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Environmental Health

QUARTERLY GROUNDWATER MONITORING REPORT
First Quarter 2009

Alaska Gas
1310 Central Avenue
Alameda, California 94501
LOP Case No. RO0000022

PREPARED FOR:

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SUBMITTED TO:

Alameda County Environmental Health Services
Local Oversight Program
1131 Harbor Bay Parkway, Suite 250
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May 15, 2009

Project No. 6022



PREPARED BY:

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PROFESSIONAL CERTIFICATION

QUARTERLY GROUNDWATER MONITORING REPORT
First Quarter 2009

Alaska Gas
1310 Central Avenue
Alameda, California 94501
LOP Case No. RO0000022



Project No. 6022
May 25, 2009

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The conclusions presented in this document are professional opinions based solely upon visual observations of the site and vicinity, and interpretation of available information as described in this report. The limited scope of services performed in execution of this investigation may not be appropriate to satisfy the needs, or requirements of other regulatory agencies, or of other users. Any use or reuse of this document or its findings, conclusions or recommendations presented herein is at the sole risk of said user.

A handwritten signature in blue ink, appearing to read "Tom Henderson", written over a horizontal line.

Tom Henderson
President

A handwritten signature in blue ink, appearing to read "David W. Janney", written over a horizontal line.

David W. Janney, P.G.
Senior Geologist



ACRONYMS AND ABBREVIATIONS

ACEHS	Alameda County Environmental Health Services
AEI	All Environmental, Inc.
amsl	above mean sea level
ASE	Aqua Science Engineers, Inc.
BTEX	benzene, toluene, ethyl-benzene, xylenes
COC	chain-of-custody
DCA	1,2-dichloroethane
DIPE	di-isopropyl ether
EDB	ethylene di-bromide
EDF	electronic data file
ESL	Environmental Screening Level
EtBE	ethyl tert-butyl ether
FS/CAP	Feasibility Study/Corrective Action Plan
Geotracker	Geographical Information Management System
Matriks	Matriks Corporation
MtBE	methyl tert-butyl ether
O&G	oil and grease
µg/L	micrograms per liter
mg/Kg	milligrams per kilogram
ml	milliliter
MW	monitoring well
PDF	portable document format
RWQCB	Regional Water Quality Control Board
SC	specific conductance
tAME	tert-amyl methyl ether
tBA	tert butyl alcohol
UST	underground storage tank
VOA	volatile organic analysis

INTRODUCTION

This report presents the results of the third quarter 2008 groundwater monitoring event conducted by Matriks at Alaska Gas (the "Site"), located at 1310 Central Avenue in Alameda, California. The quarterly groundwater monitoring event described in this report was conducted on December 30, 2008 and is part of an ongoing subsurface investigation of petroleum hydrocarbons in soil or groundwater that was caused by an unauthorized release of petroleum fuels from the underground storage tank (UST) system (tanks, associated piping and dispensers) formerly located at the Site. Matriks is conducting this investigation on behalf of the responsible parties, Mr. Leon Zektser, Mr. Nissan Saidian, and Mr. Joe Zadik. The Alameda County Environmental Health Services (ACEHS) is the lead regulatory agency overseeing Site investigation and remediation and the ACEHS case number is RO0000022. The quarterly groundwater monitoring program consists of the collection and laboratory analysis of groundwater samples from five groundwater monitoring wells to assess concentrations of petroleum hydrocarbon compounds in shallow groundwater.

Site Description and Physical Setting

The Site is currently a retail gasoline fueling station located in an area of mixed commercial and residential properties in the south-central part of the island of Alameda. The Site is located at the intersection of Encinal Avenue, Sherman Street, and Central Avenue. A Site location map is shown on **Figure 1** and a Site plan showing physical features and groundwater monitoring well locations is shown on **Figure 2**.

The Site is relatively flat and the investigation area has a surface elevation of approximately 25 feet above mean sea level (amsl). San Francisco Bay and the Alameda Estuary are located approximately one-half mile to the south. Due to the topography of the island and proximity to San Francisco Bay, groundwater beneath the Site is tidally influenced and has a very shallow gradient.

Site History

In May 1996, Petrotek removed three gasoline USTs including one 10,000-gallon, one 7,500-gallon and one 5,000-gallon UST from the western corner of the Site. A 500-gallon waste oil UST adjacent to the building, was also removed from the southern portion of the Site. Fuel dispensers and associated product piping were also removed.

Free-phase petroleum hydrocarbons were observed floating on the groundwater surface in the gasoline UST excavation following removal of the USTs. According to the laboratory analysis, a groundwater sample collected from the gasoline UST excavation contained 2,800 micrograms per liter ($\mu\text{g/L}$) of total petroleum hydrocarbons as gasoline (TPH-g) and 100 $\mu\text{g/L}$ benzene. Soil

samples collected from the same excavation contained up to 5,000 milligrams per kilogram (mg/Kg) of THP-g and 31mg/Kg benzene. Soil samples collected beneath the former dispenser island contained up to 6,800 mg/Kg TPH-g and 63 mg/Kg benzene. A ground water sample collected in the waste oil UST excavation contained 35,000 µg/L of total petroleum hydrocarbons as diesel (TPH-d) and motor oil range hydrocarbons, and 1,300 µg/L of TPH-g. A records search at ACEHS did not identify any tank removal reports or subsequent remedial action reports.

Petrotek reportedly excavated and disposed of approximately 600 cubic yards of petroleum hydrocarbon-impacted soil from the UST excavations. It does not appear that confirmation soil samples were collected following removal of the petroleum hydrocarbon-impacted soil. Approximately 15,000 gallons of ground water were also removed from the excavations, treated and discharged to the sanitary sewer. Two new gasoline USTs, dispensers and product piping were installed in the same UST excavation after the petroleum hydrocarbon-impacted soil and ground water were removed.

In November 1998, All Environmental Inc. (AEI) advanced 14 soil borings on the Site, collected soil and groundwater samples from the borings, and submitted them for laboratory analysis. The boring soil samples contained up to 5,900 mg/Kg of TPH-g. The boring grab groundwater samples contained up to 120,000 µg/L TPH-g and 7,200 µg/L benzene.

On May 16, 2000, Aqua Science Engineers (ASE) collected groundwater samples from the three wells. Hydrocarbon concentrations detected in the May 16 groundwater samples were less than those detected in the November 1999 sampling event, especially with respect to MW-2. The reason for this is unclear. Sample results are presented in **Table 1**.

On July 28, 2000, ASE advanced 12 Geoprobe borings (borings BH-A through BH-L) to further delineate the lateral and vertical extent of petroleum hydrocarbons and collected soil and grab groundwater samples from each borings. Laboratory analysis detected 0.00061 mg/Kg of MtBE in a soil samples collected from 3.0 feet (ft) below ground surface in boring BH-K. There were no petroleum hydrocarbons or oxygenates detected in soil samples from the other 11 borings, however, petroleum hydrocarbons and oxygenates were detected in grab groundwater samples collected from borings BH-A, B, C, D, I, J, K, and L.

In December 2002, ASE conducted an investigation to assess whether subsurface utility line trenches may provide a groundwater movement pathway. ASE concluded that it did not appear that the utility line trenches act as groundwater movement pathways. This conclusion was based on ASE's assumption that the utility line trench backfill material is native sandy soil and that the highest concentrations of petroleum hydrocarbons in the 12 Geoprobe borings soil samples were located beyond the utility line trenches. Although ASE concluded that the utility line trenches did not provide a groundwater movement pathway, the ACEHS requested that water samples be collected from the sewer in one of the trenches to assess whether petroleum hydrocarbon-impacted groundwater may have entered the sewer line through seams or cracks.

In January 2004, ASE drilled four additional soil borings, BH-M through BH-P and the soil samples collected from each boring contained concentrations of TPH-d, with the highest concentration of 68 mg/Kg detected in BH-M. No TPH-d, BTEX or oxygenates were detected in any of the other soil samples. The groundwater samples collected from the borings contained TPH-d concentrations as high as 170 µg/L and the groundwater sample collected from boring BH-O also contained 19 µg/L MtBE. None of the other groundwater samples contained detectable concentrations of TPH-g, BTEX or oxygenates. Groundwater samples were also collected from the sewer line beneath Central Avenue, both up gradient and down gradient of the Site. Low concentrations of TPH-g were detected in both samples. No BTEX or oxygenates were detected in either of these samples.

In December 2005, ASE conducted a records search at the Alameda City Public Works Agency and the California Department of Water Resources to identify water wells with ½ mile radius of the Site. A total of 25 wells were located within the search radius. The results included three domestic wells, 10 irrigation wells, one industrial well, two cathodic protection wells, four groundwater monitoring wells, and five vapor extraction wells. The nearest well is located more than 1,000 feet east of the Site. The nearest, potentially down gradient, well is located approximately 1,260 feet northwest of the Site. Based on the records search, ASE proposed additional soil and groundwater assessment for the Site.

In April 2006, ASE advanced two additional borings and installed two groundwater monitoring wells. Borings BH-Q, BH-R and monitoring wells MW-4 and MW-5 were installed using a drill rig equipped with an 8-inch hollow-stem auger. Petroleum hydrocarbons were detected by laboratory analysis at a concentration of 11 mg/Kg TPH-d in a soil sample from BH-Q and 1.7 mg/Kg TPH-d in a soil sample from the boring MW-5. The laboratory noted that the hydrocarbons reported as TPH-D in each sample did not exhibit a typical diesel chromatogram pattern. None of the soil samples contained detectable concentrations of TPH-g, BTEX or oxygenates. Well construction details are presented in **Table 2**.

Groundwater samples collected from BH-Q and BH-R contained detectable concentrations of petroleum hydrocarbon of 220 µg/L TPH-d and 770 µg/L TPH-d, respectively. Similar to the soil samples, the laboratory noted the hydrocarbons reported as TPH-d did not exhibit a typical diesel chromatogram pattern. Based on the results of this investigation, ASE recommended no further delineation of the extent of petroleum hydrocarbons in soil or groundwater.

