ENGEO
INCORPORATED

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

In Reply
Please Refer to:
3174-F8

October 20, 1995

Mr. Dick Alford
Livermore Valley Joint Unified School District
685 East Jack London Boulevard
Livermore, CA 94550

Subject: Maintenance Yard
2900 Ladd Avenue
Livermore, California

REPORT ON GROUND-WATER SAMPLING

Reference: ENGEO Inc., Report on Soil and Ground-Water Investigation, 2900 Ladd Avenue, Livermore, California, dated July 8, 1994.

Dear Mr. Alford:

This report presents the results of the quarterly ground-water sampling episode at the subject property (Figure 1). The scope of services included the following:

- Purging of the three ground-water monitoring wells with the recovery of a ground-water sample from each of the wells.
- Laboratory analysis of the ground-water samples for TPH as gasoline; benzene, toluene ethyl benzene and xylene (BTEX).
- Preparation of this letter report

Ground-Water Sampling

Field work was conducted on September 20, 1995. Initially, the depth to the top of the ground-water was verified and the well was checked for the presence of free product or petroleum sheen. No free product or sheen was observed. The water levels for MW2, MW3, and MW4 were measured at 25.55, 25.06 and 25.81 feet below the top of the well casing, respectively.

Prior to sampling, approximately five casing volumes of water were removed from the wells using a submersible electric pump. Water quality parameters including, temperature, pH, and dissolved solids were monitored to allow for adequate purging. The ground-water samples were collected for

laboratory testing using a disposable polyethylene bailer. The samples were then decanted into precleaned laboratory glassware and cooled in an ice chest until delivery under a documented chain-of-custody to National Environmental Testing in Santa Rosa, California. A copy of the well sampling information forms and the chain of custody are provided as attachments.

Laboratory Analysis

The ground-water samples were tested for total petroleum hydrocarbons as gasoline, (EPA 5030/8015) and benzene, toluene, ethylbenzene and xylenes (BTEX - EPA 602). A copy of the laboratory test report is provided as an attachment. Table I provides a summary of the laboratory test results.

TABLE I
Laboratory Analysis Summary
(Concentrations reported in parts per billion)

	TPHg	B	T	E	X
MW2					
4/20/93	4,500	340	110	8.0	630
5/12/94	7,000	520	220	35	410
2/8/95	170	8.9	4.5	2.1	17
5/23/95	<50	<0.5	<0.5	<0.5	<0.5
9/20/95	8,400	2,500	1,200	180	940
MW3					
7/12/94	<50	<0.5	<0.5	<0.5	<0.5
2/8/95	<50	<0.5	<0.5	<0.5	<0.5
5/23/95	<50	<0.5	<0.5	<0.5	<0.5
9/20/95	<50	1.4	<0.5	<0.5	<0.5
MW4					
7/12/94	<50	<0.5	<0.5	<0.5	<0.5
2/8/95	<50	<0.5	<0.5	<0.5	<0.5
5/23/95	60	<0.5	<0.5	<0.5	<0.5
9/20/95	<50	<0.5	<0.5	<0.5	<0.5

The next quarterly sampling episode for the three wells will be undertaken in December 1995. With your authorization, a copy of this report has been provided to Ms. Eva Chu with the Alameda County Department of Environmental Health. We appreciate the opportunity to be of continued service to you on this project. If you have any questions, please contact our office.

