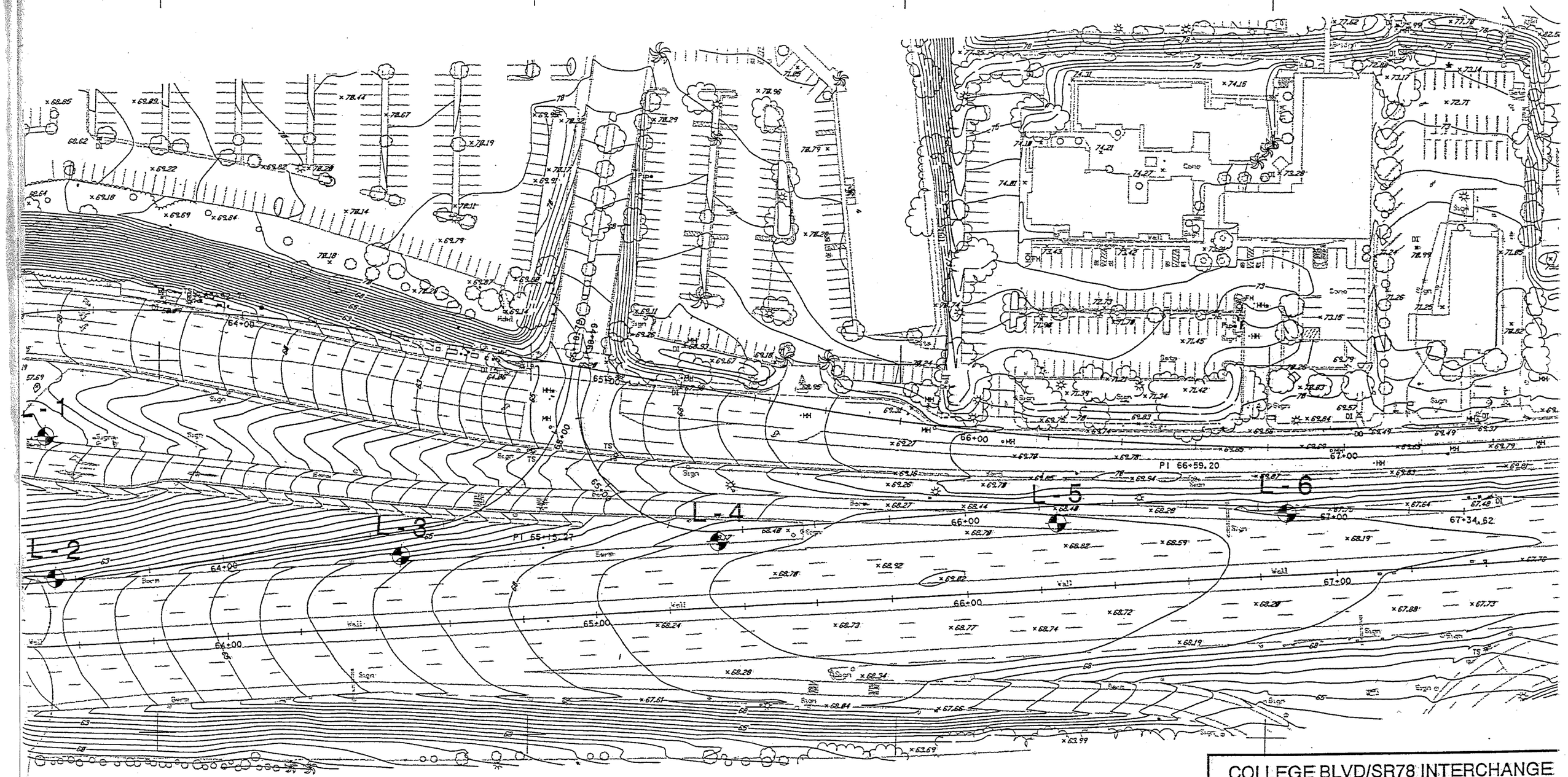
- Total Lead Concentration
- pH
- Soluble Lead Concentration

3.0 SITE CONDITIONS

3.1 SURFACE CONDITIONS

College Boulevard crosses under State Route 78 north of Buena Vista Creek in eastern Oceanside. The terrain surrounding the overcrossing slopes to the southwest, draining into Buena Vista Creek. Ground surface elevations range from about 175 meters above mean sea level beneath the undercrossing to about 230 meters on Vista Way east of College Boulevard.

Commercial development exists in both the southeast and northeast quadrant of the interchange. A condominium development is located in the northwest corner and a shopping mall is proposed in the southwest quadrant. Frontage roads parallel both the north and south side of the freeway.



COLLEGE BLVD/SR78 INTERCHANGE
OCEANSIDE, CALIFORNIA

FIGURE 2 - LOCATION OF TEST BORING

AGRA
Earth & Environmental

DRAFT	APPROVED	DATE	JOB NO.
JJV	JJS	10/28/96	6-252-102

3.2 SUBSURFACE CONDITIONS

In general, the existing interchange site is underlain by sedimentary rock of the Santiago and Delmar Formations. Isolated areas consist of fill over the sedimentary rock. A maximum of about 7.6 meters of fill was placed for the west bridge approach embankment. Fill materials consist of moderately dense silty sand. The Santiago and Delmar Formations consist of dense silty sandstone and siltstone.

Groundwater was not encountered in any of the borings for the site investigation. However, groundwater was encountered at a depth of about 7 meters in the northern portion of the site and as shallow as 1.8 meters south of the intersection during the investigation for the geotechnical design report.

4.0 SOIL ANALYTICAL RESULTS

A summary of the analytical results of the soil samples obtained by AEE are presented in Table 1. Laboratory results from Analytical Laboratories and the chain of custody documentation are included as Appendix A.

TABLE 1
SUMMARY OF ANALYTICAL TEST RESULTS

Boring No./ Sample No.	Soil Type	Sample Depth (mm)	Distance from Pavement (meters)	Slope (S) or Flat (F) Sampling Area*	Total Lead Concentration (mg/kg)	Soluble Lead Concentration Deionized (μg/L)	pH
L-1/1	Silty Sand	surface	1.8	F	11.8	--	--
L-1/2	Silty Sand	300	1.8	F	11.9	--	--
L-1/3	Silty Sand	600	1.8	F	10.6	--	--
L-2/1	Silty Sand	surface	0.3	F	33.4	--	--
L-2/2	Silty Sand	300	0.3	F	288	360	6.4
L-2/3	Silty Sand	600	0.3	F	13.1	--	--
L-3/1	Silty Sand	surface	1.8	S	30.3	--	--
L-3/2	Silty Sandstone	300	1.8	S	6.3	--	--
L-3/3	Silty Sand	600	1.8	S	2.5	--	--
L-4/1	Silty Sand	surface	2.4	F	283	110	6.0
L-4/2	Silty Sandstone	300	2.4	F	5.3	--	--
L-4/3	Silty Sandstone	600	2.4	F	2.4	--	--
L-5/1	Silty Sand	surface	1.2	F	49.4	<30	6.0
L-5/2	Silty Sand	300	1.2	F	513	860	5.6
L-5/3	Silty Sandstone	600	1.2	F	12.1	--	--

TABLE 1 - CONTINUED
SUMMARY OF ANALYTICAL TEST RESULTS

Boring No./ Sample No.	Soil Type	Sample Depth (meters)	Distance from Pavement (meters)	Slope (S) or Flat (F) Sampling Area*	Total Lead Concentration (mg/kg)	Soluble Lead Concentration Deionized (μg/L)	pH
L-6/1	Silty Sand	surface	3.0	S	80.5	60	5.5
L-6/2	Silty Sandstone	300	3.0	S	4.3	--	--
L-6/3	Silty Sandstone	600	3.0	S	1.1	--	--

* Slope is steeper than about 5:1 (horizontal:vertical)

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

A total of 6 borings were drilled and 18 samples were obtained. Sample depths varied from the ground surface to a depth of 600 mm. Borings were drilled a distance from the pavement which varied from 0.3-meter to 2.4 meters.