From April 2006 to present, groundwater monitoring well samples have been collected and analyzed on a quarterly basis. In June 2008, the Site owners contracted with Matriks to conduct quarterly groundwater monitoring and prepare for further Site remediation.

SCOPE OF WORK

The scope of work conducted for this quarterly groundwater monitoring event included the following tasks:

- Measurement of static water levels in five groundwater monitoring wells;
- Collection of field water quality parameters including pH, temperature, and specific conductance (SC) from groundwater in each well;
- Purging at least three casing volumes from each well;
- Collection and analysis of groundwater water samples from each well for THP-d, TPH-g, BTEX, MtBE, DIPE, EtBE, tAME, tBA, methanol, ethanol, EDB, and DCA (see the *Monitoring Well Purging and Sampling* section of this report for analytical methods used);
- Update of the Geotracker database; and
- Preparation of this *Quarterly Monitoring Report*.

METHODS AND PROCEDURES

Groundwater Level Measurements

Prior to measuring the depth to groundwater, the cap of each well was removed and the water level was given an opportunity to equilibrate with atmospheric pressure for approximately 30 minutes before recording measurements using an electronic water depth indicator. The static water levels were referenced to the surveyed marks notched into the top of each well casing and the depth-to-water measurements were used to calculate the purge volume of for each monitoring well.

Monitoring Well Purging and Sampling

At least three well volumes were purged from each well using a new disposable bailer. Groundwater temperature, pH, and SC were measured intermittently during purging with a Hanna multimeter water quality instrument which was calibrated by the equipment rental service prior to on-site use. Water quality measurements were recorded on monitoring well sampling logs, copies of which are included in **Appendix A**. Well purge water was placed into labeled and sealed 55-gallon, DOT-approved steel drums and temporarily stored on-site.

A new disposable bailer dedicated to each well, was used to remove the groundwater samples and transfer them to the appropriate laboratory prepared containers. Care was taken to remove the headspace in each container. Each sample container was labeled with the project number, sample ID, and collection date. The same information was recorded on the laboratory

chain-of-custody (COC) form. Samples were stored in a cooler filled with ice for transport to the laboratory.

Samples were transported and submitted to McCampbell Analytical, Inc. of Pittsburg, California (DHS ELAP Certification No. 1644) and analyzed for TPH-g and TPH-d by EPA Method 8015 modified; for BTEX by EPA Method 8021B; and for MtBE, DIPE, EtBE, tAME, tBA, methanol, ethanol, EDB, and DCA by EPA Method 8260B.

RESULTS

Groundwater Levels and Gradient

Depth-to-water was measured in each monitoring well. The groundwater flow direction for this monitoring event was calculated to be N20°W with a gradient of 0.018. Well construction details are presented in **Table 2**. Groundwater levels and elevations are summarized in **Table 3**. Groundwater elevation contours are depicted on **Figure 3**. Graphs of groundwater elevation versus time for selected monitoring wells are presented on **Figure 4**.

Groundwater Analytical Results

TPH-g, BTEX, and MtBE were detected by laboratory analysis in the highest concentrations in groundwater monitoring wells MW-1 and MW-3. TPH-g was detected in MW-1 and MW-3 at concentrations of 1,900 µg/L and 9,200 µg/L, respectively. TPH-g was also detected in MW-5 at a concentration of 200 µg/L. TPH-g was not detected in groundwater samples collected from the other monitoring wells.

Benzene was also detected in MW-3 at a concentration of 150 µg/L. Benzene was not detected in samples collected from the other groundwater monitoring wells. MtBE was detected in MW-1, MW-2, MW-3, MW-4, and MW-5 at concentrations of 22 µg/L, 5.4 µg/L, 120 µg/L, 0.9 µg/L, and 610 µg/L, respectively.

Groundwater analytical results are summarized in **Table 3**. A copy of the laboratory analytical report is included in **Appendix B**. **Figure 5** shows TPH-g and benzene concentration trends in well MW-1 and **Figure 6** shows these same concentration trends in MW-3.

Geotracker Requirements

All analytical data were submitted electronically to the California State Water Resources Control Board Geotracker database as required by AB2886 (Water Code Section 13195-13198). EDFs are prepared and formatted by the laboratory and submitted by Matriks. Well latitudes, longitudes (GEO_XY files), and elevations (GEO_Z files) were previously submitted to the database. A well status and usage report (GEO_WELL file) is submitted for each monitoring

event. A complete electronic copy of this report (GEO_REPORT file) in PDF format was also submitted. Update maps (GEO_MAP files) are submitted when site features such as monitoring wells or soil borings are added.

DISCUSSION

In general, petroleum hydrocarbon concentrations have decreased since groundwater monitoring began in September 1999. This appears to indicate that natural attenuation and degradation are occurring.

The highest concentrations of petroleum hydrocarbons were detected in monitoring wells MW-1 and MW-3. TPH-g, TPH-d, and benzene in these wells was detected above the environmental screening limits (ESLs) of 100 µg/L, 100 µg/L, and 1.0 µg/L, respectively, established by the San Francisco Bay RWQCB. MtBE was also detected above the ESL in MW-3.

TPH-g, benzene, and MtBE were also detected above the ESLs in well MW-5. This appears to indicate that petroleum hydrocarbons are migrating down gradient from the Site.

MtBE was detected in down gradient well MW-4 at a concentration of 0.9 µg/L. This concentration is less than the ESL for MTBE of 5 µg/L but this also appears to indicate that petroleum hydrocarbons are migrating down gradient within groundwater. Petroleum hydrocarbon concentrations detected in MW-1 and MW-2 appear to be consistent with their spatial relationship to the former USTs.

While benzene and MtBE appear to be migrating in the down gradient direction in low concentrations, the possibility of vapor intrusion into down gradient buildings must be considered.

RECOMMENDATIONS

We recommend the preparation of a Feasibility Study/Corrective Action Plan (FS/CAP) to address remedial alternatives for petroleum hydrocarbons primarily in groundwater but remedial consideration should also be given to the soil proximal to the former USTs. Our preliminary analysis indicates that ozone sparging will be an effective remedial action given the soil and groundwater conditions at the Site and its small apparent lateral extent. The FS/CAP may also include limited additional characterization of soil or groundwater to further assess the concentrations of TPH-d. We also recommend semi-annual groundwater monitoring.

