HerSchy Environmental

December 13, 1999
Project A51-01.02

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 Drilling, Sampling, and Monitoring Well Installation, Alaska Gasoline Company, Oakland, California

Dear Mr. Hwang:

HerSchy Environmental is pleased to present this hydrogeologic assessment report 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 presents the results of the implementation of the July 19, 1999 workplan with approval contained in the August 6, 1999 correspondence from your office.

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
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

P.O. Box 229 ◆ Bass Lake, CA 93604-0229 ◆ Phone: 559 • 641-7320 ◆ Fax: 559 • 641-7320

Table 1
(continued)

Sample	TPH	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
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.

1.0 Methods of Investigation:

1.1 Drilling and Soil Sampling

Drilling was performed on October 11, 1999, using a truck-mounted drill rig equipped with eight-inch hollow stem augers. Augers were steam cleaned prior to arriving on site. Three soil borings were drilled to evaluate subsurface conditions which were then used to install groundwater monitoring wells (MW-1 through MW-3). Monitoring well MW-1 was installed in the presumed down gradient location near

previous boring B-8. Monitoring well MW-2 was installed in a presumed up gradient location east of and adjacent to the existing USTs. Monitoring well MW-3 was installed approximately 60 feet southwest of the center of the UST area (Figures 2 and 3).

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

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

Samples were 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 six soil samples were submitted to the laboratory under chain of custody documentation. Soil samples and drill cuttings were described in accordance with the Unified Soil Classification System by a California Registered Geologist. Drill cuttings were contained in DOT-approved 55-gallon drums and stored on site as directed by the property owner. Soil sampling was discontinued below a depth of ten feet. Boring logs and well construction details are presented in Appendix A.

1.2 Monitoring Well Installation, Development, and Sampling Procedures:

Well construction and annular materials were installed through the hollow stem augers. Groundwater monitoring wells were constructed with two-inch schedule 40 PVC well casing with screw joints. The screened intervals were 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 was installed from the top of the screened interval to surface grade. The monitoring wells were completed flush with surface grade in a traffic rated well cover with a locking well cap.

Annular materials consist of #3 sand 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 were surveyed to the nearest .01 feet after installation. Depth to groundwater measurements were made to the nearest .01 feet prior to sampling using an electric sounder.

The groundwater monitoring wells were developed by pumping and surging until the discharge was relatively clear and free of sand. Well development was performed using a two-inch submersible pump. Physical characteristics (pH, electrical conductivity, and temperature) were measured and recorded during well development. Physical characteristics were measured before development and again prior to sampling.

Groundwater samples were stored, transported, and handled in a similar manner as described for soil above. In the absence of floating product, development and purge water was discharged an appropriate distance from the well head. Groundwater sampling field data sheets are presented in Appendix B.

1.3 Laboratory Analysis:

Soil and 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 C.

2.0 Results of Investigation:

2.1 Soil Profile:

Soil samples were collected at depth of five and ten feet in each of the borings used for well installation. Drill cuttings and soil samples 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. Boring logs and well construction details are presented in Appendix A.

Laboratory analytical results for soil samples indicate a relatively wide range of concentrations of fuel constituents in soil. Certified analytical reports are presented in Appendix C and summarized in Table 3 below:

Table 3
Laboratory Analytical Results for Soil, 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)

Laboratory analytical results indicate that relatively high concentrations of gasoline constituents are present in soil at the location of MW-1 at a depth of ten feet, and at the location of MW-3 at a depth of five feet. Relatively low to below detectable concentrations of gasoline constituents are present in other soil samples.

2.2 Groundwater Conditions:

Groundwater is present beneath the site at an average depth of 8.11 feet below the surveyed well elevations. The elevation of groundwater beneath the site averaged 26.35 feet above mean sea level at the time of sampling. Groundwater gradient was S. 52 degrees W. at a gradient of .0068. Groundwater conditions are summarized in Table 4 and presented graphically in Figure 3.

Table 4
Groundwater Conditions, November 7, 1999, Alaska Gasoline, Oakland

Well Number	Elevation	Depth to GW	GW Elevation
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 = .00681			

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.

2.3 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 C and are summarized in Table 5 below:

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

Well Number	TPH	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
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

All results presented in parts per billion (ppb)

3.0 Conclusions and Recommendations

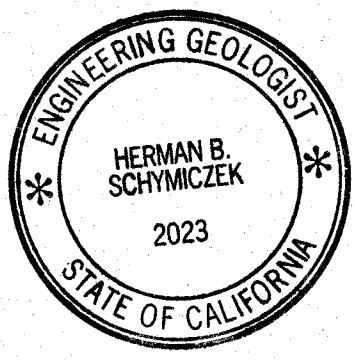
All of the site monitoring wells contain relatively high concentrations of gasoline constituents. The lateral extent of impacted soil has not been completely evaluated. The lateral extent of impacted groundwater has not been determined. It is recommended that at least one additional quarterly sampling event be performed to evaluate for seasonal variation in groundwater flow direction. This information will be used to recommend additional monitoring wells to evaluate the lateral extent of petroleum hydrocarbon-impacted groundwater. The next quarterly sampling is scheduled for February 7, 2000.

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



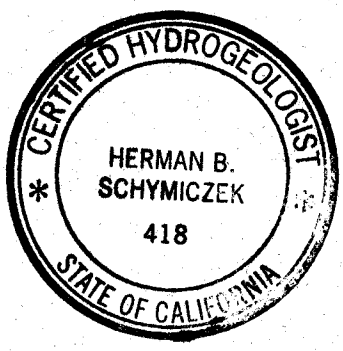


FIGURE 1 - SITE LOCATION

SCALE: 1" = 2,640'	APPROVED BY:	DRAWN BY HBS
DATE: 12/12/99		REVISED

Taken from AAA Oakland Map
1997

HerSchy Environmental

DRAWING NUMBER

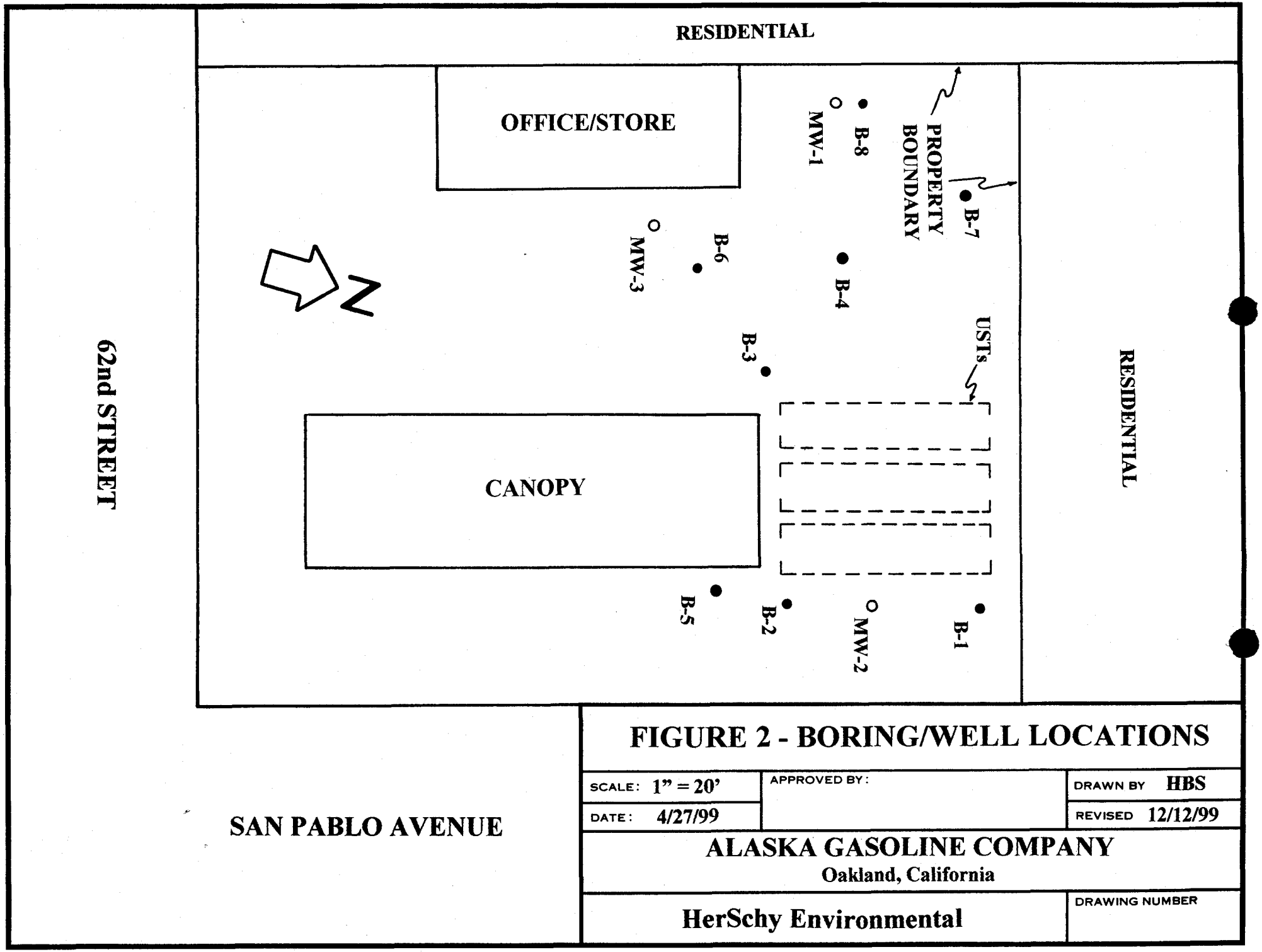


FIGURE 2 - BORING/WELL LOCATIONS

SCALE: 1" = 20'	APPROVED BY:	DRAWN BY HBS
DATE: 4/27/99		REVISED 12/12/99

ALASKA GASOLINE COMPANY
Oakland, California

HerSchy Environmental

DRAWING NUMBER

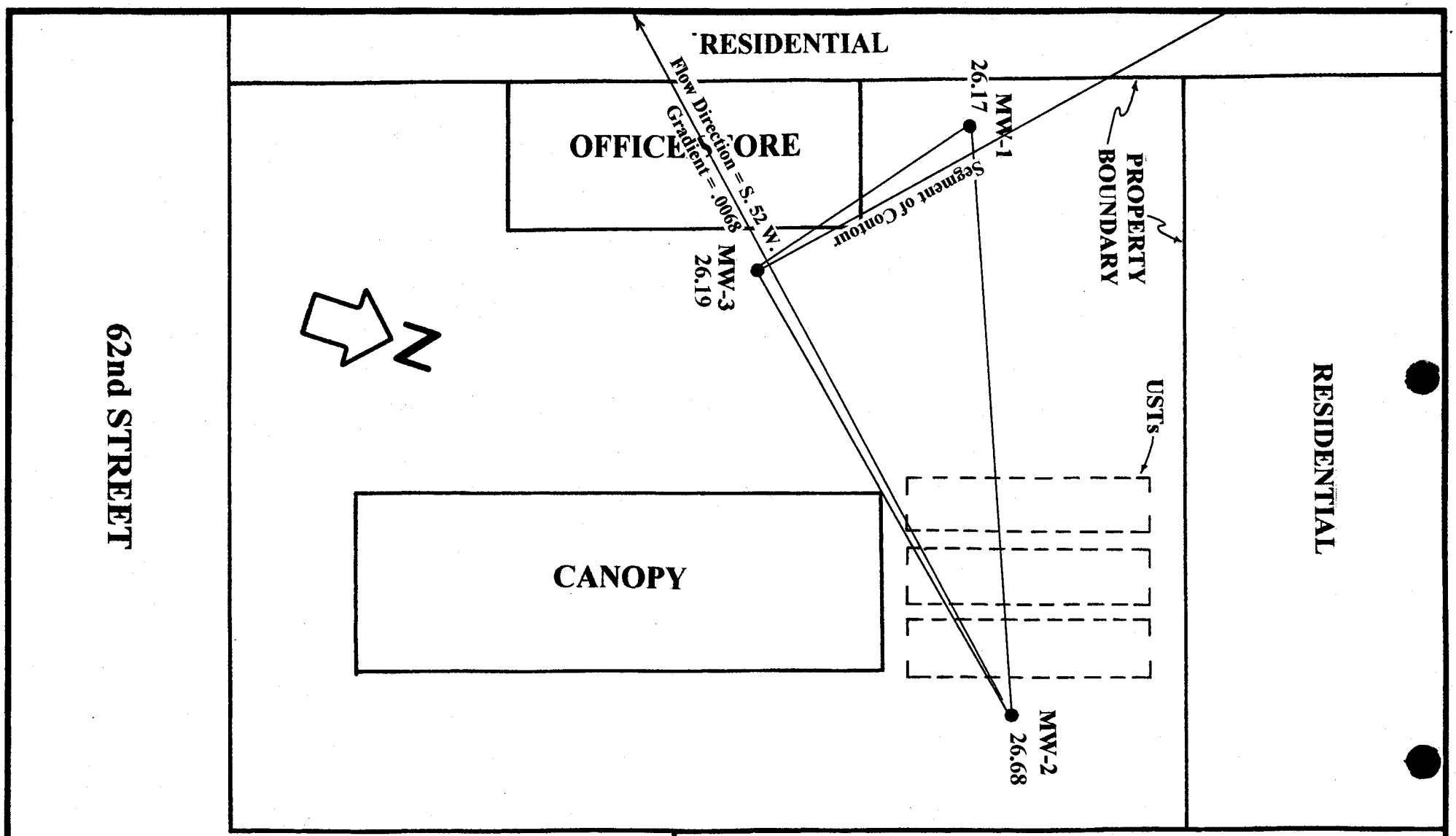


FIGURE 3 - GROUNDWATER CONDITIONS

SCALE: 1" = 20'	APPROVED BY:	DRAWN BY HBS
DATE: 12/12/99		REVISED

ALASKA GASOLINE COMPANY
Oakland, California

HerSchy Environmental

DRAWING NUMBER

APPENDIX A

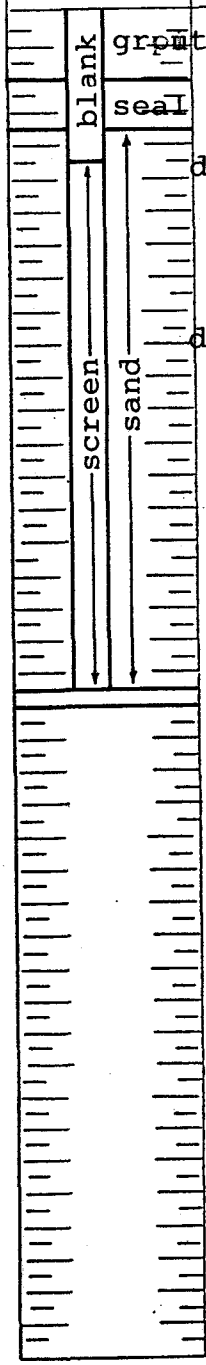
BORING LOGS AND WELL CONSTRUCTION DETAILS

HerSchy Environmental

WELL / BORING LOG

WELL/ MW-1
BORING NA
PAGE 1 OF 1

CLIENT	Alaska Gasoline Co.	LOGGED BY	H. Schymiczek
DATE DRILLED	10-11-99	DRILLED BY	West Hazmat
LOCATION	Oakland	DRILLING METHOD	HSA
HOLE DIAMETER	8"	SAMPLING METHOD	Split Spoon
HOLE DEPTH	21'	CASING TYPE	Sch. 40PVC
WELL DEPTH	20.50	SLOT SIZE	0.020"
WELL DIAMETER	2"	GRAVEL PACK	#3 Sand
ELEVATION	34.70'		



MOISTURE CONTENT	BLOWS/FOOT	DEPTH (FEET)	SOIL TYPE	LITHOLOGY / REMARKS
		0	CL	Approx. 2" asphalt Clay, dk grey, trace silt.
dmp	8 7 5	5	CL	Clay, grey, scattered pebbles to 0.20" no odor or stain; OVA=0.8ppm
dmp	7 7 8	10	CL	Sandy clay, grey, v.fine to med.-grained, distinct gasoline odor, no stain; OVA=1,950ppm
		15		
		20	CL	Silty clay, brown. T.D.=21'
		25		
		30		
		35		
		40		

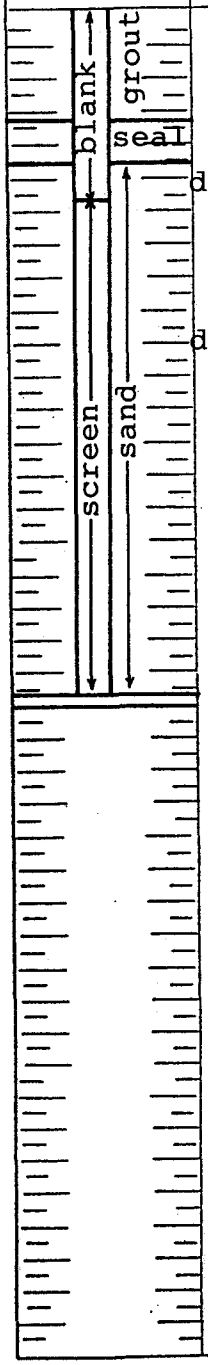
BORINGP2.DW2

HerSchy Environmental

WELL / BORING LOG

WELL/ MW-2
BORING NA
PAGE 1 OF 1

CLIENT	Alaska Gasoline Co.	LOGGED BY	H. Schymiczek
DATE DRILLED	10-11-99	DRILLED BY	West Hazmat
LOCATION	Oakland	DRILLING METHOD	HSA
HOLE DIAMETER	8"	SAMPLING METHOD	Split Spoon
HOLE DEPTH	21'	CASING TYPE	Sch. 40PVC
WELL DEPTH	20.71'	SLOT SIZE	0.020"
WELL DIAMETER	2"	GRAVEL PACK	#3 Sand
ELEVATION	33.74'		



MOISTURE CONTENT	BLOWS/FOOT	DEPTH (FEET)	SOIL TYPE	LITHOLOGY / REMARKS
		0	CL	Approx. 1" asphalt Clay, grey, trace silt.
dmp	9 13 16	5	CL	Silty clay, grey, trace v.fine sand, faint gasoline odor, no stain; OVA=60.3ppm
dmp	9 10 13	10	CL	Silty clay, mottled grey & brown, faint gasoline odor, no stain; OVA=92.1ppm
		15		
		20	CL	Silty clay, brown T.D.=21'
		25		
		30		
		35		
		40		

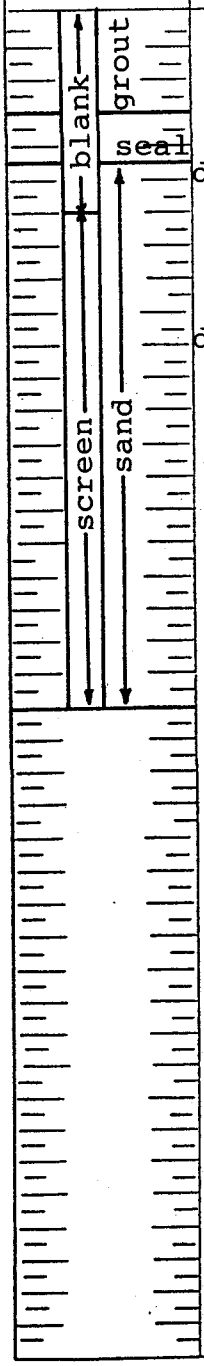
BORINGP2.DW2

HerSchy Environmental

WELL / BORING LOG

WELL/ MW-3
BORING NA
PAGE 1 OF 1

CLIENT	Alaska Gasoline Co.	LOGGED BY	H. Schymiczek
DATE DRILLED	10-11-99	DRILLED BY	West Hazmat
LOCATION	Oakland	DRILLING METHOD	HSA
HOLE DIAMETER	8"	SAMPLING METHOD	Split Spoon
HOLE DEPTH	21'	CASING TYPE	Sch. 40PVC
WELL DEPTH	20.95'	SLOT SIZE	0.020"
WELL DIAMETER	2"	GRAVEL PACK	#3 Sand
ELEVATION	34.94'		



MOISTURE CONTENT	BLOWS/FOOT	DEPTH (FEET)	SOIL TYPE	LITHOLOGY / REMARKS
		0	CL	Approx. 2" asphalt Silty clay, dk. grey
dmp	8 10 12	5	CL	Silty clay, grey, trace v.fine - to fine sand, distinct gasoline odor, no stain; OVA=1,151ppm
dmp	7 7 9	10	CL	Silty clay, grey, scattered pebbles to 0.25" distinct gasoline odor, no stain; OVA=594ppm
		15		
		20	CL	Silty clay, brown
				T.D.=21'
		25		
		30		
		35		
		40		

BORINGP2.DW2

APPENDIX B

GROUNDWATER FIELD SAMPLING DATA SHEETS

HerSchy Environmental

WATER SAMPLE FIELD DATA SHEET

Client Name: Alaska Gasoline Location: Oakland

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

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

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

Casing Elevation (feet/MSL): 34.70 Volume in Casing (gal.): 2.00

Depth of Well (feet): 20.50 Calculate Purge Volume (gal.): 8.00

Depth to Water (feet): 8.53 Actual Purge Volume (gal.): ~85

Date Purged: 11-7-99 Date Sampled: 11-7-99

TIME	VOLUME	pH	E. C.	TEMP.	TURBIDITY
6:50	—	8.85	1,058	61.8	muddy
7:20	~85	7.87	738	66.0	clear

Other Observations: ___ Odor: faint H_2S

Purging Equipment: Purger ES-60

Sampling Equipment: " " "

Remarks: Sampled after well development.

Samplers Signature: Herman Schymiczek

HerSchy Environmental

WATER SAMPLE FIELD DATA SHEET

Client Name: Alaska Gasoline Location: Oxford

Purged By: K. Schymanski Sampled By: K. Schymanski

Sample ID: MW-2 Type: Groundwater X Surface Water ____ Other ____

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

Casing Elevation (feet/MSL): 34.94 Volume in Casing (gal.): 2.03

Depth of Well (feet): 20.70 Calculate Purge Volume (gal.): 8.12

Depth to Water (feet): 8.26 Actual Purge Volume (gal.): ~45

Date Purged: 11-7-99 Date Sampled: 11-7-99

TIME	VOLUME	pH	E. C.	TEMP.	TURBIDITY
8:10	—	6.60	942	66.2	muddy
8:25	~45	6.63	1,459	66.6	cloudy

Other Observations: ____ Odor: none

Purging Equipment: Purger ES-60

Sampling Equipment: ____

Remarks: Sampled after well development, pumped dry twice in 15 min at ~2.5 gal./min.

Samplers Signature: Kerman Schymanski

HerSchy **Environmental**

WATER SAMPLE FIELD DATA SHEET

Client Name: Alaska Gasoline Location: Galena

Purged By: K. Schymczak Sampled By: K. Schymczak

Sample ID: MW-3 Type: Groundwater X Surface Water ____ Other ____

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

Casing Elevation (feet/MSL): 33.74 Volume in Casing (gal.): 2.18

Depth of Well (feet): 20.95 Calculate Purge Volume (gal.): 8.72

Depth to Water (feet): 7.55 Actual Purge Volume (gal.): ~85

Date Purged: 11-7-99 Date Sampled: 11-7-99

TIME	VOLUME	pH	E. C.	TEMP.	TURBIDITY
7:30	—	6.73	877	65.6	muddy
8:00	~85	6.91	826	66.5	cloudy

Other Observations: ____ Odor: faint H_2S

Purging Equipment: Purger ES-60

Sampling Equipment: " " "

Remarks: Sampled after well development.

Samplers Signature: Herman Schymczak

APPENDIX C

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	Client Project ID: Alaska Gasoline Company - Oakland	Sampled: 10-11-99
P.O. Box 229	Reference Number: 2528	Received: 10-13-99
Bass Lake, CA 93604	Sample Description: Soil	Extracted: 10-14-99
Attn: Herman Schymiczek	Sample Prep/Analysis Method: EPA 5030/8015M, 8020	Analyzed: 10-15-99
	Lab Numbers: 2528-1S, 2S, 3S, 4S, 5S	Reported: 10-28-99

TOTAL PETROLEUM HYDROCARBONS - GASOLINE
BTEX DISTINCTION

ANALYTE	REPORTING LIMIT (mg/kg)	SAMPLE ID MW-1 @ 5' (mg/kg)	SAMPLE ID MW-1 @ 10' (mg/kg)	SAMPLE ID MW-2 @ 5' (mg/kg)	SAMPLE ID MW-2 @ 10' (mg/kg)	SAMPLE ID MW-3 @ 5' (mg/kg)
MTBE	0.010	0.065	10	1.2	1.4	48
BENZENE	0.0050	0.14	4.6	0.25	0.79	11.0
TOLUENE	0.0050	ND	18	ND	0.38	63
ETHYLBENZENE	0.0050	0.017	10	0.26	0.52	35
TOTAL XYLENES	0.0050	0.016	47	0.30	2.1	170
GASOLINE RANGE HYDROCARBONS	1.0	1.1	570	16	22	2200
Report Limit Multiplication Factor:		1	100	2	10	500

Surrogate % Recovery:	FID: 68.8% / PID: 67.2%	NA	NA	NA	NA
Instrument ID:	VAR-GC1	VAR-GC1	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
Clari J. Cone

APPROVED BY:
James C. Phillips
Environmental Lab 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	Client Project ID: Alaska Gasoline Company - Oakland	Sampled: 10-11-99
P.O. Box 229	Reference Number: 2528	Received: 10-13-99
Bass Lake, CA 93604	Sample Description: Soil	Extracted: 10-14-99
Attn: Herman Schymiczek	Sample Prep/Analysis Method: EPA 5030/8015M, 8020	Analyzed: 10-15-99
	Lab Numbers: 2528-6S	Reported: 10-28-99

TOTAL PETROLEUM HYDROCARBONS - GASOLINE
BTEX DISTINCTION

ANALYTE	REPORTING LIMIT (mg/kg)	SAMPLE ID MW-3 @ 10' (mg/kg)
MTBE	0.010	28
BENZENE	0.0050	0.12
TOLUENE	0.0050	0.060
ETHYLBENZENE	0.0050	ND
TOTAL XYLENES	0.0050	0.087
GASOLINE RANGE HYDROCARBONS	1.0	14
Report Limit Multiplication Factor:		5
Report Limit Multiplication Factor MTBE only:		100

