

PIERS



**Environmental
Services, Inc.**

3687

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Alameda County Health Care Services
Department of Environmental Health
1131 Harbor Bay Parkway, Second Floor
Alameda, CA 94502

August 27, 1999

Attn: Mr. Barney Chan; Haz Mat. Specialist for : DiSalvo Trucking
4919 Tidewater Ave., Oakland

Re: Groundwater Monitoring Event, Free Product Removal System Performance

99 SEP -2 PM 2:59
ENVIRONMENTAL
PROTECTION

Dear Mr. Chan,

This report has been prepared by PIERS Environmental Services, (PIERS) to address requirements by the Alameda County Department of Environmental Health (ACDEH) to investigate the performance of a free product extraction system, analyze the groundwater from existing monitoring wells for contaminate level and the potential for natural bio-degradation to occur, to determine the groundwater gradient direction, at a Leaking Underground Fuel Tank (LUST) site, 4919 Tidewater Ave., Oakland, California.

This report first reviews the known site history, describes the site vicinity, and presents existing chemical data. Then, the findings of the investigation are presented including the recovery effectiveness of an existing free phase diesel product removal system, groundwater sampling and gradient determination.

1.2 Site Location

The site is located in a light industrial district of Oakland, California on property at 4919 Tidewater Ave.(Figure 1).

1.3 Previous Subsurface Work at Site

Previous subsurface work at the site includes soil excavation and bio remediation, groundwater disposal, soil borings and sampling, monitor well construction and sampling. Description and chemical results from all work conducted to date are given in reports by Geo Environmental Technology (GTE) of San Jose dated April, 1989, June 1989 and February 1991 and in reports by Gen-Tech Environmental, Inc., (GTE) dated May 1994 and November 1994 and in a report by Environmental Restoration Services (ERS) dated August 1995.

2.0 SITE DESCRIPTION

2.1 Site Description and Hydrogeologic Setting

The site is located on the west side of Tidewater Ave.. A 8000 square foot metal building is located on the northwest portion of the approximate one acre parcel. The majority of the remaining property is paved with asphalt.

The site is located at the fringe of the San Francisco Bay on soil that appears to have been imported to fill the location to approximately four feet above the mean high tide elevation. The imported fill caps the entire site and contains sands, gravels, concrete and asphalt. Native silty clay, silt, clayey sand and peat underlie this fill.

2.2 Vicinity Map

A vicinity map is given in Figure 1 which includes the location of any known hydraulic influences. The San Francisco Bay lies approximately 100 feet southeast of the site. A site map is given in Figure 2 which includes information on adjacent streets, site building locations, locations of existing wells, past soil borings and former tanks.

2.3 Existing Analytical Results

In April of 1994, three monitoring wells and eleven soil borings were installed at the site at locations. Corresponding analytical results for TPH/g, TPH/d and BTEX are shown in the GTE Figure 6. Groundwater samples were recovered from each boring and well and tested for TPH/g, TPH/d and BTEX.

2.3.2 Depth to Groundwater

Depth to groundwater based on the monitor well sampling is approximately two to three feet below ground surface.

2.3.3 Soil Profile

The boring logs for the monitor wells show predominantly import sands and gravels underlain with peat.

3.0 INVESTIGATIVE SCOPE OF WORK

3.1 Introduction

In 1991, GTE installed a groundwater recovery trench along the former location of a 2" diesel product line which culminated at a 48" diameter recovery sump. This sump has an approximate quarter inch layer of free phase diesel product floating on the surface of the shallow groundwater.

PIERS investigated the effectiveness of this recovery trench and sump by measuring the groundwater draw down at several locations along the trench while pumping groundwater from the sump.

PIERS also conducted two quarterly monitoring events for the existing monitoring wells on-site, testing for contaminate level as well as for bio-parameters. Groundwater gradient was calculated on both occasions.

PIERS also removed free phase diesel product from the recovery sump on a semi-monthly basis (six occasions) over the quarter.

3.2 Recovery Trench Drawdown Test

The influence of the groundwater draw down was measured at three locations along the recovery trench through 1 inch diameter well screens. The 1 inch by 7 foot long, steel well screens were driven into the ¾ inch drain rock backfill of the recovery trench at the locations shown in Figure 2. Before groundwater was removed from the sump, the depth to groundwater was measured at each of the three locations.

Utilizing a wet vacuum pump, the layer of free phase diesel product was completely removed from the surface of the groundwater within the sump. Care was taken to remove as little groundwater as possible. Approximately ten gallons of diesel was recovered.

A submersible water pump was then placed into the recovery sump. A 1½ inch discharge line was run from the pump to a 5000 gallon above ground tank located on site. As the groundwater was pumped from the recovery sump, a measurement to groundwater was ~~be~~ made at each location along the recovery trench.

The results indicated that, approximately 15 minutes after removing all groundwater from the sump and while the dewatering continued, a drop of approximately 4/10ths of an inch was recorded at the opposite end of the recovery trench.

Approximately 1500 gallons of diesel impacted groundwater was pumped to the 5000 gallon holding tank.

3.3 Monitor Well Sampling Procedure

On May 26, 1999 and on August 23, 1999, a single round of groundwater samples were obtained from monitoring wells MW1 through MW4, and on August 23, 1999 a sample was recovered from the recovery sump.

The groundwater sample was recovered from the sump with a disposable bailer after the sump had recharged with groundwater from the recovery trench.

Groundwater samples were collected from the wells by bailing each well until the volume of water withdrawn was equal to at least four casing volumes. To assure that a representative groundwater sample was collected, periodic measurements of the temperature, pH and specific conductance were made. The sample was collected only when the temperature, pH, and specific conductance reached relatively constant values.

A hand operated bailer was used for evacuating the well casing (purging) of each monitor well. Water samples were collected using a new disposable bailer. An effort was made to minimize exposure of the sample to air.

Sample containers were labeled with self-adhesive tags, with the following information: Sampling location and number, Project name, Date and time samples were collected, Treatment (preservatives, filtered, etc.), Name of sampler.

Subsequent to collection, the samples were immediately stored on ice in an appropriate ice chest. Samples were transported under Chain-of-Custody procedures to Priority Environmental Labs (PEL) of Milpitas.

Sampling equipment was cleaned after its use at each sampling location. Thermometers, pH electrodes, and conductivity probes were also cleaned after sampling of each well. Cleaning procedures were accomplished by scrubbing with a detergent-potable water solution and rinsing with potable water.

Care was taken to collect all excess water resulting from the sampling and cleaning procedures. The excess water is contained in a pre-labeled 55-gallon drum on-site pending receipt of laboratory analyses.