FIGURES

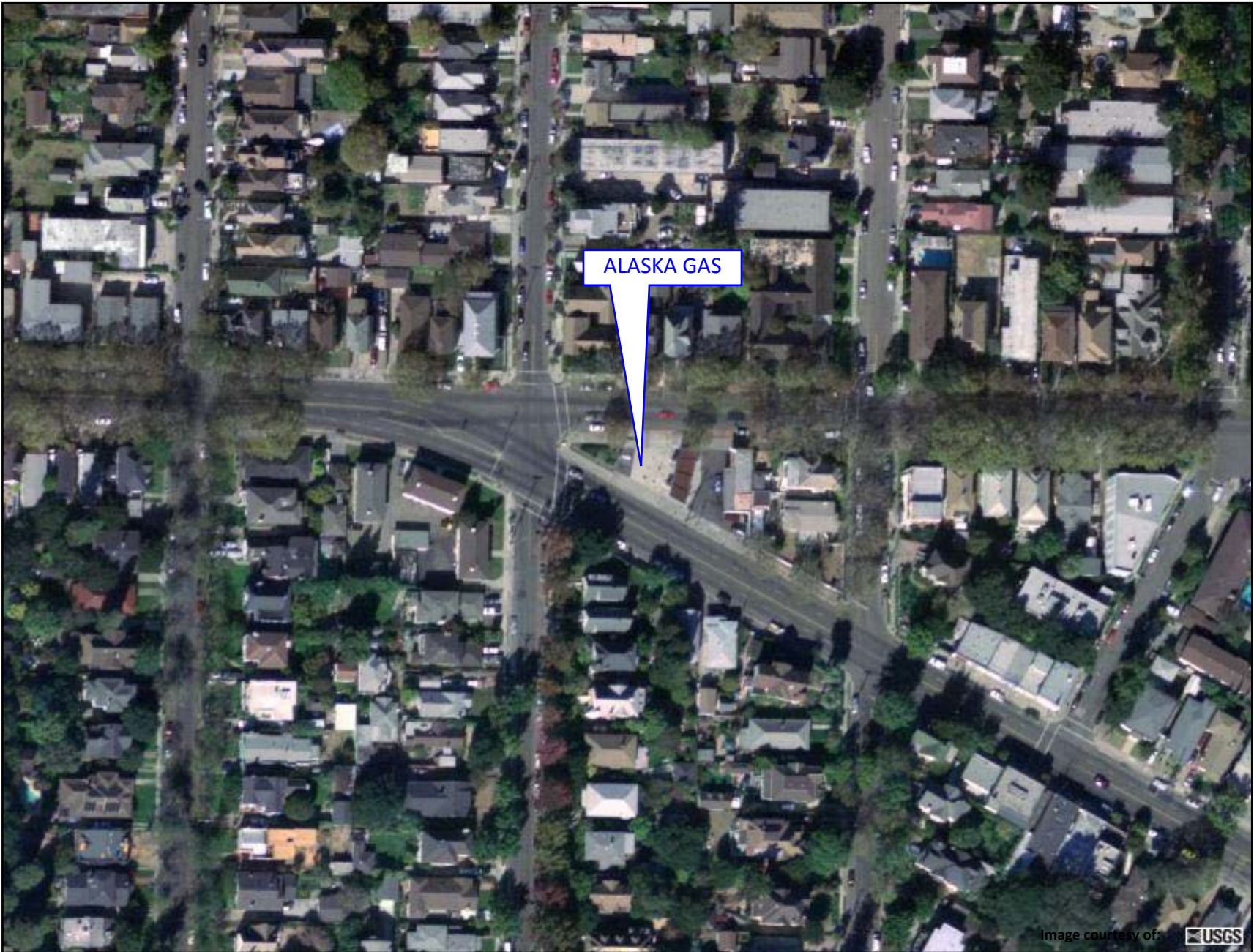



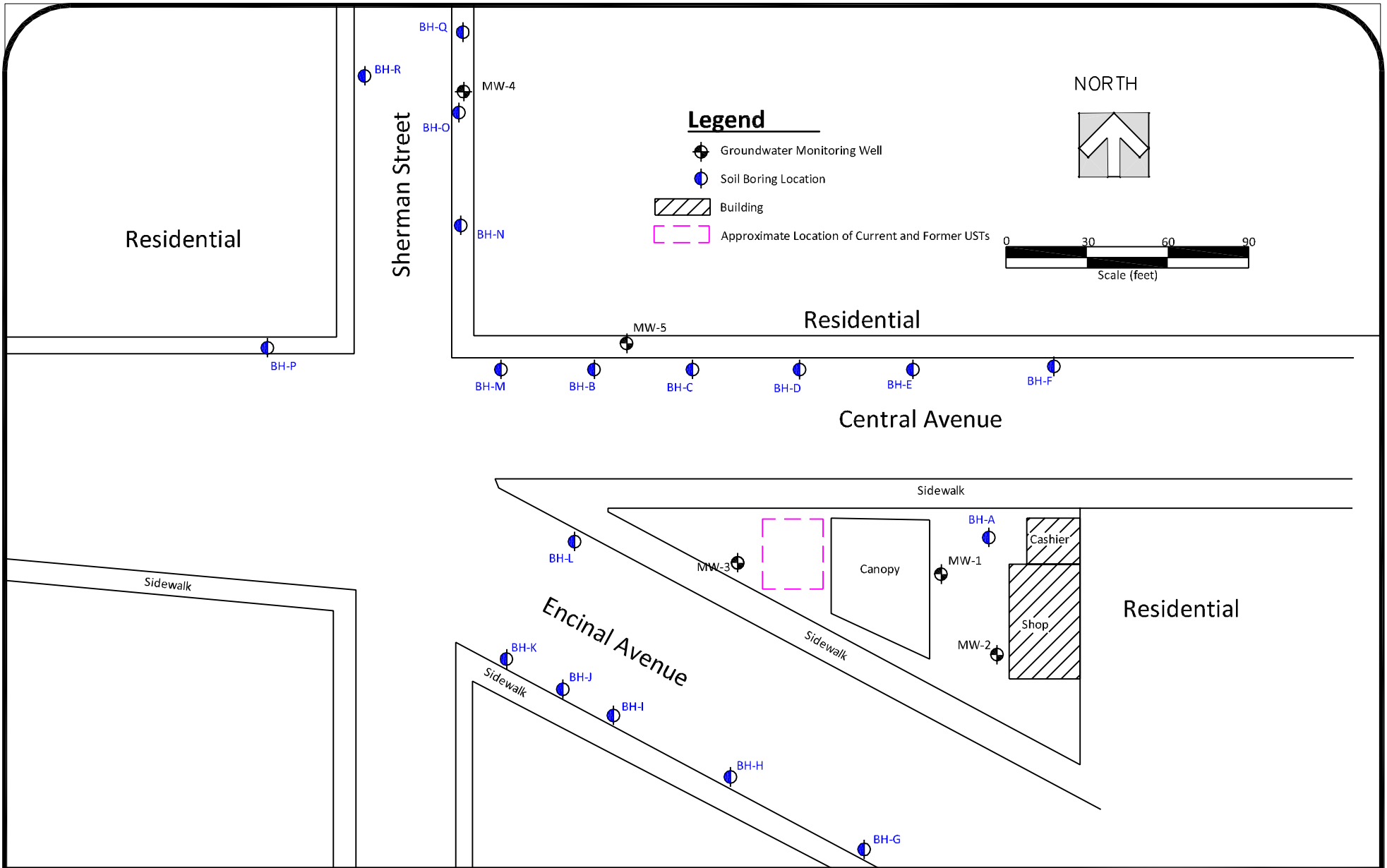
Image courtesy of: 

FIGURE 1

Site Location Map
Alaska Gas
1310 Central Avenue, Alameda, CA



321 Court Street
Woodland, CA 95695
Lic. 909563



321 Court Street Lic. No. 909563
 Woodland, California 95695
 (530) 406-1760 Fax# (530) 406-1760

Site Map

Alaska Gasoline
 1310 Central Avenue
 Alameda, California



Project #: 6022	Figure:
Date: 5/15/2009	2
Scale: as shown	

Residential

Sherman Street

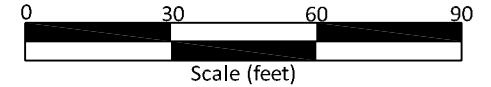
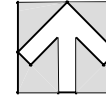
MW-4
23.73

Legend

-  Groundwater Monitoring Well
- 23.21 Groundwater Elevation (famsl)
-  Groundwater Elevation Contour

-  Building
-  Approximate Location of Current and Former USTs

NORTH



Residential

MW-5
23.93

Central Avenue

Sidewalk

MW-3
25.01

MW-1
25.40

MW-2
25.52

Residential

Encinal Avenue

Sidewalk

Canopy

Cashier

Shop



321 Court Street Lic. No. 909563
Woodland, California 95695
(530) 406-1760 Fax# (530) 406-1760

Groundwater Elevations on March 28, 2009

Alaska Gasoline
1310 Central Avenue
Alameda, California

Project #: 6022

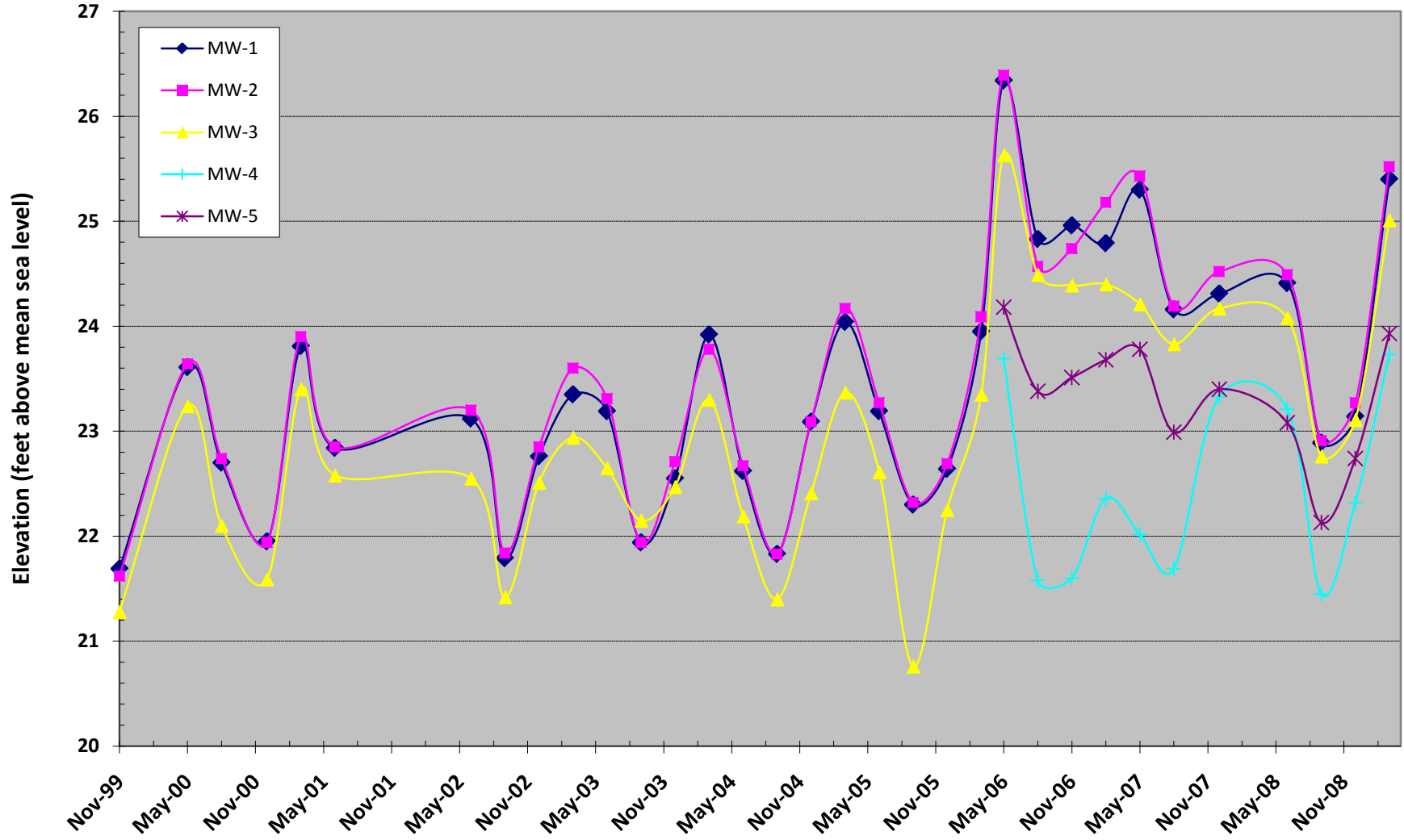
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Figure:

3

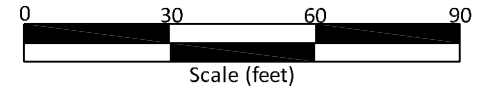
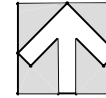
Figure 4. Monitoring Well Hydrographs
Alaska Gas
Alameda, CA