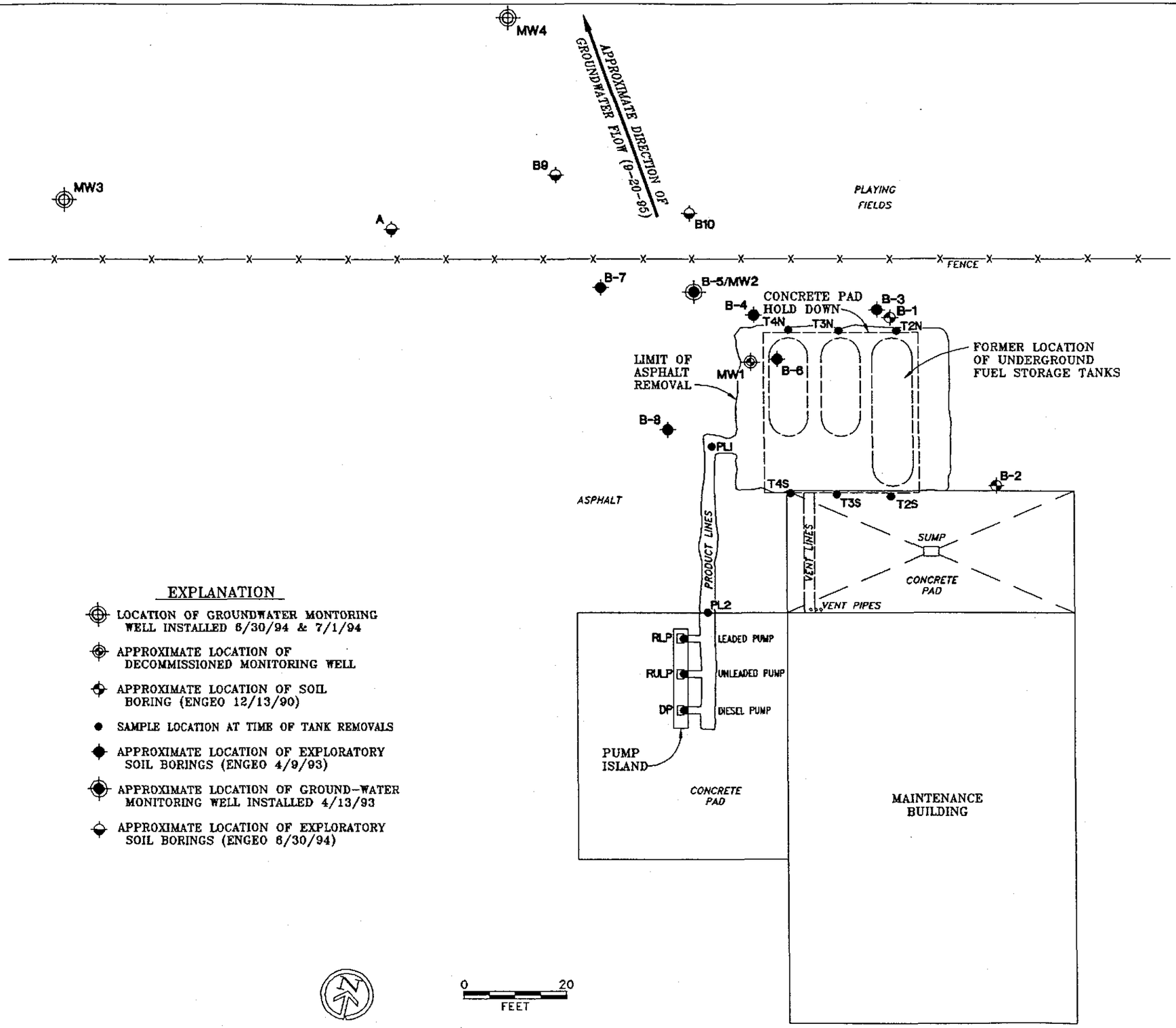
Very truly yours,

ENGEO INCORPORATED

Shawn Munger
RG 5810

Reviewed by:

for Brian Flaherty
Vice President
Director, Environmental Services



EXPLANATION

- LOCATION OF GROUNDWATER MONTORING WELL INSTALLED 6/30/94 & 7/1/94
- APPROXIMATE LOCATION OF DECOMMISSIONED MONITORING WELL
- APPROXIMATE LOCATION OF SOIL BORING (ENGEO 12/13/90)
- SAMPLE LOCATION AT TIME OF TANK REMOVALS
- APPROXIMATE LOCATION OF EXPLORATORY SOIL BORINGS (ENGEO 4/9/93)
- APPROXIMATE LOCATION OF GROUND-WATER MONITORING WELL INSTALLED 4/13/93
- APPROXIMATE LOCATION OF EXPLORATORY SOIL BORINGS (ENGEO 6/30/94)