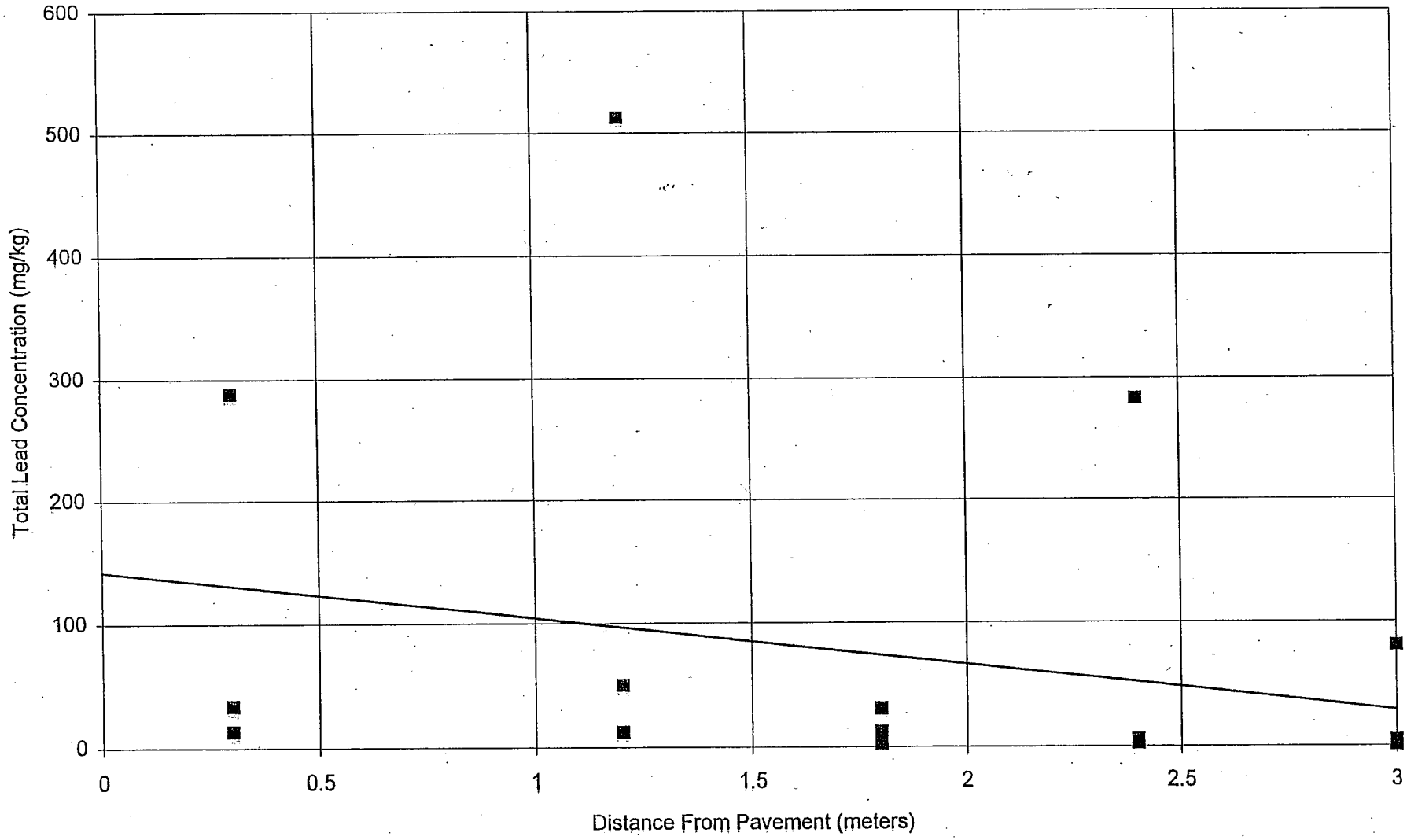
All the samples obtained were tested for total lead concentration. Five samples were tested for soluble lead using deionized water as the extractant and five samples were tested for pH.

Caltrans Variance for Reuse of Lead Contaminated Soils indicates that soils containing more than 1000 mg/kg total lead, or 5 ug/L soluble lead are considered hazardous waste. If total lead is less than 1575 mg/kg and soluble lead is less than 500 ug/L, soils may be reused as fill, provided they are placed at least 1.5 meters above the water table and covered by 0.3 meter of clean soil. If total lead is more than 1575 mg/kg but less than 4150 mg/kg and soluble lead is more than 500 ug/L, soils may be used as fill, provided they are placed at least 1.5 meters above the water table and covered by pavement or a similar cap.

Of the 18 samples tested, the highest total lead concentration was 513 mg/kg. Therefore, none of the samples exceeded the total lead concentration defining soil as a hazardous waste. The lowest reportable detection limit for the soluble lead was 30 ug/L. One of the samples tested for soluble lead had less than 30 ug/L and the other 4 samples exceeded 30 ug/L. Therefore, all 5 samples can be considered to exceed 5 ug/L which defines lead contaminated soil as a hazardous waste. All the samples have total lead concentrations less than 1575 mg/kg and all but one sample have soluble lead concentration less than 500 ug/L. It is anticipated that mixing associated with grading operations will produce fill material with less than 500 ug/L soluble lead.

As expected, total lead concentrations decrease with increasing distance from the roadway surface and with increasing depth as shown in Figures 3 and 4, respectively. Figure 5 presents the relationship between total lead concentration and soluble lead concentration. It is evident that for total lead concentrations below 300 mg/kg, soluble lead concentrations will not exceed 500 ug/L. The data also indicate that for total lead concentrations below 50 mg/kg, soluble lead will probably be less than the lowest reportable detection limit of 30 ug/L.