Surrogate % Recovery:	NA
Instrument ID:	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
Environmental Lab 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	Client Project ID: Alaska Gasoline Company - Oakland	Method: EPA 5030/8015M,8020
P.O. Box 229	Reference Number: 2528	Instrument ID: Var-GC1
Bass Lake, CA 93604	Matrix: Soil	Prepared: 10-14-99
Attn: Herman Schymiczek	Analyst: Clari Cone	Analyzed: 10-15-99
		Reported: 10-28-99

QUALITY CONTROL DATA REPORT

ANALYTE	Gasoline	MTBE	Benzene	Toluene	Ethyl Benzene	Total Xylenes
Spike Concentration:	2.20	42.1	30.1	150	36.5	179
Units:	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
LCS Batch #:	VS-0149	VS-0149	VS-0149	VS-0149	VS-0149	VS-0149
LCS % Recovery:	95.4%	92.1%	81.0%	92.6%	96.9%	87.4%
Surrogate Recovery:	92.3%	89.1%	89.1%	89.1%	89.1%	89.1%
Control Limits:	70-130 %	70-130 %	70-130 %	70-130 %	70-130 %	70-130 %
MS/MSD Batch #:	VS-0149	VS-0149	VS-0149	VS-0149	VS-0149	VS-0149
MS % Recovery:	58.3%	82.7%	57.0%	65.8%	68.3%	62.2%
Surrogate Recovery:	68.0%	66.0%	66.0%	66.0%	66.0%	66.0%
MSD % Recovery:	53.1%	62.0%	58.1%	64.9%	66.5%	61.3%
Surrogate Recovery:	68.4%	66.5%	66.5%	66.5%	66.5%	66.5%
Relative % Difference:	7.37%	26.1%	1.59%	1.46%	2.52%	1.33%
Methanol Blank :	ND	ND	ND	ND	ND	ND
Surrogate Recovery:	89.0%	88.2%	88.2%	88.2%	88.2%	88.2%

Please Note:
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*

APPROVED BY: *James C. Phillips*
Environmental Lab Director

CASTLE ANALYTICAL LABORATORY

CHAIN OF CUSTODY

Location: 2333 Shuttle Drive, Bldg 908/909, Atwater, CA 95301
Mailing Address: 2333 Shuttle Drive, Atwater, CA 95301
Phone: (209) 384-2930 - Fax: (209) 384-1507

Certificate No. 2079

PAGE 1 OF 1

Customer: Alaska Gasoline Company
Address: Oakland
City/State/ZIP:
Phone / FAX:
Proj # / P.O. #:
Report Attention:
Sampler Signature: Herman Schymiczek
Printed: Herman Schymiczek

Lab ID#	SAMPLE ID	DATE	TIME	DESCRIPTION/LOCATION	SAMPLE TYPE (g) grab (c) composite (d) discrete	SAMPLE MATRIX (s) solid (l) liquid (o) other	REQUESTED ANALYSES: BTEX/TPH-GAS	MTBE	TPH-DIESEL	TRPH 418.1M	NUMBER OF CONTAINERS	OBSERVATIONS/REMARKS
25284S	MW-1@5'	10/1/99	10:00		d	S	X	X				
-2S	MW-1@10'	"	10:10		"	"						
-3S	MW-2@5'	"	12:15		"	"						
-4S	MW-2@10'	"	12:25		"	"						
-5S	MW-3@5'	"	11:15		"	"						
6S	MW-3@10'	"	11:25		"	"	↓	↓				

Method of Shipment:

Notes:

	Signature	Printed Name	Date	Time	Company Name
Relinquished by:	Herman Schymiczek	Herman Schymiczek	10/3/99	1:30	HerSchy Environmental
Received by:					
Relinquished by:					
Received by:					
Relinquished by:					
Received by:	Clari J Cone	Clari J Cone	10/3/99	1:30	Castle

Total number of containers submitted to the laboratory

Note: All special requests (e.g. quick turn times) must be cleared through authorized laboratory personnel.

RESULTS DUE : _____

☐ VERBAL ☐ WRITTEN

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate #2079

2333 Shuttle Drive, Atwater, CA 95301

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

HerSchy Environmental	Client Project ID: Alaska Gasoline - Oakland	Sampled: 11-7-99
P.O. Box 229	Reference Number: 2583	Received: 11-8-99
Bass Lake, CA 93604	Sample Description: Water	Extracted: 11-9-99
Attn: Herman Schymiczek	Sample Prep/Analysis Method: EPA 5030/8015M, 8020	Analyzed: 11-9-99
	Lab Numbers: 2583-1W, 2W, 3W	Reported: 11-17-99