MONITORING WELL LOCATIONS
L.V.J.U.S.D. MAINTENANCE YARD
2900 LADD AVENUE
LIVERMORE, CALIFORNIA

FIGURE NO. 1
JOB NO.: 3174-F8
DATE: OCTOBER 1995
DRAWN BY:
CHECKED BY:

ENGEO INCORPORATED

ENGEO INCORPORATED
GROUND-WATER SAMPLING INFORMATION

Job Name: 2900 Ladd Avenue	Job Number: 3174-F8
Location: Livermore, California	Date: September 20, 1995
Client: L.V.J.U.S.D.	By: Shawn Munger

WELL INFORMATION

Well Number: MW-2	Diameter (in): 2
Total Depth (ft): 57.10 (toc)	Screen Length: 25'
Depth to Water (ft): 25.55 (toc)	Casing Volume (gal): 5.4

PURGING INFORMATION

Bailer: Pump: X (rate): 0.8 gpm	Time: (init./fin) 16:18/16:55
Volume Removed (gal): 30	No. of Casing Vol: 5.5

Time	Volume Removed (Gal.)	Total Casing Volumes	Temp °F	Cond (µS)	pH	Comments
16:18	--	--	--	--	--	Initial, slight petroleum odor, no sheen
16:23	5	.9	73.0	748	7.5	
16:29	10	1.8	71.7	745	7.3	
16:38	15	2.7	71.0	784	7.4	
16:44	20	3.6	71.0	773	7.4	
16:50	25	4.5	70.1	772	7.5	
16:55	30	5.5	70.5	780	7.4	

SAMPLE INFORMATION

Bailer: X Pump: (gpm):	
Decon Procedure: TSP	Dist. H_2O
Disposable X	Other

Sample	Time	Size	Presv.	Test	Comments
MW-2	17:00	40ml (2)	ICE	TPHg/BTEX	

ENGEO INCORPORATED
GROUND-WATER SAMPLING INFORMATION

Job Name: 2900 Ladd Avenue	Job Number: 3174-F8
Location: Livermore, California	Date: September 20, 1995
Client: L.V.J.U.S.D.	By: Shawn Munger

WELL INFORMATION

Well Number: MW-3	Diameter (in): 2
Total Depth (ft): 52.88 (toc)	Screen Length: 25'
Depth to Water (ft): 25.06 (toc)	Casing Volume (gal): 4.7

PURGING INFORMATION

Bailer: Pump: X (rate): .96 gpm	Time: (init./fin) 14:32/14:58
Volume Removed (gal): 25	No. of Casing Vol: 5.3

Time	Volume Removed (Gal.)	Total Casing Volumes	Temp °F	Cond (µS)	pH	Comments
14:32	--	--	--	--	--	Initial, no odor, no sheen
14:37	5	1.1	72.5	1180	7.0	
14:42	10	2.2	71.0	930	7.4	
14:48	15	3.2	70.0	927	7.4	
14:53	20	4.3	70.1	915	7.3	
14:58	25	5.3	70.3	930	7.4	

SAMPLE INFORMATION

Bailer: X Pump: (gpm):	
Decon Procedure: TSP	Dist. H_2O
Disposable X	Other

Sample	Time	Size	Presv.	Test	Comments
MW-3	15:08	40ml (2)	ICE	TPHg/BTEX	

ENGEO INCORPORATED
GROUND-WATER SAMPLING INFORMATION

Job Name: 2900 Ladd Avenue	Job Number: 3174-F8
Location: Livermore, California	Date: September 20, 1995
Client: L.V.J.U.S.D.	By: Shawn Munger

WELL INFORMATION

Well Number: MW-4	Diameter (in): 2
Total Depth (ft): 53.81 (toc)	Screen Length: 25'
Depth to Water (ft): 25.81 (toc)	Casing Volume (gal): 4.8

PURGING INFORMATION

Bailer: Pump: X (rate): 0.89 gpm	Time: (init./fin) 15:19/15:47
Volume Removed (gal): 25	No. of Casing Vol: 5.2

