ENGEO
INCORPORATED

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
MATERIALS TESTING

In Reply
Please Refer to:
N2-3174-F4A

July 28, 1992

Livermore Valley Joint Unified School District
685 Las Positas Boulevard
Livermore, CA 94550

Attention: Mr. Mike White

Subject: Transportation Facility
2900 Ladd Avenue
Livermore, California

REPORT ON GROUND-WATER SAMPLING AND WELL DESTRUCTION

Reference:
1. ENGEO Inc.; Soil and Ground-Water Study, Livermore Valley Unified School District Bus Maintenance Yard; Livermore, California; September 3, 1991.

2. ENGEO Inc.; Report on Ground-Water Sampling, Transportation Facility, 2900 Ladd Avenue, Livermore, California; September 13, 1991.

Gentlemen:

In accordance with the recommendations of the referenced soil and ground-water study (Reference 1), we have conducted additional ground-water sampling of the monitoring well located at the Livermore Valley Joint Unified School District Transportation Facility. The scope of our services included: (1) purging of the existing ground-water monitoring well; (2) collection of a ground-water sample from the well; (3) laboratory analysis for total volatile hydrocarbons and volatile aromatic compounds; (4) destruction of the monitoring well in accordance with state and county regulations, and (5) preparation of this letter report.

Ground-Water Sampling

Field activities were conducted on July 1, 1992. Prior to purging, the static ground-water level was measured and the well was checked for the presence of floating product or petroleum sheen. The depth to the top of the ground-water table had dropped by approximately 7 feet since September 1991. No floating product or sheen was observed.

Approximately five casing volumes of water were purged from the monitoring well using a PVC bailer. Water quality parameters including, temperature, pH, dissolved solids and oxidation-reduction potential were monitored to verify adequate purging.

The ground-water sample was collected for laboratory testing using a Voss Technologies dedicated polyethylene bailer. The sample was decanted with zero head space into 40-milliliter volatile organic analysis vials (VOA). Following collection, the sample was cooled in an ice chest until delivery under documented chain-of-custody to NET Pacific, in Santa Rosa, California. Sample collection, preservation, chain-of-custody procedures and equipment decontamination were performed following ENGEO's standard quality assurance/quality control procedures.

The chain-of-custody document and ground-water sampling information form are included as an attachment to this report.

Laboratory Analysis

Laboratory analysis was performed in accordance with the test methods specified in the *Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites* (August 1990). The sample was analyzed for total volatile petroleum hydrocarbons as gasoline (EPA 8015/5030) and benzene, toluene, xylene and ethyl benzene (EPA 602).

Table I shows the results of the most recent sampling event, along with results from the December 1990 and September 1991 ground-water sampling episodes.

TABLE I
MW-1 LABORATORY ANALYSIS SUMMARY
(Concentrations reported in parts per billion)

SAMPLING DATE	GW DEPTH (ft)	TVPH	BENZENE	TOLUENE	E.BENZENE	XYLENES
12/19/90	43.8	1,400	63	52	8.0	590
09/05/91	59.0	ND	ND	ND	ND	ND
07/01/92	52.6	50	17	6.0	0.9	7.6

ND: Not reported above laboratory detection limits

Gasoline and BTEX was detected in the ground water from the July 1992 sampling event. Ground-water level measurements recorded in July 1992 sampling event show a rise of approximately seven feet since September 1991. The gasoline and BTEX reported in the July 1992 event may reflect the depth of the petroleum hydrocarbon contamination in the soil.

A copy of the laboratory test report is attached to this report.

Monitoring Well Destruction

Due to a proposed underground storage tank removal project, destruction of the existing monitoring well was necessary. Prior to initiating work activities, a Ground-Water Protection Ordinance Permit was prepared and submitted to Alameda County Zone 7 Flood Control District. A copy of the county permit is included as an attachment to this report.

The well destruction was conducted on July 9, 1992, under the observation of ENGEO personnel. The well destruction methodology was specified by ENGEO following county and state regulations[1]. The well construction materials were drilled out using a Mobil B-61 drill rig equipped with 7-inch-diameter hollow stem auger. The boring was extended approximately three feet beyond the original well depth. After drilling the borehole was grouted up to the ground surface with neat cement using the tremie pipe method.

