93 SEP 17 AM 10: 07

RESNA
Working To Restore Nature

3315 Almaden Expressway, Suite 34
San Jose, CA 95118
Phone: (408) 264-7723
FAX: (408) 264-2435

TRANSMITTAL

TO: Ms. Susan Hugo
Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, CA 94621

DATE: September 14, 1993
PROJECT NUMBER: 61026.02
SUBJECT: ARCO Station No. 6113

FROM: John C. Young

WE ARE SENDING YOU:

COPIES	DATED	DESCRIPTION
1	8/16/93	Site Status Update for ARCO Station No. 6113, 785 East Stanley Boulevard, Livermore, California.

THESE ARE TRANSMITTED as checked below:

[ ] For review and comment	[ ] Approved as submitted	[ ] Resubmit ___ copies for approval
[X] As requested	[ ] Approved as noted	[ ] Submit___ copies for distribution
[ ] For approval	[ ] Return for corrections	[ ] Return ___ corrected prints
[X] For your files		

REMARKS:
Copies: 1 to RESNA project file no. 61026.02

John C. Young, Project Manager

cc: Mr. Mark Thomson, ACDAO
Mr. Eddy So, RWQCB

RESNA
Working To Restore Nature

3315 Almaden Expressway, Suite 34
San Jose, CA 95118
Phone: (408) 264-7723
FAX: (408) 264-2435

August 16, 1993
0816SHUG.6113
61026.02

Ms. Susan Hugo
Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94624

Subject: Site Status Update for ARCO Station 6113, 785 East Stanley Blvd., Livermore, California.

Dear Ms. Hugo:

This letter provides an update on investigation and remedial activities conducted for the above-referenced site. This update covers site activities performed during June and July 1993, and site activities anticipated for the month of August 1993.

June and July 1993 Activities

- Performed monthly groundwater monitoring.
- Installed vapor wells VW-3 and VW-4.
- Drilled soil boring B-15/VW-5.
- Analyzed soil samples from borings B-13 through B-15.
- Submitted Remedial Action Plan (RAP) and Addendum Three to Work Plan for Installation of Air Sparge Wells and Performance of an Air Sparge Test.

RESNA
Working to Restore Nature

Site Status Update
ARCO Station 6113, Livermore, California

August 16, 1993
61026.02

Work Anticipated for August 1993

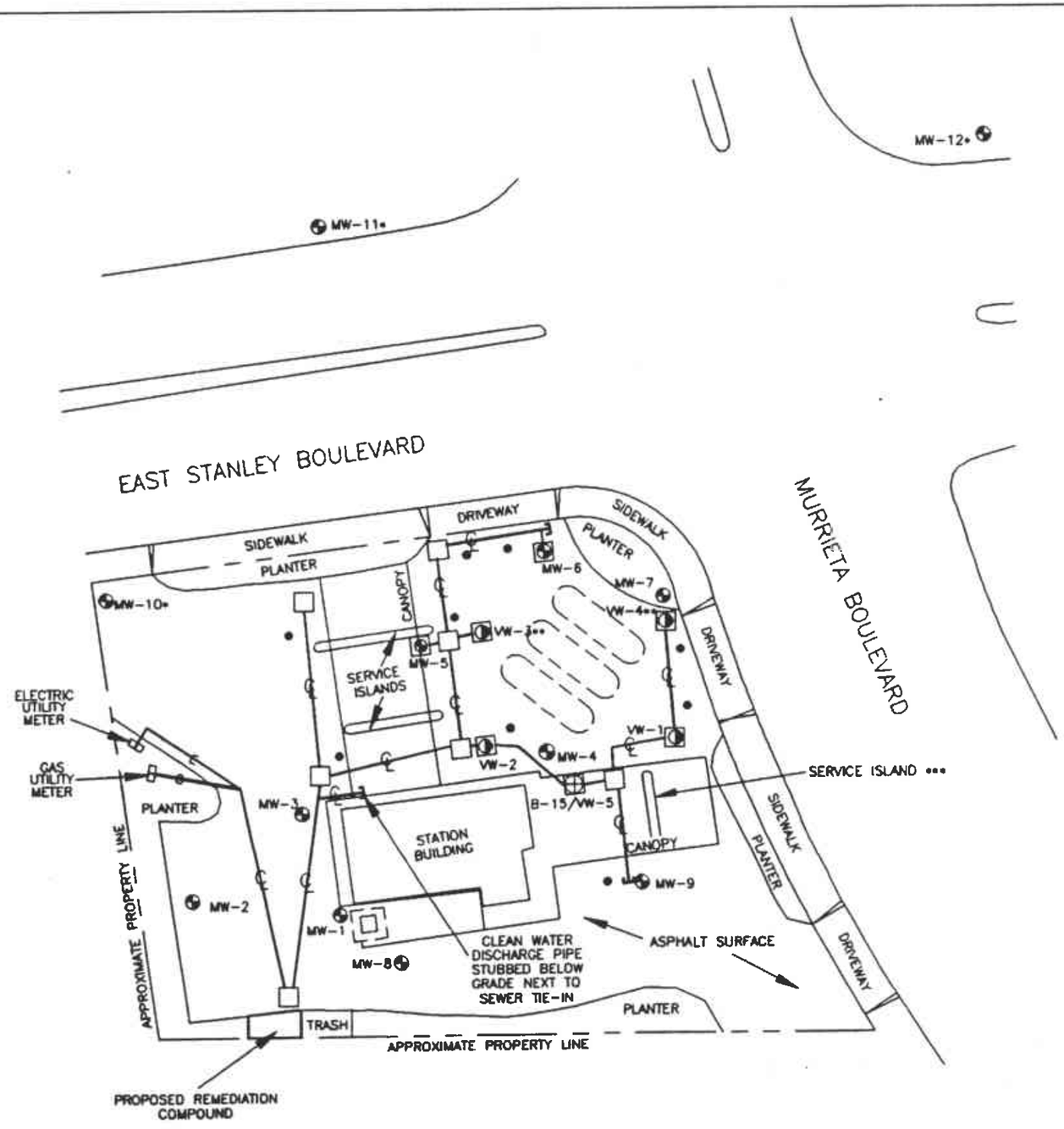
- Perform groundwater sampling for Third Quarter 1993.
- As a result of this past winter's rains, water levels in all onsite monitoring wells have risen from 60 feet below grade to 20 feet below grade. ARCO is currently re-evaluating soil and groundwater remediation alternatives that may be applicable to this site as a result of higher water levels.
- As shown on Plate 7 of the Work Plan, approximately 18 weeks are necessary to complete the scope of work outlined in the preliminary time schedule. This work will be initiated following a decrease in groundwater elevations to allow installation of air sparge wells.
- Per your telephone conversation with Keith McVicker of RESNA, the results of vapor well installation performed in June 1993, will be incorporated into the Report of Findings for Air Sparge Well Installation and Testing. RESNA has enclosed for your review the Generalized Site Plan, Boring Logs, and Analytical Results of Soil Samples from vapor well installation.
- Based on a consistent groundwater flow direction over the past year of monthly monitoring at the subject site, ARCO will discontinue monthly monitoring as of September 1993, and continue quarterly sampling.