3.3.1 Laboratory Analyses

The following analyses were performed by PEL on groundwater samples obtained from the monitor wells on May 26, 1999:

TPH-gasoline TPH-diesel (EPA Method 8015M); BTEX, MTBE (EPA Method 602)

The results of the analysis were as follows;

Results in Parts Per Billion (PPB)

Sample#	TPH/g	Benzene	Toluene	EthylBenzene	Xylenes	TPH/d	MTBE
MW1	60	0.6	ND	0.8	1.9	ND	ND
MW2	ND	ND	ND	ND	ND	120	ND
MW3	160	1.6	1.1	16	54	1100	ND
MW4	600	0.7	ND	ND	5.8	100	ND

The following analyses were performed by PEL on groundwater samples obtained from the monitor wells and sump on August 23, 1999:

TPH-diesel (EPA Method 8015M); BTEX (EPA Method 602) Iron+2, Nitrate Sulfate

Note; TPH-diesel analysis was performed after treatment with silica gel.

The results of the analysis were as follows;

Results in Parts Per Billion (PPB)

Sample#	Benzene	Toluene	EthylBenzene	Xylenes	TPH/d	Fe	NO3	SO4
MW1	ND	ND	ND	ND	ND	0.11	ND	ND
MW2	ND	ND	ND	ND	61	0.08	ND	ND
MW3	ND	ND	ND	ND	84	0.14	ND	ND
MW4	ND	ND	ND	ND	180	0.33	ND	ND
SUMP1	ND	ND	ND	ND	140	0.28	ND	ND

Chains-of-Custody and laboratory results are contained in the appendix.

Historic Monitoring Results

8/95	Results in Parts Per Billion (PPB)					
Sample#	TPH/g	Benzene	Toluene	EthylBenzene	Xylenes	TPH/d
MW1	ND	ND	ND	ND	ND	ND
MW2	ND	ND	ND	ND	ND	180
MW3	ND	ND	ND	ND	ND	1500
MW4	450	2.1	0.7	4.1	13	ND

4/94	Results in Parts Per Billion (PPB)					
Sample#	TPH/g	Benzene	Toluene	EthylBenzene	Xylenes	TPH/d
MW1	ND	ND	ND	ND	ND	ND
MW2	-----	-----	-----	-----	-----	FP
MW3	250	ND	ND	ND	1.2	7700

3.4 Determination of Horizontal Groundwater Gradient

On May 26, 1999 and on August 23, 1999 the water levels in monitor wells MW1, MW2, and MW3 were measured within a one hour period. The water surface elevations in the wells were calculated using the survey data. Then, the horizontal hydraulic gradient was calculated based on accurately determined well locations.

The gradient calculated on May 26, 1999 indicated a south southeastern direction at a magnitude of approximately 0.16%. These groundwater elevation contours are depicted in Figure 2.

The gradient calculated on August 23, 1999 indicated a western direction at a magnitude of approximately 0.13%. These groundwater elevation contours are depicted in Figure 3.

Since groundwater elevations will vary continuously based on tidal action, the average gradient and direction may be different than the one shown for this period in time.

3.5 Free-Product Removal

On May 27th, June 9th, June 22nd, July 2nd, August 2nd and August 23, 1999, free phase diesel product was removed from the extraction sump ^{by} if the following manner;

Utilizing a wet vacuum pump, the average 3/8 inch layer of free phase diesel product was completely removed from the surface of the groundwater within the sump. Care was taken to remove as little groundwater as possible. An average of approximately nine gallons of diesel was recovered from each removal session.

A submersible water pump was then placed into the recovery sump. A 1½ inch discharge line was run from the pump to a 5000 gallon above ground tank located on site. An average of approximately 1000 gallons of groundwater was recovered after each removal session.

The diesel product recovered from the sump is now stored on-site in a labeled 55 gallon drum and will be pumped out with the next scheduled waste oil removal event and documented under a standard bulk waste manifest.

The groundwater within the 5000 gallon above ground tank will be treated on site and discharged as dust control under a waiver from the Regional Water Quality Control Board.

how & to what levels?
11/01 still on site

3.6 Natural Attenuation Parameters

On August 23, 1999, the monitoring wells were tested for the following bio-parameters; Dissolved oxygen, oxidation/reduction (redox) potential, nitrate, sulfate and iron+2.

3.6.1 Dissolved Oxygen Analysis

Before purging each of the wells, a measurement for dissolved oxygen was performed using a Corning Model 317 Dissolved Oxygen Meter. After the depth to water measurement was made, the oxygen specific probe was carefully lowered into the well to prevent oxygen induction. Once the probe was submerged within the groundwater and allowed to stabilize, an average parts per million reading was recorded. Dissolved oxygen (D.O.) readings are shown below.

Well #	D.O.(ppm)
MW1	1.6
MW2	0.8
MW3	0.2
MW4	1.1

3.6.2 Redox Analysis

Oxidation/reduction (redox) potential was measured at each of the wells during purging using a Hanna "Water Test" model, Ph, Temp., Conduct., Redox meter. Groundwater was placed into the meter periodically during the well purge. Stabilized redox readings (Eh) are given below:

Well #	Eh (mV)
MW1	+141
MW2	+145
MW3	+341
MW4	+297

3.6.3 Nitrate, Sulfate and Iron II Analysis

The following analyses were performed by PEL on groundwater samples obtained from the monitor wells and sump on August 23, 1999:

Iron+2, Nitrate Sulfate

The results of the analysis were as follows;

Well#	Results in Parts Per Million (PPM)		
	Fe	NO3	SO4
MW1	0.11	ND	ND
MW2	0.08	ND	ND
MW3	0.14	ND	ND
MW4	0.33	ND	ND
SUMP1	0.28	ND	ND

4.0 CONCLUSIONS and RECCOMENDATIONS

It appears that free-phase diesel product continues to be generated through the recovery trench and sump system. Approximately 55 gallons of diesel has been recovered from the groundwater.

The level of diesel contaminates in the groundwater appears to be reduced by treating the sample with silica gel before analysis. This may indicate that the high organic (peat) soil within the aquifer may have contributed to false positive levels of TPH/d in past sampling events.

The extremely flat and tidal influenced groundwater gradient may be preventing plume migration.

The low level of dissolved oxygen in well MW3 (highest concentration of contaminate) compared to the other wells may indicate that aerobic bio-degradation is occurring. The reduced levels of sulfate and nitrate, coupled with increased level of iron II seem to be an indication that anaerobic bio-degradation has occurred in the past. The positive values recorded during redox measurements seem to indicate exothermic (energy is being produced) reactions, common during bio-degradation.

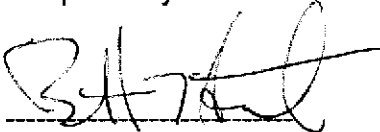
PIERS recommends the groundwater generated during sump drawdown be treated and discharged as dust control under a discharge waiver from the Bay Area Regional Water Quality Control Board and that free-product removal from continue through the recovery trench and sump system on a semi-monthly basis.

PIERS further recommends that quarterly monitoring continue at the site.