TOTAL PETROLEUM HYDROCARBONS - GASOLINE WITH BTEX DISTINCTION

ANALYTE	REPORTING LIMIT µg/L	SAMPLE ID MW-1 (µg/L)	SAMPLE ID MW-2 (µg/L)	SAMPLE ID MW-3 (µg/L)
MTBE	0.50	20000	6800	120000
BENZENE	0.50	170	1300	860
TOLUENE	0.50	59	92	70
ETHYL BENZENE	0.50	22	50	ND
TOTAL XYLENES	0.50	85	400	65
GASOLINE RANGE HYDROCARBONS	50	5700	6000	43000
Report Limit Multiplication Factor:		20	50	100
Report Limit Multiplication Factor MTBE only:		1000	200	5000

Surrogate % Recovery:	FID:102% / PID:95.6%	FID:99.7% / PID:92.3%	FID:96.2% / PID:93.1%
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*
Environmental Lab 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	Client Project ID: Alaska Gasoline - Oakland	Method: EPA 5030/8015M,8020
P.O. Box 229	Reference Number: 2583	Instrument ID: Var-GC1
Bass Lake, CA 93604	Matrix: Water	Prepared: 11-9-99
Attn: Herman Schymiczek	Analyst: Jim Phillips	Analyzed: 11-9-99
		Reported: 11-17-99

QUALITY CONTROL DATA REPORT

ANALYTE	Gasoline	MTBE	Benzene	Toluene	Ethyl Benzene	Total Xylenes
Spike Concentration:	110	2.22	1.34	7.82	1.84	9.48
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
LCS Batch #:	VW-N099	VW-N099	VW-N099	VW-N099	VW-N099	VW-N099
LCS % Recovery:	95.8%	112%	101%	88.9%	100%	88.0%
Surrogate Recovery:	101%	98.8%	98.8%	98.8%	98.8%	98.8%
Control Limits:	70-130 %	70-130 %	70-130 %	70-130 %	70-130 %	70-130 %
MS/MSD Batch #:	VW-N099	VW-N099	VW-N099	VW-N099	VW-N099	VW-N099
Spike Concentration:	110	2.22	1.34	7.82	1.84	9.48
MS % Recovery:	83.9%	25.6%	81.0%	88.9%	93.7%	86.3%
Surrogate Recovery:	103%	102%	102%	102%	102%	102%
MSD % Recovery:	82.0%	16.8%	83.5%	86.1%	91.5%	83.4%
Surrogate Recovery:	103%	101%	101%	101%	101%	101%
Relative % Difference:	1.85%	2.45%	2.37%	3.12%	2.08%	3.17%
Methanol Blank :	ND	ND	ND	ND	ND	ND
Surrogate Recovery:	99.5%	97.3%	97.3%	97.3%	97.3%	97.3%

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*

APPROVED BY: *James C. Phillips*
Environmental Lab Director

CASTLE ANALYTICAL LABORATORY

CHAIN OF CUSTODY

Location: 2333 Shuttle Drive, Bldg 908/909, Atwater, CA 95301
Mailing Address: 2333 Shuttle Drive, Atwater, CA 95301
Phone: (209) 384-2930 - Fax: (209) 384-1507

Certificate No. 2079

PAGE 1 OF 1

Customer: Alaska Gasoline
Address: Oakland
City/State/ZIP:
Phone / FAX:
Proj # / P.O. #:
Report Attention:
Sampler Signature: Herman Schymiczek
Printed: Herman Schymiczek

Lab ID#	SAMPLE ID	DATE	TIME	DESCRIPTION/LOCATION	SAMPLE TYPE (g) grab (c) composite (d) discrete	SAMPLE MATRIX (s) solid (l) liquid (o) other	REQUESTED ANALYSES: BTEX/TPH-GAS	MTBE	TPH-DIESEL	TRPH 418.1M	NUMBER OF CONTAINERS	OBSERVATIONS/REMARKS
2583-1W	MW-1	11/7/99	7:20		d	L	X	X				
-2W	MW-2	11/7/99	8:25		"	"	X	X				
-3W	MW-3	"	8:00		"	"	X	X				

Method of Shipment:

Notes:

	Signature	Printed Name	Date	Time	Company Name
Relinquished by:	Herman Schymiczek	Herman Schymiczek	11/8/99	12:55	Herman Schymiczek
Received by:					
Relinquished by:					
Received by:					
Relinquished by:					
Received by:	Clari J Cone	Clari J Cone	11/8/99	12:55	Castle

Total number of containers submitted to the laboratory

Note: All special requests (e.g. quick turn times) must be cleared through authorized laboratory personnel .

RESULTS DUE : _____

☐ VERBAL ☐ WRITTEN