If you have any questions or comments regarding this letter, please call us at (408) 264-7723.

Sincerely,
RESNA Industries Inc.

John C. Young
Project Manager

cc: Mr. Michael Whelan, ARCO Products Company
Mark Thomson, Alameda County District Attorney's Office
Eddy So, Regional Water Quality Control Board



EXPLANATION

- ● = Brass monument markers for location of 1" sparge pipe stub-outs below grade
- MW-12 ⊕ = Boring/monitoring well (RESNA, 09/89, 02/91, 06/92 and 03/93)
- VW-4 ◑ = Boring/vapor extraction well (RESNA, 06/92 and 08/92)
- * = MW-10, 11, and 12 installed in March 1993
- ** = VW-3 and VW-4 installed in June 1993
- *** = Service island in operation since April 1993
- = Existing underground gasoline storage tanks
- □ = Vault/junction box
- ℄ = Center line of subgrade remediation piping trench
- = Pipes stubbed below grade and capped
- B-15/VW-5 ⊕ = Soil boring/vapor extraction well drilled but not installed in June 1993 since no hydrocarbon-impacted soil was encountered to a depth of 30 feet below grade.

N

Approximate Scale

40 20 0 40 80

feet

Source: Modified from plan supplied by Ron Archer, Civil Engineer Inc., Feb. 1991; and John Koch Land Surveyor, June 1992 and April 1993.

RESNA
Working to Restore Nature

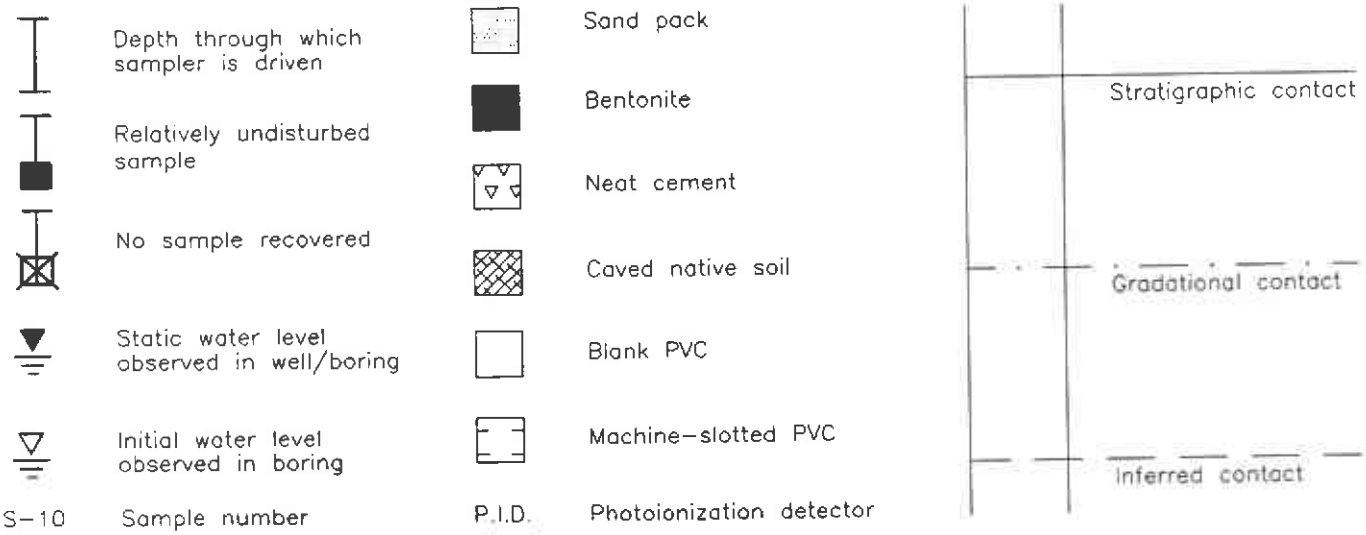
PROJECT 69028.11

GENERALIZED SITE PLAN
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

PLATE
2

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISION		LTR	DESCRIPTION	MAJOR DIVISION		LTR	DESCRIPTION
COARSE-GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	GW	Well-graded gravels or gravel-sand mixtures, little or no fines.	FINE-GRAINED SOILS	SILTS AND CLAYS LL<50	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity.
		GP	Poorly-graded gravels or gravel-sand mixtures, little or no fines.			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
		GM	Silty gravels, gravel-sand-silt mixtures.			OL	Organic silts and organic silt-clays of low plasticity.
		GC	Clayey gravel, gravel-sand-clay mixtures.		SILTS AND CLAYS LL>50	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
	SAND AND SANDY SOILS	SW	Well-graded sand or gravelly sands, little or no fines.			CH	Inorganic clays of high plasticity, fat clays.
		SP	Poorly-graded sands or gravelly sands, little or no fines.			OH	Organic clays of medium to high plasticity, organic silts.
		SM	Silty sands, sand-silt mixtures.				
		SC	Clayey sands, sand-clay mixtures.	HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils.



BLOWS REPRESENT THE NUMBER OF BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES TO DRIVE THE SAMPLER THROUGH EACH 6 INCHES OF AN 18-INCH PENETRATION.

GRADATIONAL AND INFERRED CONTACT LINES SEPARATING UNITS ON THE LOG REPRESENT APPROXIMATE BOUNDARIES ONLY. ACTUAL BOUNDARIES MAY BE GRADUAL. LOGS REPRESENT SUBSURFACE CONDITIONS AT THE BORING LOCATION AT THE TIME OF DRILLING ONLY.

RESNA
Working to Restore Nature

PROJECT 69028.07

UNIFIED SOIL CLASSIFICATION SYSTEM AND SYMBOL KEY
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

PLATE 3

Total depth of boring:	24 feet	Casing diameter:	4 inches
Diameter of boring:	12 inches	Casing material:	Sch 40 PVC
Date drilled:	6-16-93	Slot size:	0.10-inch
Drilling Company:	Exploration Geoservices	Sand size:	3/8" pea gravel
Driller:	John	Screen Interval:	15-1/2 feet to 24 feet
Drilling method:	Hollow-Stem Auger	Field Geologist:	Zbigniew Ignatowicz

Signature of Registered Professional: _____

Registration No.: CEG 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
2					Pea gravel backfill.	
4						
6		6 8 8				
8						
10		7 9				
12	S-11	10 8 18 26 26	10.5	ML	Gravelly silt, dark olive-gray, damp, low plasticity, very stiff to hard; fine gravel ~10%.	
14		50/6 25 40 45 20	14.3 21.8		Fine gravel, color change to dark greenish-gray; rootlets.	
16	S-16	50/6 14 20 21 24	26.2	GW	Sandy gravel, coarse-grained sand, fine gravel, greenish-gray, damp, very dense.	
18		50/6 50/6 28	373			
20	S-20.5	50/6 50/6	1096		▽	
22					Silty clay, ~10% fine-grained sand, olive-brown, moist, low to medium plasticity, hard.	
24	S-23.5	22 27	2800	CL	Total Depth = 14 feet.	
26						
28						
30						
32						
34						
36						
38						
40						