LIMITATIONS

The observations and conclusions presented in this report are professional opinions based on the scope of work outlined herein. This report was prepared in accordance with generally accepted standards of environmental geological practice in California at the time this investigation was performed. The opinions presented apply to site conditions existing at the time of our study and cannot apply to site conditions or changes of which we are not aware or have not had the opportunity to evaluate. This investigation was conducted solely to evaluate environmental conditions of the soil and groundwater with respect to hydrocarbons identified during previous work. Evaluation of the geologic conditions at the site for the purpose of this investigation is made from a limited number of observation points. Subsurface conditions may vary away from the data points available. Additional work, including subsurface investigation, can reduce the inherent uncertainties associated with this type of investigation. It must be recognized that any conclusions drawn from these data rely on the integrity of the information available at the time of investigation and that a full and complete determination of environmental contamination and risks cannot be made.

Respectfully submitted this 27th day of August, 1999,

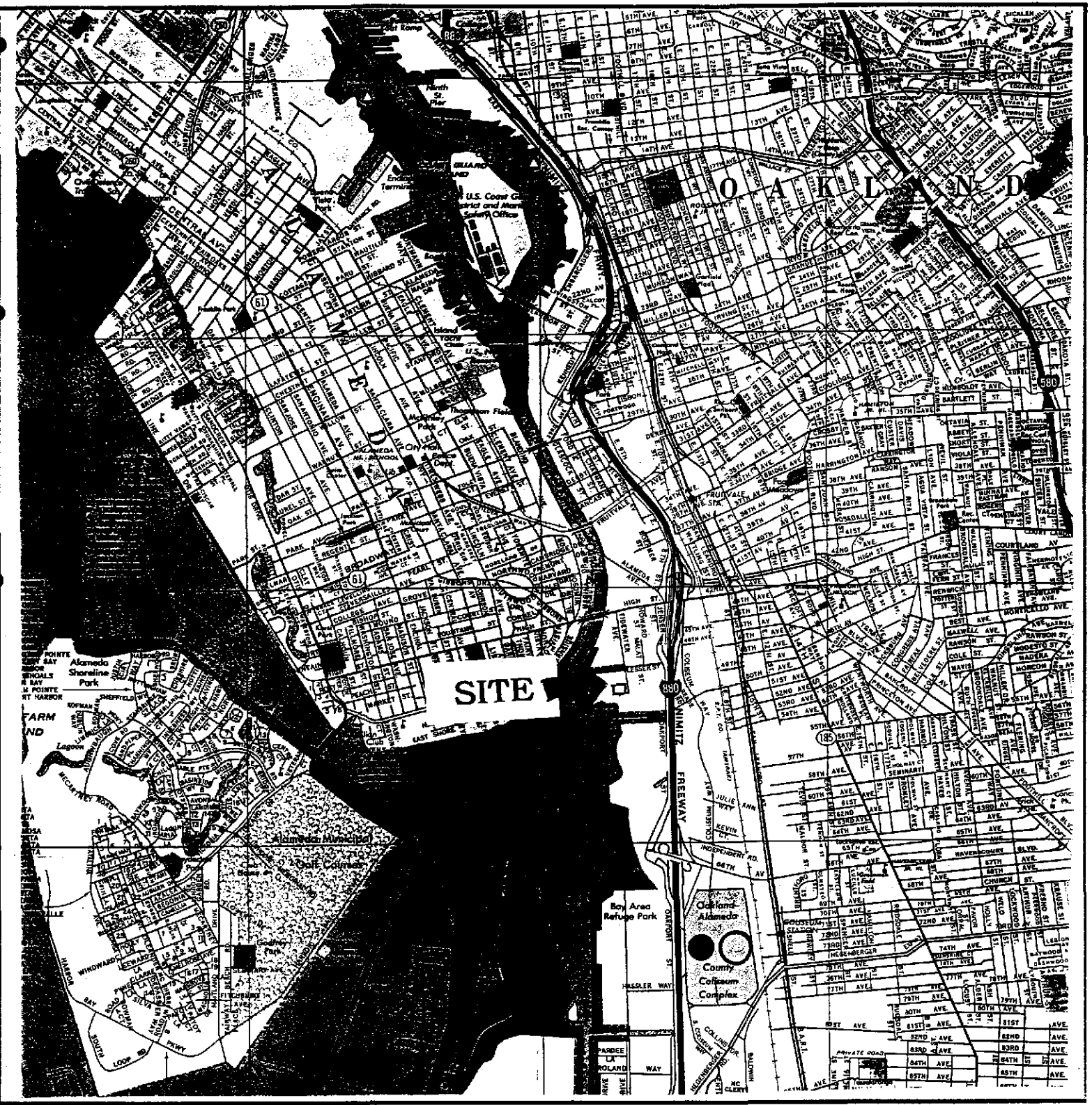


Bennett T Halsted
Project Manager

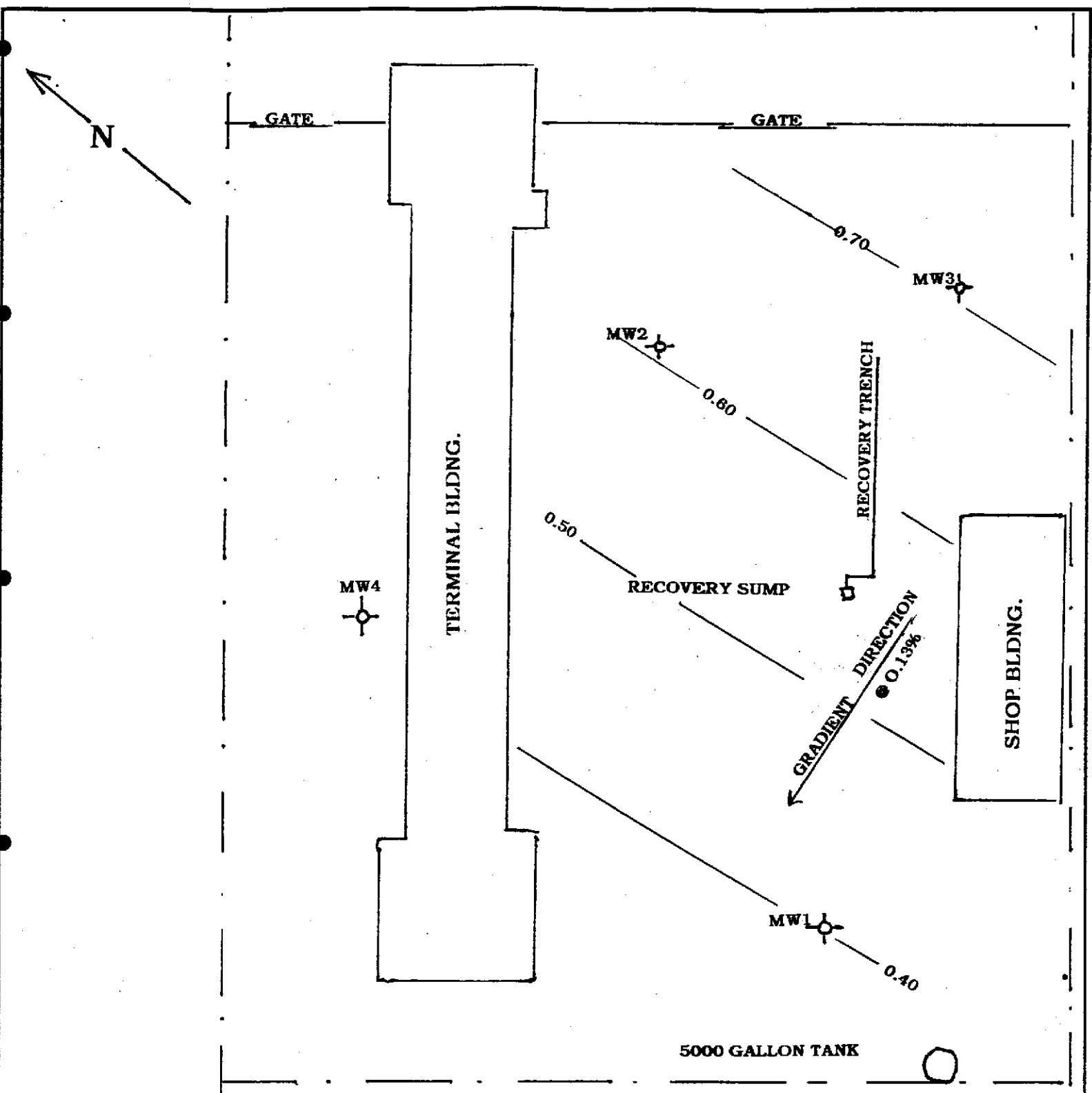


Samuel H Halsted P.E.
CE 14095

FIGURES



VICINITY MAP		
4919 TIDEWATER ST., OAKLAND, CA		
SCALE: 1"=0.67mi.	APPROVED BY:	DRAWN BY:
DATE: 8/2/99		REVISED
PIERS ENVIRONMENTAL SERVICES, INC.		
1330 S. BASCOM AVENUE, SUITE F, SAN JOSE, CA 95128		FIGURE 1



SITE PLAN

4919 TIDEWATER ST., OAKLAND, CA

Well#	Casing Elev.	Depth to Grndwtr.	Grndwtr. Elev.
MW 1	2.68	2.17	0.41
MW 2	3.50	2.89	0.61
MW 3	2.90	2.18	0.72

SCALE: 1"=50'

APPROVED BY:

DRAWN BY:

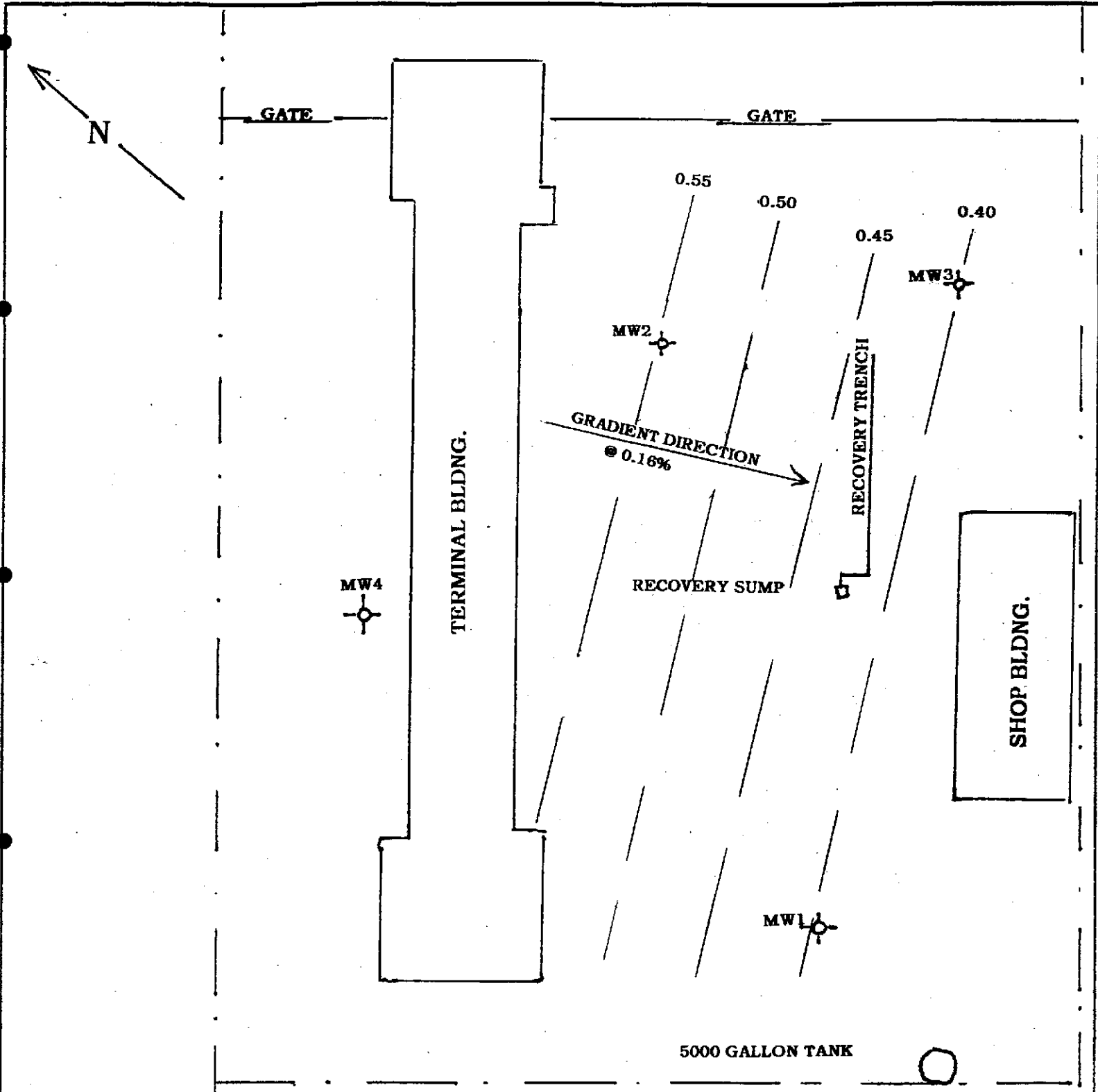
DATE: 8/2/99

REVISED

PIERS ENVIRONMENTAL SERVICES, INC.

1330 S. BASCOM AVENUE, SUITE F, SAN JOSE, CA 95128

FIGURE 3



SITE PLAN

4919 TIDEWATER ST., OAKLAND, CA

SCALE: 1"=50'

APPROVED BY:

DRAWN BY:

DATE: 8/2/99

REVISED

PIERS ENVIRONMENTAL SERVICES, INC.