Time	Volume Removed (Gal.)	Total Casing Volumes	Temp °F	Cond (μS)	pH	Comments
15:19	--	--	--	--	--	Initial, no odor, no sheen
15:24	5	1.0	75.0	1220	7.0	
15:30	10	2.1	71.6	1216	7.2	
15:36	15	3.1	72.5	1080	7.4	
15:41	20	4.2	72.1	996	7.6	
15:47	25	5.2	72.6	956	7.5	

SAMPLE INFORMATION

Bailer: X Pump: (gpm):	
Decon Procedure: TSP	Dist. H_2O
Disposable X	Other

Sample	Time	Size	Presv.	Test	Comments
MW-4	15:58	40ml (2)	ICE	TPHg/BTEX	

NATIONAL ENVIRONMENTAL TESTING, INC.

Santa Rosa Division
3636 North Laughlin Road
Suite 110
Santa Rosa, CA 95403-8226
Tel: (707) 526-7200
Fax: (707) 541-2333

Brian Flaherty
ENGEO
2401 Crow Canyon Road
Suite 200
San Ramon, CA 94583

Date: 09/30/1995
NET Client Acct. No: 44200
NET Job No: 95.03742
Received: 09/22/1995

Client Reference Information

OCT - 3

2900 Ladd Avenue/Proj. No. 3174-F8

Sample analysis in support of the project referenced above has been completed and results are presented on the following pages. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel free to call me at (707) 541-2307.

Submitted by:

Judy Ridley
Project Coordinator

Enclosure(s)

Client Name: ENGEO
Client Acct: 44200
NET Job No: 95.03742

Date: 09/30/1995
ELAP Cert: 1386

Ref: 2900 Ladd Avenue/Proj. No. 3174-F8

SAMPLE DESCRIPTION: MW-3
Date Taken: 09/20/1995
Time Taken: 15:08
NET Sample No: 251716

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed	Run Batch No.
TPH (Gas/BTXE,Liquid)								
METHOD 5030/M8015	--						09/27/1995	3206
DILUTION FACTOR*	1						09/27/1995	3206
as Gasoline	ND		0.05	mg/L	5030		09/27/1995	3206
METHOD 8020 (GC,Liquid)	--						09/27/1995	3206
Benzene	1.4	C	0.5	ug/L	8020		09/27/1995	3206
Toluene	ND		0.5	ug/L	8020		09/27/1995	3206
Ethylbenzene	ND		0.5	ug/L	8020		09/27/1995	3206
Xylenes (Total)	ND		0.5	ug/L	8020		09/27/1995	3206
SURROGATE RESULTS	--						09/27/1995	3206
Bromofluorobenzene (SURR)	85			% Rec.	5030		09/27/1995	3206

C : Positive result confirmed by secondary column or GC/MS analysis.

Ref: 2900 Ladd Avenue/Proj. No. 3174-F8

SAMPLE DESCRIPTION: MW-4
Date Taken: 09/20/1995
Time Taken: 15:58
NET Sample No: 251717

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed	Run Batch No.
TPH (Gas/BTXE,Liquid)								
METHOD 5030/M8015	--						09/27/1995	3206
DILUTION FACTOR*	1						09/27/1995	3206
as Gasoline	ND		0.05	mg/L	5030		09/27/1995	3206
METHOD 8020 (GC,Liquid)	--						09/27/1995	3206
Benzene	ND		0.5	ug/L	8020		09/27/1995	3206
Toluene	ND		0.5	ug/L	8020		09/27/1995	3206
Ethylbenzene	ND		0.5	ug/L	8020		09/27/1995	3206
Xylenes (Total)	ND		0.5	ug/L	8020		09/27/1995	3206
SURROGATE RESULTS	--						09/27/1995	3206
Bromofluorobenzene (SURR)	87			% Rec.	5030		09/27/1995	3206

Ref: 2900 Ladd Avenue/Proj. No. 3174-F8

SAMPLE DESCRIPTION: MW-2
Date Taken: 09/20/1995
Time Taken: 17:00
NET Sample No: 251718

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed	Run Batch No.
TPH (Gas/BTXE,Liquid)								
METHOD 5030/M8015	--						09/28/1995	3209
DILUTION FACTOR*	100						09/28/1995	3209
as Gasoline	8.4		5	mg/L	5030		09/28/1995	3209
METHOD 8020 (GC,Liquid)	--						09/28/1995	3209
Benzene	2,500		50	ug/L	8020		09/28/1995	3209
Toluene	1200		50	ug/L	8020		09/28/1995	3209
Ethylbenzene	180		50	ug/L	8020		09/28/1995	3209
Xylenes (Total)	940		50	ug/L	8020		09/28/1995	3209
SURROGATE RESULTS	--						09/28/1995	3209
Bromofluorobenzene (SURR)	83			% Rec.	5030		09/28/1995	3209

Ref: 2900 Ladd Avenue/Proj. No. 3174-F8

CONTINUING CALIBRATION VERIFICATION STANDARD REPORT

Parameter	CCV Standard % Recovery	CCV Standard Amount Found	CCV Standard Amount Expected	Units	Date Analyzed	Analyst Initials	Run Batch Number
TPH (Gas/BTXE,Liquid)							
as Gasoline	106.0	0.53	0.50	mg/L	09/27/1995	aal	3206
Benzene	99.0	4.95	5.00	ug/L	09/27/1995	aal	3206
Toluene	95.8	4.79	5.00	ug/L	09/27/1995	aal	3206
Ethylbenzene	98.8	4.94	5.00	ug/L	09/27/1995	aal	3206
Xylenes (Total)	98.0	14.7	15.0	ug/L	09/27/1995	aal	3206
Bromofluorobenzene (SURR)	82.0	82	100	% Rec.	09/27/1995	aal	3206
TPH (Gas/BTXE,Liquid)							
as Gasoline	106.0	0.53	0.50	mg/L	09/28/1995	aal	3209
Benzene	102.2	5.11	5.00	ug/L	09/28/1995	aal	3209
Toluene	99.8	4.99	5.00	ug/L	09/28/1995	aal	3209
Ethylbenzene	98.4	4.92	5.00	ug/L	09/28/1995	aal	3209
Xylenes (Total)	98.0	14.7	15.0	ug/L	09/28/1995	aal	3209
Bromofluorobenzene (SURR)	86.0	86	100	% Rec.	09/28/1995	aal	3209

Ref: 2900 Ladd Avenue/Proj. No. 3174-F8

METHOD BLANK REPORT

Parameter	Method Blank Amount Found	Reporting Limit	Units	Date Analyzed	Analyst Initials	Run Batch Number
TPH (Gas/BTXE,Liquid)						
as Gasoline	ND	0.05	mg/L	09/27/1995	aal	3206
Benzene	ND	0.5	ug/L	09/27/1995	aal	3206
Toluene	ND	0.5	ug/L	09/27/1995	aal	3206
Ethylbenzene	ND	0.5	ug/L	09/27/1995	aal	3206
Xylenes (Total)	ND	0.5	ug/L	09/27/1995	aal	3206
Bromofluorobenzene (SURR)	88		% Rec.	09/27/1995	aal	3206
TPH (Gas/BTXE,Liquid)						
as Gasoline	ND	0.05	mg/L	09/28/1995	aal	3209
Benzene	ND	0.5	ug/L	09/28/1995	aal	3209
Toluene	ND	0.5	ug/L	09/28/1995	aal	3209
Ethylbenzene	ND	0.5	ug/L	09/28/1995	aal	3209
Xylenes (Total)	ND	0.5	ug/L	09/28/1995	aal	3209
Bromofluorobenzene (SURR)	91		% Rec.	09/28/1995	aal	3209