Following completion of the well destruction, a Department of Water Resources report was prepared documenting the activities. A copy of the DWR report is provided as an attachment.

Copies of this report should be submitted to the Alameda Department of Environmental Health Hazardous Materials Division.

We are pleased to be of continued service to you on this project. If you have any questions, please contact our office.

Very truly yours,

ENGEO INCORPORATED

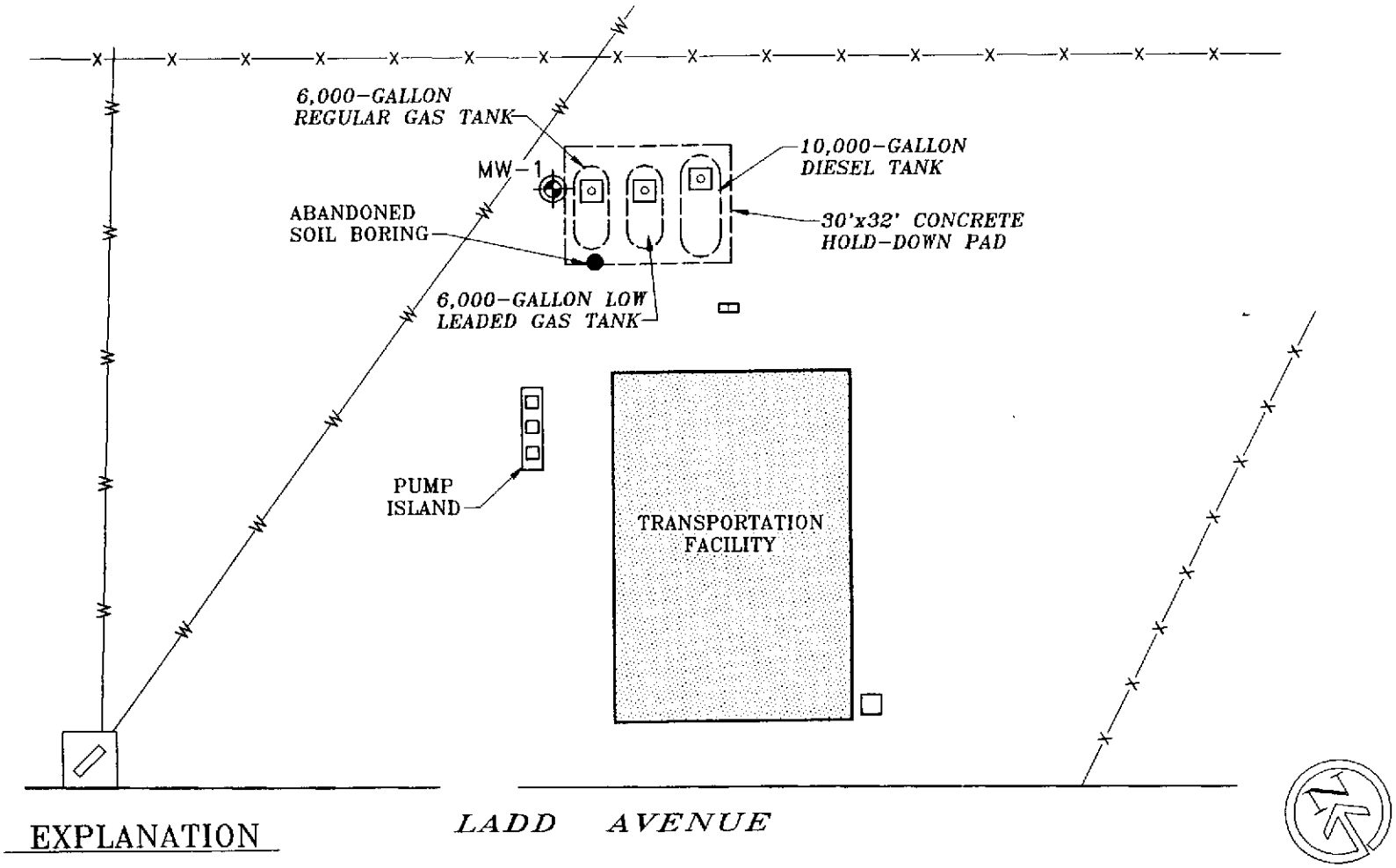
Shawn Munger
Environmental Geologist

Reviewed by:

Brian Flaherty
CEG 1256

ce
cc: 4 - Client

[1]State of California, Department of Water Resources, Bulletin 74-81, December 1981.