1330 S. BASCOM AVENUE, SUITE F, SAN JOSE, CA 95128

FIGURE 2

Well#	Casing Elev.	Depth to Grndwtr.	Gmdwtr. Elev.
MW 1	2.68	2.29	0.39
MW 2	3.50	2.96	0.54
MW 3	2.90	2.50	0.40

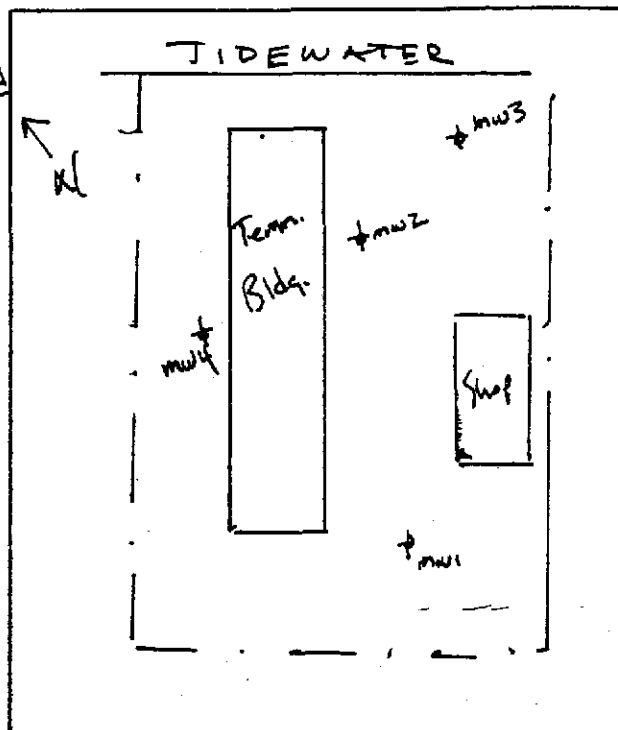
WELL PURGE LOGS
MAY 26, 1999 & AUGUST 23, 1999



PIERS Environmental Services, Inc.
 1330 S. Bascom Avenue, Suite F
 San Jose, CA 95128
 (408)559-1248

WATER-QUALITY SAMPLING INFORMATION

Project Name: DiSalvo Trucking Project No.: _____
 Date: 5/26/99 Sample No.: _____
 Samplers Name: B. Halsted
 Sampling Location: 4919 Tideunder, Oakland
 Sampling Method: Disposable Bailer
 Analyses Requested: TPH BTEX
 Number and Types of Sample Bottles Used: 1 liter amber 40 ml VOA
 Method of Shipment: on ice



LOCATION MAP

GROUND WATER

Well No.: MW1 2-inch casing = 0.16 gal/ft
 Well Diameter (in.) 2" 4-inch casing = 0.65 gal/ft
 Depth to Water, Static (ft) 229 5-inch casing = 1.02 gal/ft
 Water in Well Box No 6-inch casing = 1.47 gal/ft
 Well Depth (ft) ±8'
 Height of Water Column in Well 5'
 Water Volume in Well 0.9 gal.

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (F)	pH (S.U.)	COND (mhos/cm)	OTHER	REMARKS
11:55		1	73.8	7.21	8.33		Turbid - grey water
11:58		2	71.6	7.10	8.13		slow - recharge
11:51		3	71.3	6.95	8.01		cloudy
12:00		4	70.9	6.97	8.05		sampled No. 0202

Suggested Method for Purging Well Bailer



PIERS Environmental Services, Inc.
 1330 S. Bascom Avenue, Suite F
 San Jose, CA 95128
 (408)559-1248

WATER-QUALITY SAMPLING INFORMATION

Project Name: DiSalvo Trucking Project No.: _____

Date: May 26, 1999 Sample No.: _____

Samplers Name: B. Halsted

Sampling Location: 4919 Tideunder, Oakland

Sampling Method: Disposable Bailer

Analyses Requested: TPH BTEX

Number and Types of Sample Bottles Used: 1 liter amber 40 ml VOA

Method of Shipment: on ice

GROUND WATER

Well No.: MW2 2-inch casing = 0.16 gal/ft

Well Diameter (in.) 2" 4-inch casing = 0.65 gal/ft

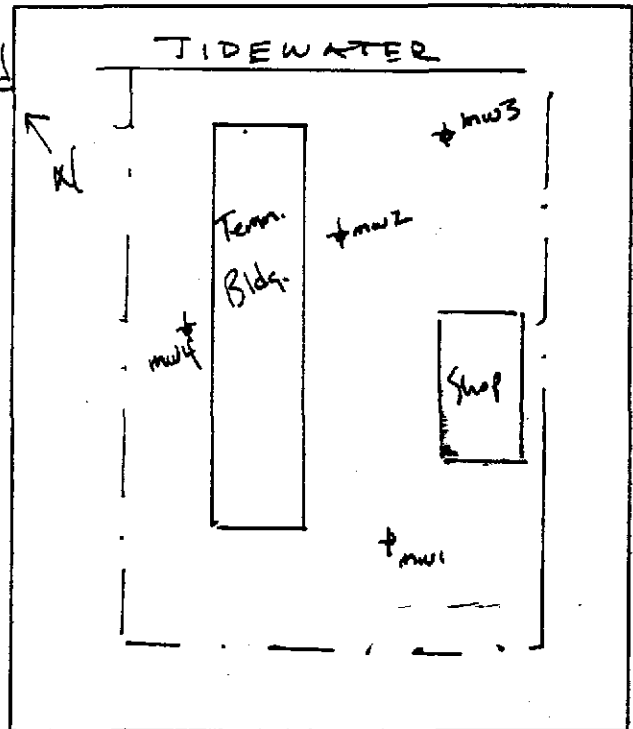
Depth to Water, Static (ft) 2.96 5-inch casing = 1.02 gal/ft

Water in Well Box No 6-inch casing = 1.47 gal/ft

Well Depth (ft) 18

Height of Water Column in Well 15'

Water Volume in Well 0.8 gallons.



LOCATION MAP

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (F)	pH (S.U.)	COND (mhos/cm)	OTHER	REMARKS
8:13		1	72.8	6.53	413		cloudy/turbid.
8:31		2	71.9	6.82	451		cloudy/slow rising
9:00		3	72.3	6.66	462		sample no odor

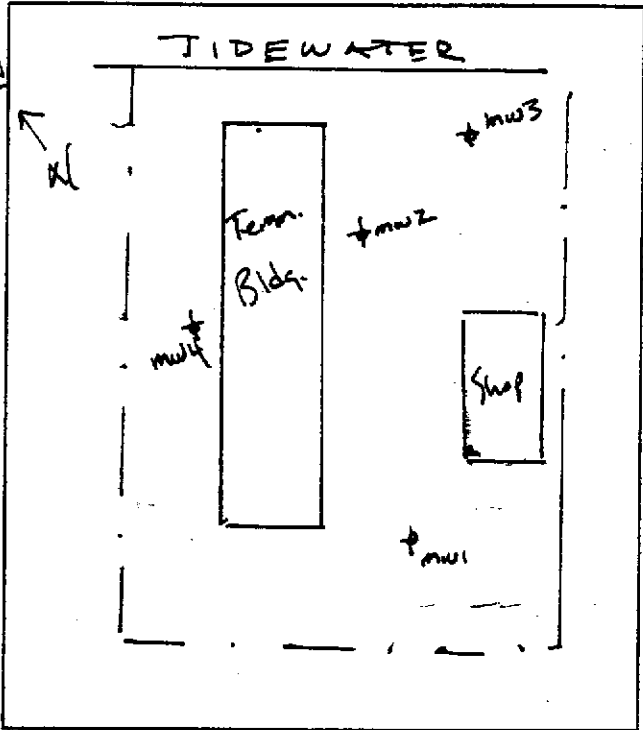
Suggested Method for Purging Well Bailer



