

# erSchy Environmental

May 2, 2001  
Project A51-01.02

**MAY 07 2001**

Mr. Don Hwang  
Alameda County  
Health Care Services Agency  
Environmental Health Services  
1131 Harbor Bay Parkway, Ste. 250  
Alameda, CA 94502-6577

**Re: Results of Groundwater Monitoring and Work Plan for Additional Investigation, Alaska Gasoline Company, Oakland, California**

Dear Mr. Hwang:

HerSchy Environmental is pleased to present the results of the most recent groundwater monitoring for the above-referenced site. The site is located at 6211 San Pablo Avenue, which is on the northwest corner of San Pablo Avenue and 62nd Street in Oakland, California (Figure 1). This document also includes a work plan for the drilling and installation of additional groundwater monitoring wells for the continuing hydrogeologic investigation at the site. This work was performed in response to the February 21, 2001 correspondence from your office.

## PREVIOUS INVESTIGATIONS

Previous work included the drilling, sampling, and laboratory analysis of soil and groundwater from three soil borings (B-1 through B-3), as shown on Figure 2. Details of this investigation is contained in the April 22, 1999 *Results of Underground Storage Tank (UST) Site Assessment, Alaska Gasoline Company, Oakland, California* prepared by HerSchy Environmental. Significant concentrations of gasoline constituents were encountered in soil during this initial investigation. Groundwater was encountered during this investigation at an approximate depth of ten feet and a groundwater sample collected from boring B-1. Boring locations are presented in Figure 2 and summarized in Table 1.

Table 1

**Laboratory Analytical Results, April 16, 1999, Alaska Gasoline, Oakland**

Sample	TPH	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
B-1 @ 10'	440	2.3	4.8	7.4	31	3.7

**Table 1**  
**(continued)**

Sample	TPH	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
B-1 @ 15'	74	1.4	1.6	1.6	6.3	4.8
B-2 @ 10'	290	3.6	9.0	5.8	24	2.0
B-3 @ 10'	460	3.8	18	7.6	37	86
B-1, GW	99,000	10,000	4,300	3,100	11,000	48,000

All results expressed in parts per million (ppm)  
 GW results expressed in parts per billion (ppb)  
 TPH = gasoline range total petroleum hydrocarbons  
 MTBE = methyl tertiary butyl ether

Based on the results of this initial investigation, five additional borings (B-4 through B-5) were drilled, sampled, and laboratory analysis performed on soil (Figure 2). Results of this work is contained in the July 19, 1999 "Results of Phase II Soil Investigation, Alaska Gasoline Company, Oakland, California" prepared by HerSchy Environmental. Laboratory analytical results of this work are summarized in Table 2 below:

**Table 2**  
**Laboratory Analytical Results, Alaska Gasoline, Oakland, June 29, 1999**

Sample	TPH	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
B-4 @ 5'	100	0.68	1.4	1.5	7.8	2.2
B-4 @ 10'	14	0.71	ND	0.23	0.11	9.3
B-5 @ 5'	5.7	0.068	0.0061	0.033	0.065	3.5
B-5 @ 10'	34	0.37	0.079	0.17	0.57	2.0
B-6 @ 5'	92	2.3	5.4	1.5	7.0	23
B-6 @ 10'	30	1.3	ND	ND	0.060	46
B-7 @ 5'	3.2	0.12	ND	0.073	0.14	0.023
B-7 @ 10'	280	0.57	0.56	2.8	14	ND
B-8 @ 5'	ND	ND	ND	ND	ND	ND
B-8 @ 10'	270	0.93	2.9	4.6	20	2.7

All results presented in ppm.  
 ND = below detectable concentrations.

Based on the results of the soil investigations described above and the relatively shallow depth to groundwater, a preliminary hydrogeologic investigation was performed. This investigation consisted of the drilling and installation of three groundwater monitoring wells (MW-1 through MW-3). Details of this work are contained in the December 13, 1999 "Results of Drilling, Sampling, and Monitoring Well Installation, Alaska Gasoline Company, Oakland, California" prepared by HerSchy Environmental.

Soil samples were collected from each of the monitoring wells and submitted for laboratory analysis. Monitoring well locations are presented in Figure 3. Laboratory analytical results for soil are summarized in Table 3 below:

**Table 3**  
**Laboratory Analytical Results for Soil, October, 1999, Alaska Gasoline, Oakland**

Sample	TPH	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
MW-1 @ 5'	1.1	0.14	ND	0.017	0.016	0.065
MW-1 @ 10'	570	4.6	18	10	47	10
MW-2 @ 5'	16	0.25	ND	0.26	0.30	1.2
MW-2 @ 10'	22	0.79	0.38	0.52	2.1	1.4
MW-3 @ 5'	2,200	11	63	35	170	48
MW-3 @ 10'	14	0.12	0.080	ND	0.087	28

All results presented in parts per million (ppm)

Drill cuttings and soil samples from each of the monitoring well locations were described in accordance with the Unified Soil Classification System by a California Registered Geologist. Soil consists entirely of silty clay (CL) from surface grade to an approximate depth of 20 feet in each boring. Groundwater conditions from this investigation and the most recent monitoring event are presented in subsequent sections of this report.

## **1.0 Methods of Investigation:**

### **1.1 Groundwater Sampling Procedures:**

The depth to groundwater was measured in each of the monitoring wells to the nearest 0.01 feet prior to initiating groundwater sampling activities. The depth to groundwater and the total depth of the wells were used to calculate the appropriate purge volume. Well purging and sampling was performed using a two-inch submersible pump. Physical characteristics (pH, electrical conductivity, and temperature) were measured and recorded prior to purging and again prior to sampling. Groundwater samples were collected in paired 40 milliliter vials. Groundwater samples were placed in a cooler chest with frozen gel packs ("blue ice") and maintained at or below four degrees Celsius until delivered to the laboratory. Samples were stored and transported under chain of custody documentation. In the absence of floating product, purge water was discharged an appropriate distance from the well head. Groundwater sampling field data sheets are presented in Appendix A.

### **1.2 Laboratory Analysis:**

Groundwater samples were analyzed for gasoline-range total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and xylenes (BTEX), and methyl

tertiary butyl ether (MTBE). Samples were analyzed using EPA method 8015 for gasoline-range TPH, and EPA method 8020 for BTEX and MTBE. Certified analytical reports are presented in Appendix B.

## 2.0 Results of Investigation:

### 2.1 Groundwater Conditions:

Groundwater is present beneath the site at an average depth of 5.86 feet below the surveyed well elevations. The elevation of groundwater beneath the site averaged 28.60 feet above mean sea level at the time of sampling. The groundwater elevation has increased by approximately 2.25 feet since the November 7, 1999 sampling event. Groundwater gradient was S. 39 degrees W. at a gradient of .0092. Groundwater conditions are summarized in Table 4 and presented graphically in Figure 3.

**Table 4**  
**Groundwater Conditions, Alaska Gasoline, Oakland**

Well Number	Elevation	Depth to GW	GW Elevation
<b>November 7, 1999:</b>			
MW-1	34.70	8.53	26.17
MW-2	34.94	8.26	26.68
MW-3	33.74	7.55	26.19
Flow Direction = S. 52 W.; Gradient = .0068			
<b>March 8, 2001:</b>			
MW-1	34.70	6.32	28.38
MW-2	34.94	5.89	29.05
MW-3	33.74	5.36	28.38
Flow Direction = S. 39 W.; Gradient = .0092			

The groundwater flow direction is toward San Francisco Bay, located approximately 0.75 miles southwest of the site. Regional groundwater flow appears to parallel the surface grade in the area.

### 2.2 Groundwater Quality:

All of the site monitoring wells contained petroleum hydrocarbon-impacted groundwater. The highest overall concentrations are present in MW-3 which is directly down gradient relative to the location of the USTs. Relatively high concentrations of gasoline constituents are also present in the other two monitoring wells. The fuel oxygenate MTBE was detected at relatively high concentrations in all of the wells, particularly in down gradient well MW-3. Certified analytical reports are presented in Appendix B and are summarized in Table 5 on the following page:

**Table 5**  
**Laboratory Analytical Results for Groundwater, Alaska Gasoline, Oakland**

Well Number	TPH	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
<b>November 7, 1999:</b>						
MW-1	5,700	170	59	22	85	20,000
MW-2	6,000	1,300	92	50	400	6,800
MW-3	43,000	860	70	ND	65	120,000
<b>March 8, 2001:</b>						
MW-1	17,000	480	150	52	170	38,000
MW-2	41,000	8,100	870	2,000	4,100	26,000
MW-3	90,000	1,800	ND	ND	ND	210,000

All results presented in parts per billion (ppb)

All of the site monitoring wells are impacted with gasoline constituents. The concentrations of gasoline constituents in groundwater appear to have increased since the last sampling event. This is likely due to the concurrent 2.25-foot rise in groundwater elevations that has brought more impacted soil into contact with groundwater. Based on site conditions, it appears that additional hydrogeologic investigation is warranted. A work plan for additional investigation is presented in the subsequent sections of this submittal.

### **3.0 Work Plan for Additional Investigation:**

#### **3.1 Drilling and Soil Sampling:**

Drilling will be performed using a truck-mounted drill rig equipped with eight-inch hollow stem augers. Augers will be steam cleaned prior to arriving on site. Two soil borings will be drilled to evaluate subsurface conditions which will then be used to install groundwater monitoring wells (MW-4 and MW-5). Monitoring wells MW-4 and MW-5 will be installed in down gradient and cross gradient locations on the property (Figure 4).

Soil samples will be collected using a California modified split spoon sampler equipped with brass liners. The samples will be collected at five and ten feet from each of the borings used for well installation. Samples will be collected by driving the sampler ahead of the drill bit. The sampler and liners will be cleaned between sampling events.

Soil samples will be field screened using a portable organic vapor analyzer (OVA) for the presence of volatile organic compounds (VOCs). All of the soil samples will be submitted to the laboratory for analysis.

Samples will be maintained in a cooler chest with frozen gel packs ("blue ice"), and maintained at a minimum of four degrees Celsius until delivered to the laboratory. A total of four soil samples will be submitted to the laboratory under chain of custody documentation. Soil samples and drill cuttings will be described in accordance with the Unified Soil Classification System by a California Registered Geologist. Drill cuttings will be contained in DOT-approved 55-gallon drums and stored on site as directed by the property owner. Soil sampling will be discontinued below a depth of ten feet.

### 3.2 Monitoring Well Installation, Development, and Sampling Procedures:

Well construction and annular materials will be installed through the hollow stem augers. Groundwater monitoring wells will be constructed with two-inch schedule 40 PVC well casing with screw joints. The screened intervals will be constructed with 20 feet of 0.020-inch factory slotted screen such that approximately 15 feet of the screened interval is below first encountered groundwater in each of the monitoring wells. Blank casing will be installed from the top of the screened interval to surface grade. The monitoring wells will be completed flush with surface grade in a traffic rated well cover with a locking well cap.

Annular materials will consist of #2/16 sand or coarser materials from the bottom of the boring to approximately two feet above the screened interval, followed by a minimum one-foot bentonite seal, followed by a sand-cement grout to the surface. Monitoring well elevations will be surveyed to the nearest .01 feet after installation. Depth to groundwater measurements will be made to the nearest .01 feet prior to sampling using an electric sounder.

The depth to groundwater will be measured in each of the monitoring wells to the nearest 0.01 feet prior to initiating monitoring well development and sampling activities. The depth to groundwater and the total depth of the existing wells will be used to calculate the appropriate purge volume. Well development, purging, and sampling will be performed using a two-inch submersible pump. Physical characteristics (pH, electrical conductivity, and temperature) will be measured and recorded prior to development and purging and again prior to sampling. Groundwater samples will be collected in paired 40 milliliter vials. Groundwater samples will be stored in a cooler chest with frozen gel packs ("blue ice") and maintained at or below four degrees Celsius until delivered to the laboratory. Samples will be stored and transported under chain of custody documentation. In the absence of floating product, development and purge water will be discharged an appropriate distance from the well head.

### 3.3 Laboratory Analysis:

Soil and groundwater samples will be analyzed for gasoline-range total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and xylenes (BTEX), and methyl

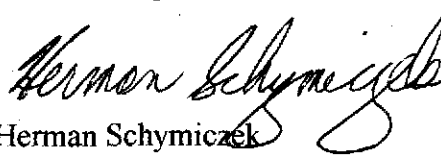
tertiary butyl ether (MTBE). Samples will be analyzed using EPA method 8015 for gasoline-range TPH, and EPA method 8020 for BTEX and MTBE.

3.4 Report Preparation:

A report will be prepared document the results of the hydrogeologic investigation. Included in the report will be borings logs and well construction details, groundwater sampling data sheets, and certified analytical reports as appendices. Data will be tabulated and discussed, with recommendations for additional investigation and proposed remedial measures will be presented as appropriate.

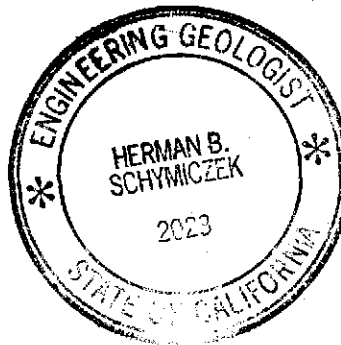
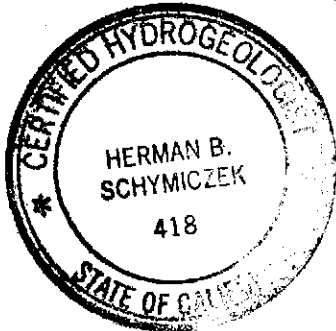
If you have any questions or need additional information, please contact me at the letterhead address or at (559) 641-7320.

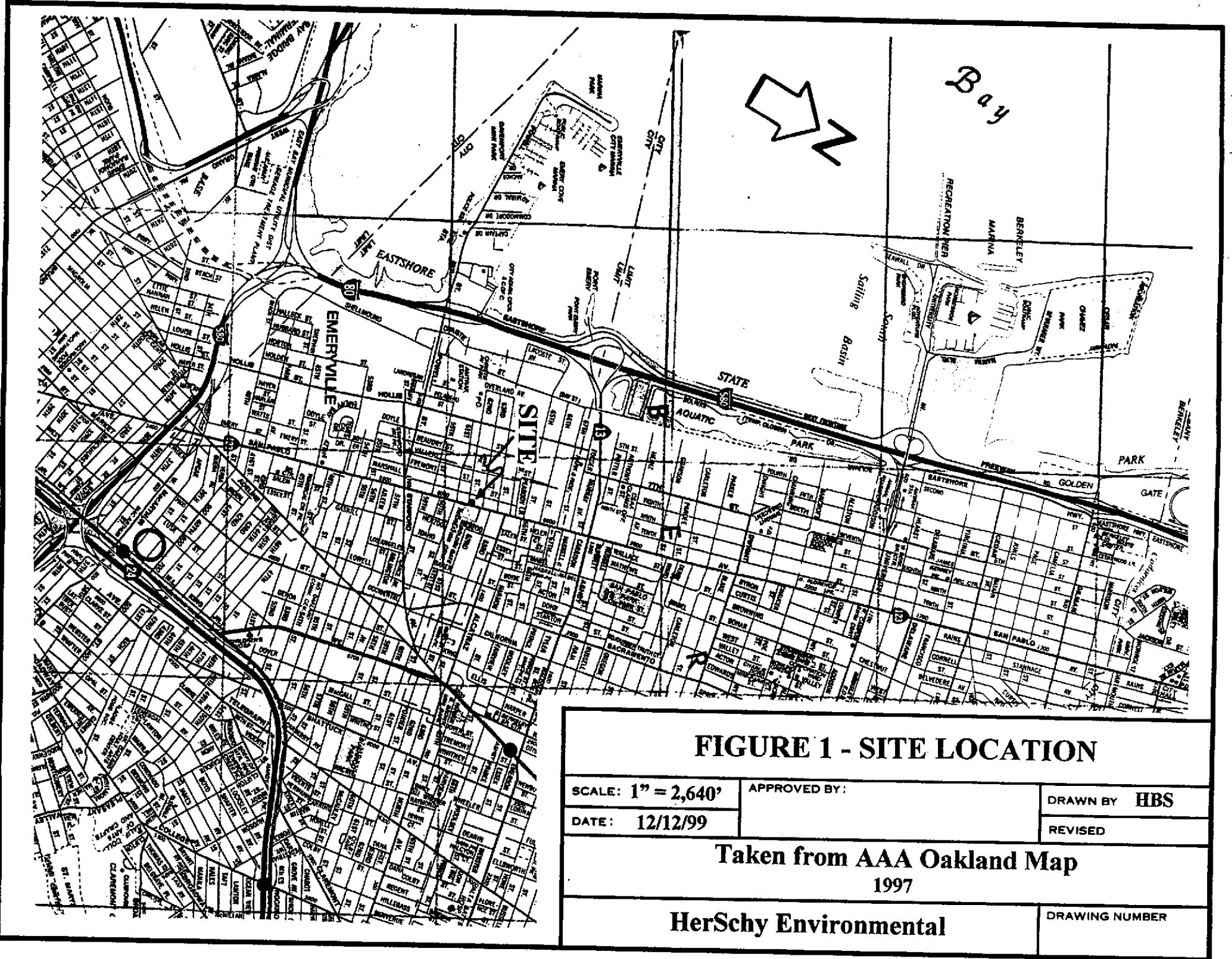
With best regards,



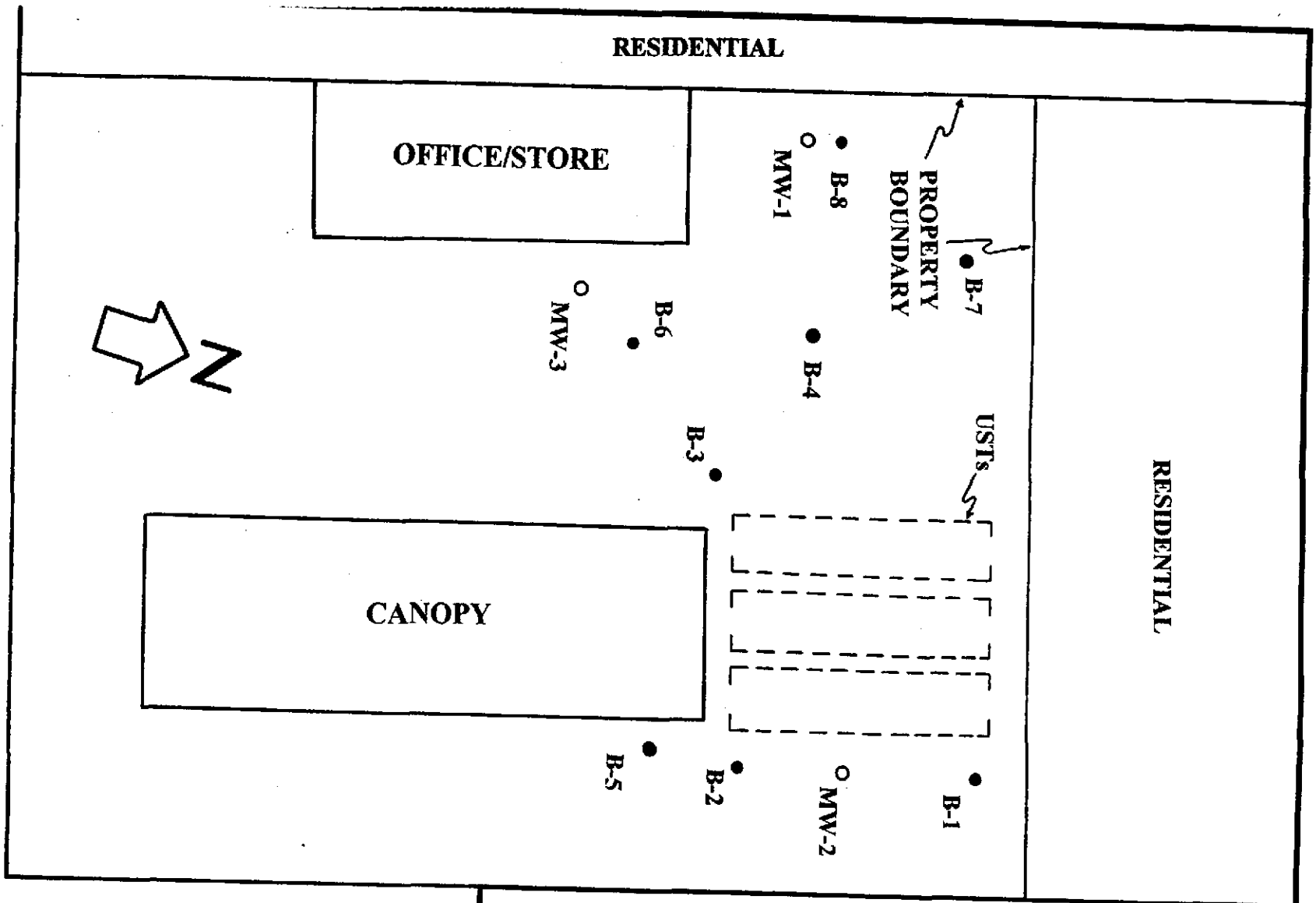
Herman Schymiczek  
CHG #418, CEG #2023