Legend

-  Groundwater Monitoring Well
- 12,000  TPH-g Concentration (ug/L)
-  Building
-  Approximate Location of Current and Former USTs

NORTH



Residential

Sherman Street

MW-4
ND

Residential

MW-5
200

Central Avenue

Sidewalk

1000

5000

MW-3
9,200

Canopy

MW-1
1,900

Cashier

Residential

Shop

Encinal Avenue

Sidewalk

MW-2
ND

Sidewalk



321 Court Street Lic. No. 909563
Woodland, California 95695
(530) 406-1760 Fax# (530) 406-1760

TPH-g Concentrations on
March 28, 2009

Alaska Gasoline
1310 Central Avenue
Alameda, California

Project #: 6022

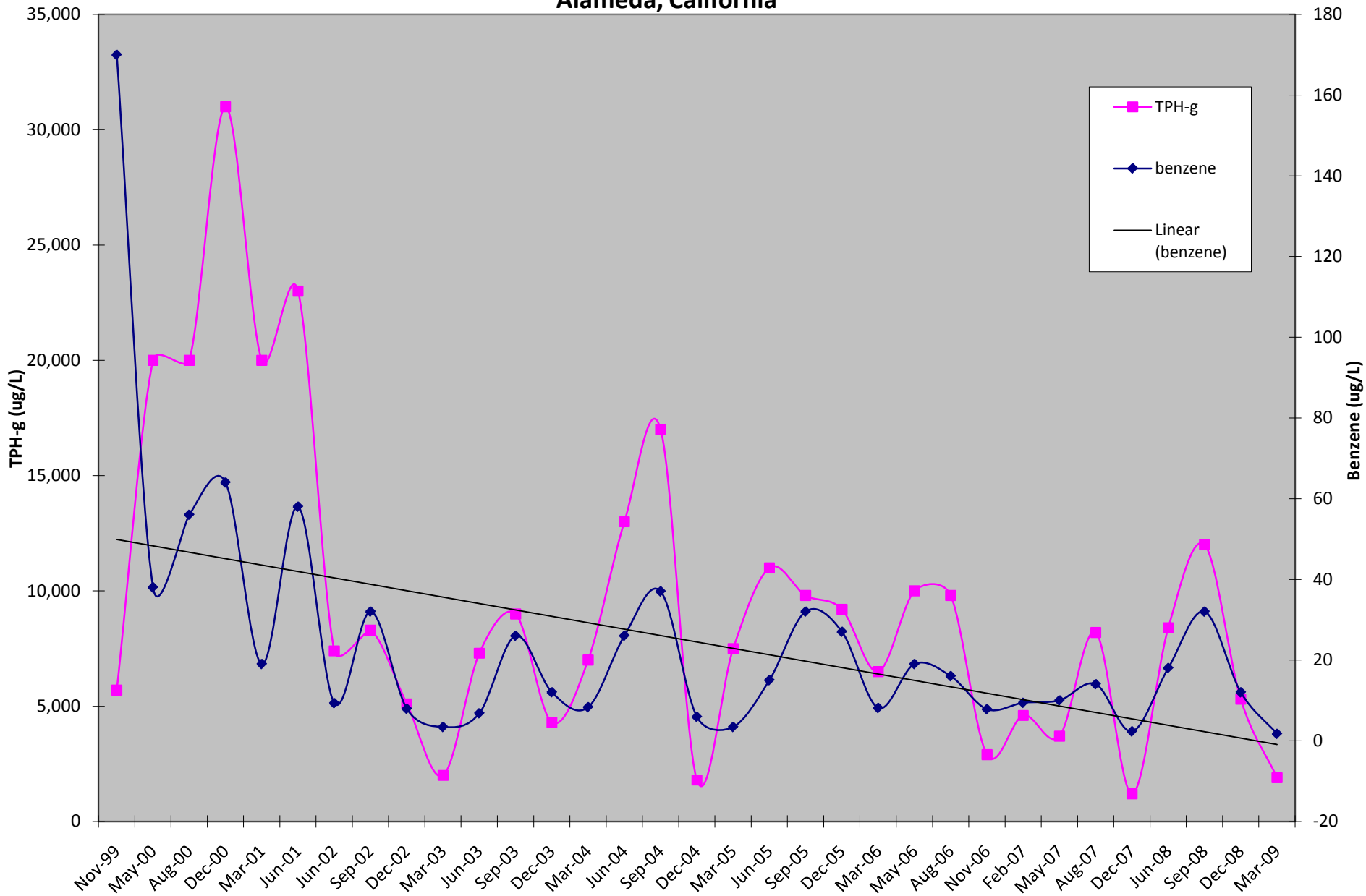
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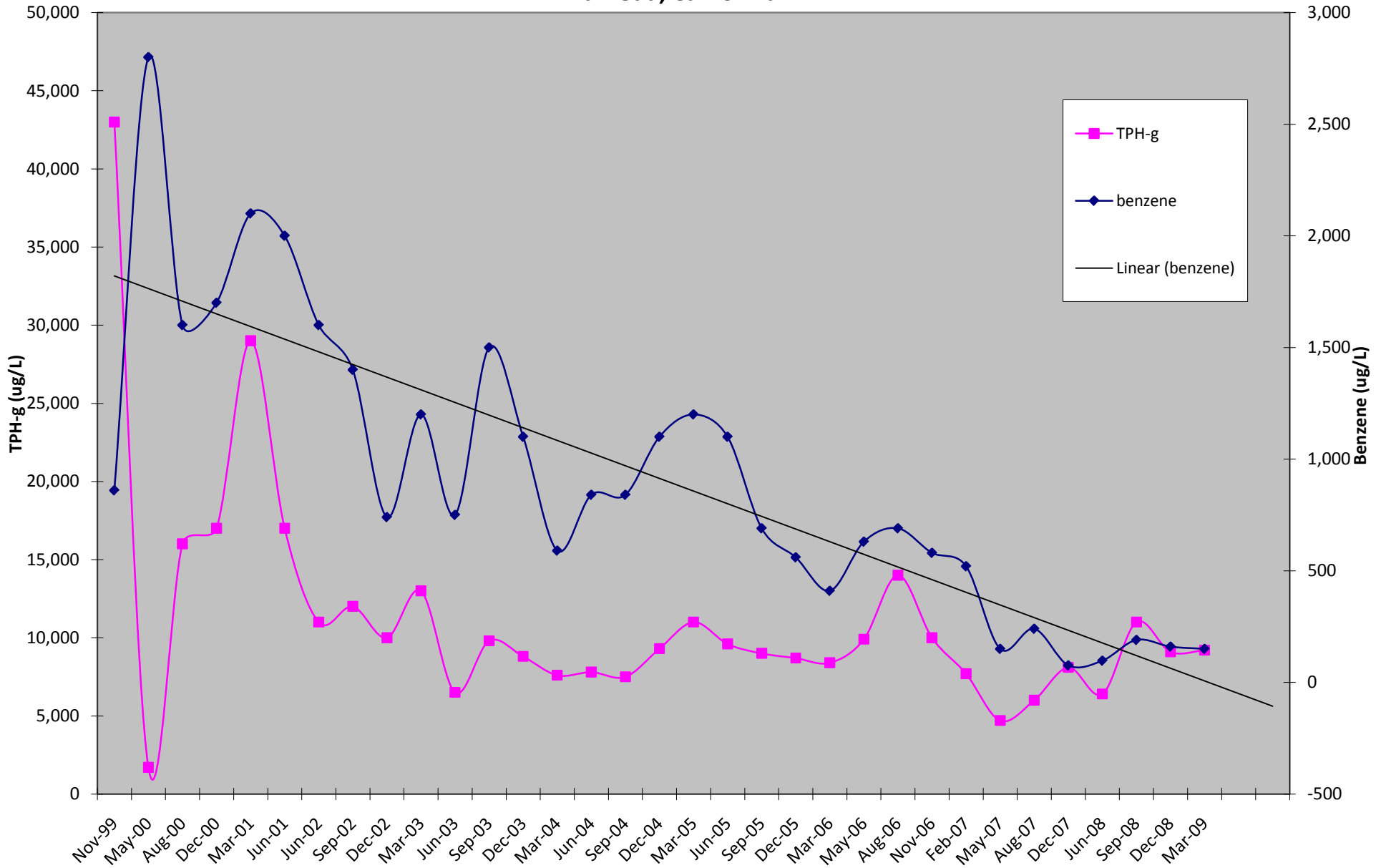
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5