EXPLANATION

MW-1 ⊕ APPROXIMATE LOCATION OF GROUNDWATER MONITORING WELL

ENGEO INCORPORATED	EXISTING UNDERGROUND GASOLINE STORAGE TANKS BUS MAINTENANCE YARD, 2908 LADD AVENUE LIVERMORE, CALIFORNIA	JOB NO.: N2-3174-F4A DATE: JULY 1992 DRAWN BY: CS / CHECKED BY:	FIGURE NO. 1

ENGEO INCORPORATED
GROUND-WATER SAMPLING INFORMATION

Date: July 1, 1992 By: Eric Harrell

Job Number: N2-3174-F4A Job Name: Transportation Yard

Location: 2900 Ladd Avenue, Livermore, California Client: Livermore Valley Joint Unified School District

WELL INFORMATION

Well Number: MW-1 Diameter (in): 2.0

Total Depth (ft): 65.75 Screen Length: 25 feet

Depth to Water (ft): 52.6 Casing Volume (gal): 2.24

PURGING INFORMATION

Bailer: X Pump: ____ (rate): ____ Time: (init./fin.) 11:13/12:22

Volume Removed (gal): 11.25 No. of Casing Vol: 5

pH Reading: 7.4 Temp (C): 20.7

TDS (ppm) 630 eh (mV): 15

SAMPLE INFORMATION

Bailer: X Pump: ____ (rate): ____

Decon Procedure: Solvent ____ Acid ____
TSP ____ Dist. H_2O ____
Disposable X Other ____

Sample	Time	Size	Presv.	Test	Comments
MW1	12:21	40ml	Ice/Acid	TPHG, BTXE	Slightly turbid

ENGEO INCORPORATED
WELL PURGING INFORMATION

Job Name: Transportation Yard	Date: July 1, 1992
Job No.: N2-3174-F4A	Client: Livermore Valley Joint Unified School Disrict
Location: Livermore, California	Personnel: Eric Harrell
Well No: MW1	Total Depth (ft.): 65.75'
Depth to Water (ft.): 52.6	Casing Volume (gal.): 2.24

Time	Volume Removed (Gal.)	Total Casing Volumes	Temp. °C	Cond. (ppm)	ORP (mV)	pH	Comments
	0	0					No seperate phase product, slight odor
11:13	2.25	1	21.2	770	.031	7.4	Slightly turbid
11:28	4.5	2	20.8	760	.014	7.4	Slightly turbid
11:44	6.75	3	20.7	630	.014	7.4	Slightly turbid
12:03	9.0	4	20.8	630	.018	7.4	Slightly turbid
12:22	11.25	5	20.7	630	.015	7.4	Slightly turbid

NATIONAL
ENVIRONMENTAL
TESTING, INC.

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

JUL 23

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

Date: 07/22/1992
NET Client Acct. No: 44200
NET Pacific Job No: 92.3699
Received: 07/02/1992

Client Reference Information

Livermore Joint Unified School Dist., Proj. No. N2-3174-F4A

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

Jules Skamarack for:
Laboratory Manager

Enclosure(s)

Ref: Livermore Joint Unified School Dist., Proj. No. N2-3174-F4A

SAMPLE DESCRIPTION: MW-1
Date Taken: 07/01/1992
Time Taken: 12:27
LAB Job No: (-128445)

Parameter	Method	Reporting Limit	Results	Units
TPH (Gas/BTXE,Liquid)				
METHOD 5030 (GC,FID)			--	
DATE ANALYZED			07-13-92	
DILUTION FACTOR*			1	
as Gasoline	5030	0.05	0.05	mg/L
METHOD 8020 (GC,Liquid)			--	
DATE ANALYZED			07-13-92	
DILUTION FACTOR*			1	
Benzene	8020	0.5	17	ug/L
Ethylbenzene	8020	0.5	0.9	ug/L
Toluene	8020	0.5	6.0	ug/L
Xylenes (Total)	8020	0.5	7.6	ug/L
SURROGATE RESULTS			--	
Bromofluorobenzene	5030		90	% Rec.