pc: Mr. Pritpaul Sappal, Alaska Gasoline Company







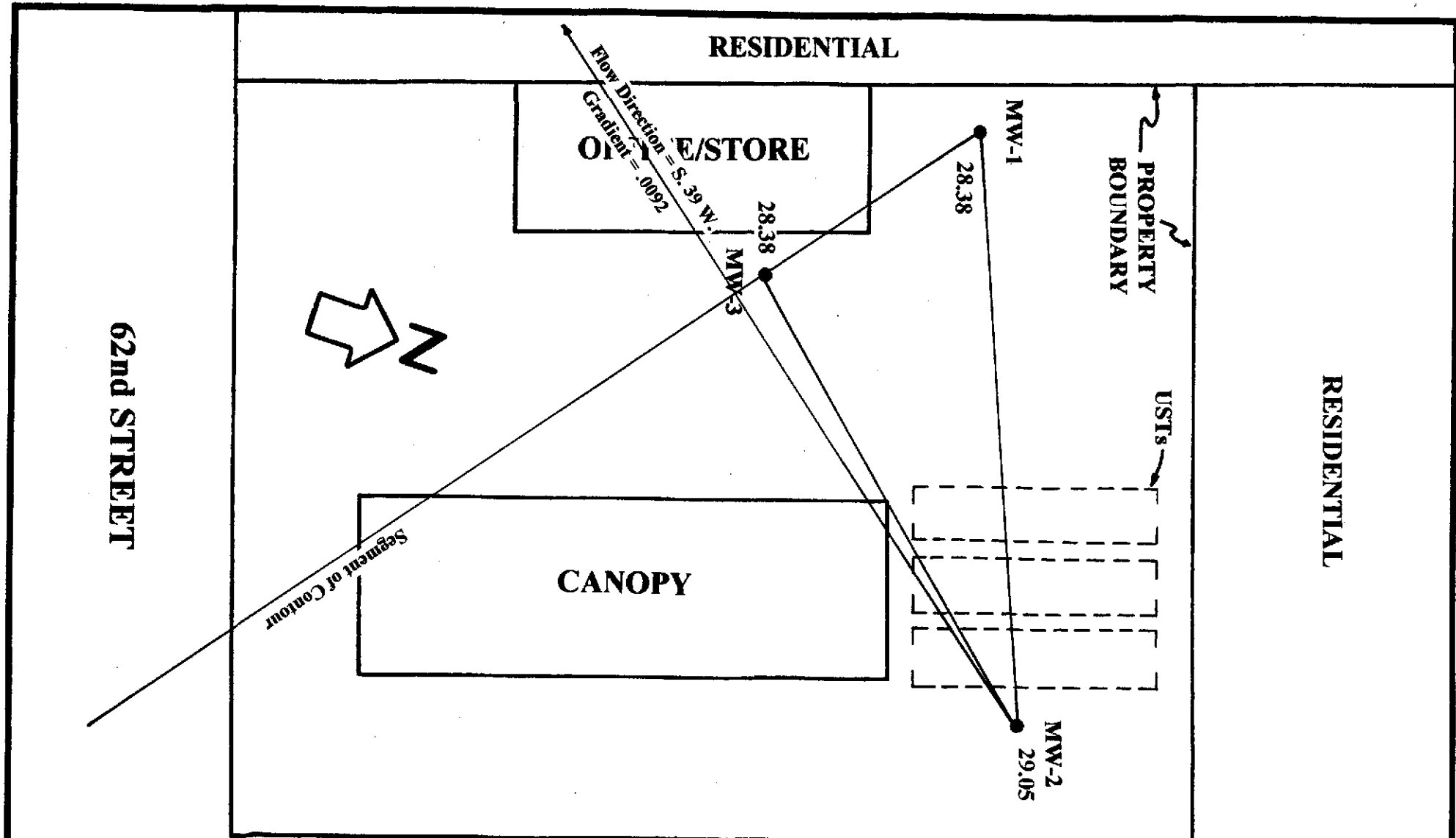


**FIGURE 2 - BORING/WELL LOCATIONS**

SCALE: 1" = 20'	APPROVED BY: _____	DRAWN BY <b>HBS</b>
DATE: 4/27/99		REVISED 12/12/99
<b>ALASKA GASOLINE COMPANY</b> Oakland, California		
<b>HerSchy Environmental</b>		DRAWING NUMBER

**SAN PABLO AVENUE**

**62nd STREET**



**FIGURE 3 - GROUNDWATER CONDITIONS**

SCALE: 1" = 20'	APPROVED BY:	DRAWN BY HBS
DATE: 12/12/99		REVISED 5/2/01
<b>ALASKA GASOLINE COMPANY</b> Oakland, California		
<b>HerSchy Environmental</b>		DRAWING NUMBER

**SAN PABLO AVENUE**

RESIDENTIAL

OFFICE/STORE

PROPERTY  
BOUNDARY

MW-1

MW-4  
(Proposed)

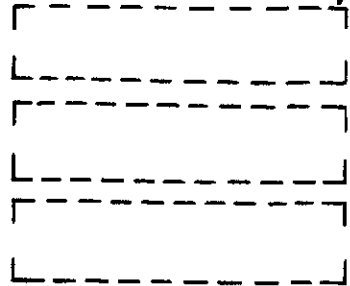
MW-3



RESIDENTIAL

USTs

CANOPY



MW-2

MW-5  
(Proposed)

