

In Reply
Please Refer to:
N1-3174-F2

September 13, 1991

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

Attention: Mr. R. F. D'Ambra

Subject: Transportation Facility
2900 Ladd Avenue
Livermore, California

REPORT ON GROUND-WATER SAMPLING

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

Gentlemen:

In accordance with the recommendations of the referenced report, we have conducted ground-water sampling of the monitoring well located at the Livermore Valley Joint Unified School District Transportation Facility at 2900 Ladd Avenue in Livermore, California. The scope of our services included: (1) purging of the existing ground-water monitoring well; (2) sampling of the well; (3) laboratory analysis for total volatile hydrocarbons and volatile aromatic compounds; and (4) preparation of this letter report.

Ground-Water Sampling

Field activities were conducted on September 5, 1991. 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 ground water level had decreased by approximately 15 feet since December 1990. No floating product or sheen was observed.

Approximately seven 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.

Ground-water samples were collected for laboratory testing using a Voss Technologies dedicated polyethylene bailer. The samples were decanted with zero head space into 40-milliliter volatile organic analysis vials (VOA). Following collection, the samples were 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 in accordance with ENGEO's standard quality assurance/quality control procedures.

Chain-of-custody documents and the 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 ethylbenzene (EPA 602).

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

SAMPLING DATE	TVPH	BENZ	TOLN	EBENZ	XYLN
12/19/90	1,400	63	52	8.0	590
9/5/91	ND	ND	ND	ND	ND

ND: Non-Detectable

**ENGEO INCORPORATED
GROUND-WATER SAMPLING INFORMATION**

Date: September 5, 1991

By: Keith Nowell

Job Number: N1-3174-F2

Job Name: Transportation Yard

Location: 2908 Ladd Avenue
Livermore, California

Client: Livermore Valley Joint
Unified School District

WELL INFORMATION

Well Number: MW-1

Diameter (in): 2.0

Total Depth (ft): 65.9

Screen Length: 25'

Depth to Water (ft): 59.0

Casing Volume (gal): 1.1

PURGING INFORMATION

Bailer: Pump: _____ (rate): 5.5gal/hr Time: (init./fin.) 9:45/11:23

Volume Removed (gal): 8

No. of Casing Vol: 7.1

pH Reading: 7.2

Temp (C): 19.9

TDS (ppm) 780

eh (mV): +33

SAMPLE INFORMATION

Bailer: Pump: _____ (rate): _____

Decon Procedure: Solvent _____ Acid _____
TSP _____ Dist. H₂O _____
Disposable Other _____

Sample	Time	Size	Presv.	Test	Comments
<u>MW-1</u>	<u>11:40</u>	<u>(4) 40ml</u>	<u>Ice</u>	<u>EPA 8015/5030</u> <u>EPA 602</u>	<u>Turbid</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Hydrocarbon concentrations in the ground water appear to have significantly attenuated since December 1990. Test results from this sampling event found no volatile hydrocarbons reported as gasoline. Similarly no volatile aromatic compounds were reported above detection limits.

Ground-water level measurements recorded at the time of the September 1991 sampling event show a drop of approximately 15 feet since last December. The lack of detectable concentrations of gasoline and volatile aromatic compounds is possibly attributable to the drop of the water table to a level below that of the contaminated soil layer.

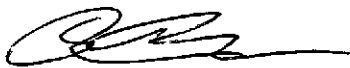
A copy of the laboratory test report has been included as an attachment to this report.

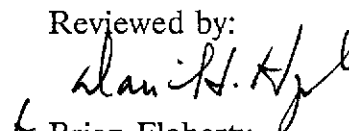
ENGEO recommends continued sampling of the existing ground-water monitoring well. Copies of this report should be submitted to Mr. Gil Wistar with the Alameda Department of Environmental Health Hazardous Materials Division.