PIERS Environmental Services, Inc.
 1330 S. Bascom Avenue, Suite F
 San Jose, CA 95128
 (408)559-1248

WATER-QUALITY SAMPLING INFORMATION

Project Name: D Salvo Trucking Project No.: _____
 Date: 5/26/99 Sample No.: _____
 Samplers Name: B. Hulsled
 Sampling Location: 4919 Tideunder, Oakland
 Sampling Method: Disposable Bailer
 Analyses Requested: TPH BTEX
 Number and Types of Sample Bottles Used: 1 liter amber 40ml VOA
 Method of Shipment: on ice



LOCATION MAP

GROUND WATER

Well No.: mw3 2-inch casing = 0.16 gal/ft
 Well Diameter (in.) 2" 4-inch casing = 0.65 gal/ft
 Depth to Water, Static (ft) 250 5-inch casing = 1.02 gal/ft
 Water in Well Box No. 6-inch casing = 1.47 gal/ft
 Well Depth (ft) ±8
 Height of Water Column in Well 550
 Water Volume in Well 0.9 gallons

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (F)	pH (S.U.)	COND (mhos/cm)	OTHER	REMARKS
9:11		1	71.3	6.91	2.97		Discol odor
9:30		2	70.9	7.09	3.40		cloudy
9:47		3	71.4	7.12	3.57		sampled

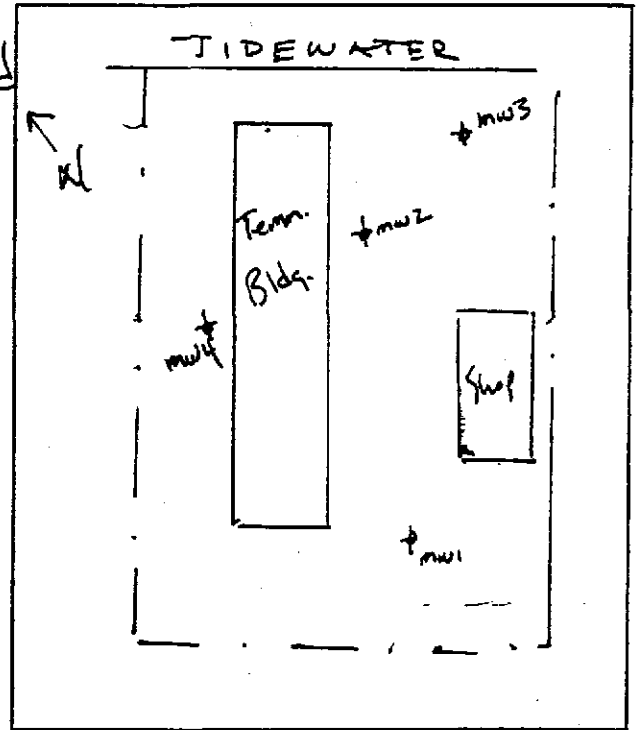
Suggested Method for Purging Well Bailer



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WATER-QUALITY SAMPLING INFORMATION

Project Name: D Salvo Trucking Project No.: _____
 Date: 5/26/99 Sample No.: _____
 Samplers Name: B. Halsted
 Sampling Location: 4919 Tideunder, Oakland
 Sampling Method: Disposable Bailer
 Analyses Requested: TPH BTEX
 Number and Types of Sample Bottles Used: 1 liter amber 40ml vials
 Method of Shipment: on ice



LOCATION MAP

GROUND WATER

Well No.: MW4 2-inch casing = 0.16 gal/ft
 Well Diameter (in.) 2" 4-inch casing = 0.65 gal/ft
 Depth to Water, Static (ft) 3.31 5-inch casing = 1.02 gal/ft
 Water in Well Box No 6-inch casing = 1.47 gal/ft
 Well Depth (ft) 15
 Height of Water Column in Well 4.69
 Water Volume in Well 0.7

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (F)	pH (S.U.)	COND (mhos/cm)	OTHER	REMARKS
<u>10²⁴</u>		<u>1</u>	<u>72.2</u>	<u>7.13</u>	<u>4.31</u>		<u>Turbid. (Greenish water)</u>
<u>10³¹</u>		<u>2</u>	<u>72.0</u>	<u>7.20</u>	<u>4.69</u>		<u>cloudy - slow reach</u>
<u>10³²</u>		<u>3</u>	<u>71.8</u>	<u>7.26</u>	<u>3.88</u>		<u>sampled - slight odor</u>

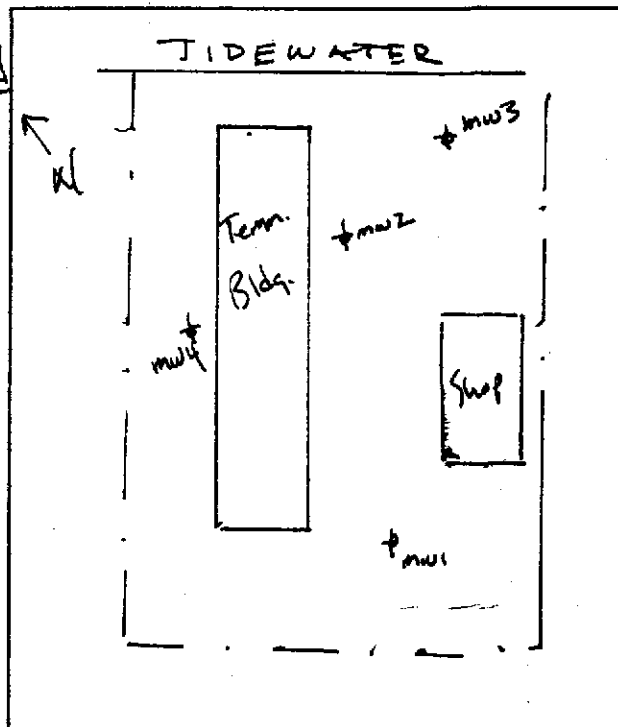
Suggested Method for Purging Well Bailer



PIERS Environmental Services, Inc.
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 San Jose, CA 95128
 (408)559-1248

WATER-QUALITY SAMPLING INFORMATION

Project Name: Di Salvo Trucking Project No.: _____
 Date: 8-23-99 Sample No.: _____
 Samplers Name: B. Halsted
 Sampling Location: 4919 Tideunder, Oakland
 Sampling Method: Disposable Bailer
 Analyses Requested: TPH BTEX
 Number and Types of Sample Bottles Used: 1 liter amber 40 ml vials
 Method of Shipment: on ice