**Figure 6. TPH-g and Benzene vs. Time in Well MW-1
Alaska Gas
Alameda, California**



**Figure 7. TPH-g and Benzene vs Time in Well MW-3
Alaska Gas
Alameda, California**



TABLES

Table 1
Groundwater Analytical Results
Alaska Gas
Alameda, California

Well ID	Date	TPH-g	TPH-d	benzene	toluene	ethyl-benzene	xylenes	MtBE	tAME	tBA	Other Oxygenates
MW-1	11/06/99	5,700	8,700	170	59	22	85	20,000	NA	NA	NA
	05/16/00	20,000	<7,500	38	6.3	740	1,600	<5.0	<5.0	<50	<5.0
	08/03/00	20,000	<6,000	56	9.7	920	1,600	<0.5	<0.5	<50	<0.5
	12/05/00	31,000	<4,000	64	27	820	2,200	<10	<5.0	<50	<5.0
	03/05/01	20,000	<4,000	19	<5.0	480	870	<5	<5.0	<50	<5.0
	06/04/01	23,000	<7,000	58	50	710	2,100	5.1	<5.0	<50	<5.0
	06/05/02	7,400	<1,500	9.3	6.7	180	230	<1.0	<1.0	<10	<1.0
	09/09/02	8,300	<3500	32	20	390	670	<2.0	<2.0	<20	<2.0
	12/19/02	5,100	NS	7.9	2.5	56	93	<1.0	<1.0	<10	<1.0
	03/10/03	2,000	<2,000	3.4	2.9	80	98	<0.5	<0.5	<5.0	<0.5
	06/03/03	7,300	<4,000	6.8	9.9	300	1,000	2.3	<0.5	<5.0	<0.5
	09/19/03	9,000	<3,000	26	22	420	1,200	4.5	<1.5	<20	<1.5
	12/22/03	4,300	<2,000	12	6.7	200	290	9.1	<1.0	<10	<1.0
	03/12/04	7,000	<3,000	8.3	8.2	250	760	3.9	<2.0	<20	<2.0
	06/11/04	13,000	<4,000	26	27	530	1,700	<2.5	<2.5	<15	<2.5
	09/13/04	17,000	<4,000	37	42	840	2,000	<5.0	<5.0	<50	<5.0
	12/16/04	1,800	<1,000	5.9	1.9	100	35	16	<0.5	<5.0	<0.5
	03/21/05	7,500	<3,000	3.4	4.2	290	760	<1.5	<1.5	<20	<1.5
	06/23/05	11,000	<8,000	15	11	370	910	2.4	<1.5	<7.0	<1.5
	09/30/05	9,800	<4,000	32	25	540	680	1.6	<1.5	<7.0	<1.5
	12/08/05	9,200	<4,000	27	21	500	490	2.2	<1.5	<7.0	<1.5
	03/01/06	6,500	<4,000	8.1	9.4	370	660	18	<1.5	<6.0	<1.5
	05/25/06	10,000	<3,000	19	14	900	620	<1.5	<1.5	<7.0	<1.5
	08/10/06	9,800	<1,500	16	8.1	640	180	<1.5	<1.5	<7.0	<1.5
	11/21/06	2,900	<1,000	7.8	2.5	160	12	2.5	2.5	<5.0	<0.5
	02/06/07	4,600	<1,500	9.4	6	380	220	1	<0.50	<5.0	<0.50
05/08/07	3,700	<800	10	4.6	320	86	1.5	<0.50	<5.0	<0.50	
08/06/07	8,200	<2,000	14	8.8	730	180	<0.50	<0.50	<5.0	<0.50	
12/26/07	1,200	<300	2.3	1.1	89	21	4.8	<0.50	<5.0	<0.50	
06/28/08	8,400	3,900	18	26	670	1,100	<2.5	<2.5	<10	<2.5	
09/27/08	12,000	4,600	32	49	1,200	680	<25	<25	<100	<25	
12/30/08	5,300	3,700	12	31	300	27	7.1	<5.0	<20	<5.0	
03/28/09	1,900	920	<1.7	<1.7	77	58	22	<1.7	<6.7	<1.7	

Table 1
Groundwater Analytical Results
Alaska Gas
Alameda, California

Well ID	Date	TPH-g	TPH-d	benzene	toluene	ethyl-benzene	xylenes	MtBE	tAME	tBA	Other Oxygenates
MW-2	11/06/99	6,000	70	1,300	92	50	400	6,800	NA	NA	NA
	05/16/00	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	08/03/00	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	12/05/00	<50	1,400	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	03/05/01	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	06/04/01	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	06/05/02	<50	2,300	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	09/09/02	<50	1,300	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	<5.0	<0.5
	12/19/02	<50	--	<0.5	<0.5	<0.5	<0.5	16	<0.5	<5.0	<0.5
	03/10/03	<50	3,000	<0.5	<0.5	<0.5	<0.5	1	<0.5	<5.0	<0.5
	06/03/03	<50	700	<0.5	<0.5	<0.5	<0.5	2	<0.5	<5.0	<0.5
	09/19/03	<50	1,400	<0.5	<0.5	<0.5	<0.5	4.7	<0.5	<5.0	<0.5
	12/22/03	<50	1,000	<0.5	<0.5	<0.5	<0.5	39	<0.5	<5.0	<0.5
	03/12/04	<50	250	<0.5	<0.5	<0.5	<0.5	2.1	<0.5	<5.0	<0.5
	06/11/04	<50	920	<0.5	<0.5	<0.5	<0.5	0.75	<0.5	<5.0	<0.5
	09/13/04	<50	140	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	<5.0	<0.5
	12/16/04	<50	150	<0.5	<0.5	<0.5	<0.5	12	<0.5	<5.0	<0.5
	03/21/05	<50	130	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	06/23/05	<50	1,100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	09/30/05	<50	300	<0.5	<0.5	<0.5	<0.5	1.6	<0.5	<5.0	<0.5
	12/08/05	<50	600	<0.5	<0.5	<0.5	<0.5	1.9	<0.5	<5.0	<0.5
	03/01/06	<50	920	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	05/25/06	<50	160	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	08/10/06	<50	870	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	11/21/06	<50	130	<0.5	<0.5	<0.5	<0.5	1.8	<0.5	<5.0	<0.5
	02/06/07	<50	450	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
05/08/07	<50	160	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	
08/06/07	<50	180	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	
12/26/07	<50	190	<0.5	<0.5	<0.5	<0.5	2.9	<0.5	<5.0	<0.5	
06/28/08	<50	180	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<2.0	
09/27/08	<50	78	<0.5	<0.5	<0.5	<0.5	7	<0.5	<2.0	<0.5	
12/30/08	<50	100	<0.5	<0.5	<0.5	<0.5	13	<0.5	<0.5	<0.5	
03/28/09	<50	60	<0.5	<0.5	<0.5	<0.5	5.4	<0.5	<0.5	<0.5	

Table 1
Groundwater Analytical Results
Alaska Gas
Alameda, California

Well ID	Date	TPH-g	TPH-d	benzene	toluene	ethyl- benzene	xylenes	MtBE	tAME	tBA	Other Oxygenates
MW-3	11/06/99	43,000	870	860	70	<0.5	65	120,000	NA	NA	NA
	05/16/00	1,700	<5,000	2,800	60	380	190	990	9.1	350	<5.0
	08/03/00	16,000	<2,000	1,600	29	210	53	1,200	21	260	<2.0
	12/05/00	17,000	5800	1,700	45	460	240	1,100	21	230	<5.0
	03/05/01	29,000	<1,300	2,100	68	280	100	180	<8.0	<80	<8.0
	06/04/01	17,000	<6,000	2,000	56	340	230	300	<10	130	<10
	06/05/02	11,000	<2,000	1,600	46	210	47	790	<10	220	<10
	09/09/02	12,000	<800	1,400	44	130	27	760	<10	160	<5.0
	12/19/02	10,000	NS	740	32	180	38	86	<5.0	<50	<5.0
	03/10/03	13,000	<6,000	1,200	42	240	35	470	5.3	140	<2.5
	06/03/03	6,500	<3,000	750	21	46	15	1,300	<50	280	<10
	09/19/03	9,800	<3,000	1,500	38	170	32	420	<10	150	<5.0
	12/22/03	8,800	<2,000	1,100	32	82	20	330	5.8	52	<2.5
	03/12/04	7,600	<3,000	590	23	69	17	470	9.2	63	<1.5
	06/11/04	7,800	<2,000	840	19	58	15	710	12	140	<2.5
	09/13/04	7,500	<1,500	840	17	23	7.8	730	15	93	<2.5
	12/16/04	9,300	<2,000	1,100	26	76	13	600	12	130	<2.5
	03/21/05	11,000	<3,000	1,200	37	190	24	460	9.3	100	<2.5
	06/23/05	9,600	<4,000	1,100	28	93	23	370	8.2	67	<1.5
	09/30/05	9,000	<3,000	690	18	32	14	380	8.4	72	<1.5
	12/08/05	8,700	<3,000	560	23	38	12	350	6.9	82	<1.5
	03/01/06	8,400	<2,000	410	24	42	13	360	8	58	<1.5
	05/25/06	9,900	<2,000	630	25	13	13	190	5.3	59	<1.5
	08/10/06	14,000	<3,000	690	43	130	26	200	5.4	70	<1.5
	11/21/06	10,000	<3,000	580	37	96	25	240	6.3	72	<1.5
	02/06/07	7,700	<1,000	520	36	90	23	260	7.4	54	<1.5
05/08/07	4,700	<800	150	0.86	<0.5	<0.5	170	5	52	<0.5	
08/06/07	6,000	<1,000	240	26	34	17	180	5	55	<0.5	
12/26/07	8,100	<1,500	76	14	17	12	150	4.3	37	<0.9	
06/28/08	6,400	3,100	97	17	19	13	200	5.6	38	<5.0	
09/27/08	11,000	15,000	190	24	29	16	160	<5.0	40	<5.0	
12/30/08	9,100	2,300	160	24	31	18	150	5	100	<5.0	
03/28/09	9,200	4,300	150	25	34	22	120	<5.0	38	<5.0	

Table 1
Groundwater Analytical Results
Alaska Gas
Alameda, California

Well ID	Date	TPH-g	TPH-d	benzene	toluene	ethyl-benzene	xylenes	MtBE	tAME	tBA	Other Oxygenates
MW-4	05/25/06	<50	86	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<5.0	<0.5
	08/10/06	<50	<50	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<5.0	<0.5
	11/21/06	<50	<50	<0.5	<0.5	<0.5	<0.5	0.59	<0.5	<5.0	<0.5
	02/06/07	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	05/08/07	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5
	08/06/07	<50	<50	<0.5	<0.5	<0.5	<0.5	0.82	<0.5	<5.0	<0.5
	12/26/07	<50	<50	<0.5	<0.5	<0.5	<0.5	1.3	<0.5	<5.0	<0.5
	06/28/08	<50	88	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	<2.0	<0.5
	09/27/08	<50	<50	<0.5	<0.5	<0.5	<0.5	1.3	<0.5	<5.0	<0.5
	12/30/08	<50	<50	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5
MW-5	03/28/09	<50	<50	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	<0.5	<0.5
	11/21/06	410	<80	<2.5	<2.5	<2.5	<2.5	1,800	28	44	<2.5
	05/25/06	55	<50	<0.5	<0.5	<0.5	<0.5	1,100	19	9.1	<0.5
	08/10/06	<250	<50	<2.5	<2.5	<2.5	<2.5	1,500	25	28	<2.5
	02/06/07	430	<50	6.9	<2.5	<2.5	<2.5	1,600	26	34	<2.5
	05/08/07	<250	<50	<2.5	<2.5	<2.5	<2.5	1,200	20	38	<2.5
	08/06/07	330	<80	<2.5	<2.5	<2.5	<2.5	1,000	20	39	<2.5
	12/26/07	490	<50	<2.5	<2.5	<2.5	<2.5	1,000	18	28	<2.5
	06/28/08	510	290	6.2	1.0	<0.5	2.3	550	11	<40	<10
	09/27/08	670	320	<17	<17	<17	<17	650	<17	95	<17
12/30/08	210	130	<0.5	0.8	0.99	<0.5	610	12	<40	<10	
03/28/09	200	100	<17	<17	<17	<17	610	<17	<67	<17	
ESL		100	100	1.0	40	30	20	5	NE	50,000	NA

Notes:

Units are micrograms per liter (ug/L).

NT analyte not tested

TPH-g total petroleum hydrocarbons as gasoline

TPH-d total petroleum hydrocarbons as diesel

MtBE methyl tert-butyl ether

tAME tert-amyl methyl ether

tBA tert-butanol

Table 2
Well Construction Details
Alaska Gas
Alameda, California

Well ID	Date Installed	Total Depth (feet bg)	Screened Interval (feet bg)	Water-Bearing Zone	Screen Slot Size (inches)	Filter Pack Interval (feet bg)	Bentonite Interval (feet bg)	Grout Interval (feet bg)	TOC Elevation (feet amsl)	Northing Coordinates (feet)	Westing Coordinates (feet)
MW-1	10/11/99	18	17.35-2.5	Silty Sand	0.02	18-1.5	1.5-0.5	0.5-0	29.18	15.20394	46.13606
MW-2	10/11/99	18	18-4	Silty Sand	0.02	18-3	3-1.5	1.5-0	29.55	14.93558	45.97882
MW-3	10/11/99	20	19-4	Silty Sand	0.02	20-3	3-1.5	1.5-0	27.74	15.28672	47.24157
MW-4	04/03/06	16	15-5	Sand-Clayey Sand	0.02	15-4.5	4.5-4	4-0.5	26.23	17.12115	48.05243
MW-5	04/04/06	17	15-5	Sand-Clayey Sand	0.02	15-4.5	4.5-4	4-0.5	26.78	16.21022	47.48996

Table 3
Groundwater Elevation Data
Alaska Gas
Alameda, California

Well ID	Date	Top of Casing Elevation (msl)	Depth to Water (feet)	Groundwater Elevation
MW-1	11/06/99	26.85	5.16	21.69
	05/16/00		3.24	23.61
	08/03/00		4.15	22.70
	12/05/00		4.90	21.95
	03/05/01		3.04	23.81
	06/04/01		4.01	22.84
	06/05/02		3.73	23.12
	09/09/02		5.06	21.79
	12/19/02		4.09	22.76
	03/10/03		3.50	23.35
	06/03/03		3.66	23.19
	09/19/03		4.91	21.94
	12/22/03		4.30	22.55
	03/12/04		2.93	23.92
	06/11/04		4.23	22.62
	09/13/04		5.02	21.83
	12/16/04		3.76	23.09
	03/21/05		2.81	24.04
	06/23/05		3.66	23.19
	09/30/05		4.55	22.30
	12/08/05		4.21	22.64
	03/01/06		2.90	23.95
	05/25/06	29.18	2.84	26.34
	08/10/06		4.35	24.83
	11/21/06		4.22	24.96
	02/06/07		4.39	24.79
	05/08/07		3.88	25.30
	08/06/07		5.02	24.16
	12/26/07		4.87	24.31
	06/28/08		4.77	24.41
09/27/08		6.29	22.89	
12/30/08		6.04	23.14	
03/28/09		3.78	25.40	

Table 3
Groundwater Elevation Data
Alaska Gas
Alameda, California

Well ID	Date	Top of Casing Elevation (msl)	Depth to Water (feet)	Groundwater Elevation
MW-2	11/06/99	27.18	5.56	21.62
	05/16/00		3.54	23.64
	08/03/00		4.44	22.74
	12/05/00		5.24	21.94
	03/05/01		3.28	23.90
	06/04/01		4.33	22.85
	06/05/02		3.98	23.20
	09/09/02		5.34	21.84
	12/19/02		4.33	22.85
	03/10/03		3.58	23.60
	06/03/03		3.87	23.31
	09/19/03		5.24	21.94
	12/22/03		4.47	22.71
	03/12/04		3.40	23.78
	06/11/04		4.51	22.67
	09/13/04		5.35	21.83
	12/16/04		4.09	23.09
	03/21/05		3.01	24.17
	06/23/05		3.91	23.27
	09/30/05		4.86	22.32
	12/08/05		4.49	22.69
	03/01/06		3.09	24.09
	05/25/06	29.55	3.16	26.39
	08/10/06		4.98	24.57
	11/21/06		4.81	24.74
	02/06/07		4.37	25.18
	05/08/07		4.12	25.43
	08/06/07		5.36	24.19
	12/26/07		5.03	24.52
	06/28/08		5.06	24.49
	09/27/08		6.64	22.91
	12/30/08		6.28	23.27
03/28/09		4.03	25.52	

Table 3
Groundwater Elevation Data
Alaska Gas
Alameda, California

Well ID	Date	Top of Casing Elevation (msl)	Depth to Water (feet)	Groundwater Elevation
MW-3	11/06/99	25.3	4.02	21.28
	05/16/00		2.06	23.24
	08/03/00		3.20	22.10
	12/05/00		3.71	21.59
	03/05/01		1.90	23.40
	06/04/01		2.72	22.58
	06/05/02		2.75	22.55
	09/09/02		3.88	21.42
	12/19/02		2.79	22.51
	03/10/03		2.36	22.94
	06/03/03		2.65	22.65
	09/19/03		3.15	22.15
	12/22/03		2.83	22.47
	03/12/04		2.00	23.30
	06/11/04		3.11	22.19
	09/13/04		3.90	21.40
	12/16/04		2.89	22.41
	03/21/05		1.93	23.37
	06/23/05		2.69	22.61
	09/30/05		4.54	20.76
	12/08/05		3.05	22.25
	03/01/06		1.95	23.35
	05/25/06	27.74	2.11	25.63
	08/10/06		3.25	24.49
	11/21/06		3.35	24.39
	02/06/07		3.34	24.40
	05/08/07		3.53	24.21
	08/06/07		3.91	23.83
	12/26/07		3.57	24.17
	06/28/08		3.66	24.08
	09/27/08		4.98	22.76
	12/30/08		4.63	23.11
03/28/09		2.73	25.01	

Table 3
Groundwater Elevation Data
Alaska Gas
Alameda, California

Well ID	Date	Top of Casing Elevation (msl)	Depth to Water (feet)	Groundwater Elevation
MW-4	05/25/06	26.23	2.54	23.69
	08/10/06		4.65	21.58
	11/21/06		4.63	21.60
	02/06/07		3.87	22.36
	05/08/07		4.21	22.02
	08/06/07		4.54	21.69
	12/26/07		2.90	23.33
	06/28/08		3.02	23.21
	09/27/08		4.78	21.45
	12/30/08		3.91	22.32
	03/28/09		2.50	23.73
MW-5	05/25/06	26.78	2.60	24.18
	08/10/06		3.40	23.38
	11/21/06		3.27	23.51
	02/06/07		3.10	23.68
	05/08/07		3.00	23.78
	08/06/07		3.79	22.99
	12/26/07		3.38	23.40
	06/28/08		3.70	23.08
	09/27/08		4.65	22.13
	12/30/08		4.04	22.74
	03/28/09		2.85	23.93

All measurements are in feet. DTW = Depth to water below top of PVC casing.
 TOC = Top of casing. ELEV = Elevation above mean sea level.
 Wells resurveyed on April 27, 2006

APPENDIX A
MONITORING WELL PURGE LOGS

DAILY REPORT FORM

Job # _____ Supervisor: _____

Date: 3/28/09

Location: Alameda

Su M Tu W Th F Sa

Weather: Warm / Sunny

Description of Activities: _____
Unload - check water levels - sample MWS - cleanup - travel home - unload.

Cost Code	Employee Initials						Work Performed
	# hrs	# hrs	# hrs	# hrs	# hrs	# hrs	
	<u>200</u>						<u>sample</u>
	<u>200</u>						<u>haul</u>
	<u>400</u>						<u>total</u>

Equipment Used	# Hours	Rental Equipment	# Hours
<u>water level indicator</u>		<u>water level indicator</u>	
<u>PTC meter</u>		<u>PTC meter</u>	

Material Used	Quantity
<u>bailers</u>	<u>5</u>
<u>disposables</u>	<u>1</u>

Visitors

Subcontractors	Tasks Performed	# Hrs

MONITORING WELL SAMPLING LOG

SITE NAME/LOCATION: Alameda

PROJECT: _____

DATE: 3/28/09

SAMPLER'S INITIALS: CM

WELL ID: MW-2

WELL DIAMETER (in): 2

WELL DEPTH (ft): 12.2

DEPTH TO WATER (ft): 4.03

WATER COLUMN Ht (ft): 7.99

STANDING WATER VOLUME (gal): 1.32

3 VOLUMES (gal): 3.97

To obtain standing volume in gallons, multiply the water column height by 0.17 for 2-inch well or 0.66 for a 4-inch well.