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

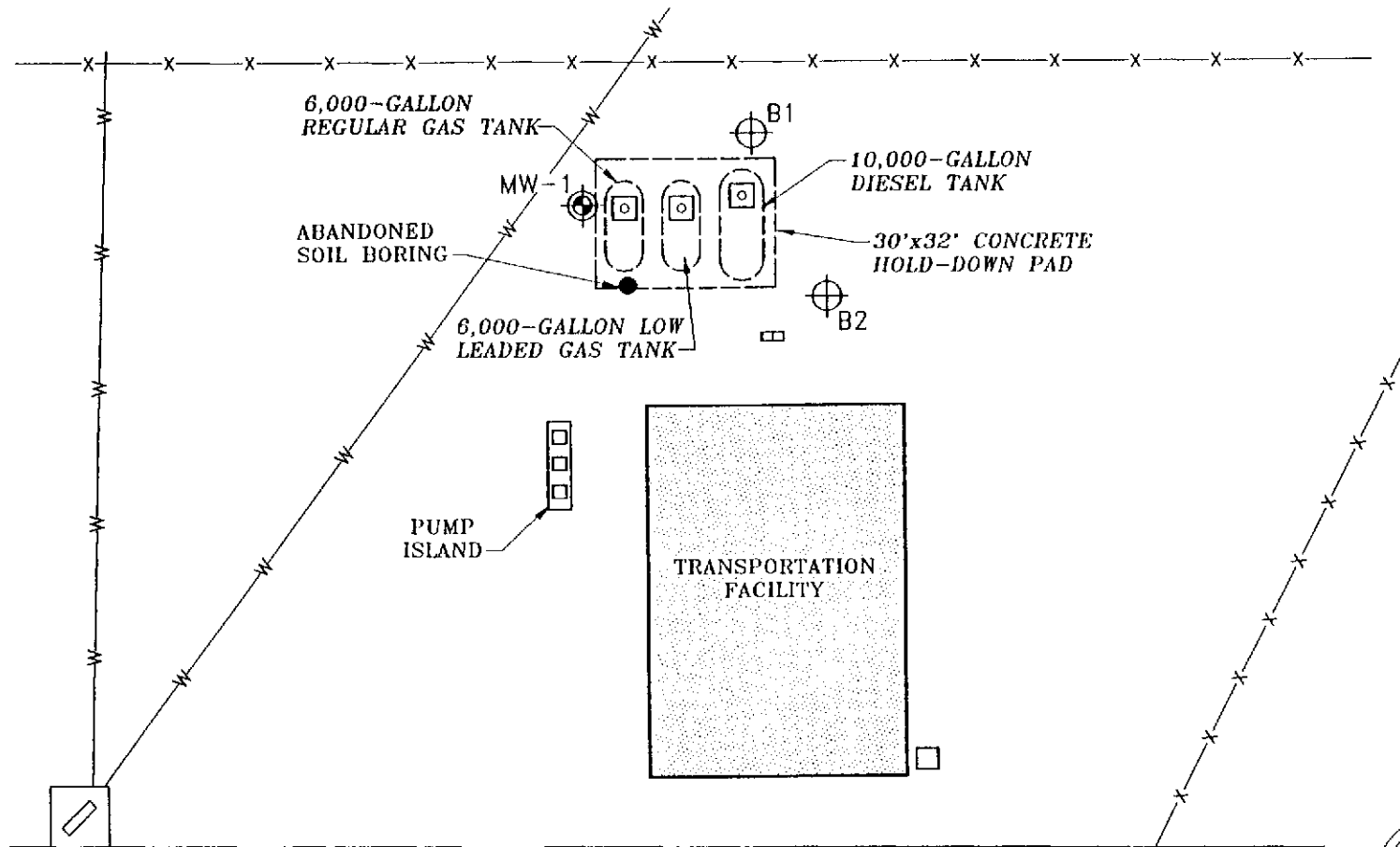

Keith Nowell *FN*
Staff Geologist

Reviewed by:

Brian Flaherty
CEG 1256



ce

cc: 4 - Client

1 - Alameda County Dept. of Environmental Health



EXPLANATION

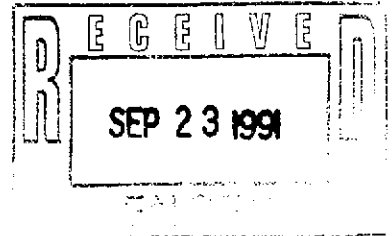
- MW-1  APPROXIMATE LOCATION OF GROUNDWATER MONITORING WELL
- B1  APPROXIMATE LOCATION OF SOIL BORING

<h1>ENGEO</h1> <p>INCORPORATED</p> <p>GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS</p>	<p>EXISTING UNDERGROUND GASOLINE STORAGE TANKS</p> <p>BUS MAINTENANCE YARD, 2908 LADD AVENUE</p> <p>LIVERMORE, CALIFORNIA</p>		<p>FIGURE NO.</p> <h1>1</h1>
	<p>SCALE: N.T.S.</p> <p>DATE: MARCH 1991</p>	<p>JOB NO. N1-3174-F1</p>	



NATIONAL
ENVIRONMENTAL
TESTING, INC.