LOCATION MAP

GROUND WATER

Well No.: MW1 2-inch casing = 0.16 gal/ft
 Well Diameter (in.) 2" 4-inch casing = 0.65 gal/ft
 Depth to Water, Static (ft) 2'17" 5-inch casing = 1.02 gal/ft
 Water in Well Box No 6-inch casing = 1.47 gal/ft
 Well Depth (ft) ±8
 Height of Water Column in Well ±5B
 Water Volume in Well 0.9 gallons

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (F)	pH (S.U.)	COND (mhos/cm) x 1000	OTHER (Eh (mV))	REMARKS
<u>11¹²</u>		<u>2</u>	<u>74.4</u>	<u>6.79</u>	<u>9.14</u>	<u>+98</u>	<u>Turbid (grey water)</u>
<u>11³¹</u>		<u>4</u>	<u>73.1</u>	<u>6.91</u>	<u>8.73</u>	<u>+108</u>	<u>slow recharge</u>
<u>11⁴⁵</u>		<u>5</u>	<u>72.9</u>	<u>7.11</u>	<u>8.61</u>	<u>+138</u>	<u>cloudy</u>
<u>12⁰⁰</u>		<u>6</u>	<u>73.8</u>	<u>7.13</u>	<u>8.63</u>	<u>+141</u>	<u>sampled cloudy</u> <u>no odor</u>

Suggested Method for Purging Well Bailer



PIERS Environmental Services, Inc.
 1330 S. Bascom Avenue, Suite F
 San Jose, CA 95128
 (408)559-1248

WATER-QUALITY SAMPLING INFORMATION

Project Name: DiSalvo Trucking Project No.: _____

Date: 8-23-99 Sample No.: _____

Samplers Name: B. Halsted

Sampling Location: 4919 Tidecenter, Oakland

Sampling Method: Disposable Bailer

Analyses Requested: TPH BTEX

Number and Types of Sample Bottles Used: 1 liter amber 40 ml VOA

Method of Shipment: on ice

GROUND WATER

Well No.: MW2 2-inch casing = 0.16 gal/ft

Well Diameter (in.) 2" 4-inch casing = 0.65 gal/ft

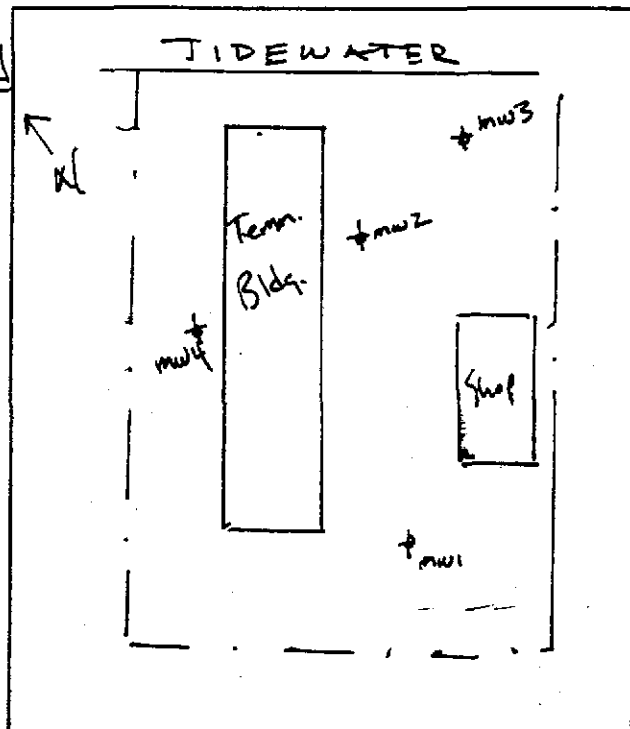
Depth to Water, Static (ft) 2.89 5-inch casing = 1.02 gal/ft

Water in Well Box No 6-inch casing = 1.47 gal/ft

Well Depth (ft) ±8'

Height of Water Column in Well ±5"

Water Volume in Well 0.8 gallons



LOCATION MAP

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (F)	pH (S.U.)	COND (mhos/cm) x1000	OTHER Eh (mV)	REMARKS
12 ⁰⁵		1	72.9	7.07	5.17	+121	Turbid (grey)
12 ¹¹		2	72.2	6.75	5.47	+138	slight odor
12 ¹⁹		3	71.8	6.81	5.75	+133	slow recharge
12 ³²		4	71.5	6.83	5.62	+145	cloudy - sampled

Suggested Method for Purging Well Bailer



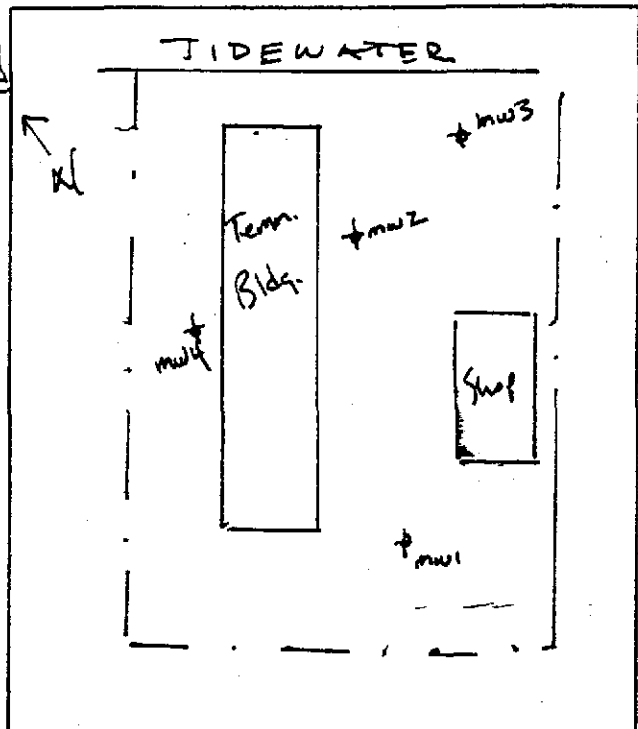
PIERS Environmental Services, Inc.
 1330 S. Bascom Avenue, Suite F
 San Jose, CA 95128
 (408)559-1248

WATER-QUALITY SAMPLING INFORMATION

Project Name: Di Salvo Trucking Project No.: _____
 Date: 8/23/99 Sample No.: _____
 Samplers Name: B. Halsted
 Sampling Location: 4919 Tideunder, Oakland
 Sampling Method: Disposable Bailer
 Analyses Requested: TPH BTEX
 Number and Types of Sample Bottles Used: 1 liter amber 40 ml VOA
 Method of Shipment: on ice

GROUND WATER

Well No.: MW3 2-inch casing = 0.16 gal/ft
 Well Diameter (in.) 2" 4-inch casing = 0.65 gal/ft
 Depth to Water, Static (ft) 2.18 5-inch casing = 1.02 gal/ft
 Water in Well Box No 6-inch casing = 1.47 gal/ft
 Well Depth (ft) ±8
 Height of Water Column in Well 5.82
 Water Volume in Well 0.9 gallons