Ref: 2900 Ladd Avenue/Proj. No. 3174-F8

MATRIX SPIKE / MATRIX SPIKE DUPLICATE

Parameter	Matrix Spike % Rec.	Matrix Spike Dup % Rec.	RPD	Spike Amount	Sample Conc.	Matrix Spike Conc.	Matrix Spike Dup. Conc.	Units	Date Analyzed	Run Batch	Sample Spiked
TPH (Gas/BTXE,Liquid)											251250
as Gasoline	96.0	98.0	2.1	0.50	ND	0.48	0.49	mg/L	09/27/1995	3206	251250
Benzene	95.9	97.3	1.4	7.30	ND	7.00	7.10	ug/L	09/27/1995	3206	251250
Toluene	94.7	97.3	2.7	26.2	ND	24.8	25.5	ug/L	09/27/1995	3206	251250
TPH (Gas/BTXE,Liquid)											250930
as Gasoline	102.0	110.0	7.5	0.50	ND	0.51	0.55	mg/L	09/28/1995	3209	250930
Benzene	100.0	129.3	25.6	7.44	ND	7.44	9.62	ug/L	09/28/1995	3209	250930
Toluene	97.3	101.9	4.5	26.1	ND	25.4	26.6	ug/L	09/28/1995	3209	250930

KEY TO ABBREVIATIONS and METHOD REFERENCES

<	:	Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit.
*	:	Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated Reporting Limits by the dilution factor (but do not multiply reported values).
ICVS	:	Initial Calibration Verification Standard (External Standard).
mean	:	Average; sum of measurements divided by number of measurements.
mg/Kg (ppm)	:	Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (parts per million).
mg/L	:	Concentration in units of milligrams of analyte per liter of sample.
mL/L/hr	:	Milliliters per liter per hour.
MPN/100 mL	:	Most probable number of bacteria per one hundred milliliters of sample.
N/A	:	Not applicable.
NA	:	Not analyzed.
ND	:	Not detected; the analyte concentration is less than applicable listed reporting limit.
NTU	:	Nephelometric turbidity units.
RPD	:	Relative percent difference, 100 [Value 1 - Value 2]/mean value.
SNA	:	Standard not available.
ug/Kg (ppb)	:	Concentration in units of micrograms of analyte per kilogram of sample, wet-weight basis (parts per billion).
ug/L	:	Concentration in units of micrograms of analyte per liter of sample.
umhos/cm	:	Micromhos per centimeter.

Method References

Methods 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, rev. 1983.

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986.

SM: see "Standard Methods for the Examination of Water & Wastewater, 17th Edition, APHA, 1989.

ENGEO
INCORPORATED
2401 CROW CANYON ROAD, SUITE 200
SAN RAMON, CALIFORNIA 94583
PHONE (510) 838-1600

CHAIN OF CUSTODY RECORD

PROJECT NUMBER: 3174-F8
PROJECT NAME: 2900 LADD AVENUE
SAMPLED BY: (SIGNATURE) SHAWN MUNGER

SAMPLE NUMBER	DATE	TIME	MATRIX	NUMBER OF CONTAINERS	CONTAINER SIZE	PRESERVATIVE	TPH – GASOLINE (EPA 8015/5030)	TPH – DIESEL (EPA 8015/3550/3510)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240)	BASE/NEUTRALS, ACIDS (EPA 625, 8270)	TOTAL OIL & GREASE (SMWW 5520(F).)	OC PESTICIDES/PCB (EPA 608, 8080)	OP PESTICIDES (EPA 614/8140)	TITLE 26 METALS (17)	PRIORITY METALS (13)						REMARKS REQUIRED DETECTION LIMITS
MW-3	9-20-95	15:08	AQ	2	40ml	ICE	X		X														
MW-4	9-20-95	15:58	AQ	2	40 ml	ICE	X		X														
MW-2	9-20-95	17:00	AQ	2	40ml	ICE	X		X														

CUSTODY SEALED
Date 9/21/95 Time 1100 Initials
SEAL INTACT?
Yes ✓ No Initials

RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)
	9/21/95 1030	Betty Harvey	Betty Harvey	9/21/95 1100	
RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE/TIME	REMARKS	
			9/22/95 09:00	Need hard copies 9/28/95	

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VIA NRC Temp 3°