62nd STREET

SAN PABLO AVENUE

**FIGURE 4 - PROPOSED WELLS**

SCALE: 1" = 20'  
DATE: 12/12/99

APPROVED BY:

DRAWN BY HBS  
REVISED 5/2/01

**ALASKA GASOLINE COMPANY**  
Oakland, California

**HerSchy Environmental**

DRAWING NUMBER

**APPENDIX A**

**GROUNDWATER FIELD SAMPLING DATA SHEETS**

**HerSchy WATER SAMPLE FIELD DATA SHEET**  
**Environmental**

Client Name: Alaska Gasoline Location: Oakland

Purged By: H. Schymiczek Sampled By: H. Schymiczek

Sample ID: MW-1 Type: Groundwater  Surface Water  Other

Casing Diameter (inches): 2  3  4  5  6  Other

Casing Elevation (feet/MSL): 34.70 Volume in Casing (gal.): 2.31

Depth of Well (feet): 20.50 Calculate Purge Volume (gal.): 9.24

Depth to Water (feet): 6.32 Actual Purge Volume (gal.): +10

Date Purged: 3-8-01 Date Sampled: 3-8-01

TIME	VOLUME	pH	E. C.	TEMP.	TURBIDITY
<u>1:50</u>	<u>-</u>	<u>7.60</u>	<u>725</u>	<u>64.4</u>	<u>cloudy</u>
<u>2:05</u>	<u>+10</u>	<u>7.58</u>	<u>668</u>	<u>64.4</u>	<u>clear</u>

Other Observations: \_\_\_\_\_ Odor: distinct H<sub>2</sub>S

Purging Equipment: Purger ES-60

Sampling Equipment: " " "

Remarks: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Samplers Signature: Herman Schymiczek

**HerSchy WATER SAMPLE FIELD DATA SHEET**  
**Environmental**

Client Name: Alaska Gasoline Location: Oakland  
 Purged By: H. Schymiczek Sampled By: H. Schymiczek  
 Sample ID: MW-2 Type: Groundwater  Surface Water  Other   
 Casing Diameter (inches): 2  3  4  5  6  Other

Casing Elevation (feet/MSL): 34.94 Volume in Casing (gal.): 2.41  
 Depth of Well (feet): 20.70 Calculate Purge Volume (gal.): 9.64  
 Depth to Water (feet): 5.89 Actual Purge Volume (gal.): +10

Date Purged: 3-8-01 Date Sampled: 3-8-01

TIME	VOLUME	pH	E. C.	TEMP.	TURBIDITY
<u>2:20</u>	<u>-</u>	<u>7.54</u>	<u>881</u>	<u>64.1</u>	<u>clear</u>
<u>2:30</u>	<u>+10</u>	<u>7.49</u>	<u>911</u>	<u>63.4</u>	<u>clear</u>

Other Observations: \_\_\_\_\_ Odor: Faint H<sub>2</sub>S

Purging Equipment: Purger ES-60

Sampling Equipment: " " "

Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Samplers Signature: Herman Schymiczek

**HerSchy WATER SAMPLE FIELD DATA SHEET**  
**Environmental**

Client Name: Alaska Gasoline Location: Oakland  
Purged By: H. Schymiczek Sampled By: H. Schymiczek  
Sample ID: MW-3 Type: Groundwater  Surface Water  Other   
Casing Diameter (inches): 2  3  4  5  6  Other

Casing Elevation (feet/MSL): 33.74 Volume in Casing (gal.): 2.54  
Depth of Well (feet): 20.95 Calculate Purge Volume (gal.): 10.16  
Depth to Water (feet): 5.36 Actual Purge Volume (gal.): +11

Date Purged: 3-8-01 Date Sampled: 3-8-01

TIME	VOLUME	pH	E. C.	TEMP.	TURBIDITY
<u>1:25</u>	<u>-</u>	<u>7.90</u>	<u>1,289</u>	<u>65.2</u>	<u>cloudy</u>
<u>1:35</u>	<u>+11</u>	<u>7.67</u>	<u>786</u>	<u>65.0</u>	<u>clear</u>

Other Observations: \_\_\_\_\_ Odor: distinct H<sub>2</sub>S  
Purging Equipment: Purger ES-60  
Sampling Equipment: " " "

Remarks: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Samplers Signature: Herman Schymiczek