RESNA
Working to Restore Nature

PROJECT: 69028.07

LOG OF BORING B-13/VW-3

ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

PLATE 4

Total depth of boring:	31 feet	Casing diameter:	4 inches
Diameter of boring:	12 inches	Casing material:	Sch 40 PVC
Date drilled:	6-16-93	Slot size:	0.10-inch
Drilling Company:	Exploration Geoservices	Sand size:	3/8" pea gravel
Driller:	John	Screen Interval:	17 feet to 30 feet
Drilling method:	Hollow-Stem Auger	Field Geologist:	Zbigniew Ignatowicz

Signature of Registered Professional: _____

Registration No.: CEG 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
					Pea gravel backfill.	
2				GW	Sandy gravel, coarse-grained sand, fine to coarse gravel, dark brown, damp, very dense.	
4						
6	S-5.5	30 50				
8						
10		15				
12	S-11	24 26	129	CL/CH	Silty clay, very dark grayish-brown, damp, medium to high plasticity, hard.	
14	S-14.5	8 9 9	49.8		Moist, yellow-orange oxidation stains.	
16						
18	S-17	50/6	45.6	GW	Sandy gravel, dark gray, moist, very dense.	
20						
22						
24	S-23	50/3		▽	Wet.	
26						
28	S-28	23 25 18	2570	SC	Clayey sand, fine-grained, dark olive-gray, wet, dense.	
30	S-30.5	12 18	230	CL	Silty clay, olive, moist, medium plasticity, stiff.	
32					Total Depth = 31 feet.	
34						
36						
38						
40						

RESNA
Working to Restore Nature

PROJECT: 69028.07

LOG OF BORING B-14/VW-4
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

PLATE 5

Total depth of boring:	31-1/2 feet	Casing diameter:	NA
Diameter of boring:	12 inches	Casing material:	NA
Date drilled:	6-16-93	Slot size:	NA
Drilling Company:	Exploration Geoservices	Sand size:	NA
Driller:	John	Screen Interval:	NA
Drilling method:	Hollow-Stem Auger	Field Geologist:	Zbigniew Ignatowicz

Signature of Registered Professional: _____

Registration No.: CEG 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
					Steel box.	
2				GW	Sandy gravel, grayish-brown, slightly damp, dense.	
4						
6	S-6	15 21 29	6.1			
8						
10	S-10.5	25 50/6	7.0			
12						
14				ML	Sandy silt, with some gravel, dark grayish-brown, damp, low plasticity, hard.	
16	S-15.5	27 50/3	17.8	CL	Gravelly clay, olive, damp, medium plasticity, hard.	
18						
20	S-20.5	35 50/2	21.4			
22						
24				CL	Sandy clay, dark greenish-gray, very moist, medium plasticity, hard.	
26	S-26	11 18 25	34.2			
28						
30	S-31	13 31 18	28.6			
32					Total Depth = 31-1/2 feet.	
34						
36						
38						
40						

RESNA
Working to Restore Nature

PROJECT: 69028.07

LOG OF BORING B-15

ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

PLATE 6

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94566 • (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Arco # 6113
785 East Stanley Boulevard
Livermore, California

CLIENT
Name Arco
Address P.O. Box 5811 Phone (415) 571-2434
City San Mateo Zip 94402

APPLICANT
Name RESNA Industries - Keith McVicker
Suite 34
Address 3315 Almaden Expressway Phone (408) 264-7723
City San Jose Zip 95118

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	___	General	___
Water Supply	___	Contamination	___
Monitoring	✓	Well Destruction	___

vapor well

PROPOSED ~~WATER~~ SUPPLY WELL USE
Domestic ___ Industrial ___ Other vapor monitoring
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger ✓ Hollow-stem
Cable ___ Other ___

DRILLER'S LICENSE NO. 484288 (C-57)

WELL PROJECTS
Drill Hole Diameter 12 in. Maximum
Casing Diameter 4 in. Depth 25 ft.
Surface Seal Depth 15 ft. Number 3

GEOTECHNICAL PROJECTS
Number of Borings ___ Maximum
Hole Diameter ___ in. Depth ___ ft.

ESTIMATED STARTING DATE 6/16/93
ESTIMATED COMPLETION DATE 6/16/93

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Keith McVicker Date 6/8/93

FOR OFFICE USE

PERMIT NUMBER 93320
LOCATION NUMBER ___

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 10 Jun 93
Wyman Hong

121989

ARCO Products Company
Division of AtlanticRichfieldCompany

Chain of Custody

Task Order No. 6113-93-2 69028.11

ARCO Facility no. 6113	City (Facility) LIVERMORE	Project manager (Consultant) JOHN YOUNG	Laboratory name SEQUOIA
ARCO engineer Michael Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) (408) 264-7723	Fax no. (Consultant) (408) 264-2435
Consultant name RESNA	Address (Consultant) 3315 ALMADEN EXPRESSWAY		Contract number 07-073

Method of shipment: 69028.11

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Water	Other	Preservation: Ice	Acid	Sampling date	Sampling time	BTEX 8020/EPA 8020	BTEX/TPH EPA MB02/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ VOA ☐ Semi VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	Hold
B13-1-11		1	X			X		6-16-93						9306A45-01				(A)			X
B13-2-16		1	X			X					X						02				
B13-3-20.5		1	X			X											~~02~~	(A)			X
B13-4-23.5		1	X			X					X						02	(A)			
B14-1-5.5		1	X			X											~~03~~	(A)			X
B14-2-11		1	X			X											~~04~~	(A)			X
B14-3-14.5		1	X			X											~~05~~	(A)			X
B14-4-17		1	X			X											~~06~~	(A)			X
B14-5-23		1	X			X					X						03				
B14-6-28		1	X			X											~~07~~	(A)			X
B14-7-30.5		1	X			X					X						04				

Special detection Limit/reporting:

Special QA/QC:

Remarks:

Lab number: 9306A45

Turnaround time:
- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☒

Condition of sample: good

Temperature received: cool

Relinquished by sampler: Christine Gustavson	Date: 6-17-93	Time: 11:00	Received by: David Adams
Relinquished by: David Adams	Date: 6/21/93	Time: 4:05	Received by:
Relinquished by:	Date:	Time:	Received by laboratory: Shelly

Date received by laboratory: 6-21-93 Time: 1601

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

APPC-3292 (2-91)

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. ~~69028.11~~ 6113-93-2

Chain of Custody

ARCO Facility no. 6113	City (Facility) LIVERMORE	Project manager (Consultant) JOHN YOUNG	Laboratory name SEQUOIA
ARCO engineer Michael Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) (408) 264-7723	Fax no. (Consultant) (408) 264-2435
Consultant name RESNA	Address (Consultant) 3315 ALMADEN EXP. SAN JOSE		Contract number 07-073

Method of shipment: 69028.11

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	PQH
B15-1-6		1	X			X		6/16/93					9306	A45			~~08~~ (10)				X
B15-2-10.5		1	X			X					X						05				
B15-3-15.5		1	X			X											~~09~~ (10)				X
B15-4-20.5		1	X			X					X						06				
B15-5-26		1	X			X										-	~~10~~ (10)				X
B15-6-31		1	X			X					X						07				

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number: 9306A45

Turnaround time

- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☐

Condition of sample: good

Temperature received: cool

	Date	Time		Date	Time
Relinquished by sampler	6-17-93	1120	Received by	6/21/93	3:15 pm
Relinquished by	6/21/93	4:05	Received by		
Relinquished by	Date	Time	Received by laboratory	6/21/93	1605

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

APPC-3292 (2-91)

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA
3315 Almaden Expwy., Suite 34
San Jose, CA 95118
Attention: John Young

Project: 69028.11, Arco 6113

Enclosed are the results from 7 soil samples received at Sequoia Analytical on June 21,1993. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
3FA4501	Soil, B13-2-16	6/16/93	EPA 5030/8015/8020
3FA4502	Soil, B13-4-23.5	6/16/93	EPA 5030/8015/8020
3FA4503	Soil, B14-5-23	6/16/93	EPA 5030/8015/8020
3FA4504	Soil, B14-7-30.5	6/16/93	EPA 5030/8015/8020
3FA4505	Soil, B15-2-10.5	6/16/93	EPA 5030/8015/8020
3FA4506	Soil, B15-4-20.5	6/16/93	EPA 5030/8015/8020
3FA4507	Soil, B15-6-31	6/16/93	EPA 5030/8015/8020

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA	Client Project ID:	69028.11, Arco 6113	Sampled:	Jun 16, 1993
3315 Almaden Expwy., Suite 34	Sample Matrix:	Soil	Received:	Jun 21, 1993
San Jose, CA 95118	Analysis Method:	EPA 5030/8015/8020	Reported:	Jul 2, 1993
Attention: John Young	First Sample #:	3FA4501		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 3FA4501 B13-2-16	Sample I.D. 3FA4502 B13-4-23.5	Sample I.D. 3FA4503 B14-5-23	Sample I.D. 3FA4504 B14-7-30.5	Sample I.D. 3FA4505 B15-2-10.5	Sample I.D. 3FA4506 B15-4-20.5
Purgeable Hydrocarbons	1.0	15	1,100	340	2.9	N.D.	N.D.
Benzene	0.0050	N.D.	14	3.0	0.69	N.D.	N.D.
Toluene	0.0050	N.D.	54	13	0.085	N.D.	N.D.
Ethyl Benzene	0.0050	0.011	18	5.1	0.021	N.D.	N.D.
Total Xylenes	0.0050	0.046	110	34	0.054	N.D.	N.D.
Chromatogram Pattern:		Non-Gas Mix > C6	Gas	Gas	Gas	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	50	50	1.0	1.0	1.0
Date Analyzed:	6/27/93	6/28/93	6/28/93	6/27/93	6/27/93	6/27/93
Instrument Identification:	GCHP-18	GCHP-1	GCHP-18	GCHP-18	GCHP-17	GCHP-17
Surrogate Recovery, %: (QC Limits = 70-130%)	96	83	116	112	112	119

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

VTague

Vickie Tague
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA	Client Project ID:	69028.11, Arco 6113	Sampled:	Jun 16, 1993
3315 Almaden Expwy., Suite 34	Sample Matrix:	Soil	Received:	Jun 21, 1993
San Jose, CA 95118	Analysis Method:	EPA 5030/8015/8020	Reported:	Jul 2, 1993
Attention: John Young	First Sample #:	3FA4507		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 3FA4507 B15-6-31
Purgeable Hydrocarbons	1.0	N.D.
Benzene	0.0050	N.D.
Toluene	0.0050	N.D.
Ethyl Benzene	0.0050	N.D.
Total Xylenes	0.0050	N.D.
Chromatogram Pattern:		--

Quality Control Data

Report Limit Multiplication Factor:	1.0
Date Analyzed:	6/27/93
Instrument Identification:	GCHP-17
Surrogate Recovery, %: (QC Limits = 70-130%)	108

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

SEQUOIA ANALYTICAL
680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA	Client Project ID:	69028.11, Arco 6113
3315 Almaden Expwy., Suite 34	Matrix:	Soil
San Jose, CA 95118		
Attention: John Young	QC Sample Group: 3FA4501-07	Reported: Jul 2, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	A. Maralit	A. Maralit	A. Maralit	A. Maralit
Conc. Spiked:	0.20	0.20	0.20	0.60
Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg
LCS Batch#:	BLK062593	BLK062593	BLK062593	BLK062593
Date Prepared:	6/25/93	6/25/93	6/25/93	6/25/93
Date Analyzed:	6/27/93	6/27/93	6/27/93	6/27/93
Instrument I.D.#:	GCHP-18	GCHP-18	GCHP-18	GCHP-18
LCS % Recovery:	90	90	90	90
Control Limits:	60-140	60-140	60-140	60-140
MS/MSD Batch #:	3FA4008	3FA4008	3FA4008	3FA4008
Date Prepared:	6/25/93	6/25/93	6/25/93	6/25/93
Date Analyzed:	6/27/93	6/27/93	6/27/93	6/27/93
Instrument I.D.#:	GCHP-18	GCHP-18	GCHP-18	GCHP-18
Matrix Spike % Recovery:	75	80	80	82
Matrix Spike Duplicate % Recovery:	80	85	85	85
Relative % Difference:	6.5	6.1	6.1	3.6

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA	Client Project ID:	69028.11, Arco 6113
3315 Almaden Expwy., Suite 34	Matrix:	Soil
San Jose, CA 95118		
Attention: John Young	QC Sample Group: 3FA4501-07	Reported: Jul 2, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	R. Geckler	R. Geckler	R. Geckler	R. Geckler
Conc. Spiked:	0.20	0.20	0.20	0.60
Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg
LCS Batch#:	BLK062593	BLK062593	BLK062593	BLK062593
Date Prepared:	6/25/93	6/25/93	6/25/93	6/25/93
Date Analyzed:	6/25/93	6/25/93	6/25/93	6/25/93
Instrument I.D.#:	GCHP-17	GCHP-17	GCHP-17	GCHP-17
LCS % Recovery:	110	100	100	100
Control Limits:	60-140	60-140	60-140	60-140
MS/MSD Batch #:	3FA4004	3FA4004	3FA4004	3FA4004
Date Prepared:	6/25/93	6/25/93	6/25/93	6/25/93
Date Analyzed:	6/25/93	6/25/93	6/25/93	6/25/93
Instrument I.D.#:	GCHP-18	GCHP-18	GCHP-18	GCHP-18
Matrix Spike % Recovery:	95	95	95	97
Matrix Spike Duplicate % Recovery:	100	100	100	98
Relative % Difference:	5.1	5.1	5.1	1.0