PURGE METHOD: Bailer or Mini-Whaler Pump
(circle the correct method)

SAMPLING METHOD: disposable PE bailer

PURGE MEASUREMENTS

Time	Gallons Purged	Temp (C)	pH	SC (uS)	DO (mg/L)	Comments
1300	1	21.9	6.57	5957		
	2	20.6	6.50	565		
1302	3	19.7	6.48	576		
1303	4	19.2	6.48	581		
						sampled @ 1305

WELL ID: MW-1

WELL DIAMETER (in): 2

WELL DEPTH (ft): 11.03

DEPTH TO WATER (ft): 3.78

WATER COLUMN Ht (ft): 7.25

STANDING WATER VOLUME (gal): 1.2

3 VOLUMES (gal): 3.6

To obtain standing volume in gallons, multiply the water column height by 0.17 for 2-inch well or 0.66 for a 4-inch well.

PURGE METHOD: Bailer or Mini-Whaler Pump
(circle the correct method)

SAMPLING METHOD: disposable PE bailer

PURGE MEASUREMENTS

Time	Gallons Purged	Temp (C)	pH	SC (uS)	DO (mg/L)	Comments
1315	1.5	23.5	6.67	542		
1318	3.5	20.2	6.67	562		
1321	4.5	19.5	6.66	568		good recharge
						sampled @ 1325

MONITORING WELL SAMPLING LOG

SITE NAME/LOCATION: Akmeda PROJECT: _____

DATE: 3/28/09 SAMPLER'S INITIALS: CM

WELL ID: MW-5 WELL DIAMETER (in): 2

WELL DEPTH (ft): 1418 DEPTH TO WATER (ft): 2.85 WATER COLUMN Ht (ft): 1195

STANDING WATER VOLUME (gal): 1.98 3 VOLUMES (gal): 6

To obtain standing volume in gallons, multiply the water column height by 0.17 for 2-inch well or 0.66 for a 4-inch well.

PURGE METHOD: Bailer or Mini-Whaler Pump SAMPLING METHOD: disposable PE bailer
(circle the correct method)

PURGE MEASUREMENTS

Time	Gallons Purged	Temp (C)	pH	SC (uS)	DO (mg/L)	Comments
	meter not working					
						Purged 6 gallons
						sampled @ 1213

WELL ID: MW-4 WELL DIAMETER (in): 2

WELL DEPTH (ft): 1412 DEPTH TO WATER (ft): 2.50 WATER COLUMN Ht (ft): 117

STANDING WATER VOLUME (gal): 1.94 3 VOLUMES (gal): 5.8

To obtain standing volume in gallons, multiply the water column height by 0.17 for 2-inch well or 0.66 for a 4-inch well.

PURGE METHOD: Bailer or Mini-Whaler Pump SAMPLING METHOD: disposable PE bailer
(circle the correct method)

PURGE MEASUREMENTS

Time	Gallons Purged	Temp (C)	pH	SC (uS)	DO (mg/L)	Comments
1230	1	?	6.76	318		
	2	20.5	6.76	362		Dry, slow recharge
1245	5	17.6	6.90	401		
	6					sampled @ 1245

APPENDIX B
LABORATORY ANALYTICAL REPORTS FOR
GROUNDWATER SAMPLES



McC Campbell Analytical, Inc.

"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mcccampbell.com E-mail: main@mcccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Matriks Corporation 321 Court Street Woodland, CA 95695	Client Project ID: Alameda	Date Sampled: 03/28/09
		Date Received: 03/30/09
	Client Contact: Tom Henderson	Date Reported: 04/06/09
	Client P.O.:	Date Completed: 04/06/09

WorkOrder: 0903739

April 06, 2009

Dear Tom:

Enclosed within are:

- 1) The results of the **5** analyzed samples from your project: **Alameda**,
- 2) A QC report for the above samples,
- 3) A copy of the chain of custody, and
- 4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing

McC Campbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McC Campbell Analytical, Inc.

McCAMPBELL ANALYTICAL, INC.

1534 WILLOW PASS ROAD
PITTSBURG, CA 94565-1701

0903739

Website: www.mccampbell.com Email: main@mccampbell.com

Telephone: (877) 252-9262

Fax: (925) 252-9269

CHAIN OF CUSTODY RECORD

TURN AROUND TIME

RUSH
 24 HR
 48 HR
 72 HR
 5 DAY

GeoTracker EDF PDF Excel Write On (DW)

Report To: Tom Henderson Bill To: Matriks
Company: Matriks Corp.
321 Court Street
Woodland, CA 95695 E-Mail: thenderson@matrikscorp.com
Tele: (530)406-1760 Fax: (530)406-1071
Project #: Project Name: Alameda
Project Location: Central Avenue, Alameda, CA
Sampler Signature: *Chris*

Analysis Request

Other

Comments

MTBE / BTEX & TPH as Gas (602 / 8021 + 8015)																					
MTBE / BTEX ONLY (EPA 602 / 8021)																					
TPH as Diesel (8015)																					
Total Petroleum Oil & Grease (1664 / 5520 E/B&F)																					
Total Petroleum Hydrocarbons (418.1)																					
EPA 502.2 / 601 / 8010 / 8021 (HVOCs)																					
EPA 505/ 608 / 8081 (Cl Pesticides)																					
EPA 608 / 8082 PCB's ONLY; Aroclors / Congeners																					
EPA 507 / 8141 (NP Pesticides)																					
EPA 515 / 8151 (Acidic Cl Herbicides)																					
EPA 524.2 / 624 / 8260 (VOCs)																					
EPA 525.2 / 625 / 8270 (SVOCs)																					
EPA 8270 SIM / 8310 (PAHs / PNAs)																					
CAM 17 Metals (200.7 / 200.8 / 6010 / 6020)																					
LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020)																					
Lead (200.7 / 200.8 / 6010 / 6020)																					
TPH-g, BTEX, 5-oxy (8260)																					

Filter Samples for Metals analysis: Yes / No

5
+
+++

SAMPLE ID	LOCATION/ Field Point Name	SAMPLING		CONTAINERS		MATRIX					METHOD PRESERVED			
		Date	Time	# Containers	Type Containers	Water	Soil	Air	Sludge	Other	ICE	HCL	HNO ₃	None
MW-1		3/28/09	1325	5	*	x						5	4	1
MW-2		3/28/09	1305	5	*	x						5	4	1
MW-3		3/28/09	1340	5	*	x						5	4	1
MW-4		3/28/09	1245	5	*	x						5	4	1
MW-5		3/28/09	1213	5	*	x						5	4	1

Relinquished By: *[Signature]* Date: *3/29/09* Time: *9:00* Received By: *Envirotech*
Relinquished By: *Juanita Wall Envirotech* Date: *3/30/09* Time: *18:00* Received By: *Don M Envirotech*
Relinquished By: *Envirotech* Date: *3/30/09* Time: *19:55* Received By: *[Signature]*

ICE/ ^{YES} GOOD CONDITION
HEAD SPACE ABSENT
DECHLORINATED IN LAB
APPROPRIATE CONTAINERS PRESERVED IN LAB
COMMENTS: * = 4 VOA + 1 Amber
VOAS O&G METALS OTHER
PRESERVATION pH<2

McC Campbell Analytical, Inc.



1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0903739

ClientCode: MCW

WriteOn
 EDF
 Excel
 Fax
 Email
 HardCopy
 ThirdParty
 J-flag

Report to:

Tom Henderson
Matriks Corporation
321 Court Street
Woodland, CA 95695
(530) 406-1760 FAX (530) 406-1771

Email: thenderson@matrikscorp.com
cc:
PO:
ProjectNo: Alameda

Bill to:

Robert Neely
Matriks Corporation
321 Court Street
Woodland, CA 95695

Requested TAT: 5 days

Date Received: 03/30/2009

Date Printed: 03/30/2009

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
0903739-001	MW-1	Water	3/28/2009 13:25	<input type="checkbox"/>	B	A	A									
0903739-002	MW-2	Water	3/28/2009 13:05	<input type="checkbox"/>	B		A									
0903739-003	MW-3	Water	3/28/2009 13:40	<input type="checkbox"/>	B		A									
0903739-004	MW-4	Water	3/28/2009 12:45	<input type="checkbox"/>	B		A									
0903739-005	MW-5	Water	3/28/2009 12:13	<input type="checkbox"/>	B		A									

Test Legend:

1	GMBTEXOXPB_W	2	PREDF REPORT	3	TPH(D)_W	4		5	
6		7		8		9		10	
11		12							

Prepared by: Samantha Arbuckle

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.



Sample Receipt Checklist

Client Name: **Matriks Corporation**

Date and Time Received: **03/30/09 8:46:23 PM**

Project Name: **Alameda**

Checklist completed and reviewed by: **Samantha Arbuckle**

WorkOrder N°: **0903739** Matrix Water

Carrier: EnviroTech

Chain of Custody (COC) Information

- Chain of custody present? Yes No
- Chain of custody signed when relinquished and received? Yes No
- Chain of custody agrees with sample labels? Yes No
- Sample IDs noted by Client on COC? Yes No
- Date and Time of collection noted by Client on COC? Yes No
- Sampler's name noted on COC? Yes No

Sample Receipt Information

- Custody seals intact on shipping container/cooler? Yes No NA
- Shipping container/cooler in good condition? Yes No
- Samples in proper containers/bottles? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No

Sample Preservation and Hold Time (HT) Information

- All samples received within holding time? Yes No
- Container/Temp Blank temperature Cooler Temp: 6.2°C NA
- Water - VOA vials have zero headspace / no bubbles? Yes No No VOA vials submitted
- Sample labels checked for correct preservation? Yes No
- TTLC Metal - pH acceptable upon receipt (pH<2)? Yes No NA
- Samples Received on Ice? Yes No

(Ice Type: WET ICE)

* NOTE: If the "No" box is checked, see comments below.

Client contacted:

Date contacted:

Contacted by:

Comments:



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Matriks Corporation 321 Court Street Woodland, CA 95695	Client Project ID: Alameda	Date Sampled: 03/28/09
		Date Received: 03/30/09
	Client Contact: Tom Henderson	Date Extracted: 04/02/09-04/03/09
	Client P.O.:	Date Analyzed: 04/02/09-04/03/09

TPH(g)MBTEX + Oxygenates + EDB and 1,2-DCA*

Extraction Method: SW5030B

Analytical Method: SW8260B

Work Order: 0903739

Lab ID	0903739-001B	0903739-002B	0903739-003B	0903739-004B	Reporting Limit for DF =1	
Client ID	MW-1	MW-2	MW-3	MW-4		
Matrix	W	W	W	W		
DF	3.3	1	10	1		

Compound	Concentration				ug/kg	µg/L
TPH(g)	1900	ND	9200	ND	NA	50
tert-Amyl methyl ether (TAME)	ND<1.7	ND	ND<5.0	ND	NA	0.5
Benzene	ND<1.7	ND	150	ND	NA	0.5
t-Butyl alcohol (TBA)	ND<6.7	ND	38	ND	NA	2.0
1,2-Dibromoethane (EDB)	ND<1.7	ND	ND<5.0	ND	NA	0.5
1,2-Dichloroethane (1,2-DCA)	ND<1.7	ND	ND<5.0	ND	NA	0.5
Diisopropyl ether (DIPE)	ND<1.7	ND	ND<5.0	ND	NA	0.5
Ethylbenzene	77	ND	34	ND	NA	0.5
Ethyl tert-butyl ether (ETBE)	ND<1.7	ND	ND<5.0	ND	NA	0.5
Methyl-t-butyl ether (MTBE)	22	5.4	120	0.90	NA	0.5
Toluene	ND<1.7	ND	25	ND	NA	0.5
Xylenes	58	ND	22	ND	NA	0.5

Surrogate Recoveries (%)

%SS1:	87	85	87	86	
%SS2:	104	103	104	103	
%SS3:	84	80	81	84	

Comments b6

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis.

surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.

b6) lighter than water immiscible sheen/product is present



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Matriks Corporation 321 Court Street Woodland, CA 95695	Client Project ID: Alameda	Date Sampled: 03/28/09
		Date Received: 03/30/09
	Client Contact: Tom Henderson	Date Extracted: 04/02/09-04/03/09
	Client P.O.:	Date Analyzed: 04/02/09-04/03/09

TPH(g)MBTEX + Oxygenates + EDB and 1,2-DCA*

Extraction Method: SW5030B

Analytical Method: SW8260B

Work Order: 0903739

Lab ID	0903739-005B				Reporting Limit for DF =1
Client ID	MW-5				
Matrix	W				
DF	1				

Compound	Concentration				ug/kg	µg/L
TPH(g)	200				NA	50
tert-Amyl methyl ether (TAME)	ND<17				NA	0.5
Benzene	ND<17				NA	0.5
t-Butyl alcohol (TBA)	ND<67				NA	2.0
1,2-Dibromoethane (EDB)	ND<17				NA	0.5
1,2-Dichloroethane (1,2-DCA)	ND<17				NA	0.5
Diisopropyl ether (DIPE)	ND<17				NA	0.5
Ethylbenzene	ND<17				NA	0.5
Ethyl tert-butyl ether (ETBE)	ND<17				NA	0.5
Methyl-t-butyl ether (MTBE)	610				NA	0.5
Toluene	ND<17				NA	0.5
Xylenes	ND<17				NA	0.5

Surrogate Recoveries (%)

%SS1:	83				
%SS2:	99				
%SS3:	73				

Comments

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis.

surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.

b6) lighter than water immiscible sheen/product is present



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Matriks Corporation 321 Court Street Woodland, CA 95695	Client Project ID: Alameda	Date Sampled: 03/28/09
		Date Received: 03/30/09
	Client Contact: Tom Henderson	Date Extracted: 03/30/09
	Client P.O.:	Date Analyzed 03/31/09-04/01/09

Total Extractable Petroleum Hydrocarbons*

Extraction method SW3510C

Analytical methods: SW8015B

Work Order: 0903739

Lab ID	Client ID	Matrix	TPH-Diesel (C10-C23)	DF	% SS
0903739-001A	MW-1	W	920,e4	1	105
0903739-002A	MW-2	W	60,e2	1	96
0903739-003A	MW-3	W	4300,e4	1	101
0903739-004A	MW-4	W	ND	1	105
0903739-005A	MW-5	W	100,e4	1	107

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	µg/L
	S	NA	NA

* water samples are reported in µg/L, wipe samples in µg/wipe, soil/solid/sludge samples in mg/kg, product/oil/non-aqueous liquid samples in mg/L, and all DISTLC / STLC / SPLP / TCLP extracts are reported in µg/L.

cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract.

+The following descriptions of the TPH chromatogram are cursory in nature and McC Campbell Analytical is not responsible for their interpretation:

e2) diesel range compounds are significant; no recognizable pattern
e4) gasoline range compounds are significant.



QC SUMMARY REPORT FOR SW8260B

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 42352

WorkOrder 0903739

Analyte	Extraction SW5030B			Spiked Sample ID: 0903737-001F								
	Sample µg/L	Spiked µg/L	MS % Rec.	MSD % Rec.	MS-MSD % RPD	LCS % Rec.	LCSD % Rec.	LCS-LCSD % RPD	Acceptance Criteria (%)			
tert-Amyl methyl ether (TAME)	ND	10	108	106	1.49	105	105	0	70 - 130	30	70 - 130	30
Benzene	ND	10	125	123	1.78	119	119	0	70 - 130	30	70 - 130	30
t-Butyl alcohol (TBA)	ND	50	94.2	97.8	3.75	91.5	92	0.596	70 - 130	30	70 - 130	30
Chlorobenzene	ND	10	107	107	0	111	112	0.430	70 - 130	30	70 - 130	30
1,2-Dibromoethane (EDB)	ND	10	122	120	1.58	119	119	0	70 - 130	30	70 - 130	30
1,2-Dichloroethane (1,2-DCA)	ND	10	120	120	0	114	114	0	70 - 130	30	70 - 130	30
1,1-Dichloroethene	ND	10	96.8	96.8	0	97.1	97.6	0.450	70 - 130	30	70 - 130	30
Diisopropyl ether (DIPE)	ND	10	117	115	1.64	108	109	1.26	70 - 130	30	70 - 130	30
Ethyl tert-butyl ether (ETBE)	ND	10	122	121	1.08	121	122	0.850	70 - 130	30	70 - 130	30
Methyl-t-butyl ether (MTBE)	ND	10	114	111	2.18	112	113	0.676	70 - 130	30	70 - 130	30
Toluene	ND	10	117	117	0	123	124	0.762	70 - 130	30	70 - 130	30
Trichloroethene	ND	10	125	123	1.59	128	129	0.580	70 - 130	30	70 - 130	30
%SS1:	72	25	84	83	1.33	78	78	0	70 - 130	30	70 - 130	30
%SS2:	105	25	100	101	0.707	88	88	0	70 - 130	30	70 - 130	30
%SS3:	86	2.5	80	80	0	84	83	1.21	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 42352 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0903739-001B	03/28/09 1:25 PM	04/03/09	04/03/09 12:46 AM	0903739-002B	03/28/09 1:05 PM	04/02/09	04/02/09 6:06 PM
0903739-003B	03/28/09 1:40 PM	04/02/09	04/02/09 6:51 PM	0903739-004B	03/28/09 12:45 PM	04/03/09	04/03/09 1:29 AM
0903739-005B	03/28/09 12:13 PM	04/03/09	04/03/09 2:13 AM	0903739-005B	03/28/09 12:13 PM	04/03/09	04/03/09 4:34 PM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

Laboratory extraction solvents such as methylene chloride and acetone may occasionally appear in the method blank at low levels.



QC SUMMARY REPORT FOR SW8015B

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 42290

WorkOrder: 0903739

Analyte	Extraction SW3510C			Spiked Sample ID: N/A								
	Sample µg/L	Spiked µg/L	MS % Rec.	MSD % Rec.	MS-MSD % RPD	LCS % Rec.	LCSD % Rec.	LCS-LCSD % RPD	Acceptance Criteria (%)			
TPH-Diesel (C10-C23)	N/A	1000	N/A	N/A	N/A	90.8	88.1	3.01	N/A	N/A	70 - 130	30
%SS:	N/A	2500	N/A	N/A	N/A	87	82	5.90	N/A	N/A	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 42290 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0903739-001A	03/28/09 1:25 PM	03/30/09	03/31/09 5:33 AM	0903739-002A	03/28/09 1:05 PM	03/30/09	04/01/09 9:54 PM
0903739-003A	03/28/09 1:40 PM	03/30/09	03/31/09 7:50 AM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.



QC SUMMARY REPORT FOR SW8015B

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 42360

WorkOrder: 0903739

Analyte	EPA Method SW8015B		Extraction SW3510C						Spiked Sample ID: N/A			
	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH-Diesel (C10-C23)	N/A	1000	N/A	N/A	N/A	101	100	0.548	N/A	N/A	70 - 130	30
%SS:	N/A	2500	N/A	N/A	N/A	104	104	0	N/A	N/A	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 42360 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0903739-004A	03/28/09 12:45 PM	03/30/09	03/31/09 9:03 AM	0903739-005A	03/28/09 12:13 PM	03/30/09	03/31/09 2:13 PM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = $100 * (MS - Sample) / (Amount\ Spiked)$; RPD = $100 * (MS - MSD) / ((MS + MSD) / 2)$.

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.