**APPENDIX B**

**CERTIFIED ANALYTICAL REPORTS**



# CASTLE ANALYTICAL LABORATORY

Environmental Testing Services  
Certificate #2079

2333 Shuttle Drive, Atwater, CA 95301

Phone: (209) 384-2930  
Fax: (209) 384-1507

HerSchy Environmental P.O. Box 229 Bass Lake, CA 93604 Attn: Herman Schymiczek	Client Project ID: Alaska Gasoline - Oakland Reference Number: 3588 Sample Description: Water Sample Prep/Analysis Method: EPA 5030/8015M, 8020 Lab Numbers: 3588-1W, 2W, 3W	Sampled: 3-8-01 Received: 3-9-01 Extracted: 3-14-01 Analyzed: 3-14-01 Reported: 3-16-01
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## TOTAL PETROLEUM HYDROCARBONS - GASOLINE WITH BTEX DISTINCTION

ANALYTE	REPORTING LIMIT µg/L	SAMPLE ID	SAMPLE ID	SAMPLE ID
		MW-1 (µg/L)	MW-2 (µg/L)	MW-3 (µg/L)
MTBE	0.50	38000	26000	210000
BENZENE	0.50	480	8100	1800
TOLUENE	0.50	150	870	ND
ETHYL BENZENE	0.50	52	2000	ND
TOTAL XYLENES	0.50	170	4100	ND
GASOLINE RANGE HYDROCARBONS	50	17000	41000	90000
Report Limit Multiplication Factor:		100	200	500
Report Limit Multiplication Factor MTBE only:		1000	1000	5000

Surrogate % Recovery:	FID: 114% / PID: 112%	FID: 124% / PID: 117%	FID: 105% / PID: 104%
Instrument ID:	VAR-GC1	VAR-GC1	VAR-GC1

Analytes reported as ND were not detected or below the Practical Quantitation Limit  
Practical Quantitation Limit = Reporting Limit x Report Limit Multiplication Factor

ANALYST: *Clari J. Cone* APPROVED BY: *James C. Phillips*  
Clari J. Cone Laboratory Director

# CASTLE ANALYTICAL LABORATORY

Environmental Testing Services  
Certificate #2079

2333 Shuttle Drive, Atwater, CA 95301

Phone: (209) 384-2930  
Fax: (209) 384-1507

HerSchy Environmental P.O. Box 229 Bass Lake, CA 93604 Attn: Herman Schymiczek	Client Project ID: Alaska Gasoline - Oakland Reference Number: 3588 Matrix: Water Analyst: Jim Phillips	Method: EPA 5030/8015M,8020 Instrument ID: Var-GC1 Prepared: 3-14-01 Analyzed: 3-14-01 Reported: 3-16-01
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## QUALITY CONTROL DATA REPORT

ANALYTE	Gasoline	MTBE	Benzene	Toluene	Ethyl Benzene	Total Xylenes
Spike Concentration:	110	2.08	1.28	7.72	1.84	9.24
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
LCS Batch #:	VW-3141	VW-3141	VW-3141	VW-3141	VW-3141	VW-3141
LCS % Recovery:	96.6%	85.1%	117%	108%	111%	109%
Surrogate Recovery:	120%	116%	116%	116%	116%	116%
Control Limits:	70-130 %	70-130 %	70-130 %	70-130 %	70-130 %	70-130 %
MS/MSD Batch #:	VW-3141	VW-3141	VW-3141	VW-3141	VW-3141	VW-3141
Spike Concentration:	110	2.08	1.28	7.72	1.84	9.24
MS % Recovery:	84.0%	113%	116%	106%	107%	105%
Surrogate Recovery:	116%	111%	111%	111%	111%	111%
MSD % Recovery:	89.2%	109%	116%	107%	108%	106%
Surrogate Recovery:	119%	115%	115%	115%	115%	115%
Relative % Difference:	5.48%	2.86%	0.0298%	0.900%	0.800%	0.977%
Methanol Blank :	ND	ND	ND	ND	ND	ND
Surrogate Recovery:	111%	117%	117%	117%	117%	117%

The LCS (Laboratory Check Sample) is a control sample of known, interferent free matrix that is fortified with representative analytes and analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery is used for validation of sample batch results. Due to matrix effects, the QC limits and recoveries for MS/MSD's are advisory only and are not used to accept or reject batch results.

ANALYST:

*Clari J. Cone*  
Clari J. Cone

APPROVED BY:

*James C. Phillips*  
James C. Phillips  
Laboratory Director