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588 VOICE (510) 484-2600
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT ARCO 6113
785 East Stanley Boulevard,
Livermore, CA

CLIENT
Name ARCO Products Co
Address P.O. Box 5811 Phone (415) 571-2434
City San Mateo Zip 94402

APPLICANT
Name RESNA Industries Inc. for ARCO
Address 325 Ainsley Exp. Suite 34 Phone (408) 264-7723
City San Jose Zip 95118

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	___	General	___
Water Supply	___	Contamination	___
Monitoring	✓	Well Destruction	___
Vapor Extraction Recovery	✓		

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger Hollow-Stem
Cable ___ Other ___

DRILLER'S LICENSE NO. C-57 #484288

WELL PROJECTS
Drill Hole Diameter 10 in. Maximum
Casing Diameter 6; [4] [2] in. 1; (5); [2] Depth 75 (55) ft. 4; (3)
Surface Seal Depth 45 (25) ft. 4; (3) Number 7

GEOTECHNICAL PROJECTS
Number of Borings ___ Maximum
Hole Diameter ___ in. Depth ___ ft.

ESTIMATED STARTING DATE 02/01/93
ESTIMATED COMPLETION DATE 02/05/93

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Barbara Sieminski Date 1/19/93

FOR OFFICE USE

PERMIT NUMBER 93044
LOCATION NUMBER ___

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 27 Jan 93
Wyman Hong

31992

CITY OF LIVERMORE
Public Works Department

STREET ENCROACHMENT PERMIT APPLICATION

APR 1 1 199

PERMIT TO DO WORK IN ACCORDANCE WITH CHAPTER 12.08 OF THE LIVERMORE MUNICIPAL CODE AND SPECIFICATIONS AS ADOPTED BY THE CITY OF LIVERMORE AND ANY SPECIAL REQUIREMENTS SHOWN OR LISTED HEREIN.

Applicant/Permittee:

Name: RESNA Industries Inc. for ARCO

Address: 3315 Almaden Expy, Suite 34
San Jose, CA 95118

Phone: (408) 264-7723

Permit No.: ____

Receipt No.: ____

Fee: $ ____

Bond: $ ____

PLEASE READ THIS PERMIT CAREFULLY. KEEP IT AT THE WORK SITE. TO ARRANGE FOR INSPECTION, PHONE 373-5240 AT LEAST 24 HOURS BEFORE YOU START WORK.

JOB LOCATION vicinity of ARCO Station 6113, 785 East Stanley Blvd, Livermore, CA (Plate 2)

DESCRIPTION OF WORK:
Two 10-inch diameter soil borings will be drilled and two 2-inch-diameter groundwater monitoring wells (MW-1 and MW-2) installed in borings (Plate 3). After initial installation of the wells, they will be monitored on a quarterly basis to determine changes in groundwater levels, and for sampling to determine presence of any groundwater contamination. The wells will be an important source of information concerning soil and groundwater in the immediate area of ARCO 6113.

Length of Excavation N/A l.f. Width 10" l.f. Depth 75' ft.

ATTENTION IS DIRECTED TO THE GENERAL PROVISIONS PRINTED ON THE REVERSE SIDE OF THIS PERMIT AND TO THE FOLLOWING SPECIAL REQUIREMENTS (to be filled in by Engineering Division):

1. See attached conditions.
2. required by other agencies shall be the responsibility of the applicant.
3. [illegible] of the Depa[illegible] dated 3/24/93 on file [illegible] City Clerk.

Prosecution of Work: All work authorized by the permit shall be performed in a workmanlike, diligent, and expeditious manner, and must be completed to the satisfaction of the Director of Public Works.

Liability and Damages: The permittee shall be responsible for all liability imposed by law for personal injury or property damage which may arise out of the work permitted and done by permittee under this permit, or which may arise out of the failure on the part of the permittee to perform his obligations under said permit in respect to maintenance and encroachment. The permittee shall protect and indemnify the City of Livermore, its officers and employees, and save them harmless in every way from all action at law for damage or injury to persons or property that may arise out of or be occasioned in any way because of his operations as provided in this permit.

Signature of Permittee

By: ____

Date: 4/6/93

City Engineer

By: M. Dennerley

Date of Issue: 4/6/93

Work Completed: ____

Inspector: ____

WHITE — PUBLIC WORKS YELLOW — FINANCE PINK — APPLICANT GOLDENROD — ENGINEERING DEPARTMENT

Total depth of boring:	31-1/2 feet	Casing diameter:	NA
Diameter of boring:	12 inches	Casing material:	NA
Date drilled:	6-16-93	Slot size:	NA
Drilling Company:	Exploration Geoservices	Sand size:	NA
Driller:	John	Screen Interval:	NA
Drilling method:	Hollow-Stem Auger	Field Geologist:	Zbigniew Ignatowicz

Signature of Registered Professional: _____

Registration No.: CEG 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
					Steel box.	
2				GW	Sandy gravel, grayish-brown, slightly damp, dense.	
4						
6	S-6	15 21 29	6.1			
8						
10	S-10.5	25 50/6	7.0			
12						
14				ML	Sandy silt, with some gravel, dark grayish-brown, damp, low plasticity, hard.	
16	S-15.5	27 50/3	17.8	CL	Gravelly clay, olive, damp, medium plasticity, hard.	
18						
20	S-20.5	35 50/2	21.4			
22						
24				CL	Sandy clay, dark greenish-gray, very moist, medium plasticity, hard.	
26	S-26	11 18 25	34.2			
28						
30	S-31	13 31 18	28.6			
32					Total Depth = 31-1/2 feet.	
34						
36						
38						
40						

RESNA
Working to Restore Nature

PROJECT: 69028.07

LOG OF BORING B-15

ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

PLATE 6

Depth of boring: 54 1/2 feet Diameter of boring: 10 inches Date drilled: 03/24/93

Well depth: 52 feet Material type: Scn 40 PVC Casing diameter: 4 inches

Screen interval: 32 to 52 feet Slot size: 0.020-inch

Drilling Company: Exploration GeoServices Driller: John and Dennis

Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional:

Registration No.: CEG 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt (4 inches)	
				GP	Sandy gravel, grey, damp, dense; baserock.	
2				SP	Sandy, medium- to coarse-grained, brown, damp, dense.	
4				GP	Sandy gravel, brown, damp, very dense.	
6	S-5.5	34 50/6"	3			
8						
10		50/5"			With cobbles.	
12						
				ML	Clayey silt with sand, light brown mottled orange, damp, low plasticity, hard.	
14						
	S-15.5	24 50/4"	5			
16				GW-GC	Sandy gravel with clay, brown, damp, very dense.	
18						
20	S-20	50/5"	5		Increasing clay.	