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



Brian Flaherty
ENGE0
2280 Diamond Blvd., Ste 200
Concord, CA 94520-5719

Date: 09-13-91
NET Client Acct. No: 442
NET Pacific Log No: 9649
Received: 09-06-91 0800

Client Reference Information

Livermore Valley School Dist. Trans. Yard, Proj:N1-3174-F2

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
Laboratory Manager

Enclosure(s)



NET Pacific, Inc.

Client Acct: 442
Client Name: ENGEO
NET Log No: 9649

Date: 09-13-91
Page: 2

Ref: Livermore Valley School Dist. Trans. Yard, Proj:N1-3174-F2

SAMPLE DESCRIPTION: MW-1 09-05-91 1140
LAB Job No: (-96649)

Parameter	Method	Reporting Limit	Results	Units
PETROLEUM HYDROCARBONS			--	
VOLATILE (WATER)			--	
DILUTION FACTOR *			1	
DATE ANALYZED			09-11-91	
METHOD GC FID/5030			--	
as Gasoline			0.05	ND
METHOD 302			--	mg/L
DILUTION FACTOR *			1	
DATE ANALYZED			09-11-91	
Benzene			0.5	ND
Ethylbenzene			0.5	ND
Toluene			0.5	ND
Xylenes, total			0.5	ND



NET Pacific, Inc.

Client Acct: 442
* Client Name: ENGEO
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Page: 3

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QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	0.05	mg/L	97	ND	92	99	7.3
Benzene	0.5	ug/L	111	ND	96	99	3.5
Toluene	0.5	ug/L	107	ND	96	99	3.1

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, (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, $100 \text{ [Value 1 - Value 2] / mean value}$.
- SNA : Standard not available.
- ug/Kg (ppb) : Concentration in units of micrograms of analyte per kilogram of sample, (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.

9649

ENGEO

INCORPORATED

2280 DIAMOND BOULEVARD, SUITE 200
CONCORD, CALIFORNIA 94520
PHONE (415) 687-9700

CHAIN OF CUSTODY RECORD

PROJECT NUMBER NI-3174-F2		PROJECT NAME Livermore Valley School District Transportation Yard					TPH - GASOLINE (EPA 8015/5030)	TPH - DIESEL (EPA 8015/3550/3510)	PURGEABLE AROMATICS BITX (EPA 802, 8020)	PURGEABLE HALOCARBONS (EPA 801, 3010)	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	
SAMPLED BY: (SIGNATURE) Keith E. Nowell																			
SAMPLE NUMBER	DATE	TIME	MATRIX	NUMBER OF CONTAINERS	CONTAINER SIZE	PRESERVATIVE													
MW-1	9-5-91	1140	aqueous	4	40ml	Ice	X	X											
<p>CUSTODY SEALED <u>9/5/91</u></p> <p>@ <u>1400</u> <u>MW-1</u> <u>and intact</u></p>																			
RELINQUISHED BY: (SIGNATURE) Keith E. Nowell		DATE/TIME 9/5/91 1423		RECEIVED BY: (SIGNATURE) Mike Tavaris		DATE/TIME 9/5/91		RELINQUISHED BY: (SIGNATURE) Mike Tavaris		DATE/TIME 9/5/91		RECEIVED BY: (SIGNATURE)		RECEIVED BY: (SIGNATURE)		RECEIVED BY: (SIGNATURE)			
RELINQUISHED BY: (SIGNATURE)		DATE/TIME		RECEIVED BY: (SIGNATURE)		DATE/TIME		RELINQUISHED BY: (SIGNATURE)		DATE/TIME		RECEIVED BY: (SIGNATURE)		RECEIVED BY: (SIGNATURE)		RECEIVED BY: (SIGNATURE)			
RELINQUISHED BY: (SIGNATURE) (via NCS)		DATE/TIME		RECEIVED FOR LABORATORY BY: (SIGNATURE) K. Sample		DATE/TIME 9/6/91 0800		REMARKS 10 day TAT											

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