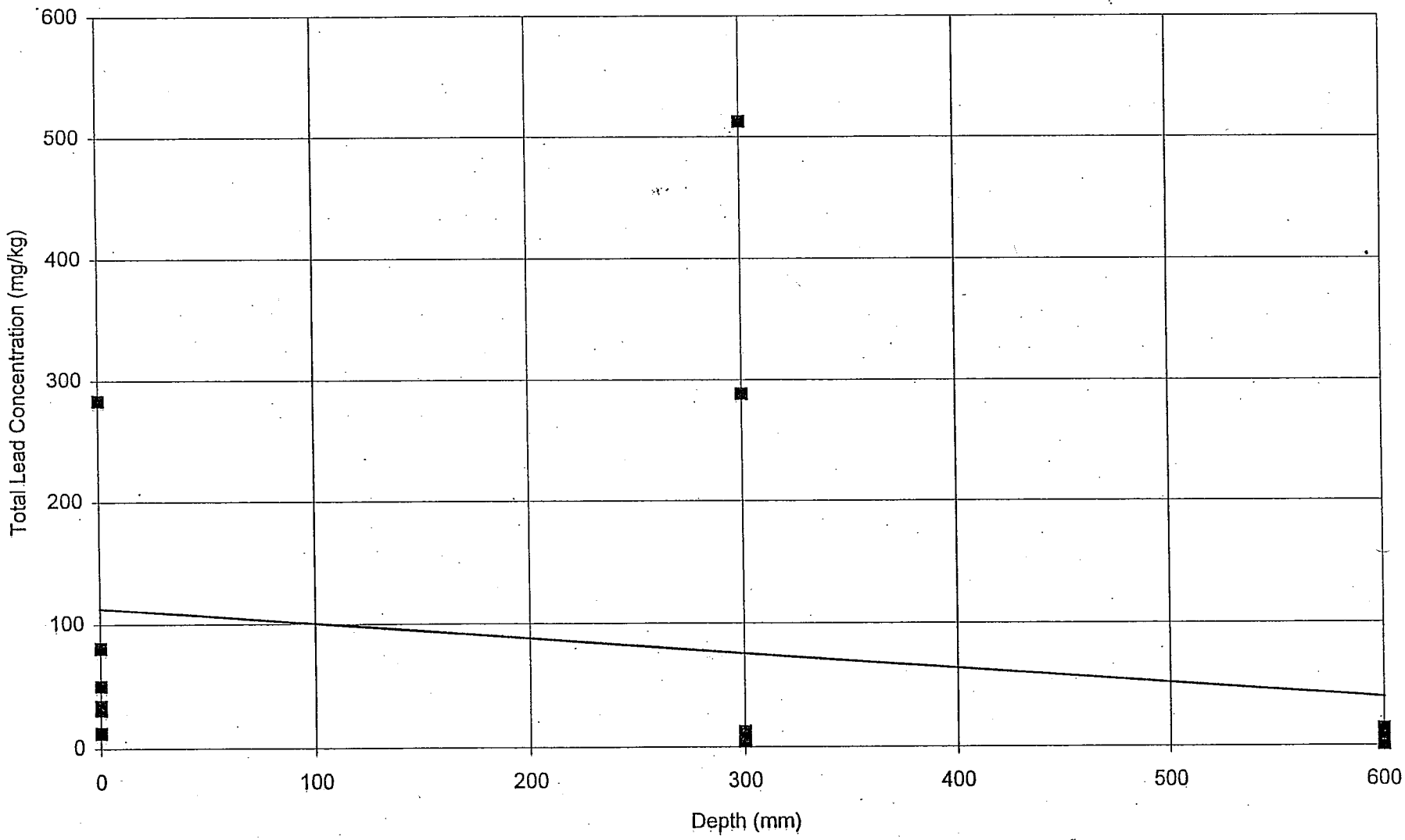
Total Lead/Pavement Distance Relationship



Job No. 6-252-101200

Figure 3

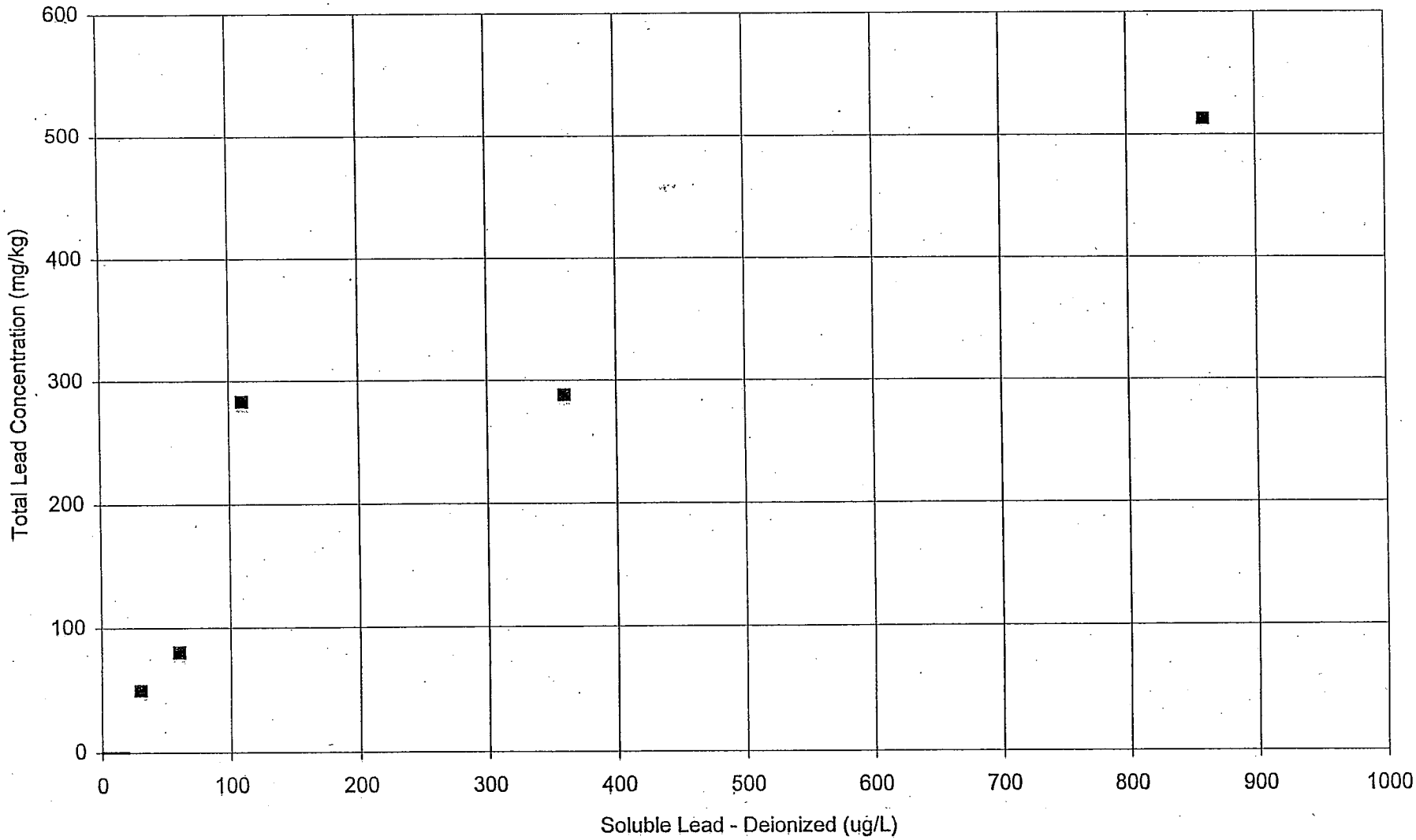
Total Lead/Sample Depth Relationship



Job No. 6-252-101200

Figure 4

Total Lead/Soluble Lead (Deionized) Relationship



Job No. 6-252-101200

Figure 5

5.2 RECOMMENDATIONS

Very small extractable lead quantities could not be measured, because the lowest reportable detection limit of soluble lead was 30 ug/L. It is assumed that for total lead concentrations below 50 mg/kg, soluble lead will probably be about 5 ug/L. Assuming a total lead concentration of less than 50 mg/kg will meet the criteria for clean soil for both total lead and soluble lead, the least squares best-fit lines on Figures 3 and 4 indicate that soils below a depth of 0.5 meter, or greater than 2.4 meters from the roadway pavement, will, on average, meet the criteria for clean soil. Because of the uncertainty in the relationship between total lead and soluble lead concentrations and to maintain a degree of conservatism, it is recommended that soils above a depth of 0.6 meter and less than 3 meters from the roadway pavement be restricted to placement in the zone described in the following paragraph. Soils obtained from excavations below a depth of 0.6 meter or greater than 3 meters from the pavement edge can be placed as fill without restriction, from a lead content standpoint. Geotechnical considerations will determine appropriate locations for placement of the material as fill.

Because all the soils tested have total lead concentrations less than 1575 mg/kg and soluble lead concentrations less than 500 ug/L (except for 1 sample), soils above a depth of 0.6 meter and less than 3 meters from the roadway pavement may be reused as fill, provided they are placed at least 1.5 meters above the water table (per Water Board) and covered by 0.3 meter of clean soil.

6.0 CLOSURE

6.1 GENERAL

It is apparent from review of the limited available literature that lead concentration criteria and Caltrans placement guidelines are continuing to evolve. Consequently, changes from the recommendations in this report may be necessary as project design proceeds and research by Caltrans and others develop.

6.2 GEOTECHNICAL REVIEW

The earthwork plans and pertinent sections of the project specifications should be reviewed by the geotechnical engineer to evaluate conformance with the intent of the conclusions and recommendations contained in this report.

If project conditions or final design varies from that described in this report, AEE should be contacted regarding the applicability of, and the necessity for any revisions to, the conclusions and recommendations presented herein.

6.3 LIMITATIONS

This report is based on the project as described and the information obtained from field exposures and the borings at the approximate locations indicated on the plans. Our findings are based on the results of the field, laboratory and office investigations combined with an interpolation and extrapolation of conditions between and beyond the boring locations. Results reflect interpretation of the limited direct evidence obtained. This firm should be notified of any pertinent changes in the project plans. Variations may require a re-evaluation of the recommendations contained in this report.

This report has been prepared for use in design of the described project. It may not contain sufficient information for other purposes. This report has been prepared in accordance with generally accepted geotechnical and environmental practice in the San Diego County, California area, and may not contain sufficient information for other projects or uses.

AGRA Earth & Environmental

REGISTERED PROFESSIONAL ENGINEER
JOSEPH VETTEL
No. C049827
Exp. 9/30/00
CIVIL
STATE OF CALIFORNIA

Joseph J. Vettel, RCE 49827
Project Engineer

James. J. Stone, GE 808
Supervising Engineer

JJV/JJS/jv

Distribution: (6) Addressee

REGISTERED PROFESSIONAL ENGINEER
JAMES J. STONE
No. GE000808
Exp. 12/31/97
GEOTECHNICAL
STATE OF CALIFORNIA

REFERENCES

1. California Department of Transportation, 1989, Bridge Design Aids Manual.

2. _____, 1986, Bridge Design Details Manual.

3. _____, 1987, Bridge Design Specifications Manual.

4. _____, 1986, Bridge Memo to Designers Manual.

5. _____, 1988, Highway Design Manual.

6. _____, 1992, Standard Specifications.

7. California Department of Transportation, Division of Structures, As-Built Plans, College Boulevard Undercrossing, July 25, 1966.

8. California Department of Transportation, Memorandum on Interim Aerially Deposited Lead Testing Procedures, September 14, 1995.

9. California Division of Mines and Geology, 1982, Recent Slope Failures, Ancient Landslides and Related Geology of the North-Central Coastal Area, San Diego County, California.

10. California Environmental Protection Agency, Caltrans Variance for Reuse of Lead Contaminated Soils, February 1995.

11. City of Oceanside, Topographic Survey Sheets, dated 1960, scale 1:2400, Sheet No. 16-30.

11. County of San Diego, Topographic Survey Sheets, dated 1974, scale 1:2400, Sheet No. 370-1677.

APPENDIX

CEIMIC
Corporation

"Analytical Chemistry for Environmental Management"

Ceimic I.D.: 966068

ugust 29, 1996

GRA EARTH & ENVIRONMENTAL
6760 W. BERNARDO DR.
AN DIEGO, CA 92109

roject Name: COLLEGE BLVD/SR78
roject # : 6-252-101200

ttention: JOSEPH J. VETTEL

eimic Corporation has received the following sample(s):

Date Received	Quantity	Matrix
August 15, 1996	18	SOIL

The sample(s) were analyzed with EPA methodology or equivalent methods as specified in the nclosed analytical schedule. The symbol for "less than" indicates a value below the reportable detection limit. If any flags appear next to the analytical data in this report, please see the attached list of flag definitions.

The results of these analyses and the quality control data are enclosed. Please note that the Sample Condition Upon Receipt Checklist is included at the end of this report.

HARAT VANDRA
ROJECT MANAGER

MIGUEL MUZZIO
LABORATORY MANAGER

SAMPLE CROSS REFERENCE

lient : AGRA EARTH & ENVIRONMENTAL
roject # : 6-252-101200
roject Name: COLLEGE BLVD/SR78

Report Date: August 29, 1996
Ceimic I.D. : 966068

mp.	Client Description	Matrix	Date Collected
1	L-1/1	SOIL	14-AUG-96
2	L-1/2	SOIL	14-AUG-96
3	L-1/3	SOIL	14-AUG-96
4	L-2/1	SOIL	14-AUG-96
5	L-2/2	SOIL	14-AUG-96
6	L-2/3	SOIL	14-AUG-96
7	L-3/1	SOIL	14-AUG-96
8	L-3/2	SOIL	14-AUG-96
9	L-3/3	SOIL	14-AUG-96
10	L-4/1	SOIL	14-AUG-96
11	L-4/2	SOIL	14-AUG-96
12	L-4/3	SOIL	14-AUG-96
13	L-5/1	SOIL	14-AUG-96
14	L-5/2	SOIL	14-AUG-96
15	L-5/3	SOIL	14-AUG-96
16	L-6/1	SOIL	14-AUG-96
17	L-6/2	SOIL	14-AUG-96
18	L-6/3	SOIL	14-AUG-96

---TOTALS---

Matrix	# Samples
SOIL	18

CEIMIC STANDARD DISPOSAL PRACTICE

The sample(s) from this project will be disposed of in twenty-one (21) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

ANALYTICAL SCHEDULE

Ceimic I.D.: 966068

ient : AGRA EARTH & ENVIRONMENTAL
oject # : 6-252-101200
oject Name: COLLEGE BLVD/SR78

alysis	Technique/Description
a 6010 (LEAD)	INDUCTIVELY COUPLED ARGON PLASMA

METALS RESULTS

Client : AGRA EARTH & ENVIRONMENTAL
Project # : 6-252-101200
Project Name: COLLEGE BLVD/SR78

Ceimic I.D.: 966068

Sample #	Client ID	Matrix	Date Sampled	Date Received
1	L-1/1	SOIL	14-AUG-96	15-AUG-96
2	L-1/2	SOIL	14-AUG-96	15-AUG-96
3	L-1/3	SOIL	14-AUG-96	15-AUG-96
4	L-2/1	SOIL	14-AUG-96	15-AUG-96
5	L-2/2	SOIL	14-AUG-96	15-AUG-96

Parameter	Units	1	2	3	4	5
LEAD	MG/KG	11.8	11.9	10.6	33.4	288

METALS RESULTS

Client : AGRA EARTH & ENVIRONMENTAL
Project # : 6-252-101200
Project Name: COLLEGE BLVD/SR78

Ceimic I.D.: 966068

Sample #	Client ID	Matrix	Date Sampled	Date Received
6	L-2/3	SOIL	14-AUG-96	15-AUG-96
7	L-3/1	SOIL	14-AUG-96	15-AUG-96
8	L-3/2	SOIL	14-AUG-96	15-AUG-96
9	L-3/3	SOIL	14-AUG-96	15-AUG-96
10	L-4/1	SOIL	14-AUG-96	15-AUG-96

Parameter	Units	6	7	8	9	10
LEAD	MG/KG	13.1	30.3	6.3	2.5	283

METALS RESULTS

Client : AGRA EARTH & ENVIRONMENTAL
Project # : 6-252-101200
Project Name: COLLEGE BLVD/SR78

Ceimic I.D.: 966068

Sample #	Client ID	Matrix	Date Sampled	Date Received
11	L-4/2	SOIL	14-AUG-96	15-AUG-96
12	L-4/3	SOIL	14-AUG-96	15-AUG-96
13	L-5/1	SOIL	14-AUG-96	15-AUG-96
14	L-5/2	SOIL	14-AUG-96	15-AUG-96
15	L-5/3	SOIL	14-AUG-96	15-AUG-96

Parameter	Units	11	12	13	14	15
LEAD	MG/KG	5.3	2.4	49.4	513	12.1

METALS RESULTS

lient : AGRA EARTH & ENVIRONMENTAL
roject # : 6-252-101200
roject Name: COLLEGE BLVD/SR78

Ceimic I.D.: 966068

ample #	Client ID	Matrix	Date Sampled	Date Received
6	L-6/1	SOIL	14-AUG-96	15-AUG-96
7	L-6/2	SOIL	14-AUG-96	15-AUG-96
8	L-6/3	SOIL	14-AUG-96	15-AUG-96

Parameter	Units	16	17	18
EAD	MG/KG	80.5	4.3	1.1

METALS - QUALITY CONTROL

DUP/MS

Client : AGRA EARTH & ENVIRONMENTAL
Project # : 6-252-101200
Project Name: COLLEGE BLVD/SR78

Ceimic I.D. : 966068

Parameters	REF I.D.	Units	Sample Result	Dup Result	RPD	Spiked Sample	Spike Conc	% Rec
LEAD	966068-09	MG/KG	2.5	2.9	15	6.6	3.9	105

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Sample Result - Duplicate Result)*100/Average Result

METALS - QUALITY CONTROL

BLANK SPIKE

Client : AGRA EARTH & ENVIRONMENTAL
Project # : 6-252-101200
Project Name: COLLEGE BLVD/SR78

Ceimic I.D. : 966068

Parameters	Blank Spike ID#	Units	Blank Result	Spiked Sample	Spike Conc.	% Rec
LEAD	63509	MG/KG	<1.5	49.5	53.6	92

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Sample Result - Duplicate Result)*100/Average Result

ACCESSION #: 00006

CEIMIC CORPORATION, SAN DIEGO
SAMPLE CONDITION UPON RECEIPT CHECKLIST
(For Re-accessions, complete No. 7 through 9)

1	Does this project require special handling according to NFESC Levels C, D, AFCEE or CLP protocols? If yes, complete a)and b) a) pH sample aliquoted: yes /no /na b) Either 1) Record Bottle Lot #'s: Or 2) Attach Sample Kit Request Form(s)	YES	NO
2	Number of Coolers Received If more than one cooler received attach Multiple Cooler Documentation Form (MCD) Indicate "see MCD"on Item 11 below	2	
3	Are custody seals required for this project ?	YES	N/A
	a) are Custody Seals present on Cooler(s) ?	YES	NO
	If yes, are seals intact ?	YES	NO NA
	b) are Custody Seals present on the sample ?	YES	NO
	If yes, are seals intact ?	YES	NO NA
4	Is there a Chain-Of-Custody (COC)* per cooler ? if not, if a problem is found indicate which samples/test were in the affected cooler on the MCD.	YES	NO
5	Is the COC* complete per cooler ? Relinquished: yes/no Requested analysis: yes/no	YES	NO
6	Is the COC* in agreement with the samples received? # Samples: yes/no Sample ID's: yes/no Date sampled: yes/no Matrix: yes/no # containers: yes/no	YES	NO
7	Are the samples preserved correctly?	YES	NO
8	Is there enough sample for all the requested analyses?	YES	NO
9	Are all samples within holding times for the requested analyses?	YES	NO
10	Record cooler temperature. Contact PM if temperature is not 4°C ± 2°C.	SEE M.C. FORM C	
	Is ice present in cooler?	YES	NO
11	Were all sample containers received intact (ie. not broken, leaking, etc.)?	YES	NO
12	Are samples requiring no headspace, headspace free? N/A	YES	NO
13	Are VOA 1st stickers required?	YES	NO
14	Are there special comments on the Chain of Custody which require client contact?	YES	N/A
15	If yes, was Ceimic Client Coordinator notified?	YES	NO

Describe "no" items: _____

Was client contacted? yes / no

If yes, Date: _____ Name of Person contacted:

Describe actions taken or client instructions: _____

*Or other representative documents,letters, and/or shipping memos

Accession # : 60068

Initials: LQ

Multiple Cooler Documentation Form

ATI-SD Cooler ID#		COC ID *1	Cooler Temperature ° C	Ice Present Upon Receipt?	SCUR *2			Comments
					Problem Noted? (Y/N)	Item Number(s) of Problem	Sample/Test *3	
1	RED COOLER		5.3°C	Y	N	—	—	—
2	BLUE COOLER		5.8°C	Y	N	—	—	—
3								
4								
5								
6								
7								
8								
9								
10								

* 1 COC ID: Indicate a Unique Identifier for each Chain of Custody (COC) if there is a COC per cooler (i.e. 1 of 3, etc). Create an identifier for each COC if the client did not and write these unique identifiers on the corresponding COCs Write "N/A" if there is not a COC per cooler..

*2 SCUR: For each cooler,go through the list of questions on the SCUR and indicate whether problems were found.

*3 Sample/Test: If there was not a COC per cooler and a problem was found in a cooler write what sample containers were shipped in this cooler.

pas:mcdform (2/95)

AnalyticalTechnologies,Inc.

5550 MOREHOUSE DRIVE
SAN DIEGO, CA 92121-1709
(619) 458-9141

Chain of Custody

DATE 8/14/96 PAGE 2 OF 2

PROJECT MANAGER: Joseph J Vettel
COMPANY: AGRA Earth + Envir
ADDRESS: 16760 W. Bernardo Dr.
San Diego CA 92127

BILL TO: Joseph J Vettel
COMPANY: AGRA Earth + Environmental
ADDRESS: 16760 W. Bernardo Dr.
SD CA 92127

SAMPLERS: (Signature) PHONE NUMBER (619) 487-2113

Recommended Quantity and Preservative (Provide triple volume on QC Samples)

SAMPLE ID	SAMPLE DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons 418.1 (1L (H_2SO_4)/100g)	Oil and Grease 413.2 (1L (H_2SO_4)/100g)	Gasoline (MOD 8015/DOHS) (4 oz (HCl)/50g)	Diesel (MOD 8015/DOHS) (4 oz (HCl)/50g)	Gasoline/BTXE (MOD 8015/8020) Maximum Contamination Level of Gasoline:2ppm(water),50ppm(Soil) (2X40ml (HCl)/50g)	MOD 8015 (Unknown) (4 oz (HCl)/50g)	BTXE (8020) (2X40ml (HCl)/50g)	Chlorinated Hydrocarbons (8010) (2X40ml (HCl)/50g)	Aromatic Hydrocarbons (8020) (2X40ml (HCl)/50g)	Chlorinated/Aromatic Hydrocarbons (8010/8020) (2X40ml (HCl)/50g)	Organic Pb (500ml/50g)	Pesticides/PCB (8080) (1L/50g)	Base/NEU/Acid Cmpds GC/MS (8270) (1L/100g)	Volatile Cmpds GC/MS (8240) (2X40ml (HCl)/100g)	Polynuclear Aromatic (8310) (1L/100g)	CCR Metals (500ml/100g)	Priority Pollutant Metals (500ml/100g)	Total Lead	Number of Containers
L-4/1	8/14/96		soil	10																				
L-4/2				11																				
L-4/3				12																				
L-5/1				13																				
L-5/2				14																				
L-5/3				15																				
L-6/1				16																				
L-6/2				17																				
L-6/3				18																				

PROJECT INFORMATION	SAMPLE RECEIPT	
PROJECT NUMBER:	TOTAL NUMBER OF CONTAINERS	
PROJECT NAME:	CHAIN OF CUSTODY SEALS Y/N/NA	
PURCHASE ORDER NUMBER:	SEALS INTACT? Y/N/NA	
VIA:	RECEIVED GOOD COND./COLD	
TAT: ☐24HR ☐48HRS ☐72HRS ☐1WK ☒2WK	LAB NUMBER 6068	

SAMPLE DISPOSAL INSTRUCTIONS

☐ ATI Disposal @ $5.00 each ☐ Return ☐ Pickup

Comments:

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time: 4:55	Signature: Time:	Signature: Time:
Printed Name: Date: Joseph J Vettel	Printed Name: Date:	Printed Name: Date:
Company: AGRA	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time: 1705	Signature: Time:	Signature: Time:
Printed Name: Date: Lisa J Tucker 8-15-96	Printed Name: Date:	Printed Name: Date:
Company: CEMIC Corp	Company:	Analytical Technologies, Inc.

DISTRIBUTION: White, Canary - ANALYTICAL TECHNOLOGIES, INC. • Pink - ORIGINATOR

Analytical Technologies, Inc.

5550 MOREHOUSE DRIVE
SAN DIEGO, CA 92121-1709
(619) 458-9141

Chain of Custody

DATE 8/14/96 PAGE 1 OF 2

PROJECT MANAGER: Joseph J Vettel
COMPANY: AGRA Earth + Environmental
ADDRESS: 16760 W. Bernardo Dr. San Diego CA 92127

BILL TO: Joseph J Vettel
COMPANY: AGRA Earth + Environmental
ADDRESS: 16760 W. Bernardo Dr. San Diego CA 92127

SAMPLERS: (Signature) (619) 487 2113 PHONE NUMBER

Recommended Quantity and Preservative (Provide triple volume on QC Samples)

SAMPLE ID	SAMPLE DATE	TIME	MATRIX	LAB ID
L-1/1	8/14/96		soil	01
L-1/2	8/14/96			02
L-1/3	8/14/96			03
L-2/1	8/14/96			04
L-2/2	8/14/96			05
L-2/3	8/14/96			06
L-3/1	8/14/96			07
L-3/2	8/14/96			08
L-3/3	8/14/96			09

Petroleum Hydrocarbons 418.1	Oil and Grease 413.2	Gasoline (MOD 8015/DOHS)	Diesel (MOD 8015/DOHS)	Gasoline/BTXE (MOD 8015/8020) Maximum Contamination Level of Gasoline: 2ppm (water), 50ppm (Soil)	MOD 8015 (Unknown)	BTXE (8020)	Chlorinated Hydrocarbons (8010)	Aromatic Hydrocarbons (8020)	Chlorinated/Aromatic Hydrocarbons (8010/8020)	Organic Pb	Pesticides/PCB (8080)	Base/NEU/Acid Cmpds. GC/MS (8270)	Volatile Cmpds GC/MS (8240)	Polynuclear Aromatic (8310)	CCR Metals	Priority Pollutant Metals	Total Lead	Number of Containers
1L (H_2SO_4)/100g	1L (H_2SO_4)/100g	4 oz (HCl)/50g	4 oz (HCl)/50g	2X40ml (HCl)/50g	4 oz (HCl)/50g	2X40ml (HCl)/50g	2X40ml (HCl)/50g	2X40ml (HCl)/50g	2X40ml (HCl)/50g	500ml/50g	1L/50g	1L/100g	2X40ml (HCl)/100g	1L/100g	500ml/100g	500ml/100g	2	

PROJECT INFORMATION	SAMPLE RECEIPT	
PROJECT NUMBER: 6-252-101200	TOTAL NUMBER OF CONTAINERS	
PROJECT NAME: College Blvd / SR78	CHAIN OF CUSTODY SEALS Y/N/NA	
PURCHASE ORDER NUMBER:	SEALS INTACT? Y/N/NA	
VIA:	RECEIVED GOOD COND./COLD	
TAT: ☐24HR ☐48HRS ☐72HRS ☐1WK ☒2WK	LAB NUMBER: 6068	

SAMPLE DISPOSAL INSTRUCTIONS

☐ ATI Disposal @ $5.00 each ☐ Return ☐ Pickup

Comments:

Red cooler = 5.3°
Blue cooler = 5.8°

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time: 4:55	Signature: Time:	Signature: Time:
Printed Name: Joseph J Vettel Date:	Printed Name: Date:	Printed Name: Date:
Company: AGRA	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time: 1705	Signature: Time:	Signature: Time:
Printed Name: Date: 8-15-96	Printed Name: Date:	Printed Name: Date:
Company: CEMC Corp	Company:	Analytical Technologies, Inc.

DISTRIBUTION: White, Canary - ANALYTICAL TECHNOLOGIES, INC. • Pink - ORIGINATOR

CEIMIC
Corporation

"Analytical Chemistry for Environmental Management"

Ceimic I.D.: 966184

September 17, 1996

AGRA EARTH & ENVIRONMENTAL
16760 W. BERNARDO DR.
SAN DIEGO, CA 92109

RECEIVED
SEP 27 1996
AGRA

Project Name: COLLEGE BLVD/SR78
Project # : 6-252-101200

Attention: JOSEPH J. VETTEL

Ceimic Corporation has received the following sample(s):

Date Received	Quantity	Matrix
August 15, 1996	5	SOIL

The sample(s) were analyzed with EPA methodology or equivalent methods as specified in the enclosed analytical schedule. The symbol for "less than" indicates a value below the reportable detection limit. If any flags appear next to the analytical data in this report, please see the attached list of flag definitions.

The results of these analyses and the quality control data are enclosed. Please note that the Sample Condition Upon Receipt Checklist is included at the end of this report.

Please note this is a reaccession of Ceimic I.D. #966068.

BHARAT VANDRA
PROJECT MANAGER

MIGUEL MUZZIO
LABORATORY MANAGER

8808 Balboa Avenue, San Diego, CA 92123 • Telephone: (619) 637-7400 • Fax: (619) 637-7401

ANALYTICAL SCHEDULE

Client : AGRA EARTH & ENVIRONMENTAL
Project # : 6-252-101200
Project Name: COLLEGE BLVD/SR78

Ceimic I.D.: 966184

Analysis	Technique/Description
EPA 6010 (LEAD)	INDUCTIVELY COUPLED ARGON PLASMA
EPA 9045 (pH SOIL)	ELECTRODE

GENERAL CHEMISTRY RESULTS

Client : AGRA EARTH & ENVIRONMENTAL
Project # : 6-252-101200
Project Name: COLLEGE BLVD/SR78

Ceimic I.D.: 966184

Sample #	Client ID	Matrix	Date Sampled	Date Received
1	L-2/2	SOIL	14-AUG-96	15-AUG-96
2	L-4/1	SOIL	14-AUG-96	15-AUG-96
3	L-5/1	SOIL	14-AUG-96	15-AUG-96
4	L-5/2	SOIL	14-AUG-96	15-AUG-96
5	L-6/1	SOIL	14-AUG-96	15-AUG-96

Parameter	Units	1	2	3	4	5
pH	UNITS	6.4	6.0	6.0	5.6	5.5

GENERAL CHEMISTRY - QUALITY CONTROL

DUP/MS

Client : AGRA EARTH & ENVIRONMENTAL
Project # : 6-252-101200
Project Name: COLLEGE BLVD/SR78

Ceimic I.D. : 966184

Parameters	REF I.D.	Units	Sample Result	Dup Result	RPD	Spiked Sample	Spike Conc	% Rec
pH	966193-06	UNITS	8.1	8.2	1	N/A	N/A	N/A

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Sample Result - Duplicate Result)*100/Average Result

METALS RESULTS

Client : AGRA EARTH & ENVIRONMENTAL
Project # : 6-252-101200
Project Name: COLLEGE BLVD/SR78

Ceimic I.D.: 96618

Sample #	Client ID	Matrix	Date Sampled	Date Received
6	L-2/2 /WET 01	WET EXTRACT	14-AUG-96	15-AUG-9
7	L-4/1 /WET 02	WET EXTRACT	14-AUG-96	15-AUG-9
8	L-5/1 /WET 03	WET EXTRACT	14-AUG-96	15-AUG-9
9	L-5/2 /WET 04	WET EXTRACT	14-AUG-96	15-AUG-9
10	L-6/1 /WET 05	WET EXTRACT	14-AUG-96	15-AUG-9

Parameter	Units	6	7	8	9	10
LEAD	MG/L	19.3	23.3	4.1	28.9	4.9

METALS - QUALITY CONTROL

DUP/MS

Client : AGRA EARTH & ENVIRONMENTAL
Project # : 6-252-101200
Project Name: COLLEGE BLVD/SR78

Ceimic I.D. : 966184

Parameters	REF I.D.	Units	Sample Result	Dup Result	RPD	Spiked Sample	Spike Conc	% Rec
LEAD	966202-10	MG/L	<0.3	<0.3	0	10.5	10.0	105

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Sample Result - Duplicate Result)*100/Average Result

METALS - QUALITY CONTROL

BLANK SPIKE

Client : AGRA EARTH & ENVIRONMENTAL
Project # : 6-252-101200
Project Name: COLLEGE BLVD/SR78

Ceimic I.D. : 96618

Parameters	Blank Spike ID#	Units	Blank Result	Spiked Sample	Spike Conc.	% Rec
LEAD	63686	MG/L	<0.3	10.6	10.0	106

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Sample Result - Duplicate Result)*100/Average Result

ACCESSION #: 6184 INITIALS: LQ

CEIMIC CORPORATION, SAN DIEGO
SAMPLE CONDITION UPON RECEIPT CHECKLIST
(For Re-accessions, complete No. 7 through 9)

1	Does this project require special handling according to NFESC Levels C, D, AFCEE or CLP protocols? If yes, complete a)and b) a) pH sample aliquoted: yes /no /na b) Either 1) Record Bottle Lot #'s: Or 2) Attach Sample Kit Request Form(s)	YES	NO
2	Number of Coolers Received If more than one cooler received attach Multiple Cooler Documentation Form (MCD) Indicate "see MCD"on Item 11 below		
3	Are custody seals required for this project ?	YES	N/A
	a) are Custody Seals present on Cooler(s) ?	YES	NO
	If yes, are seals intact ?	YES	NO
	b) are Custody Seals present on the sample ?	YES	NO
	If yes, are seals intact ?	YES	NO
4	Is there a Chain-Of-Custody (COC)* per cooler ? if not, if a problem is found indicate which samples/test were in the affected cooler on the MCD.	YES	NO
5	Is the COC* complete per cooler ? Relinquished: yes/no Requested analysis: yes/no	YES	NO
6	Is the COC* in agreement with the samples received? # Samples: yes/no Sample ID's: yes/no Date sampled: yes/no Matrix: yes/no # containers: yes/no	YES	NO
7	Are the samples preserved correctly?	YES	NO
8	Is there enough sample for all the requested analyses?	YES	NO
* 9	Are all samples within holding times for the requested analyses?	YES	NO
10	Record cooler temperature. Contact PM if temperature is not 4°C ± 2°C.	°C	
	Is ice present in cooler?	YES	NO
11	Were all sample containers received intact (ie. not broken, leaking, etc.)?	YES	NO
12	Are samples requiring no headspace, headspace free? N/A	YES	NO
13	Are VOA 1st stickers required?	YES	NO
14	Are there special comments on the Chain of Custody which require client contact?	YES	N/A
15	If yes, was Ceimic Client Coordinator notified?	YES	NO

Describe "no" items:

*9) PH OUT of Hold TIME

Was client contacted? yes / no

If yes, Date: _____ Name of Person contacted:

Describe actions taken or client instructions:

*Or other representative documents, letters, and/or shipping memos

CEIMIC

ANALYTICAL CHEMISTRY FOR ENVIRONMENTAL MANAGEMENT

Ceimic I.D.: 96636

October 16, 1996

AGRA EARTH & ENVIRONMENTAL
16760 W. BERNARDO DR.
SAN DIEGO, CA 92109

Project Name: (NONE)
Project # : (NONE)

Attention: JOE VETTEL

Ceimic Corporation has received the following sample(s):

Date Received	Quantity	Matrix
August 15, 1996	5	SOIL

The sample(s) were analyzed with EPA methodology or equivalent methods as specified in th enclosed analytical schedule. The symbol for "less than" indicates a value below the reportabl detection limit. If any flags appear next to the analytical data in this report, please see th attached list of flag definitions.

The results of these analyses and the quality control data are enclosed. Please note that th Sample Condition Upon Receipt Checklist is included at the end of this report.

Please note this report was reaccessed from Ceimic I.D. #966184.

BHARAT VANDRA
PROJECT MANAGER

for ROBERT BEIMER
LABORATORY MANAGER

RECEIVED
OCT 21 1996
AGRA

8808 BALBOA AVENUE, SAN DIEGO, CA 92123 • TEL: 619/637-7400 • FAX: 619/637-7401

SAMPLE CROSS REFERENCE

Client : AGRA EARTH & ENVIRONMENTAL
Project # : (NONE)
Project Name: (NONE)

Report Date: October 16, 1996
Ceimic I.D. : 966368

Smp. #	Client Description	Matrix	Date Collected
1	L-2/2	SOIL	14-AUG-96
2	L-4/1	SOIL	14-AUG-96
3	L-5/1	SOIL	14-AUG-96
4	L-5/2	SOIL	14-AUG-96
5	L-6/1	SOIL	14-AUG-96
6	L-2/2 / DIWET 01	WET EXTRACT	14-AUG-96
7	L-4/1 / DIWET 02	WET EXTRACT	07-OCT-96
8	L-5/1 / DIWET 03	WET EXTRACT	07-OCT-96
9	L-5/2 / DIWET 04	WET EXTRACT	07-OCT-96
10	L-6/1 / DIWET 05	WET EXTRACT	07-OCT-96

---TOTALS---

Matrix	# Samples
SOIL	5
WET EXTRACT	5

CEIMIC STANDARD DISPOSAL PRACTICE

The sample(s) from this project will be disposed of in twenty-one (21) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

ANALYTICAL SCHEDULE

Client : AGRA EARTH & ENVIRONMENTAL
Project # : (NONE)
Project Name: (NONE)

Ceimic I.D.: 966368

Analysis	Technique/Description
EPA 6010 (LEAD)	INDUCTIVELY COUPLED ARGON PLASMA

METALS RESULTS

Client : AGRA EARTH & ENVIRONMENTAL
Project # : (NONE)
Project Name: (NONE)

Ceimic I.D.: 9663

Sample #	Client ID	Matrix	Date Sampled	Date Receive
6	L-2/2 / DIWET 01	WET EXTRACT	14-AUG-96	15-AUG-
7	L-4/1 / DIWET 02	WET EXTRACT	07-OCT-96	07-OCT-
8	L-5/1 / DIWET 03	WET EXTRACT	07-OCT-96	07-OCT-
9	L-5/2 / DIWET 04	WET EXTRACT	07-OCT-96	07-OCT-
10	L-6/1 / DIWET 05	WET EXTRACT	07-OCT-96	07-OCT-

Parameter	Units	6	7	8	9	10
LEAD	MG/L	0.36	0.11	<0.03	0.86	0.06

METALS - QUALITY CONTROL

DUP/MS

Client : AGRA EARTH & ENVIRONMENTAL
Project # : (NONE)
Project Name: (NONE)

Ceimic I.D. : 966368

Parameters	REF I.D.	Units	Sample Result	Dup Result	RPD	Spiked Sample	Spike Conc	% Rec
LEAD	966368-06	MG/L	0.36	0.48	29	1.51	1.00	115

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Sample Result - Duplicate Result)*100/Average Result

METALS - QUALITY CONTROL

BLANK SPIKE

Page

Client : AGRA EARTH & ENVIRONMENTAL
Project # : (NONE)
Project Name: (NONE)

Ceimic I.D. : 96636

Parameters	Blank Spike ID#	Units	Blank Result	Spiked Sample	Spike Conc.	% Rec
LEAD	64100	MG/L	<0.03	1.06	1.00	106

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Sample Result - Duplicate Result)*100/Average Result

ACCESSION #: 6368 INITIALS: LP

CEIMIC CORPORATION, SAN DIEGO
SAMPLE CONDITION UPON RECEIPT CHECKLIST
(For Re-accessions, complete No. 7 through 9)

1	Does this project require special handling according to NFESC Levels C, D, AFCEE or CLP protocols? If yes, complete a)and b) a) pH sample aliquoted: yes /no /na b) Either 1) Record Bottle Lot #'s: Or 2) Attach Sample Kit Request Form(s)	YES	NO
2	Number of Coolers Received If more than one cooler received attach Multiple Cooler Documentation Form (MCD) Indicate "see MCD"on Item 11 below		
3	Are custody seals required for this project ?	YES	N/A
	a) are Custody Seals present on Cooler(s) ?	YES	NO
	If yes, are seals intact ?	YES	NO
	b) are Custody Seals present on the sample ?	YES	NO
	If yes, are seals intact ?	YES	NO
4	Is there a Chain-Of-Custody (COC)* per cooler ? if not, if a problem is found indicate which samples/test were in the affected cooler on the MCD.	YES	NO
5	Is the COC* complete per cooler ? Relinquished: yes/no Requested analysis: yes/no	YES	NO
6	Is the COC* in agreement with the samples received? # Samples: yes/no Sample ID's: yes/no Date sampled: yes/no Matrix: yes/no # containers: yes/no	YES	NO
7	Are the samples preserved correctly?	YES	NO
8	Is there enough sample for all the requested analyses?	YES	NO
9	Are all samples within holding times for the requested analyses?	YES	NO
10	Record cooler temperature. Contact PM if temperature is not 4°C ± 2°C.	°C	
	Is ice present in cooler?	YES	NO
11	Were all sample containers received intact (ie. not broken, leaking, etc.)?	YES	NO
12	Are samples requiring no headspace, headspace free? N/A	YES	NO
13	Are VOA 1st stickers required?	YES	NO
14	Are there special comments on the Chain of Custody which require client contact?	YES	N/A
15	If yes, was Ceimic Client Coordinator notified?	YES	NO

Describe "no" items: _____

Was client contacted? yes / no

If yes, Date: _____ Name of Person contacted:

Describe actions taken or client instructions: _____

*or other representative documents, letters, and/or shipping notes