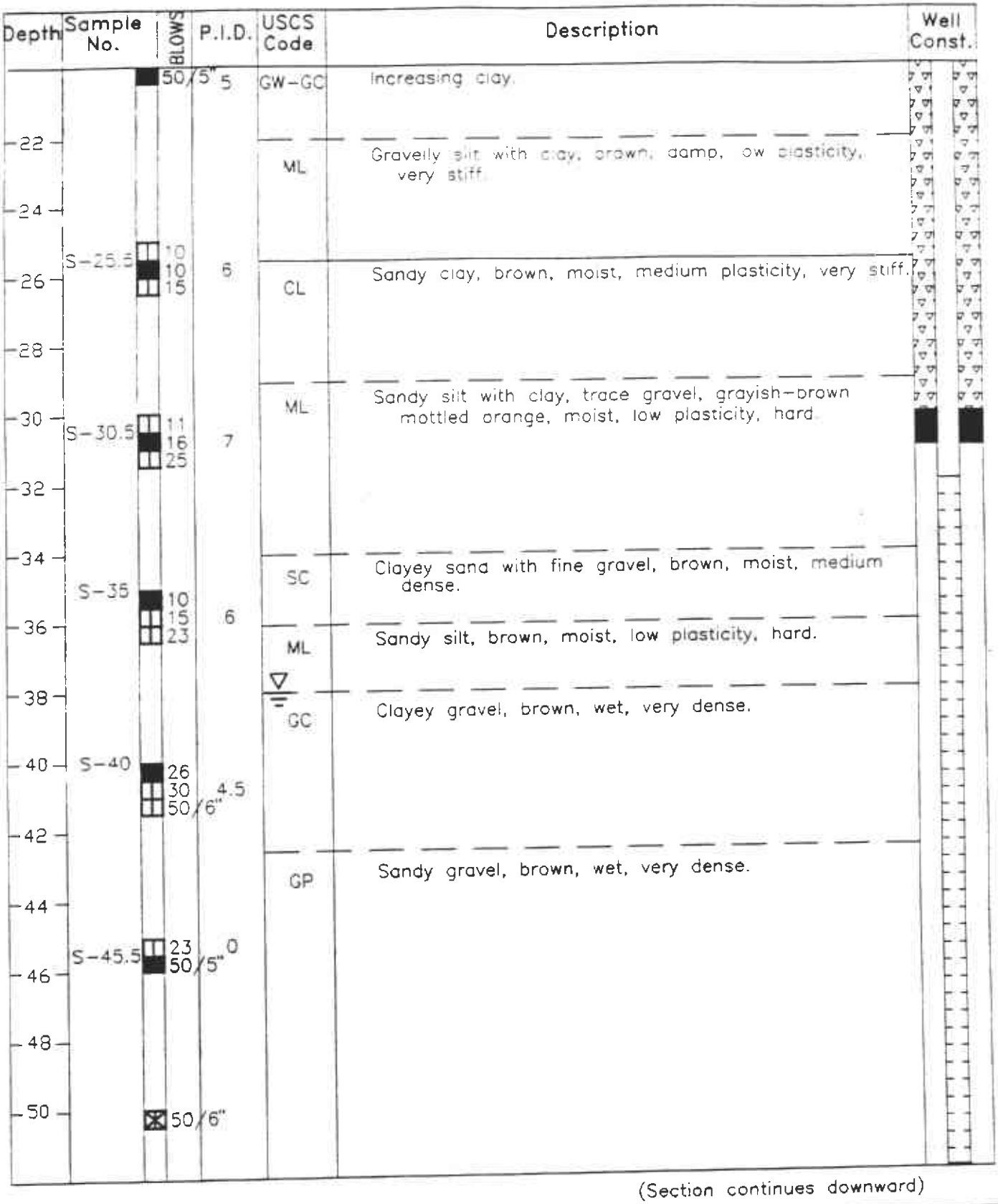
(Section continues downward)

RESNA
Working to Restore Nature

PROJECT: 69028.11

LOG OF BORING B-17/MW-10
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

PLATE 4



(Section continues downward)

RESNA
Working to Restore Nature

PROJECT 69028.11

LOG OF BORING B-17/MW-10
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

PLATE 5

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
				GP	Sandy gravel, brown, wet, very dense.	
52						
54	S-54	50/5"				
					Total depth = 54 1/2 feet.	
56						
58						
60						
62						
64						
66						
68						
70						
72						
74						
76						
78						
80						

RESNA
Working to Restore Nature

PROJECT 69028.11

LOG OF BORING B-17/MW-10
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

PLATE 6

Depth of boring: 47 1/2 feet Diameter of boring: 8 inches Date drilled: 03/23/93

Well depth: 45 feet Material type: Sch 40 PVC Casing diameter: 2 inches

Screen interval: 38 to 45 feet Slot size: 0.020-inch

Drilling Company: Exploration GeoServices Driller: John and Dennis

Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional:

Registration No.: CEG 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0				GW-GC	Sandy gravel with clay, damp, brownish-gray, very dense.	
4				GC	Clayey gravel with sand, brown, damp, very dense.	
4	S-5	21 25 25	0	GW-GC	Sandy gravel with clay and cobbles, dark brown, damp, very dense; gravel up to 3" diameter.	
10	S-10	11 33 31	0		Decreasing clay; color change to grayish-brown.	
14	S-15	48 33 35	2			
16				ML	Clayey silt with sand, trace fine gravel, light brown mottled gray, damp, low plasticity, hard.	
20	S-20	16 36 50/5"	0			

(Section continues downward)

RESNA
Working to Restore Nature

PROJECT: 69028.11

LOG OF BORING B-18/MW-11
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

PLATE 7

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
22		36 50/5"	0	ML	Clayey silt with sand, trace fine gravel, light brown mottled gray, damp, low plasticity, hard.	
24				SC	Clayey sand, fine-grained, brown, moist, medium dense.	
26	S-25	13 16 26	0	ML	Sandy silt with clay, light brown, moist, low plasticity, hard.	
28				SC	Clayey sand, fine-grained, brown, moist, medium dense.	
30	S-30	12 17 22	0	ML	Clayey silt with sand, light brown, damp, low to medium plasticity, hard.	
32						
34	S-35	7 17 18	0		Increasing clay.	
36						
38				SC	Clayey sand, fine-grained, brown, moist, medium dense.	
40	S-40	8 14 26	0			
42						
44				GL	Silty clay with sand, brown, damp, medium plasticity, hard.	
46	S-45	13 28 28 15 28 40	0 0			
48					Total depth = 47 1/2 feet.	
50						

RESNA
Working to Restore Nature

PROJECT 69028.11

LOG OF BORING B-18/MW-11
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

PLATE
8

Depth of boring: 37 1/2 feet Diameter of boring: 8 inches Date drilled: 03/23/93

Well depth: 34 1/2 feet Material type: Sch 40 PVC Casing diameter: 2 inches

Screen interval: 18 to 34 1/2 feet Slot size: 0.020-inch

Drilling Company: Exploration GeoServices Driller: John and Dennis

Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional:

Registration No.: CEG 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0				GW	Sandy gravel, brown, damp, very dense.	
2						
4		23 25 30	0	GC	Clayey gravel, dark brown, damp, very dense.	
6				GW-GC	Sandy gravel with clay, damp, very dense.	
8						
10	S-10	11 16 21	0	CL	Sandy clay, trace fine gravel, brown, damp, medium plasticity, hard.	
12				ML	Gravelly silt with sand, grayish-brown, damp, low plasticity, hard.	
14	S-15	15 18 22	0			
16						
18				GW-GC	Sandy gravel with clay, brown, moist, very dense.	
20		50/3"	0			

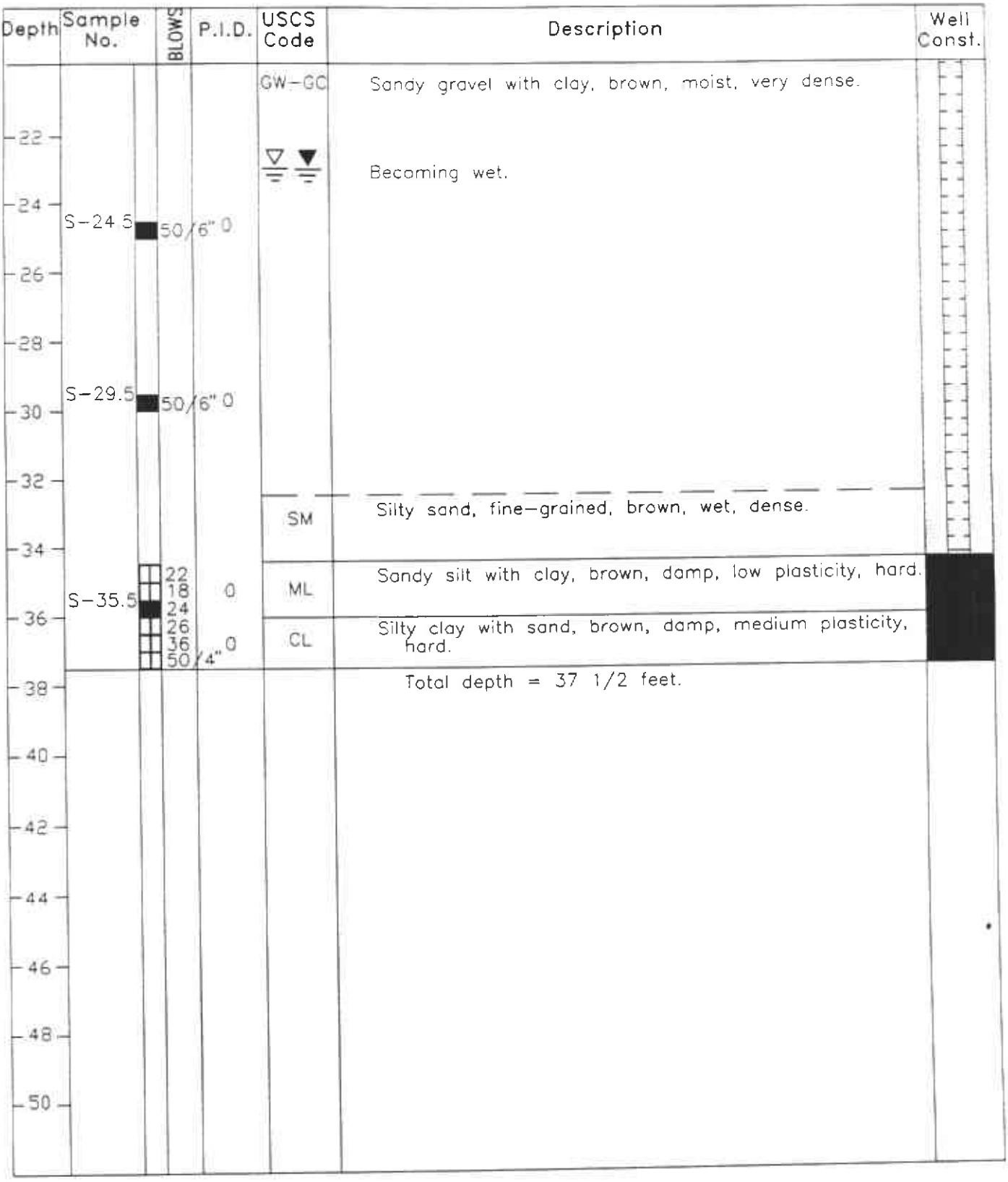
(Section continues downward)

RESNA
Working to Restore Nature

PROJECT: 69028.11

LOG OF BORING B-19/MW-12
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

PLATE 9



RESNA
Working to Restore Nature

PROJECT 69028.11

LOG OF BORING B-19/MW-12
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

PLATE
10

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 6113-93-2

Chain of Custody

ARCO Facility no. 6113	City (Facility) Livermore	Project manager (Consultant) Joel Coffman	Laboratory name Sequoia
ARCO engineer Michael Whelan	Telephone no. (ARCO) (415) 571-2434	Telephone no. (Consultant) (408) 264-7723	Fax no. (Consultant) (408) 264-2435
Consultant name RESNA	Address (Consultant) 3315 Almaden Expy, Suite 34, San Jose, CA 95118		Contract number 07-073

Method of shipment: Sequoia Courier

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
S-15.5-B17	1	1	✓	~~✓~~		✓	~~✓~~	3/24/93			X		9303009				01					
S-20-B17	1	1	✓	~~✓~~		✓		3/24/93			X						02					
S-30.5-B17	1	1	✓	~~✓~~		✓		3/24/93			X						03					
S-35-B17	1	1	✓			✓		3/24/93			X						04					
S-10-B18	1	1	✓			✓		3/23/93			X						05					
S-20-B18	1	1	✓			✓		3/23/93			X						06					
S-30-B18	1	1	✓			✓		3/23/93			X						07					
S-35-B18	1	1	✓			✓		3/23/93			X						08					
S-45-B18	1	1	✓			✓		3/23/93			X						09					
S-10-B19	1	1	✓			✓		3/23/93			X						10					
S-15-B19	1	1	✓			J		3/23/93			X						11					
S-25.5-B19	1	1	✓			✓		3/23/93			X						12					

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number

Turnaround time
- Priority Rush 1 Business Day
- Rush 2 Business Days
- Expedited 5 Business Days
- Standard 10 Business Days

Condition of sample:

Temperature received:

	Date	Time		Date	Time
Relinquished by sampler: Barbara Sieminski	3/25/93	16:15	Received by		
Relinquished by	3/25/93	15:45	Received by		
Relinquished by			Received by laboratory	3/26/93	17:15

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

APPC-3292 (2-91)

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA
3315 Almaden Expwy., Suite 34
San Jose, CA 95118
Attention: Joel Coffman

Project: Arco 6113, Livermore

Enclosed are the results from 12 soil samples received at Sequoia Analytical on March 25,1993. The requested analyses are listed below:

3CD0901	Soil, S-15.5-B17	3/24/93	EPA 5030/8015/8020
3CD0902	Soil, S-20-B17	3/24/93	EPA 5030/8015/8020
3CD0903	Soil, S-30.5-B17	3/24/93	EPA 5030/8015/8020
3CD0904	Soil, S-35-B17	3/24/93	EPA 5030/8015/8020
3CD0905	Soil, S-10-B18	3/24/93	EPA 5030/8015/8020
3CD0906	Soil, S-20-B18	3/24/93	EPA 5030/8015/8020
3CD0907	Soil, S-30-B18	3/24/93	EPA 5030/8015/8020
3CD0908	Soil, S-35-B18	3/24/93	EPA 5030/8015/8020
3CD0909	Soil, S-45-B18	3/24/93	EPA 5030/8015/8020
3CD0910	Soil, S-10-B19	3/24/93	EPA 5030/8015/8020
3CD0911	Soil, S-15-B19	3/24/93	EPA 5030/8015/8020
3CD0912	Soil, S-35.5-B19	3/24/93	EPA 5030/8015/8020

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Maria Lee
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA	Client Project ID:	Arco 6113, Livermore	Sampled:	Mar 24, 1993
3315 Almaden Expwy., Suite 34	Sample Matrix:	Soil	Received:	Mar 25, 1993
San Jose, CA 95118	Analysis Method:	EPA 5030/8015/8020	Reported:	Apr 7, 1993
Attention: Joel Coffman	First Sample #:	3CD0901		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 3CD0901 S-15.5-B17	Sample I.D. 3CD0902 S-20-B17	Sample I.D. 3CD0903 S-30.5-B17	Sample I.D. 3CD0904 S-35-B17	Sample I.D. 3CD0905 S-10-B18	Sample I.D. 3CD0906 S-20-B18
Purgeable Hydrocarbons	1.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Benzene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Toluene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		--	--	--	--	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	1.0
Date Analyzed:	3/31/93	3/31/93	3/31/93	3/31/93	3/30/93	3/30/93
Instrument Identification:	GCHP-7	GCHP-7	GCHP-7	GCHP-7	GCHP-7	GCHP-6
Surrogate Recovery, %: (QC Limits = 70-130%)	77	87	87	89	82	89

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Maria Lee
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA	Client Project ID:	Arco 6113, Livermore	Sampled:	Mar 24, 1993
3315 Almaden Expwy., Suite 34	Sample Matrix:	Soil	Received:	Mar 25, 1993
San Jose, CA 95118	Analysis Method:	EPA 5030/8015/8020	Reported:	Apr 7, 1993
Attention: Joel Coffman	First Sample #:	3CD0907		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 3CD0907 S-30-B18	Sample I.D. 3CD0908 S-35-B18	Sample I.D. 3CD0909 S-45-B18	Sample I.D. 3CD0910 S-10-B19	Sample I.D. 3CD0911 S-15-B19	Sample I.D. 3CD0912 S-35.5-B19
Purgeable Hydrocarbons	1.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Benzene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Toluene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		--	--	--	--	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	1.0
Date Analyzed:	3/30/93	3/31/93	3/31/93	3/31/93	3/31/93	3/31/93
Instrument Identification:	GCHP-7	GCHP-7	GCHP-7	GCHP-7	GCHP-7	GCHP-7
Surrogate Recovery, %: (QC Limits = 70-130%)	105	87	95	85	92	90

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Maria Lee
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

RESNA
3315 Almaden Expwy., Suite 34
San Jose, CA 95118
Attention: Joel Coffman

Client Project ID: Arco 6113, Livermore
Matrix: Soil

QC Sample Group: 3CD0901 - 012

Reported: Apr 7, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	R.Geckler	R.Geckler	R.Geckler	R.Geckler
Conc. Spiked:	0.20	0.20	0.20	0.60
Units:	mg/kg	mg/kg	mg/kg	mg/kg
LCS Batch#:	GBLK033193	GBLK033193	GBLK033193	GBLK033193
Date Prepared:	3/31/93	3/31/93	3/31/93	3/31/93
Date Analyzed:	3/31/93	3/31/93	3/31/93	3/31/93
Instrument I.D.#:	GCHP-7	GCHP-7	GCHP-7	GCHP-7
LCS % Recovery:	95	105	110	110
Control Limits:	60-140	60-140	60-140	60-140
MS/MSD Batch #:	3CD0903	3CD0903	3CD0903	3CD0903
Date Prepared:	3/31/93	3/31/93	3/31/93	3/31/93
Date Analyzed:	3/31/93	3/31/93	3/31/93	3/31/93
Instrument I.D.#:	GCHP-7	GCHP-7	GCHP-7	GCHP-7
Matrix Spike % Recovery:	85	95	100	103
Matrix Spike Duplicate % Recovery:	85	100	100	100
Relative % Difference:	0.0	5.1	0.0	3.3

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Maria Lee
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

SEQUOIA ANALYTICAL

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RESNA
3315 Almaden Expwy., Suite 34
San Jose, CA 95118
Attention: Joel Coffman

Client Project ID: Arco 6113, Livermore
Matrix: Soil

QC Sample Group: 3CD0901 - 12

Reported: Apr 7, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	R.Geckler	R.Geckler	R.Geckler	R.Geckler
Conc. Spiked:	0.20	0.20	0.20	0.60
Units:	mg/kg	mg/kg	mg/kg	mg/kg
LCS Batch#:	GBLK033093	GBLK033093	GBLK033093	GBLK033093
Date Prepared:	3/30/93	3/30/93	3/30/93	3/30/93
Date Analyzed:	3/30/93	3/30/93	3/30/93	3/30/93
Instrument I.D.#:	GCHP-7	GCHP-7	GCHP-7	GCHP-7
LCS % Recovery:	105	110	125	120
Control Limits:	60-140	60-140	60-140	60-140
MS/MSD Batch #:	3CC4405	3CC4405	3CC4405	3CC4405
Date Prepared:	3/30/93	3/30/93	3/30/93	3/30/93
Date Analyzed:	3/30/93	3/30/93	3/30/93	3/30/93
Instrument I.D.#:	GCHP-7	GCHP-7	GCHP-7	GCHP-7
Matrix Spike % Recovery:	100	110	115	112
Matrix Spike Duplicate % Recovery:	100	115	120	115
Relative % Difference:	0.0	4.4	4.3	2.9

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Maria Lee
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.