LOCATION MAP

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (F)	pH (S.U.)	COND (mhos/cm)	OTHER Eh (mV)	REMARKS
12:41		1	71.6	6.70	4.10	+391	Cloudy Diesel
12:41		2	71.8	6.67	3.88	+325	odor (slight)
12:53		3	71.3	6.54	3.84	+352	cloudy sampled
1:00		4	72.1	6.48	3.79	+341	

Suggested Method for Purging Well Bailer



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WATER-QUALITY SAMPLING INFORMATION

Project Name: DiSalvo Trucking Project No.: _____

Date: 8-23-99 Sample No.: _____

Samplers Name: B. Halsted

Sampling Location: 4919 Tideunder, Oakland

Sampling Method: Disposable Bailer

Analyses Requested: TPH BTEX

Number and Types of Sample Bottles Used: 1 liter amber 40ml VOA

Method of Shipment: on ice

GROUND WATER

Well No.: MW4 2-inch casing = 0.16 gal/ft

Well Diameter (in.) 2" 4-inch casing = 0.65 gal/ft

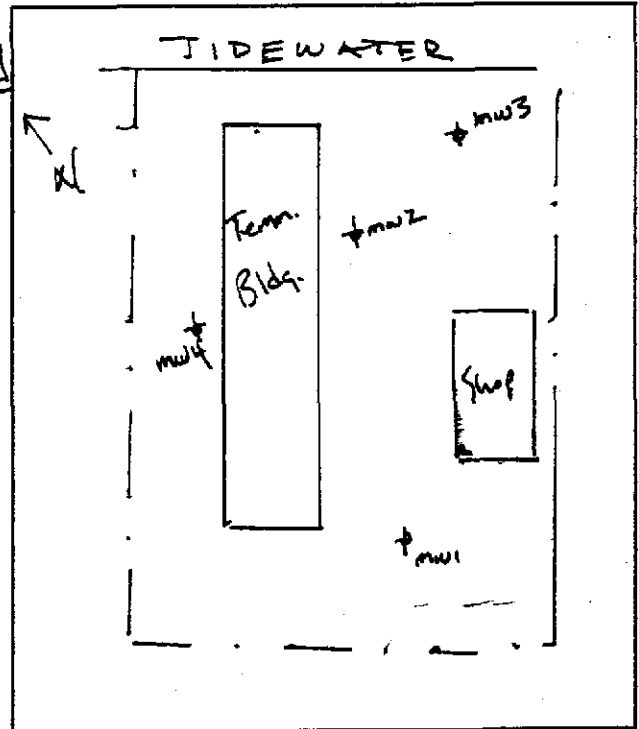
Depth to Water, Static (ft) ± 340 5-inch casing = 1.02 gal/ft

Water in Well Box No 6-inch casing = 1.47 gal/ft

Well Depth (ft) ± 8

Height of Water Column in Well 4⁶⁰

Water Volume in Well 0.7 gallons



LOCATION MAP

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (F)	pH (S.U.)	COND (mhos/cm)	OTHER Eh ml	REMARKS
1:05		1	73.1	6.11	417	+321	Turbid (grey water)
1:15		2	73.0	6.31	421	+307	cloudy - slow recharge
1:40		3	72.8	6.45	411	+297	sampled

Suggested Method for Purging Well Bailer

**ANALYTICAL RESULTS
CHAINS-OF-CUSTODY
MAY 26, 1999 & AUGUST 23, 1999**



PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

June 01, 1999

PEL # 9905016

PIERS ENVIRONMENTAL

Attn: Ben Halsted

Re: Four water samples for Gasoline/BTEX with MTBE and Diesel analyses.

Project name: Di Salvo

Date sampled: May 26, 1999

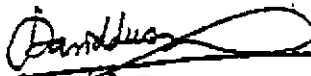
Date submitted: May 27, 1999

Date extracted: May 27-28, 1999

Date analyzed: May 27-28, 1999

RESULTS:

SAMPLE I.D.	Gasoline (ug/L)	Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylene (ug/L)	MTBE (ug/L)
MW # 1	60	N.D.	0.6	N.D.	0.8	1.9	N.D.
MW # 2	N.D.	120.	N.D.	N.D.	N.D.	N.D.	N.D.
MW # 3	160	1100	1.6	1.1	16	54	N.D.
MW # 4	600	100	0.7	N.D.	N.D.	5.8	N.D.
Blank	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	82.0%	88.7%	93.1%	86.4%	85.3%	94.2%	---
Detection limit	50	50	0.5	0.5	0.5	0.5	0.5
Method of Analysis	5030 / 8015	3510 / 8015	602	602	602	602	602


 David Duong
 Laboratory Director



PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

August 29, 1999

PEL # 9908015

PIERS ENVIRONMENTAL

Attn: Ben Halsted

Re: Five water samples for Diesel and BTEX analyses.

Project name: DiSalvo Oak

Date sampled: Aug 23, 1999

Date submitted: Aug 24, 1999

Date extracted: Aug 24-26, 1999

Date analyzed: Aug 24-26, 1999

RESULTS:

SAMPLE I.D.	Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
MW-1	N.D.	N.D.	N.D.	N.D.	N.D.
MW-2	61	N.D.	N.D.	N.D.	N.D.
MW-3	84	N.D.	N.D.	N.D.	N.D.
MW-4	180	N.D.	N.D.	N.D.	N.D.
SUMP1	140	N.D.	N.D.	N.D.	N.D.
Blank	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	87.5%	81.0%	97.9%	84.1%	92.5%
Detection limit	50	0.5	0.5	0.5	0.5
Method of Analysis	3510/ 8015	602	602	602	602


David Duong
Laboratory Director



PRIORITY ENVIRONMENTAL

Precision Environmental Analytical Laboratory

August 29, 1999

PEL # 9908015

PIERS ENVIRONMENTAL

Attn: Ben Halsted

Re: Five water samples for Iron(+2), Nitrate, and Sulfate analyses.

Project name: Disalvo Oak

Date sampled: Aug 23, 1999

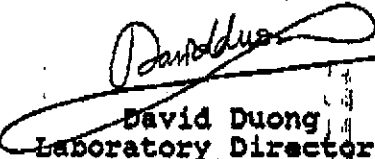
Date submitted: Aug 24, 1999

Date extracted: Aug 24-28, 1999

Date analyzed: Aug 24-28, 1999

RESULTS:

SAMPLE I.D.	Iron(+2) (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)
MW-1	0.11	N.D.	N.D.
MW-2	0.08	N.D.	N.D.
MW-3	0.14	N.D.	N.D.
MW-4	0.33	N.D.	N.D.
SUMP1	0.28	N.D.	N.D.
Blank	N.D.	N.D.	N.D.
Detection limit	0.05	0.5	5.0
Method of Analysis	3500-Fe	4500-NO3(-1)	4500-SO4(-2)


 David Duong
 Laboratory Director