NET Pacific, Inc

Client Acct: 44200
Client Name: ENGEO
NET Job No: 92.3699

Date: 07/22/1992
Page: 3

Ref: Livermore Joint Unified School Dist., Proj. No. N2-3174-F4A

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	0.05	mg/L	101	ND	96	99	3.1
Benzene	0.5	ug/L	98	ND	97	102	4.4
Toluene	0.5	ug/L	112	ND	97	99	1.8

COMMENT: Blank Results were ND on other analytes tested.

NET Pacific, Inc

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.

7350

ENGEO INCORPORATED
2401 CROW CANYON ROAD, SUITE 200
SAN RAMON, CA 94583-1545

CHAIN OF CUSTODY RECORD

PROJECT NUMBER	PROJECT NAME
N2-3174-F4A	Livermore Joint Unified School Dist

SAMPLED BY: (SIGNATURE) Eric Harrell

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
MW1	7-1-92	12:27	water	~~3~~ 4	40 ml	HCl/ICE	X		X														Luft Detection Limits.

7-1 7:00 PM Jason Bean
Accutest

RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)
Eric Harrell	7-1-92	Jason Bean 7-1 3:45	Jason Bean	7-1 7:20 pm	

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
(Crane)		Kunzel	7/2/92 0800	10-day TAT

DISTRIBUTION: ORIGINAL ACCOMPANIES SHIPMENT. COPY TO PROJECT FIELD FILES

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94588 • (510) 484-2600

30 June 1992

JUL - 1

Engeo, Inc.
2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583

Gentlemen:

Enclosed is drilling permit 92323 for the destruction of well 3S/2E 9L2 at 2900 Ladd Avenue in Livermore for Livermore Valley Joint Unified School District.

Please note that permit condition A-2 requires that a well destruction report be submitted after completion of the work. The report should include a description of methods and materials used to destroy the well, location sketch, date of destruction, and permit number.

If you have any questions, please contact Wyman Hong or me at 484-2600.

Very truly yours,

Craig A. Mayfield

Craig A. Mayfield
Water Resources Engineer

WH:mm
Enc.

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

FOR OFFICE USE

LOCATION OF PROJECT Livermore Valley Joint Unified School District, 2900 Ladd Avenue, Livermore, CA.

PERMIT NUMBER 92323

LOCATION NUMBER 3S/2E 9L2

CLIENT

Name Livermore Valley Joint Unified District

Address 685 Las Positas Bl. Phone 447-9500

City Livermore, CA Zip 94550

APPLICANT

Name Eric Harrell c/o Engre Incorporated

Address 2401 Crow Canyon Rd #B Phone 838-1600

City San Ramon Zip 94583

TYPE OF PROJECT

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

PROPOSED WATER SUPPLY WELL USE

Domestic ___ Industrial ___ Other ___

Municipal ___ Irrigation ___

DRILLING METHOD:

Mud Rotary ___ Air Rotary ___ Auger X

Cable ___ Other ___

DRILLER'S LICENSE NO. Kuilhaug No. 482390

WELL PROJECTS (Decommissioning)

Drill Hole Diameter 6 in. Maximum

Casing Diameter 2 in. Depth 67 ft.

Surface Seal Depth 35 ft. Number 1

GEOTECHNICAL PROJECTS

Number of Borings ___ Maximum

Hole Diameter ___ in. Depth ___ ft.

ESTIMATED STARTING DATE 6 JUL 92

ESTIMATED COMPLETION DATE 6 JUL 92

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

APPLICANT'S SIGNATURE Eric Harrell Date 6-26-92

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 29 Jun 92

Wyman Hong

121989

30 June 1992

ZONE 7
WATER RESOURCES ENGINEERING
DRILLING ORDINANCE

LIVERMORE VALLEY JOINT
UNIFIED SCHOOL DISTRICT
2900 LADD AVENUE
LIVERMORE
WELL 3S/2E 9L2
PERMIT 92323

Destruction Requirements:

1 Drill out the well so that the casing, seal, and gravel pack are removed to the bottom of the well.

2. Using a tremie pipe, fill the hole to 15 feet below the lower of finished grade or original ground with neat cement.

3. After seal has set, backfill the remaining hole with compacted material.

These destruction requirements as proposed by Eric Harrell of Engeo Incorporated meet or exceed the Zone 7 minimum requirements.

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED