

Mr. Keith Nowell  
Alameda County Environmental Health  
Department of Environmental Health  
1131 Harbor Bay Parkway, 2<sup>nd</sup> Floor  
Alameda, CA 94502-6577

**RECEIVED**

*11:19 am, Jul 31, 2012*

Alameda County  
Environmental Health

**Re: Former Exxon Station**

5175 Broadway  
Oakland, California  
ACEH File No. 139  
SFRWQCB Site No. 01-0958  
UST Fund Claim No. 3406

Dear Mr. Nowell:

I, Mr. Ernie Nadel, have retained Pangea Environmental Services, Inc. (Pangea) as the environmental consultant for the project referenced above. Pangea is submitting the attached report on my behalf.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached report are true and correct to the best of my knowledge.

Sincerely,



Ernie Nadel  
Rockridge Heights, LLC



July 27, 2012

***VIA ALAMEDA COUNTY FTP SITE***

Mr. Keith Nowell  
Alameda County Environmental Health  
1331 Harbor Bay Parkway, Suite 250  
Alameda, California 94502

Re: **Groundwater Monitoring and Remediation Report – July 2012**  
5175 Broadway Street, Oakland, California  
ACEH Fuel Leak Case No. RO#0000139

Dear Mr. Nowell:

On behalf of Rockridge Heights LLC, Pangea Environmental Services, Inc., has prepared this *Groundwater Monitoring and Remediation Report – July 2012*. This report documents the second post-remediation groundwater monitoring event after shutdown of the site remediation system on January 31, 2012.

Soil gas sampling was proposed in our *Revised Soil Gas Sampling Workplan* dated July 16, 2012. Pangea plans to continue post-remediation monitoring for four consecutive quarters, unless additional remediation is merited to target residual hydrocarbon impact identified by proposed soil gas sampling or ongoing groundwater monitoring.

If you have any questions or comments, please call me at (510) 435-8664.

Sincerely,  
**Pangea Environmental Services, Inc.**

A handwritten signature in blue ink that reads "Bob Clark-Riddell".

Bob Clark-Riddell, P.E.  
Principal Engineer

Attachment: *Groundwater Monitoring and Remediation Report – July 2012*

cc: Rockridge Heights, LLC, C/O Ernie Nadel, 6100 Pinewood Road, Oakland, California 94611  
SWRCB Geotracker (Electronic copy)

**PANGEA Environmental Services, Inc.**



**GROUNDWATER MONITORING AND REMEDIATION REPORT  
– JULY 2012**

**5175 Broadway  
Oakland, California**

**July 27, 2012**

*Prepared for:*

Rockridge Heights, LLC  
C/O Ernie Nadel  
6100 Pinewood Road  
Oakland, California 94611

*Prepared by:*

Pangea Environmental Services, Inc.  
1710 Franklin Street, Suite 200  
Oakland, California 94612

*Written by:*

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Morgan Gillies  
Project Manager



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Bob Clark-Riddell, P.E.  
Principal Engineer

**PANGEA Environmental Services, Inc.**

## **INTRODUCTION**

On behalf of Rockridge Heights, LLC, Pangea Environmental Services, Inc. (Pangea) conducted groundwater monitoring and sampling, and remediation system operation and sampling during July 2012 at the subject site (Figure 1). The purpose of the monitoring and sampling is to evaluate dissolved contaminant concentrations, determine the groundwater flow direction, and inspect site wells for separate-phase hydrocarbons (SPH). The purpose of the remediation is to clean up petroleum hydrocarbons from a historic fuel release.

This report documents the *second* post-remediation groundwater monitoring event after shutdown of the site remediation system on January 31, 2012. Pangea plans to continue post-remediation monitoring for four consecutive quarters, unless additional remediation is merited to target residual hydrocarbon impact identified by proposed soil gas sampling or ongoing groundwater monitoring. Pangea is awaiting agency approval of the soil gas sampling proposed in our *Revised Soil Gas Sampling Workplan* dated July 16, 2012.

## **SITE BACKGROUND**

The subject property is located at 5175 Broadway Street, at the southwest corner of the intersection of Broadway and Coronado Avenue in Oakland, California in Alameda County (Figure 1). The site is approximately 0.6 miles south-southeast of Highway 24 and approximately 2.3 miles east of Interstate 80 and the San Francisco Bay. The property is relatively flat lying, with a slight slope to the south-southwest, and lies at an elevation of approximately 160 feet above mean sea level. Topographic relief in the area surrounding the site also slopes generally towards the south-southwest. The western site boundary is the top of an approximately 10 foot high retaining wall that separates the site from an adjacent apartment complex.

The property has been vacant since 1979 and was formerly occupied by an Exxon Service Station used for fuel sales and automobile repair. The site is approximately 13,200 square feet in area and the majority of the ground surface is paved with concrete and/or asphalt, although the former tank location is not paved. Land use to the west and northwest is residential, including apartment buildings and single family homes. Properties to the northeast, east and south of the site are commercial. The subject site and adjacent properties are shown on Figure 2.

Environmental compliance work commenced when the site USTs were removed in January 1990. Three 8,000-gallon steel single-walled USTs, associated piping, and a 500-gallon steel single-walled waste oil tank were removed. Tank Project Engineering, Inc. (TPE) conducted the tank removal and observed holes in all four tanks. Approximately 700 tons of contaminated soil was excavated during tank removal and was subsequently remediated and reused for onsite backfill by TPE. In April 1990, TPE installed and sampled monitoring wells MW-1, MW-2 and MW-3. In June 1991, Soil Tech Engineering (STE), subsequently renamed Environmental Soil Tech Consultants (ESTC), installed monitoring wells STMW-4 and STMW-5. Groundwater monitoring

was conducted on the site intermittently until October 2002. Golden Gate Tank Removal (GGTR) performed additional assessment in January and February 2006. In June 2006, the property was purchased by Rockridge Heights, LLC. Pangea commenced quarterly groundwater monitoring at the site in July 2006. MTBE is not considered to be a contaminant of concern because use of the site for fuel sales predates widespread use of MTBE in gasoline and because analytical results have not shown significant detections of MTBE.

In January and March 2007, Pangea installed twelve wells (MW-2C, MW-3A, MW-3C, MW-4A, MW-5A, MW-5B, MW-5C, MW-6A, MW-7B, MW-7C, MW-8A and MW-8C) and three offsite soil borings to help define the vertical and lateral extent of groundwater contamination. Pangea also abandoned four monitoring wells (MW-2, MW-3, STMW-4 and STMW-5) to reduce the risk of vertical contaminant migration and improve the quality of monitoring data. New wells installed at the site were categorized according to the depths of their screen intervals. Shallow (A-zone) wells have screen intervals of approximately 10 to 15 feet bgs, which generally straddle the top of the water table and are generally screened in surficial fill and alluvium. Intermediate-depth (B-zone) wells are screened at approximately 15 to 20 feet bgs, either in surficial strata or underlying fractured bedrock, while deep (C-zone) wells are generally screened at approximately 20 to 25 feet bgs and into fractured bedrock. Well MW-1 is screened across both the A-zone and B-zone.

In April 2007, Pangea performed a dual-phase extraction (DPE) pilot test to evaluate whether DPE is an appropriate remedial technology to remove residual hydrocarbons from beneath the site. In July 2007, Pangea submitted an Interim Remedial Action Plan for site corrective action.

In August 2007, Pangea installed three offsite monitoring wells (MW-9A, MW-9C and MW-10A) and conducted subsurface vapor sampling in the commercial building located immediately south of the site. The purpose of the offsite well installation was to determine the downgradient extent of contaminant migration, and to help evaluate downgradient effects of any future remediation conducted onsite. The purpose of the subsurface vapor sampling was to determine whether vapor migrating from underlying groundwater had impacted soil vapor. Soil gas sampling was also conducted near the southern and western edge of the property. Soil gas sampling and offsite monitoring well installation is described in Pangea's *Soil Gas Sampling and Well Installation Report* dated October 23, 2007. Further subsurface/soil gas sampling was conducted at the two adjacent properties in June 2008 and reported in Pangea's *Additional Soil Gas Sampling Report* dated July 14, 2008.

In a June 2009 letter, ACEH approved insitu site remediation using dual-phase extraction (DPE) and air sparging (AS) techniques. Operation of the DPE system began on December 8, 2010 and operation of the AS system began on March 16, 2011. The DPE/AS system has been very effective for site remediation.

## **GROUNDWATER MONITORING AND SAMPLING**

On July 12 and 13, 2012, Pangea conducted groundwater monitoring and sampling at the site. The monitoring was performed approximately 162 days (about 5.5 months) after the DPE/AS system was shutdown due to low removal rates and to allow evaluation of contaminant concentration rebound. To provide comprehensive site data for evaluation of remedial effectiveness and site conditions, Pangea sampled all twenty-three site wells in accordance with agency correspondence on July 10, 2012. All site monitoring wells were gauged for depth-to-water and inspected for separate-phase hydrocarbons (SPH). To obtain water levels representative of the piezometric surface, technicians removed all well caps approximately one hour prior to measuring water levels.

Before well purging, the dissolved oxygen (DO) concentration was measured in each well scheduled for sampling. DO was measured by lowering a downwell sensor to the approximate middle of the water column, and allowing the reading to stabilize during gentle height adjustment. Prior to sample collection, approximately three casing volumes of water were purged using disposable bailers, an electric submersible pump, or a clean PVC bailer (although fewer casing volumes were purged if the well dewatered). During well purging, field technicians measured the pH, temperature and conductivity of the water. A groundwater sample was collected from each well with a disposable bailer and decanted into the appropriate containers supplied by the analytical laboratory. Groundwater samples were labeled, placed in protective plastic bags, and stored on crushed ice at or below 4° C. All samples were transported under chain-of-custody to the State-certified analytical laboratory. Purge water was stored onsite in DOT-approved 55-gallon drums. Groundwater monitoring field data sheets, including purge volumes and field parameter measurements, are presented in Appendix B.

## **MONITORING RESULTS**

Current and historical groundwater elevation and analytical data are described below and summarized on Table 1, Figure 2 and Figure 3. To facilitate data evaluation, well construction details are summarized on Table 2. Groundwater samples were analyzed for total petroleum hydrocarbons as diesel (TPHd) by EPA Method 8015C with silica gel cleanup; total petroleum hydrocarbons as gasoline (TPHg) by modified EPA Method 8015C; and benzene, toluene, ethylbenzene, xylenes (BTEX) and methyl tertiary butyl ether (MTBE) by EPA Method 8021B. Samples were analyzed by McCampbell Analytical, Inc., of Pittsburg, California, a State-certified laboratory. The laboratory analytical report is included in Appendix C.

## Groundwater Flow Direction

Based on depth-to-water data collected on July 12, 2012, shallow groundwater (A-zone) generally flows *southwards* beneath the site, as shown on Figure 2. The current inferred flow direction in shallow groundwater is generally consistent with previous monitoring results.

Groundwater flow in deep groundwater (C-zone) is generally *southwards* beneath the site, as shown on Figure 3. Generally, the elevation of the piezometric surface for C-zone wells is lower than elevations for A-zone wells, indicating that a downward gradient is present.

## Hydrocarbon Distribution in Groundwater

Current Distribution: Key current analytical data for shallow and deep groundwater is summarized on Figures 2 and 3, respectively. The dramatic contaminant reduction in site wells achieved by site remediation and partial rebound is illustrated on Figures 5 and 6. This monitoring was performed 162 days (about 5.5 months) following temporary remediation system shutdown to allow subsurface equilibration and contaminant rebound.

This quarter the maximum TPHg concentration detected was 1,700 µg/L (well DPE-2) and the maximum benzene concentration detected was 150 µg/L (well DPE-2). The maximum TPHd concentration detected this quarter was 920 µg/L in well DPE-6. No measurable thickness of separate-phase hydrocarbons (SPH) was observed in any monitoring wells this quarter. As shown on Figures 5 and 6, hydrocarbon concentrations were generally within historic ranges and trends in most site wells, while select wells remain ‘non detect’ or near *historic low* concentrations. Significant concentration reduction and lack of SPH is attributed to DPE and AS remediation at the site.

Not surprising, hydrocarbon concentrations have partially *rebounded* in select wells. The only wells where *TPHg* concentrations rebounded above 1,000 µg/L this event include shallow well MW-3A (1,400 µg/L) and deeper wells DPE-2 (1,700 µg/L) and DPE-6 (1,200 µg/L). The only wells where *benzene* concentrations rebounded above 100 µg/L this event include deeper well DPE-2 (150 µg/L), which remains unchanged from the concentration reported for the prior monitoring event. While *benzene* concentrations slightly rebounded in several deep wells this event, the only shallow wells where benzene concentrations rebounded above 10 µg/L this event include well MW-3A (55 µg/L) and well MW-4A (14 µg/L).

Historic Distribution: Shallow (A-zone) groundwater contained petroleum hydrocarbons at elevated concentrations in two primary areas near the former UST excavation: a northern area in the vicinity of well MW-4A, and a southwestern area in the vicinity of wells MW-3A and MW-8A. Prior shallow grab groundwater sampling data also indicates that the southern area of contamination extended to the southern site boundary in the vicinity of wells MW-7B and MW-7C. The non-detect concentrations of hydrocarbons in wells

MW-9A and MW-10A indicate that any offsite migration of petroleum hydrocarbons in shallow groundwater is minimal. The historic distribution of hydrocarbons in A-zone groundwater was presumably due to plume migration radially away from the excavation area, likely caused by mounding of groundwater within the uncapped former UST excavation during the rainy season.

Contaminant distribution in deeper groundwater differed from the distribution of hydrocarbons in shallow groundwater. Elevated contaminant concentrations within deeper groundwater (B-zone and C-zone) were present in the vicinity of wells MW-3C, MW-7B and MW-7C in the central and southern portions of the site. Site remediation has improved site conditions. Well screen intervals for shallow and deep wells are summarized on Table 2.

### **Fuel Oxygenate Distribution in Groundwater**

No MTBE was detected above reporting limits in any samples obtained from site monitoring wells this monitoring event. MTBE is not a contaminant of concern at this site both due to the lack of detections, and because the USTs were removed in 1990 prior to widespread use of MTBE as a fuel oxygenate.

## **REMEDIATION SYSTEM SUMMARY**

### **Dual Phase Extraction/Air Sparging System**

The dual phase extraction (DPE) remediation system simultaneously extracts groundwater and soil vapor from site remediation wells. The remediation system layout is shown on Figure 4. Extraction and treatment is performed using a 25 hp liquid ring vacuum pump with a 400 cubic foot per minute (cfm) electric catalytic oxidizer. To maximize groundwater depression, a “stinger” (vacuum tube inserted below the water table) is used to both depress the water table and extract soil vapor in each of the 10 remediation wells (DPE-1 through DPE-6 and MW-3A, MW-4A, MW-7B and MW-8A). Extracted vapors are routed through an air/water separator and then treated by the electric catalytic oxidizer. The treated vapor is discharged to the atmosphere in accordance with Bay Area Air Quality Management District (BAAQMD) requirements. Groundwater captured within the air/water separator is pumped through two 200-lb canisters of granular activated carbon plumbed in series. The treated groundwater is discharged into the sewer in accordance with East Bay Municipal Utility District’s (EBMUD) requirements.

The air sparging (AS) system consists of a 5 hp Ingersoll-Rand rotary-screw air compressor capable of injecting 16 cfm of air and reaching pressures of 125 psig. Injection into the seven air sparge wells (AS-1, MW-1, MW-2C, MW-3C, MW-5B, MW-7C and MW-8C) is controlled by timer-activated solenoid valves and individual valves on the well flow meters. The remediation system layout is shown on Figure 4.



## Operation and Performance

DPE and AS system operation commenced on December 8, 2010 and March 16, 2011, respectively. The DPE system was initially operated to target elevated impact within the northern portion of the site (wells DPE-1, MW-3A, MW-4A and MW-8A). After initial contaminant mass removal rates decreased, DPE remediation was focused on the southern portion of the site, and AS was commenced soon thereafter. AS was initiated on wells MW-2C and MW-3C near the center of the site, and later expanded to include well MW-7C and well MW-8C. System operation and performance data is summarized on Tables 3 and 4. Pangea periodically optimizes hydrocarbon removal by checking influent vapor concentrations within individual wells. The DPE system was shutdown on January 31, 2011 and remains off pending agency and client direction.

As of January 31, 2011, the DPE system operated for a total of about 6,856 hours (approximately 286 days). Laboratory analytical and performance data indicates that soil vapor removal rates observed during this reporting period ranged from 0.7 to 2.3 lbs/day TPHg and 0.00 to 0.01 lbs/day benzene. As of January 31, 2011, the vapor-phase portion of the DPE system removed a total of approximately 1,350 lbs TPHg and 9.2 lbs benzene. The groundwater portion of the DPE system has removed a total of approximately 0.27 lbs TPHg and 0.006 lbs benzene. Additional hydrocarbon removal is provided by biodegradation stimulated by oxygenation from DPE/AS processes.

The DPE/AS system is monitored in accordance with air permit requirements of the *Permit to Operate* issued by the Bay Area Air Quality Management District (BAAQMD) and groundwater discharge requirements of the *Wastewater Discharge Permit* issued by East Bay Municipal Utility District.

## Evaluation of Remediation Effectiveness

The calculated hydrocarbon mass removal and reported concentration reduction in groundwater suggest that the DPE/AS system is effectively remediating the site subsurface. Hydrocarbon mass removal and concentration reduction are illustrated on Figures 5 and 6.

## **FUTURE SITE ACTIVITY**

The following site activity is based on recent correspondence with your agency (ACEH).

### **Proposed Soil Gas Sampling**

On March 6, 2012, Pangea initially proposed soil gas sampling to confirm cleanup effectiveness and evaluate risk associated with residual compounds to help justify case closure. Per your request during our discussion on July 6, 2012, a revised soil gas sampling plan was presented in our *Revised Soil Gas Sampling Workplan* dated July 16, 2012. The revised plan included an evaluation of potential vapor migration pathways between 5175 Broadway and the adjacent residential building at 5230 Coronado Avenue. Upon agency approval, Pangea will expedite the proposed soil gas sampling and reporting.

### **Post-Remediation Groundwater Monitoring**

Pangea plans to continue post-remediation monitoring for four consecutive quarters, unless additional remediation is merited to target residual hydrocarbon impact identified by proposed soil gas sampling or ongoing groundwater monitoring. The first post-remediation monitoring event was performed in March 2012 and the second event was performed in July 2012. (Note that the July 2012 is effectively considered a second quarter 2012 monitoring event, which was delayed from planned sampling in June 2012 to await agency direction).

The third and fourth consecutive post-remediation monitoring events are planned for September and December 2012, respectively, to facilitate comparison with historic data. The proposed program for future groundwater monitoring, presented in Appendix A, includes *quarterly* monitoring of three shallow wells and 10 deep monitoring/remediation wells. The program includes *annual* monitoring of select wells with little or no historic impact. Since all site wells were sampled in July 2012, Pangea plans to not sample the *annual* wells this September (which was the typical quarter for annual sampling).

### **Electronic Reporting**

This report will be uploaded to the Alameda County FTP site. The report, laboratory data, and other applicable information will also be uploaded to the State Water Resource Control Board's Geotracker database. As requested, report hard copies will no longer be provided to the local agencies.

## **ATTACHMENTS**

Figure 1 – Site Location Map

Figure 2 – Groundwater Elevation Contour and Hydrocarbon Concentration Map (Shallow)

Figure 3 – Groundwater Elevation Contour and Hydrocarbon Concentration Map (Deep)

Figure 4 – Remediation System Layout

Figure 5 – TPHg and Benzene Concentration Trends in Shallow Groundwater

Figure 6 – TPHg and Benzene Concentration Trends in Deep Groundwater

Table 1 – Groundwater Analytical Data

Table 2 – Well Construction Details

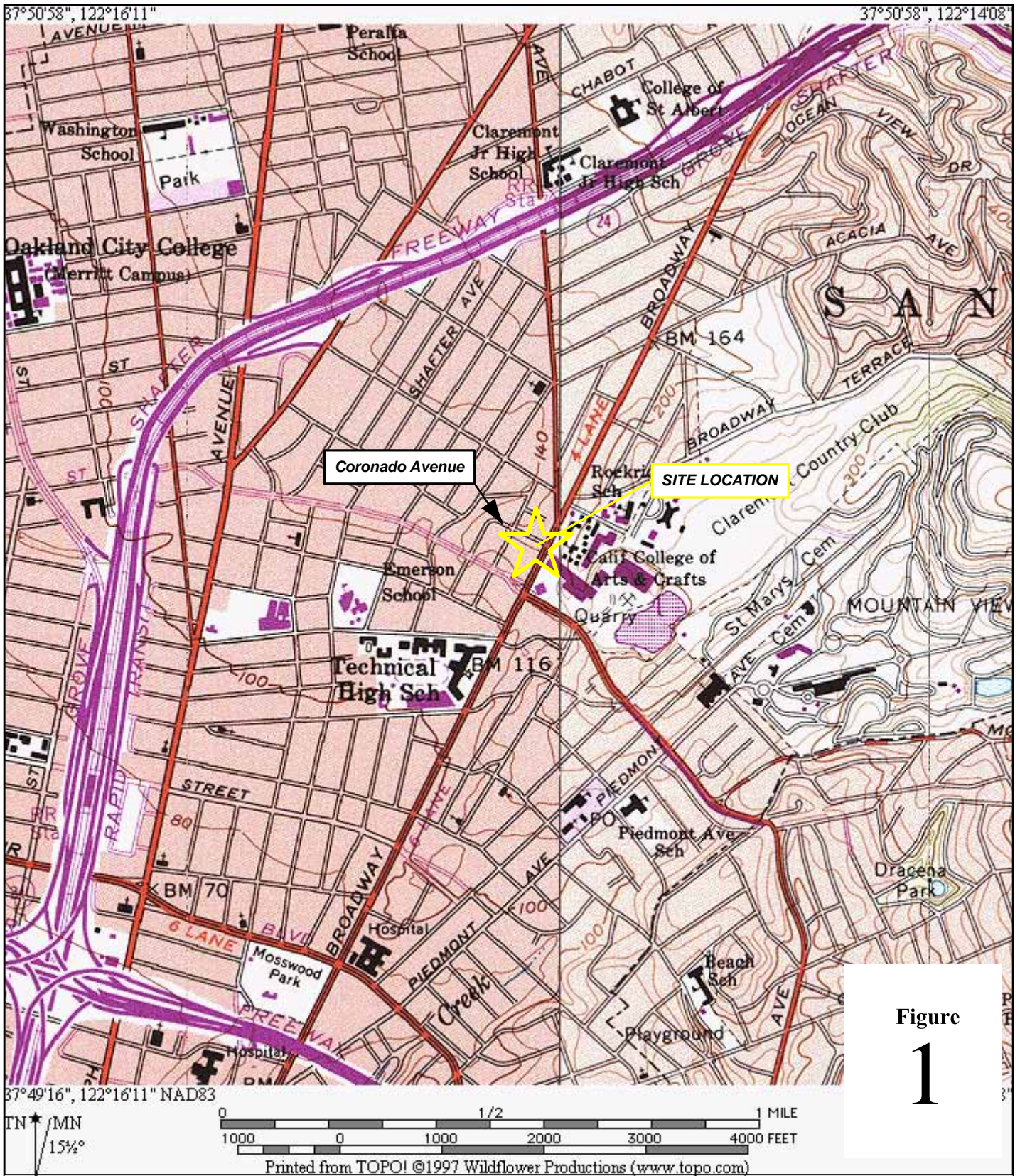
Table 3 – SVE System Performance Data

Table 4 – GWE System Performance Data

Appendix A – Groundwater Monitoring Program

Appendix B – Groundwater Monitoring Field Data Sheets

Appendix C – Laboratory Analytical Reports



Former Exxon Station  
 5175 Broadway  
 Oakland, California



Site Location Map

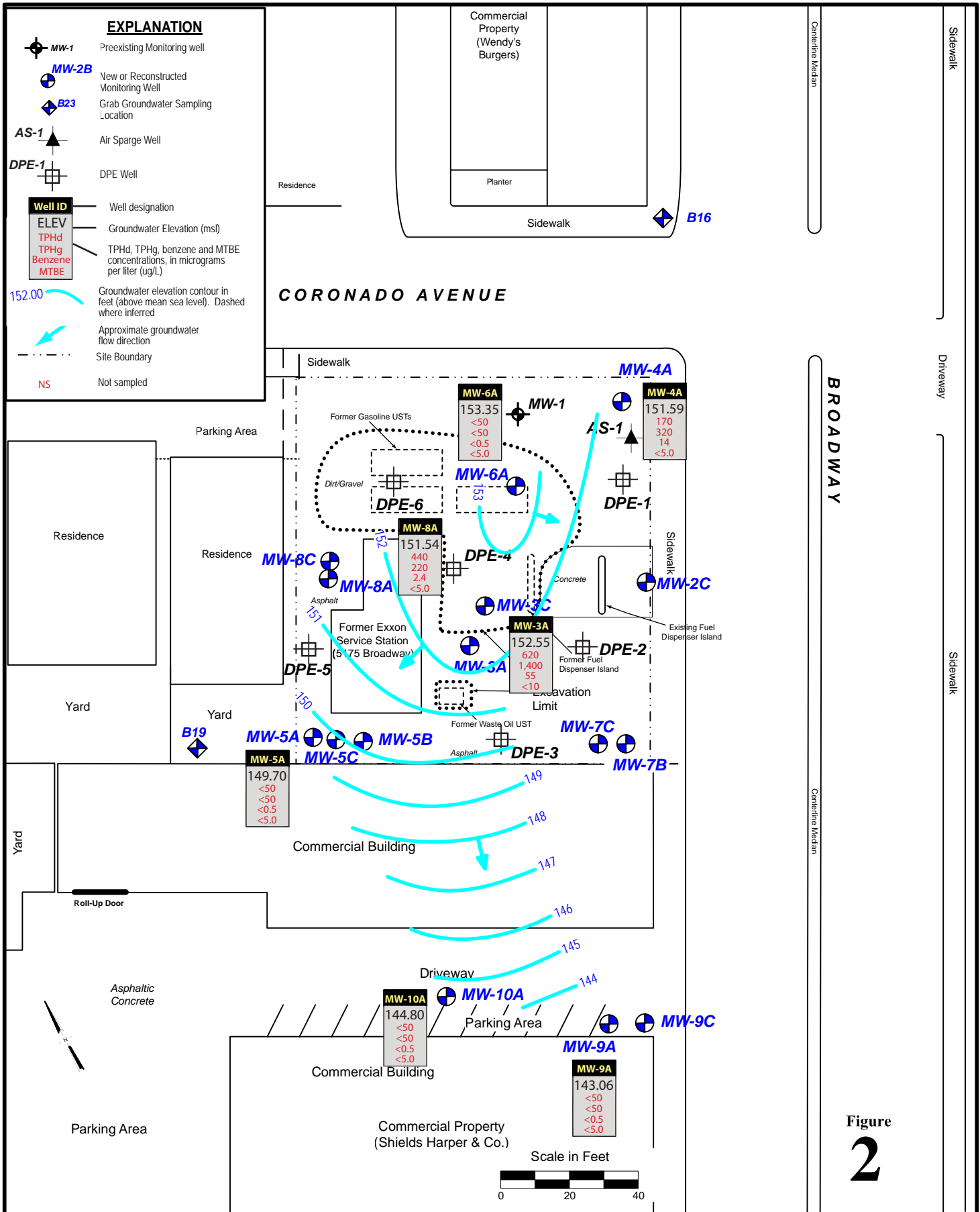


Figure  
**2**

**Former Exxon Station**  
5175 Broadway  
Oakland, California

**Groundwater Elevation Contour and Hydrocarbon Concentration Map (Shallow)**  
July 12-13, 2012



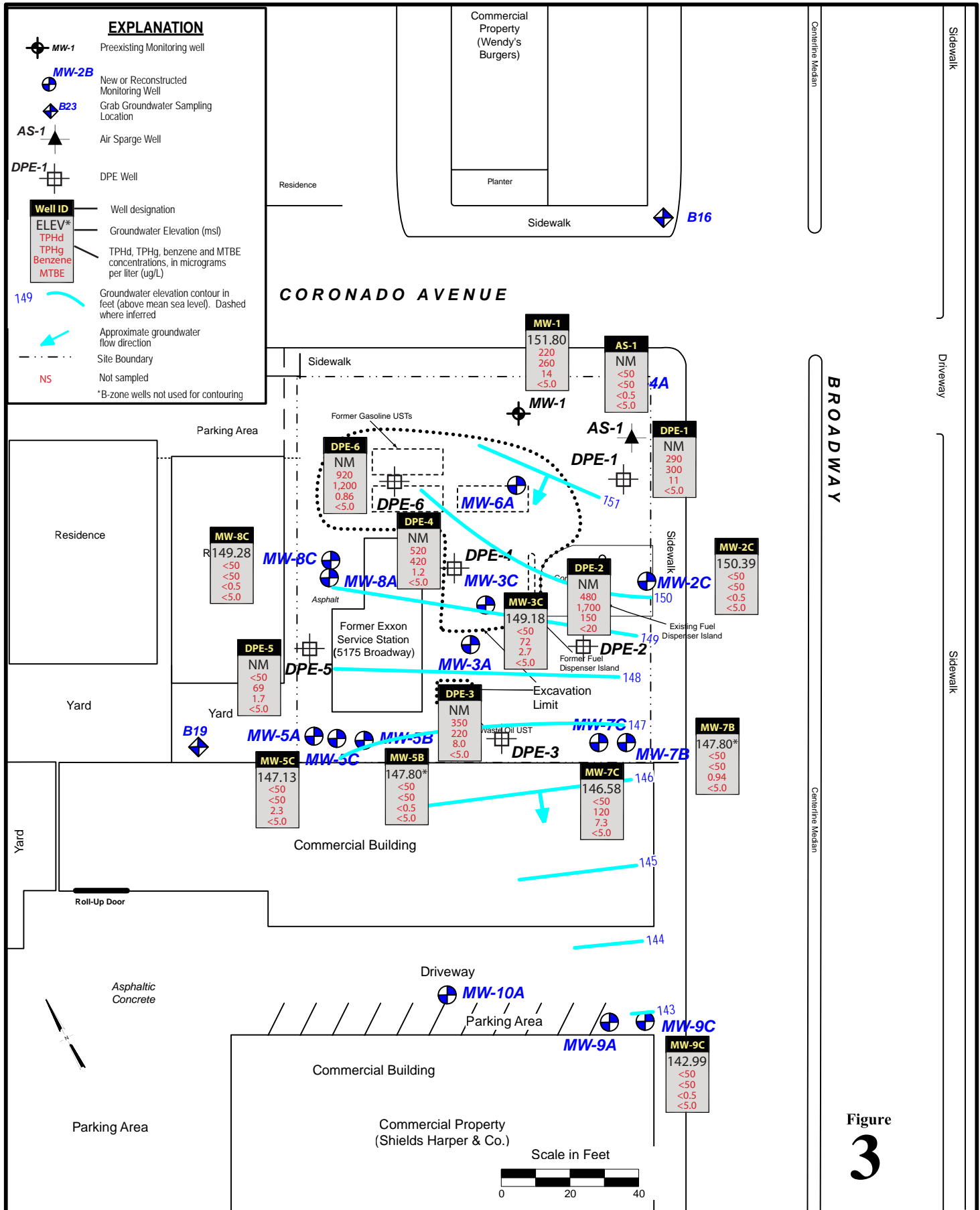


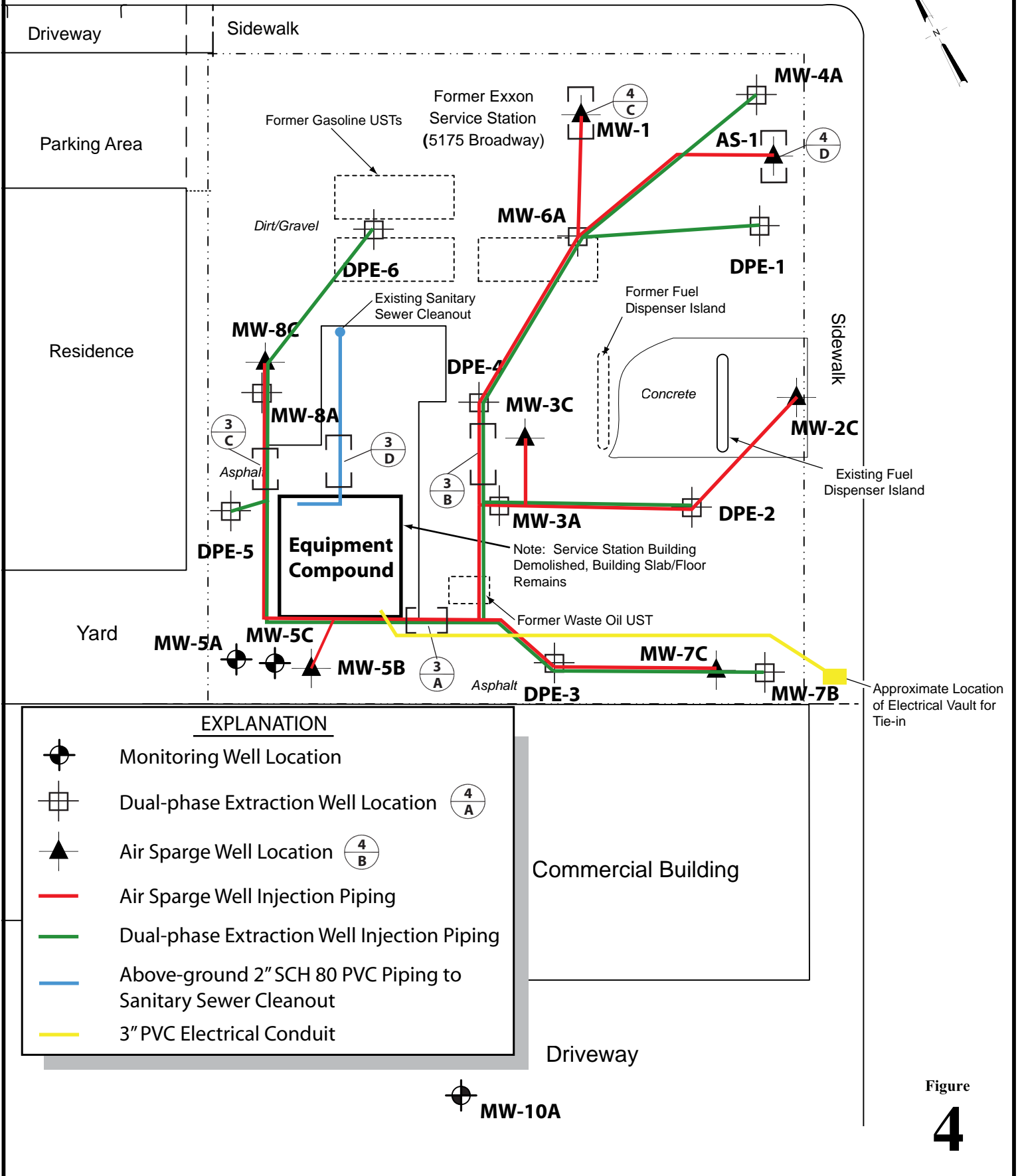
Figure  
**3**

Former Exxon Station  
5175 Broadway  
Oakland, California








Groundwater Elevation Contour and  
Hydrocarbon Concentration Map (Deep)  
July 12-13, 2012



# CORONADO AVENUE



### EXPLANATION

-  Monitoring Well Location
-  Dual-phase Extraction Well Location (4/A)
-  Air Sparge Well Location (4/B)
-  Air Sparge Well Injection Piping
-  Dual-phase Extraction Well Injection Piping
-  Above-ground 2" SCH 80 PVC Piping to Sanitary Sewer Cleanout
-  3" PVC Electrical Conduit

 MW-10A

Figure

# 4

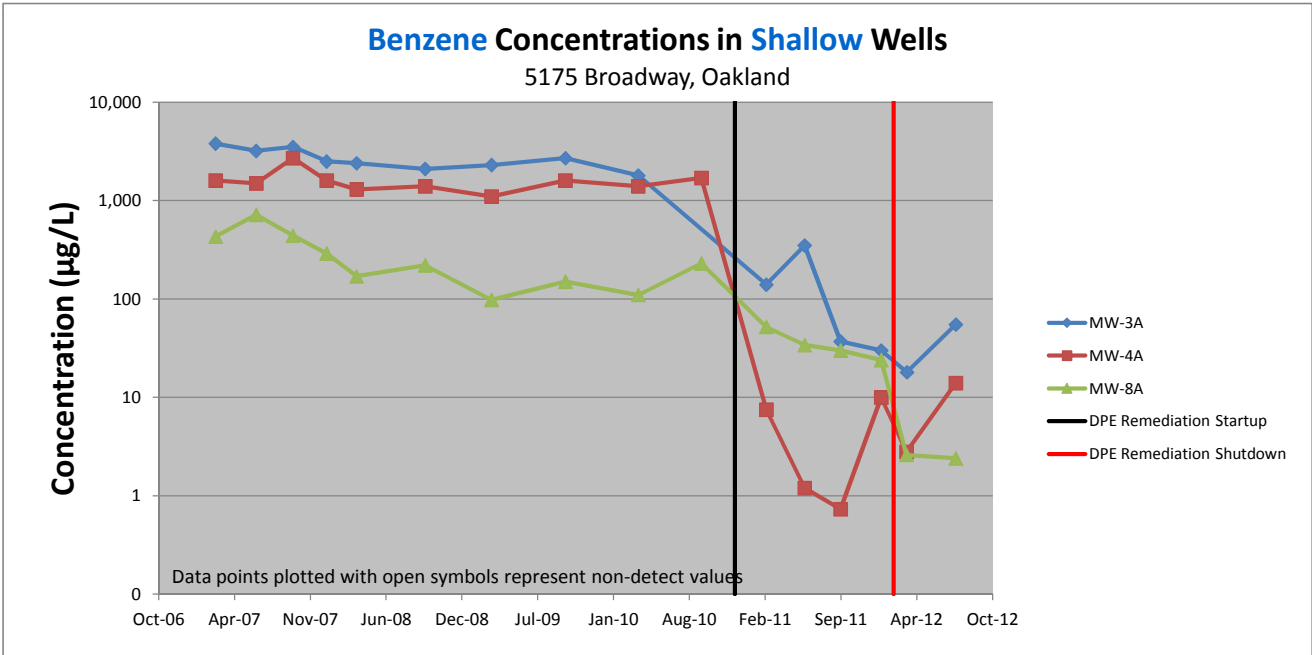
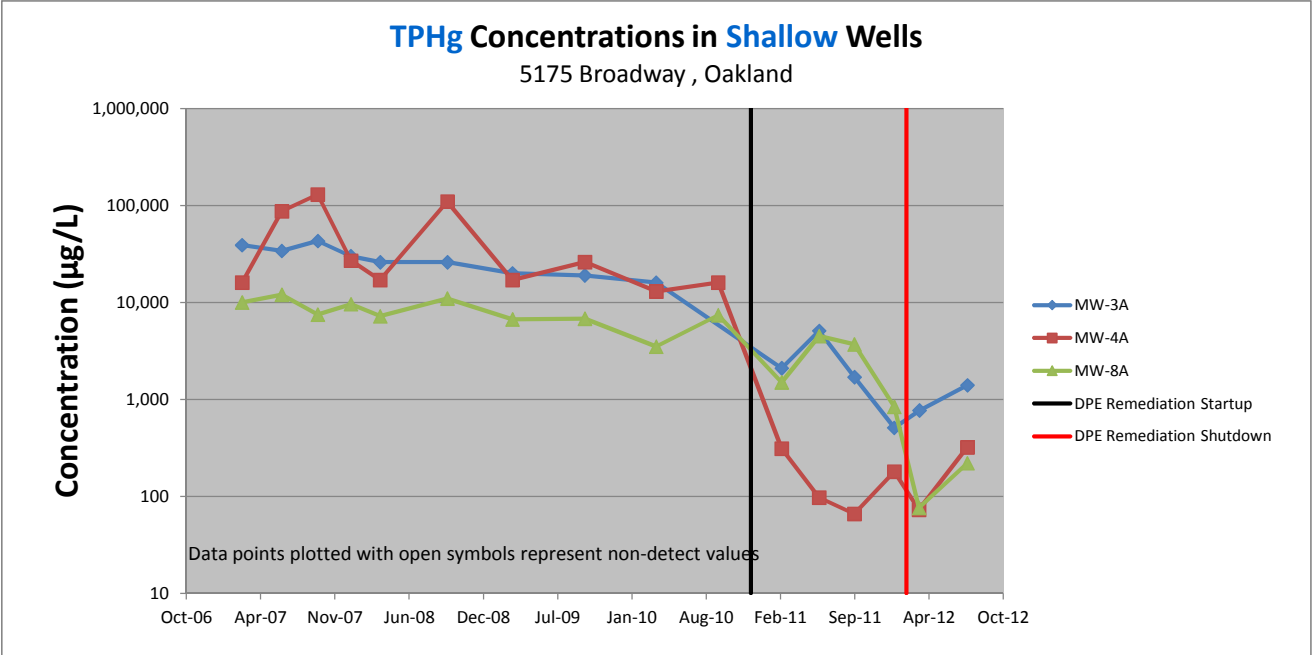


Figure 5. TPHg and Benzene Concentration Trends in Shallow Groundwater



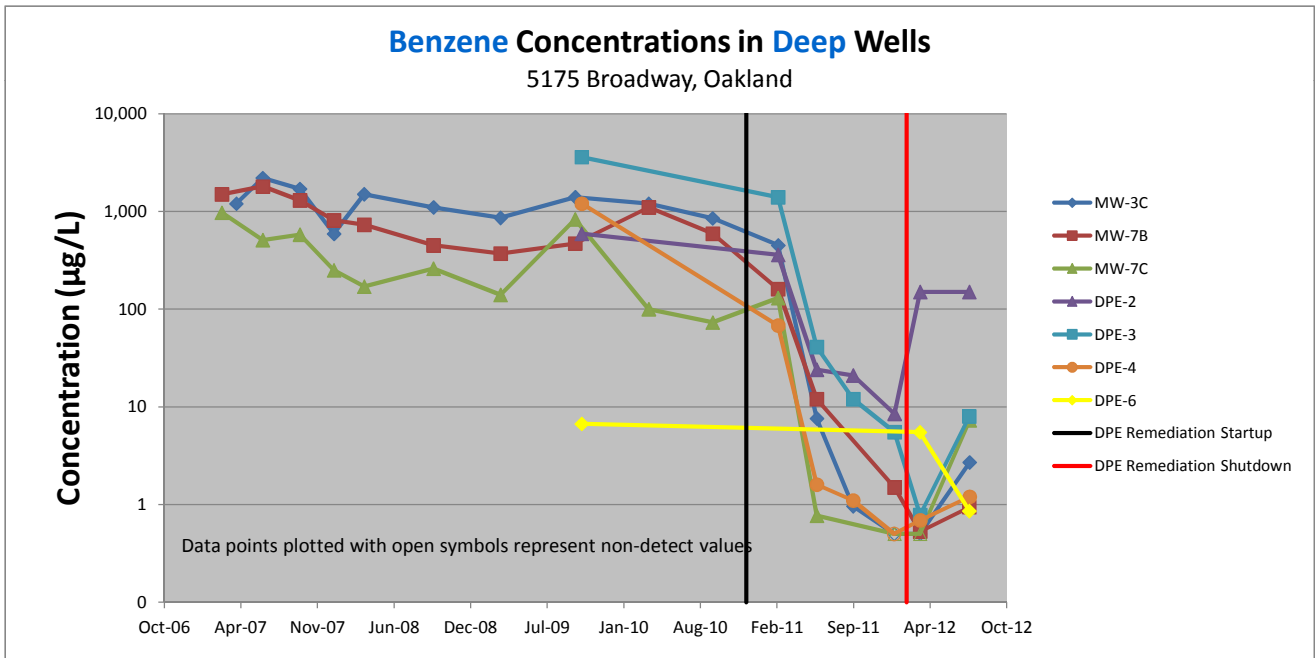
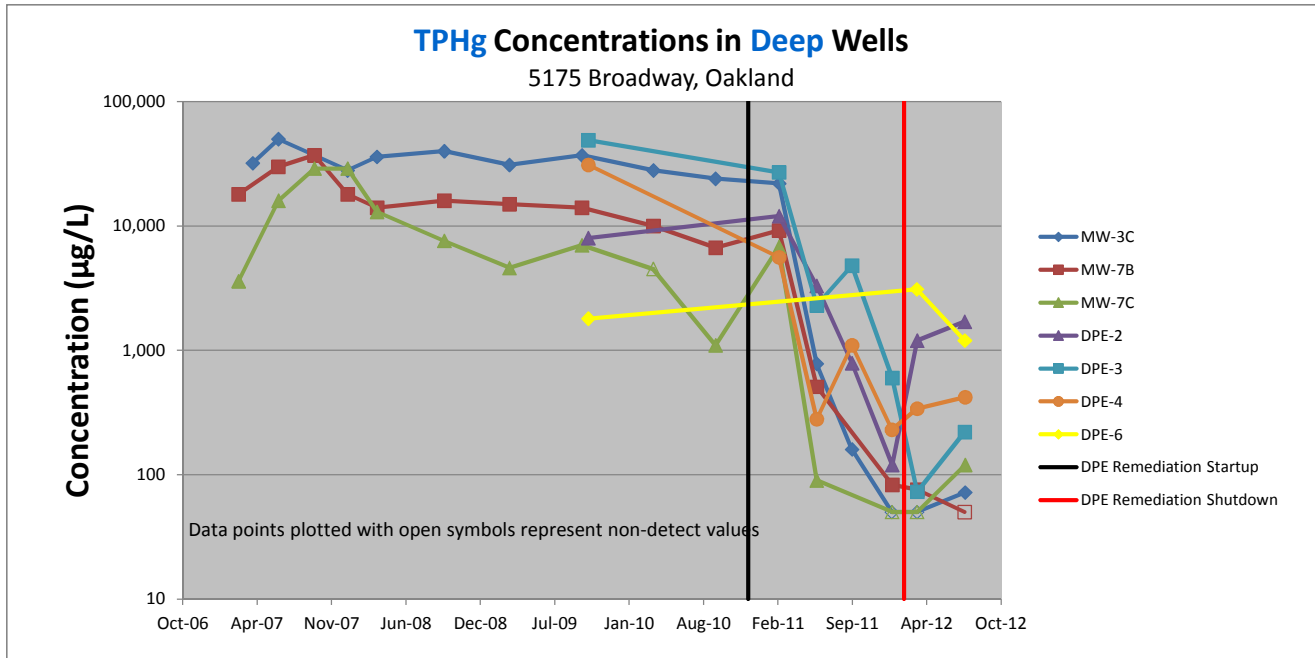


Figure 6. TPHg and Benzene Concentration Trends in Deep Groundwater

# Pangea

**Table 1. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA**

Well ID <i>TOC Elev</i> <i>(ft)</i>	Date Sampled	SPH <i>(ft)</i>	Groundwater Elevation <i>(ft)</i>	Depth to Water <i>(ft)</i>	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved Oxygen <i>mg/L</i>
					←----- μg/L -----→									
<b>SHALLOW WELLS</b>														
MW-3A <i>(161.55)</i> <i>(161.57)</i>	03/09/07	--	152.20	9.35	4,500	39,000	3,800	220	830	2,800	<500	--	--	--
	03/26/07	--	152.33	9.22	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	151.61	9.94	11,000	34,000	3,200	330	990	3,200	<250	--	--	--
	09/29/07	--	150.21	11.36	11,000	43,000	3,500	150	730	2,200	<1,000	--	--	--
	12/27/07	--	150.20	11.37	8,700	30,000	2,500	24	520	930	<100	--	--	--
	03/15/08	--	152.27	9.30	10,000	26,000	2,400	110	700	1,200	<250	--	--	--
	09/12/08	--	149.57	12.00	9,000	26,000	2,100	29	560	280	<100	--	--	--
	03/06/09	--	152.66	8.91	6,500	20,000	2,300	59	740	410	<180	--	--	--
	09/17/09	--	149.47	12.10	6,900	19,000	2,700	33	660	110	<250	--	--	--
	03/28/10	--	152.50	9.07	4,300	16,000	1,800	38	220	340	<100	--	--	--
	09/11/10	--	149.44	12.13					Insufficient water to sample			--	--	--
	03/01/11	--	150.01	11.56	2,200	2,100	140	10	37	97	<10	--	--	--
	06/10/11	--	151.89	9.68	1,400	5,100	350	140	110	490	<80	--	--	--
	09/13/11	--	150.95	10.62	400	1,700	37	38	17	110	<15	--	--	0.36
	12/29/11	--	149.34	12.23	410	510	30	1.0	2.1	24	<5.0	--	--	0.83
	03/06/12	--	151.30	10.27	360	770	18	1.5	5.7	23	<5.0	--	--	0.23
	<b>07/13/12</b>	--	<b>152.55</b>	<b>9.02</b>	<b>620</b>	<b>1,400</b>	<b>55</b>	<b>2.3</b>	<b>23</b>	<b>10</b>	<b>&lt;10</b>	--	--	<b>0.15</b>
MW-4A <i>(162.44)</i>	03/09/07	--	152.88	9.56	3,600	16,000	1,600	36	37	150	<250	--	--	--
	03/26/07	--	152.56	9.88	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	152.02	10.42	110,000	87,000	1,500	59	290	800	<500	--	--	--
	09/29/07	--	151.33	11.11	170,000	130,000	2,700	69	400	1,400	<240	--	--	--
	12/27/07	--	152.33	10.11	19,000	27,000	1,600	31	100	320	<90	--	--	--
	03/15/08	--	152.51	9.93	38,000	17,000	1,300	<50	120	380	<500	--	--	--
	09/12/08	--	151.72	10.72	120,000	110,000	1,400	<50	210	660	<500	--	--	--
	03/06/09	--	153.84	8.60	32,000	17,000	1,100	15	<10	190	<100	--	--	--
	09/17/09	--	151.44	11.00	25,000	26,000	1,600	63	140	320	<350	--	--	--
	03/28/10	--	152.69	9.75	9,200	13,000	1,400	29	16	160	<100	--	--	--
	09/11/10	--	151.34	11.10	23,000	16,000	1,700	43	140	330	<250	--	--	--
	03/01/11	--	148.94	13.50	270	310	7.5	1.0	<0.5	7.7	<5.0	--	--	--
	06/10/11	--	152.32	10.12	110	97	1.2	<0.5	<0.5	1.7	<5.0	--	--	--
	09/13/11	--	148.27	14.17	130	66	0.73	<0.5	<0.5	<0.5	<5.0	--	--	0.48
	12/29/11	--	151.29	11.15	200	180	10	<0.5	<0.5	<0.5	<5.0	--	--	0.83
	03/05/12	--	152.64	9.80	<50	73	2.8	<0.5	<0.5	<0.5	<5.0	--	--	0.25
	<b>07/13/12</b>	--	<b>151.59</b>	<b>10.85</b>	<b>170</b>	<b>320</b>	<b>14</b>	<b>0.85</b>	<b>2.0</b>	<b>1.9</b>	<b>&lt;5.0</b>	--	--	<b>0.30</b>
MW-5A <i>(160.82)</i>	03/09/07	--	150.40	10.42	56	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/26/07	--	150.00	10.82	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	148.94	11.88	<50	180	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/29/07	--	147.86	12.96	--	--	--	--	--	--	--	--	--	--
	12/27/07	--	148.40	12.42	--	--	--	--	--	--	--	--	--	--
	03/15/08	--	149.96	10.86	<50	180	0.91	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/12/08	--	147.50	13.32					Insufficient water to sample			--	--	--

# Pangea

**Table 1. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA**

Well ID	Date	Groundwater	Depth	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved	
<i>TOC Elev</i>	<i>Sampled</i>	<i>SPH</i>	<i>Elevation</i>	<i>to Water</i>	<i>μg/L</i>									<i>Oxygen</i>
<i>(ft)</i>		<i>(ft)</i>	<i>(ft)</i>											<i>mg/L</i>
MW-5A	03/06/09	--	151.33	9.49	230	460	2.0	3.0	0.68	1.9	<5.0	--	--	--
<i>(cont.)</i>	09/17/09	--	148.02	12.80	Insufficient water to sample									--
	03/28/10	--	150.30	10.52	<50	69	<0.5	<0.5	<0.5	<0.5	<5.0	---	---	---
	09/11/10	--	147.72	13.10	Insufficient water to sample									--
	03/01/11	--	150.98	9.84	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	06/10/11	--	149.95	10.87	--	--	--	--	--	--	--	--	--	--
	09/13/11	--	148.30	12.52	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	0.36
	12/29/11	--			Well Dry									--
	<b>07/13/12</b>	--	<b>149.70</b>	<b>11.12</b>	<b>&lt;50</b>	<b>&lt;50</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;5.0</b>	--	--	<b>0.27</b>
MW-6A	03/09/07	--	154.91	6.67	380	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
<i>(161.58)</i>	03/26/07	--	154.41	7.17	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	153.79	7.79	590	140	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/29/07	--	152.84	8.74	540	52	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	12/27/07	--	154.27	7.31	170	94	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/15/08	--	154.42	7.16	150	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/12/08	--	152.92	8.66	510	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/06/09	--	155.76	5.82	110	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/17/09	--	152.89	8.69	280	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/28/10	--	154.55	7.03	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/11/10	--	152.99	8.59	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/01/11	--	154.57	7.01	67	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	06/10/11	--	154.11	7.47	--	--	--	--	--	--	--	--	--	--
	09/13/11	--	151.67	9.91	74	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	0.23
	12/29/11	--	151.96	9.62	--	--	--	--	--	--	--	--	--	--
	<b>07/13/12</b>	--	<b>153.35</b>	<b>8.23</b>	<b>&lt;50</b>	<b>&lt;50</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;5.0</b>	--	--	<b>0.13</b>
MW-8A	03/09/07	--	152.05	9.52	4,200	10,000	430	18	<10	88	<100	--	--	--
<i>(161.57)</i>	03/26/07	--	151.74	9.83	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	151.40	10.17	17,000	12,000	720	500	230	880	<300	--	--	--
	09/29/07	--	150.64	10.95	5,300	7,500	440	67	26	240	<90	--	--	--
<i>(161.59)</i>	12/27/07	--	152.00	9.59	13,000	9,600	290	100	90	360	<100	--	--	--
	03/15/08	--	152.00	9.59	7,500	7,200	170	28	270	110	<100	--	--	--
	09/12/08	--	150.27	11.32	9,900	11,000	220	31	110	180	<50	--	--	--
	03/06/09	--	153.01	8.58	5,500	6,700	98	17	57	63	<50	--	--	--
	09/17/09	--	150.83	10.76	5,200	6,800	150	19	10	35	<25	--	--	--
	03/28/10	--	151.86	9.73	2,600	3,500	110	7.2	<1.7	19	<17	--	--	--
	09/11/10	--	150.43	11.16	4,800	7,400	230	25	15	40	<90	--	--	--
	03/01/11	--	152.80	8.79	1,000	1,500	52	3.5	24	11	<10	--	--	--
	06/10/11	--	151.80	9.79	5,100	4,500	34	11	42	240	<50	--	--	--
	09/13/11	--	150.69	10.90	7,400	3,700	30	4.3	12	99	<10	--	--	0.23
	12/29/11	--	148.06	13.53	3,400	840	24	2.5	2.6	16	<5.0	--	--	0.51
	03/05/12	--	152.39	9.20	<50	76	2.6	<0.5	<0.5	<0.5	<5.0	--	--	0.48
	<b>07/13/12</b>	--	<b>151.54</b>	<b>10.05</b>	<b>440</b>	<b>220</b>	<b>2.4</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;5.0</b>	--	--	<b>0.19</b>

# Pangea

**Table 1. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA**

Well ID	Date	SPH	Groundwater	Depth	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved	
<i>TOC Elev</i>	<i>Sampled</i>	<i>(ft)</i>	<i>Elevation</i>	<i>to Water</i>	<i>μg/L</i>										<i>Oxygen</i>
<i>(ft)</i>			<i>(ft)</i>	<i>(ft)</i>											<i>mg/L</i>
MW-9A (155.37)	09/29/07	--	142.76	12.61	86	<50	2.6	<0.5	<0.5	<0.5	<5.0	--	--	--	
	12/27/07	--	143.51	11.86	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	03/15/08	--	143.35	12.02	<50	<50	0.85	<0.5	<0.5	<0.5	<5.0	--	--	--	
	09/12/08	--	142.60	12.77	<50	<50	1.2	<0.5	<0.5	<0.5	<5.0	--	--	--	
	03/06/09	--	144.18	11.19	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	09/17/09	--	142.91	12.46	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	03/28/10	--	143.49	11.88	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	09/11/10	--	142.71	12.66	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	03/01/11	--	143.86	11.51	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	06/10/11	--	143.63	11.74	--	--	--	--	--	--	--	--	--	--	
	09/13/11	--	142.79	12.58	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	0.42	
	12/29/11														
		<b>07/12/12</b>	--	<b>143.06</b>	<b>12.31</b>	<b>&lt;50</b>	<b>&lt;50</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;5.0</b>	--	--	<b>1.71</b>
MW-10A (154.88)	09/29/07	--	144.35	10.53	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	12/27/07	--	145.50	9.38	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	03/15/08	--	145.96	8.92	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	09/12/08	--	143.82	11.06	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	03/06/09	--	147.45	7.43	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	09/17/09	--	144.11	10.77	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	03/28/10	--	146.25	8.63	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	09/11/10	--	144.19	10.69	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	03/01/11	--	147.12	7.76	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	06/10/11	--	146.11	8.77	--	--	--	--	--	--	--	--	--	--	
	09/13/11	--	144.21	10.67	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	0.42	
	12/29/11														
		<b>07/12/12</b>	--	<b>144.80</b>	<b>10.08</b>	<b>&lt;50</b>	<b>&lt;50</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;5.0</b>	--	--	<b>3.34</b>
<b>DEEP WELLS</b>															
MW-1 (97.71)	04/30/89	--	--	--	--	200	18	5	2	12	--	--	--	--	
	05/17/90	--	88.45	9.26	--	--	--	--	--	--	--	--	--	--	
(102.04)	09/26/90	--	87.79	9.92	--	1,300	55	31	120	100	--	--	--	--	
	01/14/91	--	88.17	9.54	--	3,100	350	83	86	130	--	--	--	--	
	07/03/91	--	92.62	9.42	--	580	32	41	40	55	--	--	--	--	
	11/11/91	--	92.59	9.45	--	330	20	2	2	11	--	--	--	--	
(101.83)	03/04/92	--	93.90	7.93	--	810	11	5	10	23	--	--	--	--	
	06/02/92	--	92.85	8.98	--	2,200	93	32	40	120	--	--	--	--	
	09/28/92	--	92.54	9.29	--	2,900	24	78	19	37	--	--	--	--	
	01/11/93	--	94.27	7.56	--	1,700	5.7	6	11	28	--	--	--	--	
	08/15/94	--	92.64	9.19	--	2,000	120	3	6	16	--	--	--	--	
	11/07/96	--	88.77	8.73	270	1,200	3	1.1	1.5	3.8	<0.5	--	--	--	
(97.50)	02/12/97	--	89.58	7.92	<50	1,800	13	5.7	4.8	17	<0.5	--	--	--	
	06/16/97	--	88.46	9.04	<50	330	27	<0.5	<0.5	1.2	<0.5	--	--	--	
	09/30/97	--	89.94	7.56	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--	

# Pangea

**Table 1. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA**

Well ID	Date	Groundwater	Depth	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved
<i>TOC Elev</i>	<i>Sampled</i>	<i>SPH</i>	<i>Elevation</i>	<i>to Water</i>									<i>Oxygen</i>
<i>(ft)</i>		<i>(ft)</i>	<i>(ft)</i>	<i>(ft)</i>	<i>μg/L</i>								<i>mg/L</i>
(97.50)	01/27/98	--	89.54	7.96	<50	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
MW-1	04/24/98	--	89.52	7.98	<50	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
(cont.)	08/17/98	--	88.52	8.98	<50	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
	11/16/98	--	88.60	8.90	<50	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
	02/16/99	--	88.86	8.64	<50	110	<0.5	<0.5	<0.5	<0.5	--	--	--
	05/17/99	--	89.00	8.50	--	280	1.1	0.6	<0.5	<0.5	--	--	--
	08/17/99	--	88.26	9.24	86	790	5.6	4.3	4.5	11	<5.0	--	--
	11/17/99	--	87.06	10.44	--	1,300	3.6	1.9	2.7	6.6	<1.0	--	--
	02/17/00	--	89.02	8.48	--	580	1.1	2.3	3.6	4.9	<5.0	--	--
	05/17/00	--	89.26	8.24	--	1,500	130	6.8	6.1	<5.0	<5.0	--	--
	08/17/00	--	88.73	8.77	--	550	160	<25	<25	<25	<25	--	--
	11/15/00	--	88.46	9.04	--	130	<5.0	<5.0	<5.0	<5.0	<5.0	--	--
	02/16/01	--	89.90	7.60	--	400	26	<5.0	<5.0	<5.0	<5.0	--	--
	01/11/02	--	89.42	8.08	160	600	74	53	14	52	110	--	--
(161.03)	07/01/02	--	152.01	9.02	280	670	25	<5.0	<5.0	<5.0	<5.0	--	--
	10/04/02	--	151.29	9.74	520	1,800	130	7.8	8.1	14	<5.0	--	--
	07/28/06	--	151.93	9.10	86	250	42	1.7	1.4	3.1	<1.0	51	1.5
	10/16/06	--	151.98	9.05	110	390	16	<0.5	1.5	2.2	<0.5	41	1.6
(161.10)	01/09/07	--	152.90	8.20	160	530	21	1.7	2.8	5.1	--	--	0.22
	03/26/07	--	152.84	8.26	--	--	--	--	--	--	--	--	--
	06/24/07	--	152.12	8.98	220	500	24	1.1	2.2	4.2	<5.0	--	--
	09/29/07	--	151.44	9.66	180	540	19	1.2	2.3	5.3	<5.0	--	--
	12/27/07	--	152.60	8.50	200	290	10	0.65	1.2	3.0	<5.0	--	--
	03/15/08	--	152.72	8.38	340	680	24	1.1	1.9	2.9	<10	--	--
	09/12/08	--	151.86	9.24	320	1,000	13	<0.5	0.61	1.4	<5.0	--	--
	03/06/09	--	154.40	6.70	2,700	2,500	28	3.2	4.8	10	<17	--	--
	09/17/09	--	151.67	9.43	170	300	4.4	<0.5	<0.5	2.3	<5.0	--	--
	03/28/10	--	153.05	8.05	290	1,000	16	1.2	1.1	4.2	<5.0	--	--
	09/11/10	--	151.50	9.60	190	270	6.9	<0.5	0.75	2.1	<5.0	--	--
	03/01/11	--	152.61	8.49	1,600	940	<0.5	<0.5	0.55	2.0	<5.0	--	--
	06/10/11	--	152.89	8.21	1,900	1,500	2.4	<0.5	0.84	7.9	<5.0	--	--
	09/13/11	--	150.96	10.14	320	1,400	<0.5	<0.5	<0.5	6.3	<5.0	--	0.66
	12/29/11	--	151.76	9.34	3,100	950	2.1	<0.5	<0.5	2.9	<5.0	--	0.53
	03/05/12	--	153.05	8.05	340	660	21	2.4	1.7	2.1	<5.0	--	0.27
	<b>07/13/12</b>	--	<b>151.80</b>	<b>9.30</b>	<b>220</b>	<b>260</b>	<b>14</b>	<b>0.85</b>	<b>&lt;0.5</b>	<b>1.1</b>	<b>&lt;5.0</b>	--	<b>0.15</b>
MW-2C	03/09/07	--	152.24	8.41	140	450	40	9.3	2.9	16	<10	--	--
(160.65)	03/26/07	--	151.93	8.72	--	--	--	--	--	--	--	--	--
	06/24/07	--	151.21	9.44	160	440	30	1.8	5.9	7.4	<5.0	--	--
	09/29/07	--	150.45	10.20	120	200	13	<0.5	<0.5	2.0	<5.0	--	--
	12/27/07	--	151.42	9.23	83	190	13	0.83	<0.5	1.9	<5.0	--	--
	03/15/08	--	151.83	8.82	120	250	24	2.2	5.2	4.5	<5.0	--	--
	09/12/08	--	150.73	9.92	<50	130	7.1	<0.5	1.2	0.83	<5.0	--	--
	03/06/09	--	153.21	7.44	95	180	8.0	1.1	1.5	2.8	<5.0	--	--
	09/17/09	--	150.57	10.08	<50	64	4.3	<0.5	0.62	0.88	<5.0	--	--

# Pangea

**Table 1. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA**

Well ID	Date	Groundwater	Depth	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved	
<i>TOC Elev</i>	<i>Sampled</i>	<i>SPH</i>	<i>Elevation</i>	<i>to Water</i>	<i>μg/L</i>									<i>Oxygen</i>
<i>(ft)</i>		<i>(ft)</i>	<i>(ft)</i>											<i>mg/L</i>
MW-2C	03/28/10	--	152.02	8.63	<50	94	4.6	<0.5	0.77	1.2	<5.0	--	--	
<i>(cont.)</i>	09/11/10	--	150.31	10.34	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	
	03/01/11	--	146.88	13.77	66	670	9.9	<0.5	0.92	0.58	<5.0	--	--	
	06/10/11	--	150.19	10.46	--	--	--	--	--	--	--	--	--	
	09/13/11	--	140.39	20.26	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	3.24	
	12/29/11	--	149.21	11.44	--	--	--	--	--	--	--	--	--	
	<b>07/13/12</b>	--	<b>150.39</b>	<b>10.26</b>	<b>&lt;50</b>	<b>&lt;50</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;5.0</b>	--	<b>0.27</b>	
MW-3C	03/26/07	--	151.15	10.64	--	--	--	--	--	--	--	--	--	
<i>(161.79)</i>	04/16/07	--	150.87	10.92	36,000	32,000	1,200	710	600	1,900	<500	--	--	
	06/24/07	--	149.43	12.36	200,000	50,000	2,200	4,100	860	6,100	<500	--	--	
	09/29/07	--	148.33	13.46	48,000	37,000	1,700	3,300	830	4,800	<1,000	--	--	
	12/27/07	--	149.79	12.00	29,000	28,000	590	900	630	2,000	<500	--	--	
	03/15/08	--	150.70	11.09	21,000	36,000	1,500	2,400	570	3,700	<500	--	--	
	09/12/08	--	148.37	13.42	11,000	40,000	1,100	1,200	600	3,000	<500	--	--	
	03/06/09	--	152.04	9.75	13,000	31,000	860	420	540	2,200	<500	--	--	
	09/17/09	--	148.59	13.20	14,000	37,000	1,400	690	400	4,300	<1,200	--	--	
MW-3C	03/28/10	--	151.15	10.64	10,000	28,000	1,200	540	750	3,200	<150	--	--	
<i>(cont.)</i>	09/11/10	--	148.48	13.31	13,000	24,000	850	390	550	3,100	<1,000	--	--	
	03/01/11	--	148.27	13.52	19,000	22,000	450	110	600	1,500	<300	--	--	
	06/10/11	--	147.89	13.90	530	780	7.6	3.4	2.7	16	<5.0	--	--	
	09/13/11	--	139.35	22.44	130	160	0.96	0.51	<0.5	0.99	<5.0	--	3.32	
	12/29/11	--	146.25	15.54	<50	<50	<0.5	<0.5	<0.5	0.90	<5.0	--	0.62	
	03/06/12	--	149.82	11.97	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	4.78	
	<b>07/13/12</b>	--	<b>149.18</b>	<b>12.61</b>	<b>&lt;50</b>	<b>72</b>	<b>2.7</b>	<b>0.50</b>	<b>0.87</b>	<b>1.2</b>	<b>&lt;5.0</b>	--	<b>0.17</b>	
MW-5B	03/09/07	--	146.42	15.08	59	140	1.3	0.77	<0.5	1.6	<5.0	--	--	
<i>(161.50)</i>	03/26/07	--	148.88	12.62	--	--	--	--	--	--	--	--	--	
	06/24/07	--	147.98	13.52	53	52	1.1	<0.5	<0.5	<0.5	<5.0	--	--	
	09/29/07	--	146.60	14.90	<50	<50	0.95	<0.5	<0.5	<0.5	<5.0	--	--	
	12/27/07	--	148.41	13.09	<50	58	1.4	<0.5	0.60	<0.5	<5.0	--	--	
	03/15/08	--	148.95	12.55	<50	61	2.6	1.1	1.1	3.0	<5.0	--	--	
	09/12/08	--	146.35	15.15	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	
	03/06/09	--	150.36	11.14	<50	67	2.0	1.4	1.3	3.3	<5.0	--	--	
	09/17/09	--	146.94	14.56	<50	58	0.66	<0.5	<0.5	<0.5	<5.0	--	--	
	03/28/10	--	149.38	12.12	<50	110	2.7	0.78	<0.5	1.6	<5.0	--	--	
	09/11/10	--	145.55	15.95	<50	110	0.56	<0.5	<0.5	<0.5	<5.0	--	--	
	03/01/11	--	149.53	11.97	97	120	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	
	06/10/11	--	148.26	13.24	--	--	--	--	--	--	--	--	--	
	09/13/11	--	147.08	14.42	<50	550	<0.5	<0.5	<0.5	<0.5	<5.0	--	0.33	
	12/29/11	--	146.36	15.14	--	--	--	--	--	--	--	--	--	
	<b>07/13/12</b>	--	<b>147.80</b>	<b>13.70</b>	<b>&lt;50</b>	<b>&lt;50</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;5.0</b>	--	<b>1.16</b>	

# Pangea

**Table 1. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA**

Well ID <i>TOC Elev</i> <i>(ft)</i>	Date Sampled	SPH <i>(ft)</i>	Groundwater Elevation <i>(ft)</i>	Depth to Water <i>(ft)</i>	←----- μg/L -----→									Dissolved Oxygen mg/L
					TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	
MW-5C <i>(161.03)</i>	03/09/07	--	148.12	12.91	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/26/07	--	148.41	12.62	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	147.58	13.45	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/29/07	--	146.41	14.62	66	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	12/27/07	--	148.10	12.93	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/15/08	--	148.48	12.55	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/12/08	--	146.04	14.99	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/06/09	--	149.73	11.30	<50	<50	0.52	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/17/09	--	146.60	14.43	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/28/10	--	148.68	12.35	<50	<50	1.3	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/11/10	--	146.22	14.81	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/01/11	--	148.95	12.08	66	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	06/10/11	--	147.51	13.52	--	--	--	--	--	--	--	--	--	--
	09/13/11	--	146.31	14.72	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	0.27
	12/29/11	--	146.13	14.90	--	--	--	--	--	--	--	--	--	--
	<b>07/13/12</b>	--	<b>147.13</b>	<b>13.90</b>	<b>&lt;50</b>	<b>&lt;50</b>	<b>2.3</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;5.0</b>	--	--	<b>0.54</b>
MW-7B <i>(159.15)</i>  <i>(159.02)</i>	03/09/07	--	147.97	11.18	930	18,000	1,500	1,600	140	1,800	<600	--	--	--
	03/26/07	--	148.10	11.05	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	147.54	11.61	40,000	30,000	1,800	2,400	240	2,800	<700	--	--	--
	09/29/07	--	146.91	12.11	16,000	37,000	1,300	1,500	180	2,700	<500	--	--	--
	12/27/07	--	147.37	11.65	7,700	18,000	810	880	38	1,600	<50	--	--	--
	03/15/08	--	147.66	11.36	7,900	14,000	730	820	110	1,200	<250	--	--	--
	09/12/08	--	146.87	12.15	27,000	16,000	450	340	19	1,300	<120	--	--	--
	03/06/09	--	147.90	11.12	15,000	15,000	370	270	13	1,000	<150	--	--	--
	09/17/09	--	146.94	12.08	10,000	14,000	470	330	44	1,100	<170	--	--	--
	03/28/10	--	148.17	10.85	2,300	10,000	1,100	750	46	1,100	<300	--	--	--
	09/11/10	--	146.81	12.21	2,900	6,700	590	260	84	550	<210	--	--	--
	03/01/11	--	147.28	11.74	31,000	9,200	160	96	53	510	<50	--	--	--
	06/10/11	--	145.90	13.12	780	510	12	5.5	1.4	28	<5.0	--	--	--
	09/13/11	--						Well Dry						
	12/30/11	--	145.49	13.53	95	83	1.5	0.67	<0.5	2.3	<5.0	--	--	0.61
	03/06/12	--	147.76	11.26	400	76	0.53	1.2	<0.5	1.8	<5.0	--	--	0.52
<b>07/12/12</b>	--	<b>147.80</b>	<b>11.22</b>	<b>&lt;50</b>	<b>&lt;50</b>	<b>0.94</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>0.78</b>	<b>&lt;5.0</b>	--	--	<b>0.62</b>	
MW-7C <i>(158.53)</i>	03/09/07	--	145.44	13.09	190	3,600	970	100	12	90	<120	--	--	--
	03/26/07	--	147.53	11.00	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	146.65	11.88	7,100	16,000	510	520	190	1,300	<100	--	--	--
	09/29/07	--	146.21	12.32	11,000	29,000	580	1,400	600	4,800	<1,000	--	--	--
	12/27/07	--	146.74	11.79	56,000	29,000	250	410	430	3,300	<50	--	--	--
	03/15/08	--	147.45	11.08	7,000	13,000	170	58	170	1,300	<100	--	--	--
	09/12/08	--	146.02	12.51	2,600	7,600	260	38	76	330	<50	--	--	--
	03/06/09	--	147.65	10.88	1,900	4,600	140	21	15	93	<15	--	--	--
	09/17/09	--	146.23	12.30	2,200	7,000	830	38	23	90	<100	--	--	--
	03/28/10	--	147.32	11.21	940	4,500	<100	79	2.0	59	66	--	--	--

# Pangea

**Table 1. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA**

Well ID	Date	SPH	Groundwater	Depth	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved
<i>TOC Elev</i>	<i>Sampled</i>	<i>(ft)</i>	<i>Elevation</i>	<i>to Water</i>	<i>μg/L</i>									<i>Oxygen</i>
<i>(ft)</i>			<i>(ft)</i>	<i>(ft)</i>										<i>mg/L</i>
MW-7C	09/11/10	--	145.77	12.76	350	1,100	73	3.6	2.0	5.2	<15	--	--	--
<i>(cont.)</i>	03/01/11	--	146.11	12.42	1,400	6,800	130	9.6	3.1	8.0	<10	--	--	--
	06/10/11	--	143.45	15.08	190	90	0.77	1.1	<0.5	1.1	<5.0	--	--	--
	09/13/11							Well Dry						
	12/30/11	--	143.02	15.51	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	0.59
	03/06/12	--	146.65	11.88	100	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	0.47
	<b>07/13/12</b>	--	<b>146.58</b>	<b>11.95</b>	<b>&lt;50</b>	<b>120</b>	<b>7.3</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;5.0</b>	--	--	<b>0.61</b>
MW-8C	03/09/07	--	149.18	12.15	<50	150	9.8	1.3	2.0	3.9	<5.0	--	--	--
<i>(161.33)</i>	03/26/07	--	149.56	11.77	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	148.96	12.37	<50	<50	0.57	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/29/07	--	148.35	12.98	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	12/27/07	--	149.84	11.49	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/15/08	--	149.94	11.39	<50	110	6.0	1.7	2.4	2.4	<5.0	--	--	--
	09/12/08	--	148.18	13.15	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/06/09	--	151.25	10.08	<50	<50	2.1	<0.5	0.87	0.76	<5.0	--	--	--
	09/17/09	--	148.63	12.70	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/28/10	--	149.94	11.39	<50	84	6.6	0.89	2.9	2.7	<5.0	--	--	--
	09/11/10	--	148.33	13.00	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/01/11	--	150.45	10.88	65	280	16	3.7	7.9	6.2	<10	--	--	--
	06/10/11	--	149.56	11.77	<50	110	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/13/11	--	146.53	14.80	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	3.07
	12/29/11	--	149.12	12.21	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	3.97
	<b>07/13/12</b>	--	<b>149.28</b>	<b>12.05</b>	<b>&lt;50</b>	<b>&lt;50</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;5.0</b>	--	--	<b>0.51</b>
MW-9C	09/29/07	--	142.67	12.27	390	68	2.2	0.88	<0.5	<0.5	<5.0	--	--	--
<i>(154.94)</i>	12/27/07	--	143.40	11.54	<50	<50	0.84	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/15/08	--	143.98	10.96	<50	<50	0.55	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/12/08	--	142.53	12.41	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/06/09	--	144.09	10.85	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/17/09	--	142.84	12.10	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/28/10	--	143.34	11.60	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/11/10	--	139.13	15.81	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/01/11	--	143.74	11.20	480	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	06/10/11	--	142.48	12.46	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/13/11	--	142.11	12.83	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	12/29/11							Well Inaccessible						
	<b>07/12/12</b>	--	<b>142.99</b>	<b>11.95</b>	<b>&lt;50</b>	<b>&lt;50</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;5.0</b>	--	--	<b>0.63</b>
<b>REMEDATION WELLS</b>														
AS-1	10/04/09	--	--	11.38	--	<50	3.6	<0.5	<0.5	<0.5	<5.0	--	--	--
	<b>07/13/12</b>	--	--	<b>10.25</b>	<b>&lt;50</b>	<b>&lt;50</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;5.0</b>	--	--	<b>1.87</b>



# Pangea

**Table 1. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA**

Well ID	Date	SPH	Groundwater	Depth	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved
<i>TOC Elev</i>	<i>Sampled</i>	<i>(ft)</i>	<i>Elevation</i>	<i>to Water</i>	<i>← μg/L →</i>									<i>Oxygen</i>
<i>(ft)</i>			<i>(ft)</i>	<i>(ft)</i>										<i>mg/L</i>
DPE-1	10/04/09	--	--	10.38	--	1,600	210	4.4	5.1	34	<35	--	--	--
	03/05/12	--	--	9.12	230	360	9.2	<0.5	<0.5	2.1	<5.0	--	--	0.23
	<b>07/12/12</b>	--	--	<b>10.08</b>	<b>290</b>	<b>300</b>	<b>11</b>	<b>&lt;0.5</b>	<b>1.0</b>	<b>1.4</b>	<b>&lt;5.0</b>	--	--	<b>0.95</b>
DPE-2	10/04/09	--	--	11.33	--	8,000	590	220	92	760	<250	--	--	--
	03/01/11	--	--	16.10	14,000	12,000	360	130	96	1,700	<50	--	--	--
	06/10/11	--	--	12.41	3,100	3,300	24	40	16	340	<10	--	--	--
	09/13/11	--	--	9.68	290	790	21	7.0	2.3	44	<30	--	--	0.34
	12/30/11	--	--	13.38	94	120	8.5	0.65	<0.5	4.6	<5.0	--	--	0.59
	03/06/12	--	--	9.22	160	1,200	150	10	12	80	<35	--	--	0.13
	<b>07/12/12</b>	--	--	<b>10.50</b>	<b>480</b>	<b>1,700</b>	<b>150</b>	<b>8.2</b>	<b>25</b>	<b>43</b>	<b>&lt;20</b>	--	--	<b>0.99</b>
DPE-3	10/04/09	--	--	11.85	--	49,000	3,600	4,400	1,300	6,500	<2,500	--	--	--
	03/01/11	--	--	11.37	51,000	27,000	1,400	810	870	3,300	<700	--	--	--
	06/10/11	--	--	15.34	1,100	2,300	41	19	16	130	<15	--	--	--
	09/13/11	--	--	17.91	25,000	4,800	12	13	9.1	180	<15	--	--	0.33
	12/30/11	--	--	14.76	450	600	5.5	2.0	0.90	15	<5.0	--	--	0.51
	03/06/12	--	--	10.57	<50	73	0.78	<0.5	<0.5	3.7	<5.0	--	--	0.45
	<b>07/12/12</b>	--	--	<b>11.00</b>	<b>350</b>	<b>220</b>	<b>8.0</b>	<b>0.71</b>	<b>1.9</b>	<b>2.9</b>	<b>&lt;5.0</b>	--	--	<b>0.48</b>
DPE-4	10/04/09	--	--	11.50	--	31,000	1,200	2,900	530	4,700	<1,200	--	--	--
	03/01/11	--	--	13.88	5,100	5,600	68	100	42	350	<50	--	--	--
	06/10/11	--	--	11.07	280	280	1.6	4.2	2.5	25	<5.0	--	--	--
	09/13/11	--	--	15.71	930	1,100	1.1	3.4	2.4	58	<5.0	--	--	0.29
	12/30/11	--	--	12.22	240	230	<0.5	1.9	0.84	17	<5.0	--	--	--
	03/06/12	--	--	10.55	190	340	0.69	1.9	1.1	23	<5.0	--	--	0.19
	<b>07/13/12</b>	--	--	<b>12.26</b>	<b>520</b>	<b>420</b>	<b>1.2</b>	<b>1.1</b>	<b>1.0</b>	<b>12</b>	<b>&lt;5.0</b>	--	--	<b>0.15</b>
DPE-5	10/04/09	--	--	14.46	--	2,900	78	71	29	260	<50	--	--	--
	03/05/12	--	--	10.87	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	0.43
	<b>07/12/12</b>	--	--	<b>13.35</b>	<b>&lt;50</b>	<b>69</b>	<b>1.7</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;5.0</b>	--	--	<b>0.56</b>
DPE-6	10/04/09	--	--	11.05	--	1,800	6.7	5.2	2.6	34	<5.0	--	--	--
	03/05/12	--	--	9.43	970	3,100	5.5	3.4	5.7	5.8	<30	--	--	0.18
	<b>07/12/12</b>	--	--	<b>10.45</b>	<b>920</b>	<b>1,200</b>	<b>0.86</b>	<b>2.4</b>	<b>2.2</b>	<b>2.2</b>	<b>&lt;5.0</b>	--	--	<b>0.46</b>

**DESTROYED WELLS**

MW-2	04/30/89	--	--	--	--	230	39	18	5	23	--	--	--	--
(97.78)	05/17/90	--	87.78	10.00	--	--	--	--	--	--	--	--	--	--
	09/29/90	--	86.95	10.83	--	850	970	5	25	47	--	--	--	--
	01/14/91	--	87.15	10.63	--	3,100	30	52	24	34	--	--	--	--
(102.02)	07/03/91	--	91.94	10.08	--	1,590	30	52	24	34	--	--	--	--
	11/11/91	--	91.81	10.21	--	960	320	15	4	29	--	--	--	--
	03/04/92	--	93.32	8.70	--	1,500	9.5	8.4	9.8	22	--	--	--	--

# Pangea

**Table 1. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA**

Well ID	Date	Groundwater	Depth	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved	
TOC Elev	Sampled	SPH	Elevation	to Water									Oxygen	
(ft)		(ft)	(ft)	(ft)	←-----µg/L-----→									mg/L
MW-2	06/02/92	--	92.50	9.52	--	2,800	84	41	59	95	--	--	--	
(cont.)	09/28/92	--	91.93	10.09	--	1,600	47	20	47	97	--	--	--	
	01/11/93	--	93.50	8.52	--	2,500	8.6	10	17	32	--	--	--	
(97.49)	08/15/94	--	87.58	9.91	--	6,000	450	60	100	95	--	--	--	
	11/07/96	--	87.47	10.02	780	4,200	25	4.9	8.1	14	<0.5	--	--	
	02/12/97	--	88.58	8.91	5,700	1,800	16	3.1	3.4	8.8	<0.5	--	--	
	06/16/97	--	87.74	9.75	<50	2,500	22	5.1	7.8	11	<0.5	--	--	
	09/30/97	--	89.60	7.89	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	
	01/27/98	--	89.11	8.38	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	
	04/24/98	--	88.81	8.68	1,400	2,100	18	6.5	4.8	21	<0.5	--	--	
	08/17/98	--	87.75	9.74	<50	2,900	5.1	4.5	5.8	17	<0.5	--	--	
	11/16/98	--	87.35	10.14	<50	1,400	2.1	1.9	2.3	4.8	<0.5	--	--	
	02/16/99	--	88.57	8.92	<50	1,600	82	16	<2.5	40	59	--	--	
	05/17/99	--	88.23	9.26	--	8,200	43	73	140	100	<250	--	--	
	08/17/99	--	87.45	10.04	260	2,900	20	81	17	38	<5.0	--	--	
	11/17/99	--	85.97	11.52	<50	2,600	7	3.7	5.3	12.9	<1.0	--	--	
	02/17/00	--	87.99	9.50	--	1,700	3.2	6.8	11	12.3	<5.0	--	--	
	05/17/00	--	88.65	8.84	--	3,800	450	65	110	80	<25	--	--	
	08/17/00	--	88.99	8.50	--	4,300	440	<50	78	<50	<50	--	--	
	11/15/00	--	87.55	9.94	--	5,800	320	41	78	64	<25	--	--	
	02/16/01	--	88.97	8.52	--	2,200	110	20	38	33	<5.0	--	--	
	01/11/02	--	88.67	8.82	620	3,100	280	86	84	110	<50	--	--	
(160.98)	07/01/02	--	151.34	9.64	940	2,600	300	29	45	27	<10	--	--	
	10/04/02	--	150.46	10.52	390	4,000	440	66	140	120	<25	--	--	
	07/28/06	--	150.96	10.02	340	1,300	150	9.9	6	18	<0.5	3.6	<0.5	
	10/16/06	--	150.45	10.53	76	150	16	1.0	3.5	2.2	<0.5	1.2	<0.5	
	01/09/07	--	151.65	9.33	84	210	27	2.6	8.1	6.8	--	--	0.14	
	01/25/07	--				Well Destroyed								
MW-3	04/30/90	--	--	--	--	56,000	3,600	8,600	1,300	7,200	--	--	--	
(98.14)	05/17/90	--	85.72	12.42	--	--	--	--	--	--	--	--	--	
	09/26/90	--	84.64	13.50	--	54,000	5,100	420	1,600	8,000	--	--	--	
	01/14/91	--	85.56	12.58	--	35,000	2,600	6,600	1,500	5,700	--	--	--	
(102.46)	07/03/91	--	90.38	12.08	--	33,000	4,120	4,300	1,400	4,800	--	--	--	
	11/11/91	--	90.17	12.29	--	57,000	3,900	8,400	2,100	14,000	--	--	--	
(102.18)	03/04/92	--	91.92	10.26	--	57,000	720	870	81	3,100	--	--	--	
(97.94)	06/02/92	--	86.54	11.40	--	50,000	240	240	220	740	--	--	--	
	09/28/92	--	85.30	12.64	--	64,000	110	93	97	250	--	--	--	
	01/11/93	--	87.84	10.10	--	68,000	210	280	360	990	--	--	--	
	08/15/94	--	85.74	12.20	--	50,000	870	1,200	1,300	3,000	--	--	--	
	11/07/96	--	85.54	12.40	470	68,000	33	27	63	120	<0.5	--	--	
	02/12/97	--	87.71	10.23	3,500	25,000	39	43	15	91	<0.5	--	--	
	06/16/97	--	86.15	11.79	<50	9,700	26	29	45	81	<0.5	--	--	
	09/30/97	--	88.54	9.40	1,600	6,000	43	36	12	11	<0.5	--	--	
	01/27/98	--	88.14	9.80	560	380	5.7	4.1	1.7	9.1	<0.5	--	--	

# Pangea

**Table 1. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA**

Well ID	Date	Groundwater	Depth	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved	
<i>TOC Elev</i>	<i>Sampled</i>	<i>SPH</i>	<i>Elevation</i>	<i>to Water</i>	<i>μg/L</i>									<i>Oxygen</i>
<i>(ft)</i>		<i>(ft)</i>	<i>(ft)</i>											<i>mg/L</i>
MW-3	04/24/98	--	88.04	9.90	680	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
<i>(cont.)</i>	08/17/98	--	86.48	11.46	<50	16,000	200	18	31	82	<0.5	--	--	
	11/16/98	--	85.54	12.40	<50	68,000	86	54	69	130	<0.5	--	--	
	02/16/99	--	87.22	10.72	<50	33,000	270	110	<5.0	770	170	--	--	
	05/17/99	--	87.40	10.54	--	72,000	280	230	320	890	<250	--	--	
	08/17/99	--	85.99	11.95	1,800	20,000	51	41	61	130	<5.0	--	--	
	11/17/99	--	84.34	13.60	--	1,700	39	22	31	84	<1.0	--	--	
	02/17/00	--	87.26	10.68	--	8,800	16	39	74	90	<5.0	--	--	
	05/17/00	--	87.69	10.25	--	22,000	300	260	410	940	<5.0	--	--	
	08/17/00	--	86.10	11.84	--	15,000	230	140	470	750	<50	--	--	
	11/15/00	--	86.12	11.82	--	12,000	250	210	390	700	<25	--	--	
	02/16/01	--	88.26	9.68	--	7,400	40	72	700	250	<25	--	--	
	01/11/02	--	88.36	9.58	1,900	9,300	230	200	290	580	<25	--	--	
<i>(161.43)</i>	07/01/02	--	150.29	11.14	5,200	13,000	230	220	450	890	<13	--	--	
	10/04/02	--	148.61	12.82	4,900	11,000	280	170	450	730	<25	--	--	
	07/28/06	--			Not Sampled - Unable to locate well									
	10/16/06	--			Not Sampled - Unable to locate well									
	01/09/07	--			Not Sampled - Unable to locate well									
	01/22/07	--	149.81	11.62	93,000	34,000	770	250	760	2,000	<1,000	--	--	
	03/16/07	--			Well Destroyed									
STMW-4	07/03/91	--	92.58	11.00	--	3,100	610	62	39	150	--	--	--	
<i>(103.58)</i>	11/11/91	--	92.50	11.08	--	3,600	990	15	2.6	180	--	--	--	
<i>(101.08)</i>	03/04/92	--	91.64	9.44	--	5,000	35	20	22	71	--	--	--	
<i>(98.80)</i>	06/02/92	--	88.48	10.32	--	13,000	140	45	63	210	--	--	--	
	09/28/92	--	88.04	10.76	--	40,000	35	20	48	110	--	--	--	
	01/11/93	--	89.52	9.28	--	24,000	26	88	92	280	--	--	--	
	08/15/94	--	88.26	10.54	--	9,000	500	34	46	130	--	--	--	
	11/07/96	--	88.43	10.37	180	13,000	40	2.9	7.8	19	<0.5	--	--	
	02/12/97	--	89.44	9.36	5,700	5,300	95	5.3	5.9	18	<0.5	--	--	
	06/16/97	--	88.40	10.40	<50	5,300	37	6.2	1.7	11	<0.5	--	--	
	09/30/97	--	90.30	8.50	<50	2,700	42	7.7	5.7	26	<0.5	--	--	
	01/27/98	--	89.90	8.90	300	3,000	60	17	12	49	<0.5	--	--	
	04/24/98	--	89.30	9.50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	
	08/17/98	--	88.44	10.36	<50	29,000	36	24	59	160	<0.5	--	--	
	11/16/98	--	88.24	10.56	<50	13,000	26	21	20	41	--	--	--	
	02/16/99	--	89.16	9.64	<50	32,000	660	16	16	150	<100	--	--	
	05/17/99	--	88.84	9.96	--	13,000	1600	30	45	78	<250	--	--	
	08/17/99	--	88.16	10.64	990	12,000	260	22	33	72	<5.0	--	--	
	11/17/99	--	86.78	12.02	--	7,900	21	12	17	40	<1.0	--	--	
	02/17/00	--	89.48	9.32	--	4,900	8.9	21	38	50	<5.0	--	--	
	05/17/00	--	89.15	9.65	--	9,600	840	<50	61	<50	<50	--	--	
	08/17/00	--	88.46	10.34	--	5,100	680	<50	62	<50	<50	--	--	
	11/15/00	--	88.28	10.52	--	3,900	640	<25	26	27	<25	--	--	

# Pangea

**Table 1. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA**

Well ID	Date	Groundwater	Depth	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved	
<i>TOC Elev</i>	<i>Sampled</i>	<i>SPH</i>	<i>Elevation</i>	<i>to Water</i>	<i>μg/L</i>								<i>Oxygen</i>	
<i>(ft)</i>		<i>(ft)</i>	<i>(ft)</i>										<i>mg/L</i>	
STMW-4	02/16/01	--	89.60	9.20	--	5,700	560	<25	<25	<25	--	--	--	
<i>(cont.)</i>	01/11/02	--	89.22	9.58	930	4,900	560	59	25	<25	--	--	--	
<i>(162.13)</i>	07/01/02	--	151.85	10.28	6,700	6,700	470	18	32	45	<13	--	--	
	10/04/02	--	151.05	11.08	2,900	13,000	590	26	65	110	<25	--	--	
	07/28/06	0.04	151.53	10.60	39,000	25,000	960	21	73	130	<5.0	65	<5.0	0.22
	10/16/06	0.06	151.30	10.83	14,000	14,000	790	28	81	130	<5.0	30	<5.0	0.26
	01/09/07	0.03	152.20	9.93	Not Sampled - SPH								0.24	
	01/26/07				Well Destroyed								0.24	
STMW-5	07/03/91	--	88.70	13.29	--	690	99	81	19	98	--	--	--	
<i>(101.99)</i>	11/11/91	--	87.99	14.00	--	410	61	2.4	1.4	20	--	--	--	
<i>(101.36)</i>	03/04/92	--	89.56	11.80	--	460	13	6.5	11	18	--	--	--	
	06/02/92	--	88.30	13.06	--	1,800	27	20	21	43	--	--	--	
	09/28/92	--	87.32	14.04	--	1,500	14	6.1	18	22	--	--	--	
	01/11/93	--	89.75	11.61	--	800	1.8	3	3.1	9.4	--	--	--	
	08/15/94	--	87.51	13.85	--	3,000	320	62	34	220	--	--	--	
<i>(97.14)</i>	11/07/96	--	83.47	13.67	330	1,200	11	1.7	4.4	13	<0.5	--	--	
	02/17/97	--	85.07	12.07	3,700	1,000	11	17	1.7	9.7	<0.5	--	--	
	06/19/97	--	83.81	13.33	2,300	950	7.4	1	1	7.2	<0.5	--	--	
	09/30/97	--	85.90	11.24	1,100	710	5.8	4	1	1	<0.5	--	--	
	01/27/98	--	85.50	11.64	1,100	340	2	1.8	1.6	8.2	<0.5	--	--	
	04/24/98	--	85.30	11.84	<50	3,300	12	9.4	8.5	37	<0.5	--	--	
	08/17/98	--	83.94	13.20	<50	5,300	26	17	14	39	<0.5	--	--	
	11/16/98	--	83.40	13.74	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	
	02/16/99	--	84.92	12.22	<50	950	150	3.8	1.4	14	11	--	--	
	05/17/99	--	84.56	12.58	--	2,800	67	9.4	<2.5	16	30	--	--	
	08/17/99	--	83.66	13.48	230	2,800	18	17	18	36	<5.0	--	--	
	11/17/99	--	82.26	14.88	--	1,600	3.9	2.3	3.2	7.5	<1.0	--	--	
	02/17/00	--	84.58	12.56	--	770	1.5	3.2	5.8	7	<5.0	--	--	
	05/17/00	--	85.06	12.08	--	4,500	<25	<25	<25	<25	<25	--	--	
	08/17/00	--	83.58	13.56	--	2,900	170	64	100	250	<10	--	--	
	11/15/00	--	83.86	13.28	--	2,100	120	24	40	54	<5.0	--	--	
	02/16/01	--	85.54	11.60	--	850	58	9.8	9.4	18	<5.0	--	--	
	01/11/02	--	85.42	11.72	<50	920	76	16	16	28	13	--	--	
<i>(160.65)</i>	07/01/02	--	147.51	13.14	1,500	4,300	71	14	14	36	<5.0	--	--	
	10/04/02	--	146.13	14.52	60	1,400	71	17	26	35	<5.0	--	--	
	07/28/06	--	147.30	13.35	370	700	22	4.3	1.2	6.6	<0.5	<0.5	<0.5	0.24
	10/16/06	--	146.91	13.74	240	590	14	1.6	1.3	3.2	<0.5	<0.5	<0.5	0.21
	01/09/07	--	148.19	12.46	180	390	30	3.2	1.8	3.2	--	--	--	0.17
	01/18/07				Well Destroyed									
<b>GRAB GROUNDWATER SAMPLING - 2007</b>														
B-18	01/23/07	--	--	7.1	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--
B-19	03/19/07	--	--	4	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--

# Pangea

**Table 1. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA**

Well ID	Date	Groundwater	Depth	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved	
<i>TOC Elev</i>	<i>Sampled</i>	<i>SPH</i>	<i>Elevation</i>	<i>to Water</i>									<i>Oxygen</i>	
<i>(ft)</i>		<i>(ft)</i>	<i>(ft)</i>	<i>(ft)</i>	←----- μg/L -----→								<i>mg/L</i>	
<b>GRAB GROUNDWATER SAMPLING - 2006</b>														
B1-W	02/01/06	--	--	9.5	<84	710	(0.52)	(0.59)	(<0.50)	(0.66)	<1.0	<5.0	<0.50	--
B3-W	02/08/06	--	--	9.63	<280	23,000	(3,300)	(660)	(170)	(910)	<50	380	<25	--
B4-W	02/08/06	--	--	8.24	--	9,700	(320)	(13)	(200)	(180)	<20	1,300	12	--
B5-W	02/08/06	--	--	6.96	--	10,000	(150)	(11)	(210)	(190)	<10	<50	<5.0	--
B6-W	02/06/06	--	--	12.1	--	5,600	(3.9)	(3.1)	(54)	(61)	<5.0	<25	<2.5	--
B7-W	02/08/06	--	--	11.72	--	8,000	(2,200)	(300)	(240)	(830)	<20	<100	53	--
B8-W	02/08/06	--	--	9.97	--	18,000	(330)	(53)	(440)	(1,200)	<20	<100	11	--
B10-W	02/06/06	--	--	13.3	--	6,800	(<5.0)	(5.7)	(170)	(69)	<10	<50	<5.0	--
B11-W	02/10/06	--	--	14.3	--	230,000	(13,000)	(19,000)	(960)	(20,000)	<200	<1,000	150	--
B12-W	02/03/06	--	--	7.92	--	460	(1.6)	(2.1)	(1.6)	(3.5)	<1.0	<5.0	0.62	--
B13-W	02/03/06	--	--	11.67	<60	1,700	(12)	(9.4)	(18)	(22)	<5.0	<25	<2.5	--
B14-W	02/06/06	--	--	13.1	--	38,000	(410)	(25)	(290)	(95)	<50	<250	<25	--
B15-W	02/01/06	--	--	8.75	<620	2,700	(3.2)	(2.7)	(22)	(4.3)	<5.0	<25	<2.5	--

**Abbreviations:**

μg/L = Micrograms per liter - approximately equal to parts per billion = ppb.

mg/L = Milligrams per liter - approximately equal to parts per million = ppm.

SPH = Separate-phase hydrocarbons encountered in well (value in parentheses is thickness in feet).

Groundwater elevation is calculated according to the relationship: groundwater elevation = TOC (elevation) - (depth to water) + (0.8)(SPH thickness).

TPHg = Total petroleum hydrocarbons as gasoline by EPA Method 8015Cm.

TPHd = Total petroleum hydrocarbons as diesel by EPA Method 8015C.

BTEX = Benzene, toluene, ethylbenzene, xylenes by EPA Method 8021B.

MTBE = Methyl tertiary-butyl ether by EPA Method 8021B. (Concentrations in parentheses are by EPA Method 8260B).

DIPE = Diisopropyl ether by EPA Method 8260B.

1,2-DCA = 1,2-Dichloroethane by EPA Method 8260B.

**Table 2 – Well Use and Construction Details–5175 Broadway, Oakland, CA**

Well ID	Total Depth of Well (feet bgs)	Screened Interval (ft bgs)	Well Casing Nominal Diameter (inches)	Sand & Slot Size
<b>DPE – Existing Wells</b>				
MW-3A (DPE)	14	9-14	2	#2/12 – 0.01 Slot
MW-4A (DPE)	15	8-15	2	#2/12 – 0.01 Slot
MW-6A (DPE)	17	8-17	2	#2/12 – 0.01 Slot
MW-7B (DPE)	18.5	15.5-18.5	2	#2/12 – 0.01 Slot
MW-8A (DPE)	15	8-15	2	#2/12 – 0.01 Slot
<b>DPE – New Wells</b>				
DPE 1 – DPE 6	19 – 20	10-13/19-20	2	#2/12 – 0.01 Slot
<b>AIR SPARGING – Existing Wells</b>				
MW-1 (AS)	23	13-23	4	8x20 – 0.02 Slot
MW-2C (AS)	23	18-23	2	#2/12 – 0.01 Slot
MW-3C (AS)	27	22-27	2	#2/12 – 0.01 Slot
MW-5B (AS)	20	17-20	2	#2/12 – 0.01 Slot
MW-7C (AS)	25	20-25	2	#2/12 – 0.01 Slot
MW-8C (AS)	25	20-25	2	#2/12 – 0.01 Slot
<b>AIR SPARGING –New Well</b>				
AS-1	20	16-20	1	#2/12 – 0.01 Slot
<b>GROUNDWATER MONITORING ONLY</b>				
MW-5A	14	10-14	2	#2/12 – 0.01 Slot
MW-5C	27	22-27	2	#2/12 – 0.01 Slot
MW-9A	15.5	7.5-15.5	2	#2/12 – 0.01 Slot
MW-9C	21	17-21	2	#2/12 – 0.01 Slot
MW-10A	18	8-18	2	#2/12 – 0.01 Slot

bgs = below ground surface

# Pangea

Table 3. SVE (DPE) Performance Data - 5175 Broadway, Oakland, CA										Removal				Emission Reporting						Notes
Date	Wells	Oxidizer Hr Meter Reading (hours)	Interval Time (days)	System Vapor Flow Rate (cfm)	Lab Applied Vacuum ("Hg)	Sample ID	Influent TPHg Data (ppmv)	Influent Benzene Data (ppmv)	Influent OVA Reading (ppmv)	SVE TPHg Removal Rate (lbs/day)	SVE Benzene Removal Rate (lbs/day)	Cumulative SVE TPHg Removal (lbs)	Cumulative SVE Benzene Removal (lbs)	Effluent TPHg Lab (ppmv)	Effluent Benzene Lab (ppmv)	TPHg Abatement Efficiency (lbs/day)	Benzene Abatement Efficiency (lbs/day)	Benzene Emission Rate (lbs/day)	Cumulative Vapor Flow (cf)	Notes
12/08/10	DPE-1, MW-3A, 4A, 8A	5040.8	0.0	65	22	INF-V	1,300	6.4	1,270	27.1	0.12	0.0	0	---	---	---	---	---	0	Startup Test
12/10/10	DPE-1, MW-3A, 4A, 8A	5051.8	0.5	65	22	---	900	5.7	916	18.8	0.11	8.6	0.05	---	---	---	---	---	42,900	Off. Start.
12/13/10	DPE-1, MW-3A, 4A, 8A	5120.8	2.9	93	20	INF-V	430	1.7	---	12.8	0.05	45.5	0.18	< 7.0	< 0.077	> 98.4	> 95.5	0.002	427,920	On.
12/22/10	DPE-1, MW-3A, 4A, 8A	5337.2	9.0	125	17	INF-V	460	5.2	758	18.4	0.19	211.8	1.89	---	---	---	---	---	2,050,920	On. Shutdown due to noise. Restart 12/29.
01/07/11	DPE-1, 4	5585.0	10.3	31	25	INF-V	640	6.1	1,000	6.4	0.06	277.5	2.46	---	---	---	---	---	2,511,828	Shutdown 1/14 due to noise. Restart 1/19.
02/02/11	DPE-1, 4	6019.4	18.1	31	18	INF-V	1,200	6.1	1,168	11.9	0.06	493.6	3.45	---	---	---	---	---	3,319,812	Off on arrival, restart. Add oil.
02/22/11	DPE-1, 2, 4, MW-4A	6490.1	19.6	30	18	INF-V	370	1.8	632	3.6	0.02	563.4	3.76	---	---	---	---	---	4,167,072	On. Add oil.
02/28/11	DPE-1, 2, 4, MW-4A	6633.6	6.0	30	26	---	370	1.8	---	3.6	0.02	584.7	3.85	---	---	---	---	---	4,425,372	On. Shutdown for GWM and restarted.
03/09/11	DPE-1, 2, 4, MW-4A	6797.1	6.8	86	18	INF-V	77	0.12	54	2.1	0.00	599.2	3.87	---	---	---	---	---	5,269,032	On.
03/15/11	DPE-1, 2, 4, MW-4A	6940.7	6.0	31	21	---	77	0.12	63	0.8	0.00	603.8	3.88	---	---	---	---	---	5,536,128	On.
03/16/11	DPE-2, 3, 4, MW-7B	6966.5	1.1	31	22	---	160	0.12	200	1.6	0.00	605.5	3.88	---	---	---	---	---	5,584,116	On.
03/21/11	DPE-2, 3, 4, MW-7B	7081.1	4.8	53	23	INF-V	420	4.8	760	7.1	0.07	639.6	4.23	---	---	---	---	---	5,948,544	Start Air Sparging (AS)
03/31/11	DPE-2, 3, 4, MW-7B	7131.3	2.1	98	26	---	350	3.5	603	11.0	0.10	662.6	4.57	---	---	---	---	---	6,243,720	Off. Install additional soundproofing. Restart.
04/06/11	DPE-2, 3, 4, MW-7B	7272.9	5.9	77	24	---	350	3.5	---	8.6	0.08	713.6	4.86	---	---	---	---	---	6,897,912	On. Optimize.
04/12/11	DPE-2, 3, 4, MW-7B	7293.0	0.8	73	17	---	350	3.5	---	8.2	0.07	720.5	5.07	---	---	---	---	---	6,985,950	Off on arrival, restart.
04/26/11	DPE-2, 3, 4, MW-7B, 8A	7626.9	13.9	130	20	INF-V	240	2.5	259	10.0	0.09	859.7	6.26	---	---	---	---	---	9,590,370	On.
05/04/11	DPE-2, 3, 4, MW-7B, 8A	7818.0	8.0	110	18	---	200	2.0	213	7.1	0.06	915.9	6.77	---	---	---	---	---	10,851,630	Off on arrival, restart.
05/24/11	DPE-2, 3, 4, MW-7B, 8A	8278.0	19.2	104	18	INF-V	160	0.97	235	5.3	0.03	1018.3	7.33	< 7.0	< 0.077	> 95.6	> 92.1	0.002	13,722,030	On. Add oil.
06/02/11	DPE-1,2,3,4, MW-4A,7B,8A	8488.2	8.8	90	18	---	100	0.50	130	2.9	0.01	1043.5	7.44	---	---	---	---	---	14,857,110	On.
06/06/11	DPE-1,2,3,4, MW-4A,7B,8A	8529.1	1.7	90	18	---	100	0.50	130	2.9	0.01	1048.5	7.47	---	---	---	---	---	15,077,970	Off on arrival. AS shutdown. Off on departure.
06/27/11	DPE-1,2,3,4, MW-4A,7B,8A	8661.0	5.5	90	18	---	100	0.50	130	2.9	0.01	1064.3	7.54	---	---	---	---	---	15,790,230	Off on arrival, blown fuse. Off on departure.
07/11/11	DPE-1,2,3,4, MW-4A,7B,8A	8730.7	2.9	90	18	---	90	0.40	116	2.6	0.01	1071.9	7.57	---	---	---	---	---	16,166,610	Off on arrival, overheating, restart.
07/18/11	DPE-1, 2, 3, MW-4A, 7B, 8A	8874.8	6.0	90	18	---	90	0.40	116	2.6	0.01	1087.5	7.63	---	---	---	---	---	16,944,750	Off on arrival, overheating, restart.
07/19/11	DPE-1, 2, 3, MW-4A, 7B, 8A	8876.3	0.1	87	19	---	100	0.50	127	2.8	0.01	1087.7	7.63	---	---	---	---	---	16,952,580	Off on arrival, overheating, restart.
07/21/11	DPE-1, 2, 3, MW-4A, 7B, 8A	8903.6	1.1	82	22	---	100	0.50	132	2.6	0.01	1090.7	7.65	---	---	---	---	---	17,087,060	Off on arrival, restart.
07/26/11	DPE-1, 3, 4, MW-4A, 7B	9020.9	4.9	75	19	---	100	0.50	117	2.4	0.01	1102.5	7.70	---	---	---	---	---	17,617,725	On.
07/28/11	DPE-1, 3, 4, MW-4A, 7B	9069.3	2.0	76	18	---	100	0.50	123	2.4	0.01	1107.4	7.72	---	---	---	---	---	17,839,010	On.
08/08/11	DPE-1, 3, 4, MW-4A, 7B	9216.3	6.1	79	19	---	100	0.50	131	2.5	0.01	1122.9	7.79	---	---	---	---	---	18,533,849	Off on arrival, restart.
08/18/11	DPE-1, 3, 4, MW-4A, 7B	9457.8	10.1	79	21	---	100	0.50	119	2.5	0.01	1148.4	7.91	---	---	---	---	---	19,678,559	On.
08/31/11	DPE-1, 3, 4, MW-4A, 7B	9579.9	5.1	97	15	---	50	0.50	53	1.6	0.01	1156.3	7.98	---	---	---	---	---	20,392,478	Off on arrival, overheating, restart.
09/22/11	DPE-1, 3, 4, MW-4A, 7B	9843.7	11.0	97	14	---	25	0.50	25	0.8	0.01	1164.9	8.13	---	---	---	---	---	21,927,794	Off on arrival, restart.
09/26/11	DPE-4, 5, MW-8A	9863.5	0.8	101	20	INF-V	450	1.9	427	14.5	0.06	1176.9	8.18	---	---	---	---	---	22,047,331	Off on arrival, restart.
10/05/11	DPE- 3, MW-7B, 8A	10063.0	8.3	98	18	---	100	0.50	72	3.1	0.01	1202.9	8.30	---	---	---	---	---	23,215,842	On.
10/11/11	DPE- 3, MW-7B, 8A	10065.2	0.1	91	19	---	70	0.50	58	2.0	0.01	1203.1	8.30	---	---	---	---	---	23,227,882	Off on arrival, restart.
10/18/11	DPE- 3, MW-7B, 8A	10115.6	2.1	93	22	---	100	0.50	79	3.0	0.01	1209.4	8.33	---	---	---	---	---	23,509,749	Off on arrival, restart.
11/02/11	DPE- 3, MW-7B, 8A	10473.7	14.9	89	21	---	150	1.0	117	4.3	0.03	1273.5	8.72	---	---	---	---	---	25,428,878	On.
11/15/11	DPE- 3, MW-7B, 8A	10525.4	2.2	86	18	---	100	0.50	106	2.8	0.01	1279.5	8.74	---	---	---	---	---	25,696,364	Off on arrival, restart.
11/22/11	DPE- 3, MW-7B, 8A	10690.3	6.9	76	18	---	100	0.50	---	2.4	0.01	1296.2	8.82	---	---	---	---	---	26,448,308	On.
11/23/11	DPE- 3, 4, 5, MW-8A	10717.5	1.1	83	18	---	30	0.50	39	0.8	0.01	1297.1	8.83	---	---	---	---	---	26,583,764	On.
11/29/11	DPE- 3, 4, 5, MW-8A	10855.9	5.8	83	16	---	60	0.50	63	1.6	0.01	1306.4	8.90	---	---	---	---	---	27,272,996	On.
12/08/11	DPE- 3, 4, 5, MW-8A	11075.6	9.2	76	18	---	40	0.50	49	1.0	0.01	1315.3	9.00	---	---	---	---	---	28,277,464	On.
12/16/11	DPE- 3, 4, 5, MW-8A	11263.7	7.8	77	18	---	60	0.50	61	1.5	0.01	1326.9	9.09	---	---	---	---	---	29,145,358	On.
12/22/11	DPE- 3, 4, 5, MW-8A	11383.5	5.0	77	18	---	60	0.50	---	1.5	0.01	1334.3	9.15	---	---	---	---	---	29,698,834	Off. Leave off for QM event on 12/29.
01/03/12	DPE- 3, 4, 5, MW-8A	11384.7	0.1	71	17	---	100	0.50	163	2.3	0.01	1334.4	9.15	---	---	---	---	---	29,703,962	Off. Restart.
01/04/12	DPE- 3, 4, 5, MW-8A	11410.4	1.1	68	18	INF-V	32	<0.077	43	0.7	0.00	1335.2	9.15	---	---	---	---	---	29,809,173	On.
01/16/12	DPE- 4, 5, MW-3A	11699.5	12.0	78	17	---	30	<0.077	38	0.8	0.00	1344.2	9.15	---	---	---	---	---	31,165,803	On.
01/31/12	DPE- 4, 5, MW-3A	11896.6	8.2	78	17	---	30	<0.077	31	0.8	0.00	1350.4	9.15	---	---	---	---	---	32,090,715	On. System Shutdown.

Notes:  
 ALL = Wells DPE-1 through DPE-6, MW-3A, MW-4A, MW-7B and MW-8A  
 NA = not analyzed; NM = not measured; --- = not available

# Pangea

Table 3. SVE (DPE) Performance Data - 5175 Broadway, Oakland, CA									Removal				Emission Reporting							
Date	Wells	Oxidizer Hr Meter Reading (hours)	System Interval Time (days)	Vapor Flow Rate (cfm)	Applied Vacuum ("Hg)	Lab Sample ID	Influent TPHg Data (ppmv)	Influent Benzene Data (ppmv)	Influent OVA Reading (ppmv)	SVE TPHg Removal Rate (lbs/day)	SVE Benzene Removal Rate (lbs/day)	Cumulative SVE TPHg Removal (lbs)	Cumulative SVE Benzene Removal (lbs)	Effluent TPHg Lab (ppmv)	Effluent Benzene Lab (ppmv)	TPHg Abatement Efficiency (lbs/day)	Benzene Abatement Efficiency (lbs/day)	Benzene Emission Rate (lbs/day)	Cumulative Vapor Flow (cf)	Notes

System data estimated when specific data not available.

cfm = actual cubic feet (cf) per minute based on anemometer readings (from vacuum side of vacuum pump during SVE). Flow rate is estimated on select days when anemometer measurements are anomalous (anemometer repair was required 2nd Qtr 2011).

ppmv = parts per million on volume to volume basis. Actual lab data shown in **bold**. Lab data estimated for dates without lab data to allow mass removal calculation.

lbs = Pounds

"Hg = Inches of mercury vacuum

SVE = Soil Vapor Extraction

OVA = Organic Vapor Analyzer (Horiba Model MEXA 324JU)

TPHg and Benzene Removal Rates = For dates where no laboratory analytical data was collected, the lab data is estimated based on prior lab data and OVA readings to calculate period and cumulative mass removal.

Hydrocarbon Removal/Emission Rate = Rate based on Bay Area Air Quality Management District's Manual of Procedures for Soil Vapor Extraction dated July 17, 1991.

Rate = lab concentration (ppmv) x system flowrate (scfm) x (1lb-mole/386 ft<sup>3</sup>) x molecular weight (86 lb/lb-mole for TPH-Gas hexane) x 1440 min/day x 1/1,000,000.



# Pangea

**Table 4. GWE (DPE) System Performance Summary - 5175 Broadway, Oakland, California**

Well ID	Date	Totalizer Reading <sup>1</sup> (gallons)	Interval Flow Volume (gallons)	Interval Duration (days)	Average Flow Rate (gpm)	TPHg Concentration (ug/L)	Benzene Concentration (ug/L)	MTBE Concentration (ug/L)	TPHg Removed (Lbs)	Benzene Removed (Lbs)	MTBE Removed (Lbs)	Comments
<b>System Influent</b>	12/08/10	0	0	0	--	---	---	---	0.000	0.000	0.000	System startup testing, water not discharged to sewer yet.
	12/10/10	248	248	2	0.09	---	---	---	0.000	0.000	0.000	Off; restart.
	12/14/10	1,120	872	4	0.15	<b>300</b>	<b>4.6</b>	<b>ND (&lt;5.0)</b>	0.002	0.000	0.000	Startup water sampling of influent (12/14)
	12/22/10	3,585	2,465	8	0.21	---	---	---	0.006	0.000	0.000	On. Shutdown due to noise, restarted 12/29.
	01/07/11	7,622	4,037	16	0.18	---	---	---	0.010	0.000	0.000	On. System off 1/14 due to noise, restart 1/19.
	02/02/11	16,840	9,218	26	0.25	<b>1,300</b>	<b>52</b>	<b>ND (&lt;10)</b>	0.100	0.004	0.000	Off on arrival; add oil and restart.
	02/22/11	25,427	8,587	20	0.30	<b>680</b>	<b>8.4</b>	<b>ND (&lt;5.0)</b>	0.049	0.001	0.000	On. Add more oil.
	02/28/11	28,855	3,428	6	0.40	---	---	---	0.019	0.000	0.000	On. Shutdown for GWM and restarted.
	03/09/11	31,981	3,126	9	0.24	---	---	---	0.018	0.000	0.000	On.
	03/15/11	34,398	2,417	6	0.28	---	---	---	0.014	0.000	0.000	On.
	03/16/11	34,961	563	1	0.39	---	---	---	0.003	0.000	0.000	On.
	03/31/11	36,763	1,802	15	0.08	---	---	---	0.010	0.000	0.000	Off. Add more soundproofing and restart.
	04/06/11	39,571	2,808	6	0.33	---	---	---	0.016	0.000	0.000	On.
	04/12/11	39,671	100	6	0.01	<b>240</b>	<b>4.8</b>	<b>ND (&lt;5.0)</b>	0.000	0.000	0.000	See NOTE below.
	04/26/11	41,195	1,524	14	0.08	---	---	---	0.003	0.000	0.000	On.
	05/04/11	41,703	508	8	0.04	---	---	---	0.001	0.000	0.000	Off. Pump overheating. Restart
	05/24/11	42,965	1,262	20	0.04	<b>66</b>	<b>0.92</b>	<b>ND (&lt;5.0)</b>	0.001	0.000	0.000	Off. Restart
	06/02/11	43,908	943	9	0.07	---	---	---	0.001	0.000	0.000	On.
	06/06/11	47,392	3,484	4	0.60	---	---	---	0.002	0.000	0.000	Off on arrival; restart. Off on departure
	07/13/11	48,851	1,459	37	0.03	---	---	---	0.001	0.000	0.000	Off on arrival; restart.
	07/21/11	51,271	2,420	8	0.21	---	---	---	0.001	0.000	0.000	Off. Restart.
	07/26/11	53,411	2,140	5	0.30	<b>68</b>	<b>0.51</b>	<b>ND (&lt;5.0)</b>	0.001	0.000	0.000	On.
	07/28/11	54,069	658	2	0.23	---	---	---	0.000	0.000	0.000	On.
	08/08/11	55,829	1,760	11	0.11	---	---	---	0.001	0.000	0.000	Off. Restart.
	08/18/11	60,036	4,207	10	0.29	---	---	---	0.002	0.000	0.000	On.
	08/31/11	61,771	1,735	13	0.09	---	---	---	0.001	0.000	0.000	Off. Restart.
	09/22/11	65,179	3,408	22	0.11	---	---	---	0.002	0.000	0.000	Off. Restart.
	09/26/11	65,389	210	4	0.04	---	---	---	0.000	0.000	0.000	Off. Restart.
	10/05/11	65,650	261	9	0.02	---	---	---	0.000	0.000	0.000	On.
	10/11/11	65,743	93	6	0.01	---	---	---	0.000	0.000	0.000	Off. Restart.
	10/18/11	65,881	138	7	0.01	---	---	---	0.000	0.000	0.000	Off. Restart.
	11/02/11	66,589	708	15	0.03	---	---	---	0.000	0.000	0.000	On.
	11/15/11	66,684	95	13	0.01	---	---	---	0.000	0.000	0.000	Off on arrival, restart.
	11/22/11	67,082	398	7	0.04	---	---	---	0.000	0.000	0.000	On.
	11/23/11	67,161	79	1	0.05	---	---	---	0.000	0.000	0.000	On.
	11/29/11	67,810	649	6	0.08	---	---	---	0.000	0.000	0.000	On.
	12/08/11	68,695	885	9	0.07	---	---	---	0.001	0.000	0.000	On.
	12/16/11	69,431	736	8	0.06	---	---	---	0.000	0.000	0.000	On.
	12/22/11	69,481	50	6	0.01	<b>ND (&lt;50)</b>	<b>ND (&lt;0.5)</b>	<b>ND (&lt;5.0)</b>	0.000	0.000	0.000	Off. Leave off for QM event 12/29.
	01/03/12	69,841	360	12	0.02	---	---	---	0.000	0.000	0.000	Off. Restart.
	01/04/12	70,027	186	1	0.13	---	---	---	0.000	0.000	0.000	On.
	01/16/12	71,127	1,100	12	0.06	---	---	---	0.000	0.000	0.000	On.
	01/31/12	72,634	1,507	15	0.07	---	---	---	0.000	0.000	0.000	On. System shutdown.
									<b>0.266</b>	<b>0.006</b>	<b>0.000</b>	<b>Total Cumulative Removal (Lbs)</b>
<b>System Midpoint</b>	04/12/11	---	---	---	---	<b>ND (&lt;50)</b>	<b>ND (&lt;0.5)</b>	<b>ND (&lt;5.0)</b>	---	---	---	See NOTE below.
	05/24/11	---	---	---	---	<b>ND (&lt;50)</b>	<b>ND (&lt;0.5)</b>	<b>ND (&lt;5.0)</b>	---	---	---	
	07/26/11	---	---	---	---	<b>ND (&lt;50)</b>	<b>ND (&lt;0.5)</b>	<b>ND (&lt;5.0)</b>	---	---	---	
	12/22/11	---	---	---	---	<b>ND (&lt;50)</b>	<b>ND (&lt;0.5)</b>	<b>ND (&lt;5.0)</b>	---	---	---	
<b>System Effluent</b>	12/08/10	---	---	---	---	---	---	---	---	---	---	
	12/14/10	---	---	---	---	<b>ND (&lt;50)</b>	<b>ND (&lt;0.5)</b>	<b>ND (&lt;5.0)</b>	---	---	---	Startup water sampling of effluent (12/14)
	02/22/11	---	---	---	---	<b>ND (&lt;50)</b>	<b>ND (&lt;0.5)</b>	<b>ND (&lt;5.0)</b>	---	---	---	
	05/24/11	---	---	---	---	<b>ND (&lt;50)</b>	<b>ND (&lt;0.5)</b>	<b>ND (&lt;5.0)</b>	---	---	---	
	07/26/11	---	---	---	---	<b>ND (&lt;50)</b>	<b>ND (&lt;0.5)</b>	<b>ND (&lt;5.0)</b>	---	---	---	
	12/22/11	---	---	---	---	<b>ND (&lt;50)</b>	<b>ND (&lt;0.5)</b>	<b>ND (&lt;5.0)</b>	---	---	---	

# Pangea

**Table 4. GWE (DPE) System Performance Summary - 5175 Broadway, Oakland, California**

Well ID	Date	Totalizer Reading <sup>1</sup> (gallons)	Interval Flow Volume (gallons)	Interval Duration (days)	Average Flow Rate (gpm)	TPHg Concentration (ug/L)	Benzene Concentration (ug/L)	MTBE Concentration (ug/L)	TPHg Removed (Lbs)	Benzene Removed (Lbs)	MTBE Removed (Lbs)	Comments
---------	------	---	-----------------------------------	-----------------------------	----------------------------	------------------------------	---------------------------------	------------------------------	-----------------------	--------------------------	-----------------------	----------

<i>Discharge Limits (ug/L):</i>	<i>5</i>	<i>5</i>	<i>5</i>	<i>5</i>
	<i>Benzene</i>	<i>Toluene</i>	<i>Ethylbenzene</i>	<i>Total Xylenes</i>

**ABBREVIATIONS AND NOTES:**

NOTE = Based on previous and subsequent analytical results Pangea switched the 4/12/11 analytical results for System Influent and Midpoint. Pangea suspects that the samples were accidentally switched by the lab or mislabeled by the technician.

1 = Initial totalizer reading was 23,559. Therefore, shown reading above 0 is actual reading minus 23,559. The 12/10/10 reading of 23,807 less 23,559 equals 248 gallons discharged.

gpm = Gallons per minute

TPHd = Total Petroleum Hydrocarbon as Diesel analyzed by EPA Method 8015B with silica gel cleanup

TPHg = Total Petroleum Hydrocarbon as Gasoline analyzed by EPA Method 8015B

Benzene analyzed by EPA Method 8021B

MTBE = Methyl tertiary butyl ether analyzed by EPA Method 8021 Cm

Toulene, Ethylbenzene and Total Xylenes analyzed by EPA Method 8015B

-- = not measured/not available

\* Estimated contaminant mass calculated by multiplying average concentration detected during period (Table 1) by volume of extracted groundwater. Uses most recent lab data.

\*\*Unless noted Toulene, Ethylbenzene and Total Xylenes non-detect (<0.5)

## **APPENDIX A**

### Groundwater Monitoring Program

**Table A. Quarterly Groundwater Monitoring Program for Post-Remediation Verification**  
**Rockridge Heights, 5175 Broadway, Oakland, CA**

Well ID	Well Type	Screened Interval (ft bgs)	Well Location for Monitoring	Casing Diam. (in)	Gauge Frequency	Sample Frequency <sup>1</sup>
<b>Shallow Wells</b>						
MW-3A	Mon + DPE	9-14	Downgradient (Onsite)	2	Q	Q
MW-4A	Mon + DPE	8-15	NE Corner, Upgradient (Onsite)	2	Q	Q
MW-5A	Mon	10-14	SW Corner, Downgradient (Onsite)	2	--	--
MW-6A	Mon + DPE	8-17	Source Area, Upgradient (Onsite)	2	Q	A
MW-8A	Mon + DPE	8-15	W Boundary, Downgradient (Onsite)	2	Q	Q
MW-9A	Mon	7.5-15.5	Downgradient (Offsite)	2	Q	A
MW-10A	Mon	7.5-15.5	Downgradient (Offsite)	2	Q	A
<b>Deep Wells</b>						
MW-1	Mon + AS	13-23	N Boundary, Upgradient (Onsite)	4	Q	Q
MW-2C	Mon + AS	18-23	E Boundary, Downgradient (Onsite)	2	Q	A
MW-3C	Mon + AS	22-27	Source Area, Downgradient (Onsite)	2	Q	Q
MW-5B	Mon + AS	17-20	SW Corner, Downgradient (Onsite)	2	Q	A
MW-5C	Mon	22-27	SW Corner, Downgradient (Onsite)	2	Q	A
MW-7B	Mon + DPE	15.5-18.5	SE Corner, Downgradient (Onsite)	2	Q	Q
MW-7C	Mon + AS	20-25	SE Corner, Downgradient (Onsite)	2	Q	Q
MW-8C	Mon + AS	20-25	W Boundary, Crossgradient (Onsite)	2	Q	A
MW-9C	Mon	17-21	Downgradient (Offsite)	2	Q	A
AS-1	AS	16-20	NE Corner, Upgradient (Onsite)	1	---	---
DPE-1	DPE	9-19	NE Corner, Upgradient (Onsite)	4	Q	Q
DPE-2	DPE	9-19	E Boundary, Downgradient (Onsite)	4	Q	Q
DPE-3	DPE	10-20	S Boundary, Downgradient (Onsite)	4	Q	Q
DPE-4	DPE	13-18	Source Area, Downgradient (Onsite)	4	Q	Q
DPE-5	DPE	9-19	W Boundary, Crossgradient (Onsite)	4	Q	Q
DPE-6	DPE	14-19	Source Area (Onsite)	4	Q	Q

Notes and Abbreviations:

**1= Sample Analytes:** Total Petroleum Hydrocarbons as Gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes (BTEX) and methyl tertiary butyl ether (MTBE) by EPA Method 8015Cm/8021B and Total Petroleum Hydrocarbons as Diesel (TPHd) by EPA Method 8015C with silica gel clean-up.

Q = Quarterly (Typically March, June, September and December)

A = Annually (Historically September but performed in July for 2012)

Mon = Groundwater Monitoring Well

N, S, W, E = Cardinal directions North, South, West, East and other directions (e.g., Northeast = NE)

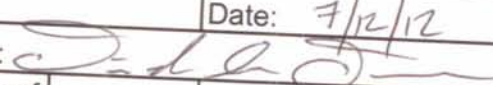
DPE = Dual Phase Extraction Well

AS = Air Sparge Well

## **APPENDIX B**

Groundwater Monitoring Field Data Sheets

Well Gauging Data Sheet

Project.Task: 1145.001.232			Project Name: Rockridge Heights				
Address: 5175 Broadway, Oakland							Date: 7/12/12
Name: Tina de la Fuente				Signature: 			
Well ID	Well Size (in.)	Time	Depth to Immiscible Liquid (ft)	Thickness of Immiscible Liquid (ft)	Depth to Water (ft)	Total Depth (ft)	Measuring Point
MW-1	4	0937	—	—	9.30	22.82	N. TOC
MW-2C	2	0947	—	—	10.26	23.45	↓
MW-3A	2	0953	—	—	9.02	13.84	
MW-3C	2	0955	—	—	12.61	26.82	
MW-4A	2	0941	—	—	10.85	14.72	
MW-5A	2	0916	—	—	11.12	13.16	
MW-5B	2	0912	—	—	13.70	19.26	
MW-5C	2	0914	—	—	13.90	26.75	
MW-6A	2	0935	—	—	8.23	14.96	
MW-7B	2	0902	—	—	11.22	17.85	
MW-7C	2	0907	—	—	11.95	24.00	

Comments: DPE SYSTEM OFF SINCE 1/31/17  
WELLS OPENED 1 HOUR PRIOR TO GAUGING

Well Gauging Data Sheet

Project.Task: 1145.001.232				Project Name: Rockridge Heights			
Address: 5175 Broadway, Oakland						Date: 7/12/12	
Name: Tina de la Fuente				Signature: <i>Tina de la Fuente</i>			
Well ID	Well Size (in.)	Time	Depth to Immiscible Liquid (ft)	Thickness of Immiscible Liquid (ft)	Depth to Water (ft)	Total Depth (ft)	Measuring Point
MW-8A	2	0922	—	—	10.05	14.60	N.TOC
MW-8C	2	0925	—	—	12.05	22.60	
MW-9A	<del>2</del> 2	0856	—	—	12.31	15.25	
MW-9C	2	0859	—	—	11.95	19.5	
MW-10A	2	0853	—	—	10.08	18.00	
DPE-1	<del>2</del> 4	<del>0852</del> 0945	—	—	10.08	19.32	
DPE-2	4	0951	—	—	10.5	19.35	
DPE-3	4	<del>0902</del> 0909	—	—	<del>11.22</del> 11.00	<del>17.85</del> 19.45	
DPE-4	4	0959	—	—	12.26	16.70	
DPE-5	4	0919	—	—	13.35	19.27	
DPE-6	4	0930	—	—	10.45	19.77	↓

Comments:

AS-1	1	0943	—	—	10.25	19.46	N.TOC
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**MONITORING FIELD DATA SHEET**

**Well ID: MW-1**

Project.Task #: 1145.001.232				Project Name: Rockridge Heights				
Address: 5175 Broadway, Oakland, CA								
Date: 7/13/12				Weather: Overcast				
Well Diameter: 4"				Volume/ft.	1" = 0.04	3" = 0.37	6" = 1.47	
					2" = 0.16	4" = 0.65	radius <sup>2</sup> * 0.163	
Total Depth (TD): 22.82				Depth to Product:				
Depth to Water (DTW): 9.3				Product Thickness:				
Water Column Height: 13.52				1 Casing Volume: 2.29 gallons				
Reference Point: N.T.O.C.				3 Casing Volumes: 6.87 gallons				
Purging Device: <del>Whaler Pump</del> Disposable Bailer Whaler Pump								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
					0.15			
1224	19.8	7.26	1012			-108	9	
1229	19.2	7.25	989.3			-119	18	
1236	19.3	7.21	1066			-102	27	

Comments:

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Sample ID: MW-1		Sample Time: 1245	
Laboratory: McCampbell		Sample Date: 7/13/12	
Containers/Preservative: 3 Voas (HCL), 1 One Liter Ambers (HCL)			
Analyzed for: TPHg/BTEX/MTBE(8015Cm/8021), TPHd (8015C) with silica gel clean-up			
Sampler Name: <del>Steve Hunter</del> JINA DE LA FUENTE		Signature: <i>Jina de la Fuente</i>	



## MONITORING FIELD DATA SHEET

Well ID: MW-2C

Project.Task #:1145.001.232				Project Name: Rockridge Heights				
Address: 5175 Broadway, Oakland, CA								
Date: 7/13/12				Weather: OVERCAST				
Well Diameter: 2"				Volume/ft.	1" = 0.04	3" = 0.37	6" = 1.47	radius <sup>2</sup> * 0.163
				2" = 0.16	4" = 0.65			
Total Depth (TD): 23.45				Depth to Product:				
Depth to Water (DTW): 10.26				Product Thickness:				
Water Column Height: 13.19				1 Casing Volume: 2.1		gallons		
Reference Point: N.T.O.C.				3 Casing Volumes: 6.3		gallons		
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
1308	20.2	7.07	482		0.27	-84	2	
1314	20.3	7.05	476			-82	4	
1320	20.5	7.14	454			-93	6.5	

Comments:

Sample ID: MW-2C		Sample Time: 1325	
Laboratory: McCampbell		Sample Date: 7/13/12	
Containers/Preservative: 3 Voas (HCL), 1 One Liter Ambers (HCL)			
Analyzed for:TPHg/BTEX/MTBE(8015Cm/8021),TPHd (8015C) with silica gel clean-up			
Sampler Name: Steve Hunter		Signature: <i>Morgan Gilmes</i>	

## MONITORING FIELD DATA SHEET

Well ID: MW-3A

Project.Task #: 1145.001.232		Project Name: Rockridge Heights						
Address: 5175 Broadway, Oakland, CA								
Date: 7/13/12		Weather: OVERCAST						
Well Diameter: 2"		Volume/ft. 1" = 0.04 3" = 0.37 6" = 1.47 2" = 0.16 4" = 0.65 radius <sup>2</sup> * 0.163						
Total Depth (TD): 13.84		Depth to Product:						
Depth to Water (DTW): 9.02		Product Thickness:						
Water Column Height: 4.82		1 Casing Volume: .8 gallons						
Reference Point: N.T.O.C.		3 Casing Volumes: 2.4 gallons						
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
					0.15			
1311	21.2	6.46	1386			-73	.8	
1315	20.2	6.76	1411			-89	1.5	
1319	20.2	6.96	1428			-100	2.5	

Comments:

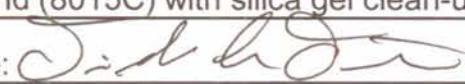
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Sample ID: MW-3A	Sample Time: 1325
Laboratory: McCampbell	Sample Date: 7/13/12
Containers/Preservative: 3 Voas (HCL), 1-One Liter Ambers (HCL)	
Analyzed for: TPHg/BTEX/MTBE(8015Cm/8021), TPHd (8015C) with silica gel clean-up	
Sampler Name: <del>Steve Hunter</del> TINA DELA FUENTE	Signature: 

**MONITORING FIELD DATA SHEET**

**Well ID: MW-3C**

Project.Task #: 1145.001.232		Project Name: Rockridge Heights						
Address: 5175 Broadway, Oakland, CA								
Date: 7/13/12		Weather: FOGY						
Well Diameter: 2"	Volume/ft.	1" = 0.04	3" = 0.37					
		2" = 0.16	4" = 0.65					
6" = 1.47		radius <sup>2</sup> * 0.163						
Total Depth (TD): 26.82		Depth to Product:						
Depth to Water (DTW): 12.61		Product Thickness:						
Water Column Height: 14.21		1 Casing Volume: 2.3 gallons						
Reference Point: N.T.O.C.		3 Casing Volumes: 6.9 gallons						
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp (°C)	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
1003	18.1	7.43	1009	—	0.17	-70	2.5	
1009	18.1	7.40	1004	—		-73	5.0	
1014	18.3	7.38	970	—		-77	7.0	

Comments:


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Sample ID: MW-3C	Sample Time: 1018
Laboratory: McCampbell	Sample Date: 7/13/12
Containers/Preservative: 3 Voas (HCL), 2 One Liter Ambers (HCL)	
Analyzed for: TPHg/BTEX/MTBE(8015Cm/8021), TPHd (8015C) with silica gel clean-up	
Sampler Name: <del>Steve Hunter</del> TINA DE LA FUENTE	Signature: 

## MONITORING FIELD DATA SHEET

Well ID: MW-4A

Project.Task #:1145.001.232				Project Name: Rockridge Heights						
Address: 5175 Broadway, Oakland, CA										
Date: 7/13/12				Weather: OVERCAST						
Well Diameter: 2"				Volume/ft.	1" = 0.04	3" = 0.37	6" = 1.47	2" = 0.16	4" = 0.65	radius <sup>2</sup> * 0.163
Total Depth (TD): 14.72				Depth to Product:						
Depth to Water (DTW): 10.85				Product Thickness:						
Water Column Height: 3.87				1 Casing Volume: .6			gallons			
Reference Point: N.T.O.C.				3 Casing Volumes: 1.8			gallons			
Purging Device: Disposable Bailer										
Sampling Device: Disposable Bailer										
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW		
					0.30					
1040	19.6	7.40	1022			-58	.6			
1043	19.7	7.34	1025			-79	1.2			
1045	19.6	7.29	1029			-87	R			

Comments:


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Sample ID: MW-4A	Sample Time: 1055
Laboratory: McCampbell	Sample Date: 7/13/12
Containers/Preservative: 3 Voas (HCL), <del>1</del> One Liter Ambers (HCL)	
Analyzed for:TPHg/BTEX/MTBE(8015Cm/8021),TPHd (8015C) with silica gel clean-up	
Sampler Name: <sup>TINA DE LA FUENTE</sup> Steve Hunter	Signature: 

## MONITORING FIELD DATA SHEET

Well ID: MW-5A

Project.Task #:1145.001.232				Project Name: Rockridge Heights				
Address: 5175 Broadway, Oakland, CA								
Date: 7/13/12				Weather: <del>SUNNY</del> OVERCAST				
Well Diameter: 2"				Volume/ft.	1" = 0.04	3" = 0.37	6" = 1.47	
				2" = 0.16	4" = 0.65	radius <sup>2</sup> * 0.163		
Total Depth (TD): 13.16				Depth to Product:				
Depth to Water (DTW): 11.12				Product Thickness:				
Water Column Height: 2.04				1 Casing Volume: .3		gallons		
Reference Point: N.T.O.C.				3 Casing Volumes: .9		gallons		
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
					0.27			
0907	16.5	6.94	2407			88	.3	
0908	16.9	6.93	2408			86	.6	
0910	17.0	6.98	2406			83		

Comments:

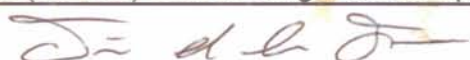
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Sample ID: MW-5A	Sample Time: 7/13/12
Laboratory: McCampbell	Sample Date: 0915
Containers/Preservative: 3 Voas (HCL), 1 One Liter Ambers (HCL)	
Analyzed for:TPHg/BTEX/MTBE(8015Cm/8021),TPHd (8015C) with silica gel clean-up	
Sampler Name: <del>Steve Hunter</del> TINA DE LA FUENTE	Signature: 

**MONITORING FIELD DATA SHEET**

**Well ID: MW-5B**

Project.Task #:1145.001.232				Project Name: Rockridge Heights				
Address: 5175 Broadway, Oakland, CA								
Date: 7/13/12				Weather: FOGGY				
Well Diameter: 2"				Volume/ft.	1" = 0.04	3" = 0.37	6" = 1.47	
					2" = 0.16	4" = 0.65	radius <sup>2</sup> * 0.163	
Total Depth (TD): 19.26				Depth to Product:				
Depth to Water (DTW): 13.70				Product Thickness:				
Water Column Height: 5.56				1 Casing Volume: 0.9			gallons	
Reference Point: N.T.O.C.				3 Casing Volumes: 2.7			gallons	
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp (°C)	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
					1.16			
0816	16.3	6.87	1174			79	1	
0819	16.7	6.86	1147			71	1.75	

Comments: well dewatered at 2 gallons

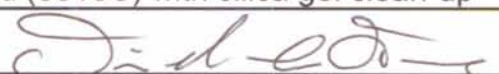
Sample ID: MW-5B	Sample Time: 1355
Laboratory: McCampbell	Sample Date: 7/13/12
Containers/Preservative: 3 Voas (HCL), 1 One Liter Ambers (HCL)	
Analyzed for: TPHg/BTEX/MTBE(8015Cm/8021),TPHd (8015C) with silica gel clean-up	
Sampler Name: <del>Steve Hunter</del> TINA DELA FUENTE	Signature: 

## MONITORING FIELD DATA SHEET

Well ID: MW-5C

Project.Task #:1145.001.232		Project Name: Rockridge Heights						
Address: 5175 Broadway, Oakland, CA								
Date: 7/13/12		Weather: FOGGY						
Well Diameter: 2"		Volume/ft. 1" = 0.04 3" = 0.37 6" = 1.47 2" = 0.16 4" = 0.65 radius <sup>2</sup> * 0.163						
Total Depth (TD): 26.75		Depth to Product:						
Depth to Water (DTW): 13.90		Product Thickness:						
Water Column Height: 12.85		1 Casing Volume: 2 gallons						
Reference Point: N.T.O.C.		3 Casing Volumes: 6 gallons						
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
					0.54			
0840	16.1	6.96	1795			81	2	
0846	16.5	6.67	1809			93	4	
0850	16.5	6.67	1816			95	6	

Comments: replaced well cap

Sample ID: MW-5C	Sample Time: 0853
Laboratory: McCampbell	Sample Date: 7/13/12
Containers/Preservative: 3 Voas (HCL), 1 One Liter Ambers (HCL)	
Analyzed for:TPHg/BTEX/MTBE(8015Cm/8021),TPHd (8015C) with silica gel clean-up	
Sampler Name: <del>Steve Hunter</del> TINA DE LA FUENTE	Signature: 

## MONITORING FIELD DATA SHEET

Well ID: MW-6A

Project.Task #: 1145.001.232				Project Name: Rockridge Heights				
Address: 5175 Broadway, Oakland, CA								
Date: 7/13/12				Weather: OVERCAST				
Well Diameter: 2"				Volume/ft.	1" = 0.04	3" = 0.37	6" = 1.47	
				2" = 0.16	4" = 0.65	radius <sup>2</sup> * 0.163		
Total Depth (TD): 14.96				Depth to Product:				
Depth to Water (DTW): 8.23				Product Thickness:				
Water Column Height: 6.73				1 Casing Volume:	<del>4</del> 1.1		gallons	
Reference Point: N.T.O.C.				3 Casing Volumes:	3.3		gallons	
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
1210	20.3	7.48	1048	—	0.13	-36	1.25	
1213	20.1	7.33	1040			-47	2.5	
1215	20.1	7.26	1042			-47	3.5	

Comments:


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Sample ID: MW-6A		Sample Time: 1220	
Laboratory: McCampbell		Sample Date: 7/13/12	
Containers/Preservative: 3 Voas (HCL), <del>2</del> One Liter Ambers (HCL)			
Analyzed for: TPHg/BTEX/MTBE(8015Cm/8021), TPHd (8015C) with silica gel clean-up			
Sampler Name: Steve Hunter		Signature: 	



## MONITORING FIELD DATA SHEET

Well ID: MW-7B

Project.Task #:1145.001.232		Project Name: Rockridge Heights						
Address: 5175 Broadway, Oakland, CA								
Date: 7/12/12				Weather: SUNNY/WARM				
Well Diameter: 2"				Volume/ft.	1" = 0.04	3" = 0.37	6" = 1.47	
					2" = 0.16	4" = 0.65	radius <sup>2</sup> * 0.163	
Total Depth (TD): 17.85				Depth to Product:				
Depth to Water (DTW): 11.22				Product Thickness:				
Water Column Height: 6.63				1 Casing Volume: 1.1		gallons		
Reference Point: N.T.O.C.				3 Casing Volumes: 3.3		gallons		
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
					0.62			
1225	19.7	7.64	487.5			-44	1.1	
1228	20.0	7.16	557.9			-77	2.25	

Comments: well dewatered at 2.25 gallons


Sample ID: MW-7B	Sample Time: <del>1624</del> 1624
Laboratory: McCampbell	Sample Date: 7/12/12
Containers/Preservative: 3 Voas (HCL), 1 One Liter Ambers (HCL)	
Analyzed for: TPHg/BTEX/MTBE(8015Cm/8021), TPHd (8015C) with silica gel clean-up	
Sampler Name: <del>Steve Hunter</del> TINA DE LA FUENTE	Signature:

## MONITORING FIELD DATA SHEET

Well ID: MW-7C

Project, Task #: 1145.001.232				Project Name: Rockridge Heights				
Address: 5175 Broadway, Oakland, CA								
Date: 7/13/12				Weather: FOGGY				
Well Diameter: 2"				Volume/ft.	1" = 0.04	3" = 0.37	6" = 1.47	
				2" = 0.16	4" = 0.65	radius <sup>2</sup> * 0.163		
Total Depth (TD): 24.00				Depth to Product:				
Depth to Water (DTW): 11.95				Product Thickness:				
Water Column Height: 12.05				1 Casing Volume: 1.9		gallons		
Reference Point: N.T.O.C.				3 Casing Volumes: 5.7		gallons		
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
					0.61			
0748	17.0	5.71	1209			101	2	
0754	17.5	6.34	1632			88	4	
0800	17.5	6.55	1769			82	5	

Comments: VERY SILTY - WELL DEWATERED @ 5 gallons

Sample ID: MW-7C		Sample Time: 1345	
Laboratory: McCampbell		Sample Date: <del>7/12</del> 7/13/12	
Containers/Preservative: 3 Voas (HCL), 2 One Liter Ambers (HCL)			
Analyzed for: TPHg/BTEX/MTBE(8015Cm/8021), TPHd (8015C) with silica gel clean-up			
Sampler Name: <del>Steve Hunter</del> TINA DELA FUENTE		Signature: 	




## MONITORING FIELD DATA SHEET

Well ID: MW-8C

Project.Task #: 1145.001.232				Project Name: Rockridge Heights					
Address: 5175 Broadway, Oakland, CA									
Date: 7/13/12				Weather: FOGGY/OVERCAST					
Well Diameter: 2"				Volume/ft. 1" = 0.04		3" = 0.37		6" = 1.47	
				2" = 0.16		4" = 0.65		radius <sup>2</sup> * 0.163	
Total Depth (TD): 22.60				Depth to Product:					
Depth to Water (DTW): 12.05				Product Thickness:					
Water Column Height: 10.55				1 Casing Volume: 1.7		gallons			
Reference Point: N.T.O.C.				3 Casing Volumes: 5.1		gallons			
Purging Device: Disposable Bailer									
Sampling Device: Disposable Bailer									
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW	
					0.51				
0935	17.9	7.18	1003			-77	1.7		
	17.7	7.34	1123			-64	2.5		

Comments: well dewatered at 3.5 gallons

Sample ID: MW-8C	Sample Time: 1417
Laboratory: McCampbell	Sample Date: 7/13/12
Containers/Preservative: 3 Voas (HCL), 2-One Liter Ambers (HCL)	
Analyzed for: TPHg/BTEX/MTBE(8015Cm/8021), TPHd (8015C) with silica gel clean-up	
Sampler Name: <del>Steve Hunter</del> TINA DE LA FUENTE	Signature: 





## MONITORING FIELD DATA SHEET

Well ID: MW-10A

Project.Task #:1145.001.232		Project Name: Rockridge Heights						
Address: 5175 Broadway, Oakland, CA								
Date: 7/12/12		Weather: SUNNY/WARM						
Well Diameter: 2"	Volume/ft.	1" = 0.04	3" = 0.37					
		2" = 0.16	4" = 0.65					
		6" = 1.47						
		radius <sup>2</sup> * 0.163						
Total Depth (TD): 18.00		Depth to Product:						
Depth to Water (DTW): 10.08		Product Thickness:						
Water Column Height: 7.92		1 Casing Volume: 1.3 gallons						
Reference Point: N.T.O.C.		3 Casing Volumes: 3.9 gallons						
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
1047	20.9	6.45	985.1			172	1.5	
1049	20.7	6.39	990.4			171	2.5	
1053	20.3	6.43	989.2			164	3.9	

Comments: PRE D.O 3.34

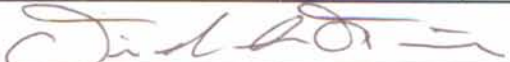
Sample ID: MW-10A	Sample Time: 7 1055
Laboratory: McCampbell	Sample Date: 7/12/12
Containers/Preservative: 3 Voas (HCL), 2-One Liter Ambers (HCL)	
Analyzed for:TPHg/BTEX/MTBE(8015Cm/8021),TPHd (8015C) with silica gel clean-up	
Sampler Name: <sup>TINA DE LA FUENTE</sup> Steve Hunter	Signature:

## MONITORING FIELD DATA SHEET

Well ID: DPE-1

Project.Task #:1145.001.232				Project Name: Rockridge Heights							
Address: 5175 Broadway, Oakland, CA											
Date: 7/12/12				Weather: SUNNY/WARM							
Well Diameter: 4"				Volume/ft.		1" = 0.04		3" = 0.37		6" = 1.47	
				2" = 0.16		4" = 0.65		radius <sup>2</sup> * 0.163			
Total Depth (TD): 19.32				Depth to Product:							
Depth to Water (DTW): 10.08				Product Thickness:							
Water Column Height: 9.24				1 Casing Volume: 6		gallons					
Reference Point: N.T.O.C.				3 Casing Volumes: 18		gallons					
Purging Device: <del>Disposable Bailer</del> Whaler Pump											
Sampling Device: Disposable Bailer											
Time	Temp (°C)	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW			
					0.95						
1413	25.9	7.97	953.8			-119	6				
1415	23.7	7.68	990.1			-111	12				
1417	23.2	7.4	991.9			-109	18				

Comments:

Sample ID: DPE-1		Sample Time: 1426	
Laboratory: McCampbell		Sample Date: 7/12/12	
Containers/Preservative: 3 Voas (HCL), 1 -One Liter Ambers (HCL)			
Analyzed for: TPHg/BTEX/MTBE(8015Cm/8021), TPHd (8015C) with silica gel clean-up			
Sampler Name: Steve Hunter		Signature: 	



## MONITORING FIELD DATA SHEET

Well ID: DPE-2


Project.Task #: 1145.001.232				Project Name: Rockridge Heights				
Address: 5175 Broadway, Oakland, CA								
Date: 7/12/12				Weather: SUNNY/WARM				
Well Diameter: 4"				Volume/ft.	1" = 0.04	3" = 0.37	6" = 1.47	
					2" = 0.16	4" = 0.65	radius <sup>2</sup> * 0.163	
Total Depth (TD): 19.35				Depth to Product:				
Depth to Water (DTW): 10.5				Product Thickness: 5				
Water Column Height: 9.3				1 Casing Volume: <del>10</del> 6		gallons		
Reference Point: N.T.O.C.				3 Casing Volumes: 18		gallons		
Purging Device: <del>Disposable Bailer</del> Whaler pump								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
					0.99			
1321	23.3	7.33	815.6			-110	6	
1324	21.6	7.02	815.5			-107	12	
1327	20.9	6.87	914.9			-107	16	

Comments: dewatered at 16 gallons

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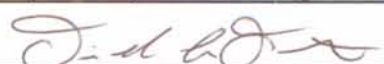
Sample ID: DPE-2		Sample Time: 1647	
Laboratory: McCampbell		Sample Date: 7/12/12	
Containers/Preservative: 3 Voas (HCL), 1 One Liter Ambers (HCL)			
Analyzed for: TPHg/BTEX/MTBE(8015Cm/8021), TPHd (8015C) with silica gel clean-up			
Sampler Name: Steve Hunter		Signature: 	

## MONITORING FIELD DATA SHEET

Well ID: DPE-3

Project.Task #:1145.001.232				Project Name: Rockridge Heights				
Address: 5175 Broadway, Oakland, CA								
Date: 7/12/12				Weather :				
Well Diameter: 4"				Volume/ft.	1" = 0.04	3" = 0.37	6" = 1.47	
				2" = 0.16	4" = 0.65	radius <sup>2</sup> * 0.163		
Total Depth (TD): 19.45				Depth to Product:				
Depth to Water (DTW): 11.00				Product Thickness:				
Water Column Height: 8.45				1 Casing Volume: 5.5			gallons	
Reference Point: N.T.O.C.				3 Casing Volumes: 16.5			gallons	
Purging Device: <del>Disposable Bailer</del> Whair pump (submersible)								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
					0.48			
12:49	20.9	7.29	1191			-70	5.5	
1256	20.7	7.30	1204			-99	<del>4.70</del> ← 11 vol (gal)	

Comments: well dewatered at 12 gallons

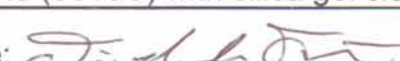
Sample ID: DPE-3	Sample Time: 1636
Laboratory: McCampbell	Sample Date: 7/12/12
Containers/Preservative: 3 Voas (HCL), 1 One Liter Ambers (HCL)	
Analyzed for:TPHg/BTEX/MTBE(8015Cm/8021),TPHd (8015C) with silica gel clean-up	
Sampler Name: <del>Steve Hunter</del> TINA DE LA FUENTE	Signature: 

## MONITORING FIELD DATA SHEET

Well ID: DPE-4

Project.Task #:1145.001.232				Project Name: Rockridge Heights				
Address: 5175 Broadway, Oakland, CA								
Date: 7/13/12				Weather: <del>SUNNY/WARM</del> <sup>TDIF</sup> OVERCAST				
Well Diameter: 4"				Volume/ft.	1" = 0.04	3" = 0.37	6" = 1.47	
				2" = 0.16	4" = 0.65	radius <sup>2</sup> * 0.163		
Total Depth (TD): 16.70				Depth to Product:				
Depth to Water (DTW): 12.26				Product Thickness:				
Water Column Height: 4.44				1 Casing Volume: 2.9		gallons		
Reference Point: N.T.O.C.				3 Casing Volumes: 8.7		gallons		
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
					0.15			
0958	18.7	7.39	1060			-81	3	
1008	18.6	7.32	1059			-82	6	

Comments: Well dewatered at 7 gallons

Sample ID: DPE-4		Sample Time: 1429	
Laboratory: McCampbell		Sample Date: 7/13/12	
Containers/Preservative: 3 Voas (HCL), 1 One Liter Ambers (HCL)			
Analyzed for: TPHg/BTEX/MTBE(8015Cm/8021), TPHd (8015C) with silica gel clean-up			
Sampler Name: <sup>TINA DE LA FUENTE</sup> Steve Hunter		Signature: 	

## MONITORING FIELD DATA SHEET

Well ID: DPE-5

Project.Task #:1145.001.232		Project Name: Rockridge Heights						
Address: 5175 Broadway, Oakland, CA								
Date: 7/12/12		Weather: SUNNY/WARM						
Well Diameter: 4"		Volume/ft. 1" = 0.04 3" = 0.37 6" = 1.47 2" = 0.16 4" = 0.65 radius* 0.163						
Total Depth (TD): 19.27		Depth to Product:						
Depth to Water (DTW): 13.35		Product Thickness:						
Water Column Height: 5.92		1 Casing Volume: 3.8 gallons						
Reference Point: N.T.O.C.		3 Casing Volumes: 11.4 gallons						
Purging Device: Disposable Bailer Whaler Pump								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
					0.56			
1532	20.2	7.14	1967			-115	4	
1534	18.8	6.99	1998			-114	8	
1536	19.0	6.83	2035			-113	11	

Comments:

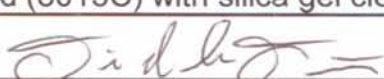
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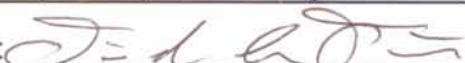
Sample ID: DPE-5	Sample Time: 1657
Laboratory: McCampbell	Sample Date: 7/12/12
Containers/Preservative: 3 Voas (HCL), 4 One Liter Ambers (HCL)	
Analyzed for: TPHg/BTEX/MTBE(8015Cm/8021), TPHd (8015C) with silica gel clean-up	
Sampler Name: Steve Hunter <small>TINA DE LA FUENTE</small>	Signature: 

## MONITORING FIELD DATA SHEET

Well ID: DPE-6

Project.Task #:1145.001.232		Project Name: Rockridge Heights						
Address: 5175 Broadway, Oakland, CA								
Date: 7/12/12		Weather: SUNNY/WARM						
Well Diameter: 4"		Volume/ft. 1" = 0.04 3" = 0.37 6" = 1.47 2" = 0.16 4" = 0.65 radius* 0.163						
Total Depth (TD): 19.77		Depth to Product:						
Depth to Water (DTW): 10.45		Product Thickness:						
Water Column Height: 9.32		1 Casing Volume: 6 gallons						
Reference Point: N.T.O.C.		3 Casing Volumes: 18 gallons						
Purging Device: <del>Disposable Bailer</del> Whaler Pump								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
						← 0.46(00)		
1453	22.1	7.72	1440			-113	6	
1457	20.5	7.14	1447			-110	12	
1459	20.5	7.05	1452			-114	18	

Comments: Sample water became very silty half way through collection

Sample ID: DPE-6	Sample Time: 1512
Laboratory: McCampbell	Sample Date: 7/12/12
Containers/Preservative: 3 Voas (HCL), 1 One Liter Ambers (HCL)	
Analyzed for: TPHg/BTEX/MTBE(8015Cm/8021), TPHd (8015C) with silica gel clean-up	
Sampler Name: <sup>TINA DE LA FUENTE</sup> Steve Hunter	Signature: 

## MONITORING FIELD DATA SHEET

Well ID: *AS-1*

Project.Task #:1145.001				Project Name: Rockridge Heights				
Address: 5175 Broadway, Oakland, CA								
Date: <i>7/13/12</i>				Weather: <i>Cloudy, overcast</i>				
Well Diameter: <i>1</i>				Volume/ft.	1" = 0.04	3" = 0.37	6" = 1.47	
				2" = 0.16	4" = 0.65	radius <sup>2</sup> * 0.163		
Total Depth (TD): <i>19.46<sup>ft</sup></i>				Depth to Product: <i>—</i>				
Depth to Water (DTW): <i>10.25</i>				Product Thickness: <i>—</i>				
Water Column Height: <i>9.21</i>				1 Casing Volume: <i>0.4</i>		gallons		
Reference Point: N.T.O.C.				3 Casing Volumes: <i>1.2</i>		gallons		
Purging Device: <i>Disposable Bailer</i>								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
<i>1045</i>	<i>18.6</i>	<i>7.38</i>	<i>814</i>		<i>1.87</i>	<i>-85</i>	<i>0.5</i>	
<i>1051</i>	<i>19.0</i>	<i>7.40</i>	<i>805</i>			<i>-63</i>	<i>1.0</i>	
<i>1100</i>	<i>19.0</i>	<i>7.39</i>	<i>804</i>			<i>-56</i>	<i>1.25</i>	

Comments: *D.O. measured above hole.*

Sample ID: <i>AS-1</i>		Sample Time: <del><i>1105</i></del> <i>1107</i>	
Laboratory: McCampbell		Sample Date: <i>7/13/12</i>	
Containers/Preservative: 3 Voas (HCL), 1-One Liter Ambers (HCL)			
Analyzed for:TPHg/BTEX/MTBE(8015Cm/8021),TPHd (8015C) with silica gel clean-up			
Sampler Name: <i>MORGAN GILLIES</i>		Signature: <i>[Signature]</i>	

## **APPENDIX C**

Laboratory Analytical Report



## Analytical Report

Pangea Environmental Svcs., Inc.  1710 Franklin Street, Ste. 200  Oakland, CA 94612	Client Project ID: 5175 Broadway; Rockridge Heights	Date Sampled: 07/12/12-07/13/12
		Date Received: 07/13/12
	Client Contact: Tina De La Fuente	Date Reported: 07/20/12
	Client P.O.:	Date Completed: 07/20/12

**WorkOrder: 1207365**

July 20, 2012

Dear Tina:

Enclosed within are:

- 1) The results of the **23** analyzed samples from your project: **5175 Broadway; Rockridge Heights**,
- 2) QC data for the above samples, and
- 3) A copy of the chain of custody.

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.

*The analytical results relate only to the items tested.*



1207365

**McCAMPBELL ANALYTICAL, INC.**

1534 Willow Pass Rd.  
Pittsburg, CA 94565

Website: [www.mccampbell.com](http://www.mccampbell.com) Email: [main@mccampbell.com](mailto:main@mccampbell.com)  
Telephone: (925) 252-9262 Fax: (925) 252-9269

**CHAIN OF CUSTODY RECORD**

TURN AROUND TIME

RUSH 24 HR 48 HR 72 HR 5 DAY

EDF Required? Coelt (Normal) No Write On (DW) No

Report To: Tina de la Fuente Bill To: Pangea  
Company: Pangea Environmental Services, Inc.  
1710 Franklin Street, Suite 200, Oakland, CA 94612  
E-Mail: [tdelafuente@pangeaenv.com](mailto:tdelafuente@pangeaenv.com)  
Tele: (510) 836-3702 Fax: (510) 836-3709  
Project #: 5175 Broadway Project Name: Rockridge Heights  
Project Location: 5175 Broadway, Oakland, CA  
Sampler Signature: *[Signature]*

Analysis Request										Other	Comments
<p>BTEX &amp; TPH as Gas (602/8020 + 8015)/MTBE TPHd (8015) w/ silica gel cleanup</p>											Filter Samples for Metals analysis: Yes / No

SAMPLE ID (Field Point Name)	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED							
		Date	Time			Water	Soil	Air	Sludge	Other	ICE	HCL	HNO <sub>3</sub>	Other				
MW-1		7/13/12	1245	4	↓	X					X	X						
MW-2C		7/13/12	1325															
MW-3A		7/13/12	1325															
MW-4A		7/13/12	1055															
MW-3C		7/13/12	1018															
MW-5A		7/13/12	0915															
MW-5B		7/13/12	1355															
MW-5C		7/13/12	0853															
MW-6A		7/13/12	1220															
MW-7B		7/12/12	1624															
MW-7C		7/13/12	1345															
MW-8A		7/13/12	1405															
MW-8C		7/13/12	1417															
MW-9A		7/12/12	1557															

Relinquished By: *[Signature]* Date: 7/13/12 Time: 1615 Received By: *[Signature]*  
 Relinquished By: *[Signature]* Date: 7/13/12 Time: 1700 Received By: *[Signature]*  
 Relinquished By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_

COMMENTS:  
 ICE/t° 48h ✓  
 GOOD CONDITION ✓  
 HEAD SPACE ABSENT ✓  
 DECHLORINATED IN LAB ✓  
 APPROPRIATE CONTAINERS ✓  
 PRESERVED IN LAB ✓  
 VOAS ✓ O&G METALS OTHER ✓  
 PRESERVATION ✓ pH<2 ✓





# CHAIN-OF-CUSTODY RECORD

WorkOrder: 1207365

ClientCode: PEO

WaterTrax   
  WriteOn   
  EDF   
  Excel   
  EquiS   
  Email   
  HardCopy   
  ThirdParty   
  J-flag

**Report to:**

Tina De La Fuente  
Pangea Environmental Svcs., Inc.  
1710 Franklin Street, Ste. 200  
Oakland, CA 94612  
(510) 836-3700    FAX: (510) 836-3709

Email: tdelafuente@pangeaenv.com  
cc:  
PO:  
ProjectNo: 5175 Broadway; Rockridge Heights

**Bill to:**

Bob Clark-Riddell  
Pangea Environmental Svcs., Inc.  
1710 Franklin Street, Ste. 200  
Oakland, CA 94612

**Requested TAT:**

**5 days**

**Date Received: 07/13/2012**

**Date Printed: 07/13/2012**

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	
1207365-001	MW-1	Water	7/13/2012 12:45	<input type="checkbox"/>	A	A	B										
1207365-002	MW-2C	Water	7/13/2012 13:25	<input type="checkbox"/>	A		B										
1207365-003	MW-3A	Water	7/13/2012 13:25	<input type="checkbox"/>	A		B										
1207365-004	MW-4A	Water	7/13/2012 10:55	<input type="checkbox"/>	A		B										
1207365-005	MW-3C	Water	7/13/2012 10:18	<input type="checkbox"/>	A		B										
1207365-006	MW-5A	Water	7/13/2012 9:15	<input type="checkbox"/>	A		B										
1207365-007	MW-5B	Water	7/13/2012 13:55	<input type="checkbox"/>	A		B										
1207365-008	MW-5C	Water	7/13/2012 8:53	<input type="checkbox"/>	A		B										
1207365-009	MW-6A	Water	7/13/2012 12:20	<input type="checkbox"/>	A		B										
1207365-010	MW-7B	Water	7/12/2012 16:24	<input type="checkbox"/>	A		B										
1207365-011	MW-7C	Water	7/13/2012 13:45	<input type="checkbox"/>	A		B										
1207365-012	MW-8A	Water	7/13/2012 14:05	<input type="checkbox"/>	A		B										
1207365-013	MW-8C	Water	7/13/2012 14:17	<input type="checkbox"/>	A		B										
1207365-014	MW-9A	Water	7/12/2012 15:57	<input type="checkbox"/>	A		B										

**Test Legend:**

1	G-MBTX_W	2	PREFD REPORT	3	TPH(D)WSG_W	4		5	
6		7		8		9		10	
11		12							

Prepared by: Melissa Valles

**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.



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

WorkOrder: 1207365

ClientCode: PEO

WaterTrax   
  WriteOn   
  EDF   
  Excel   
  EQuIS   
  Email   
  HardCopy   
  ThirdParty   
  J-flag

**Report to:**

Tina De La Fuente  
 Pangea Environmental Svcs., Inc.  
 1710 Franklin Street, Ste. 200  
 Oakland, CA 94612  
 (510) 836-3700    FAX: (510) 836-3709

Email: tdelafuente@pangeaenv.com  
 cc:  
 PO:  
 ProjectNo: 5175 Broadway; Rockridge Heights

**Bill to:**

Bob Clark-Riddell  
 Pangea Environmental Svcs., Inc.  
 1710 Franklin Street, Ste. 200  
 Oakland, CA 94612

**Requested TAT:**

**5 days**

**Date Received: 07/13/2012**

**Date Printed: 07/13/2012**

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	
1207365-015	MW-9C	Water	7/12/2012 16:07	<input type="checkbox"/>	A		B										
1207365-016	MW-10A	Water	7/12/2012 10:55	<input type="checkbox"/>	A		B										
1207365-017	DPE-1	Water	7/12/2012 14:26	<input type="checkbox"/>	A		B										
1207365-018	DPE-2	Water	7/12/2012 16:47	<input type="checkbox"/>	A		B										
1207365-019	DPE-3	Water	7/12/2012 16:36	<input type="checkbox"/>	A		B										
1207365-020	DPE-4	Water	7/13/2012 14:29	<input type="checkbox"/>	A		B										
1207365-021	DPE-5	Water	7/12/2012 16:57	<input type="checkbox"/>	A		B										
1207365-022	DPE-6	Water	7/12/2012 15:12	<input type="checkbox"/>	A		B										
1207365-023	AS-1	Water	7/13/2012 11:07	<input type="checkbox"/>	A		B										

**Test Legend:**

1	G-MBTX_W	2	PREFD REPORT	3	TPH(D)WSG_W	4		5	
6		7		8		9		10	
11		12							

**Prepared by: Melissa Valles**

**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: **Pangea Environmental Svcs., Inc.** Date and Time Received: **7/13/2012 6:29:05 PM**  
 Project Name: **5175 Broadway; Rockridge Heights** LogIn Reviewed by: **Melissa Valles**  
 WorkOrder N°: **1207365** Matrix: Water Carrier: Rob Pringle (MAI Courier)

**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: 4.8°C NA   
 Water - VOA vials have zero headspace / no bubbles? Yes  No  No VOA vials submitted   
 Sample labels checked for correct preservation? Yes  No   
 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.

-----  
 Comments:



Pangea Environmental Svcs., Inc.  1710 Franklin Street, Ste. 200  Oakland, CA 94612	Client Project ID: 5175 Broadway; Rockridge Heights	Date Sampled: 07/12/12-07/13/12
	Client Contact: Tina De La Fuente	Date Received: 07/13/12
	Client P.O.:	Date Extracted: 07/14/12-07/20/12
		Date Analyzed: 07/14/12-07/20/12

**Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE\***

Extraction method: SW5030B

Analytical methods: SW8021B/8015Bm

Work Order: 1207365

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS	Comments
001A	MW-1	W	260	ND	14	0.85	ND	1.1	1	104	d1
002A	MW-2C	W	ND	ND	ND	ND	ND	ND	1	94	
003A	MW-3A	W	1400	ND<10	55	2.3	23	10	1	103	d7,d9
004A	MW-4A	W	320	ND	14	0.85	2.0	1.9	1	113	d1,d7
005A	MW-3C	W	72	ND	2.7	0.50	0.87	1.2	1	92	d1
006A	MW-5A	W	ND	ND	ND	ND	ND	ND	1	89	b1
007A	MW-5B	W	ND	ND	ND	ND	ND	ND	1	93	b1
008A	MW-5C	W	ND	ND	2.3	ND	ND	ND	1	92	b1
009A	MW-6A	W	ND	ND	ND	ND	ND	ND	1	96	
010A	MW-7B	W	ND	ND	0.94	ND	ND	0.78	1	88	
011A	MW-7C	W	120	ND	7.3	ND	ND	ND	1	111	d1
012A	MW-8A	W	220	ND	2.4	ND	ND	ND	1	101	d1,d7
013A	MW-8C	W	ND	ND	ND	ND	ND	ND	1	117	b1
014A	MW-9A	W	ND	ND	ND	ND	ND	ND	1	121	
015A	MW-9C	W	ND	ND	ND	ND	ND	ND	1	89	
016A	MW-10A	W	ND	ND	ND	ND	ND	ND	1	89	b1

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	5.0	0.5	0.5	0.5	0.5	0.5	0.5	µg/L
	S	1.0	0.05	0.005	0.005	0.005	0.005	0.005	0.005	mg/Kg

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

# cluttered chromatogram; sample peak coelutes w/surrogate peak; low surrogate recovery due to matrix interference. %SS = Percent Recovery of Surrogate Standard; DF = Dilution Factor

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

- b1) aqueous sample that contains greater than ~1 vol. % sediment
- d1) weakly modified or unmodified gasoline is significant
- d7) strongly aged gasoline or diesel range compounds are significant in the TPH(g) chromatogram
- d9) no recognizable pattern



Pangea Environmental Svcs., Inc.  1710 Franklin Street, Ste. 200  Oakland, CA 94612	Client Project ID: 5175 Broadway; Rockridge Heights	Date Sampled: 07/12/12-07/13/12
	Client Contact: Tina De La Fuente	Date Received: 07/13/12
	Client P.O.:	Date Extracted: 07/14/12-07/20/12
		Date Analyzed: 07/14/12-07/20/12

**Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE\***

Extraction method: SW5030B

Analytical methods: SW8021B/8015Bm

Work Order: 1207365

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS	Comments
017A	DPE-1	W	300	ND	11	ND	1.0	1.4	1	103	d1,d7
018A	DPE-2	W	1700	ND<20	150	8.2	25	43	1	107	d1
019A	DPE-3	W	220	ND	8.0	0.71	1.9	2.9	1	98	d1
020A	DPE-4	W	420	ND	1.2	1.1	1.0	12	1	90	d7
021A	DPE-5	W	69	ND	1.7	ND	ND	ND	1	93	d1
022A	DPE-6	W	1200	ND	0.86	2.4	2.2	2.2	1	---#	d1,d7,b1
023A	AS-1	W	ND	ND	ND	ND	ND	ND	1	100	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	5.0	0.5	0.5	0.5	0.5	0.5	µg/L
	S	1.0	0.05	0.005	0.005	0.005	0.005	0.005	mg/Kg

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

# cluttered chromatogram; sample peak coelutes w/surrogate peak; low surrogate recovery due to matrix interference. %SS = Percent Recovery of Surrogate Standard; DF = Dilution Factor

The following descriptions of the TPH chromatogram are cursory in nature and McC Campbell Analytical is not responsible for their interpretation:  
 b1) aqueous sample that contains greater than ~1 vol. % sediment  
 d1) weakly modified or unmodified gasoline is significant  
 d7) strongly aged gasoline or diesel range compounds are significant in the TPH(g) chromatogram  
 d9) no recognizable pattern



Pangea Environmental Svcs., Inc.  1710 Franklin Street, Ste. 200  Oakland, CA 94612	Client Project ID: 5175 Broadway; Rockridge Heights	Date Sampled: 07/12/12-07/13/12
	Client Contact: Tina De La Fuente	Date Received: 07/13/12
	Client P.O.:	Date Extracted 07/13/12
		Date Analyzed 07/14/12-07/19/12

**Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up\***

Extraction method: SW3510C/3630C

Analytical methods: SW8015B

Work Order: 1207365

Lab ID	Client ID	Matrix	TPH-Diesel (C10-C23)	DF	% SS	Comments
1207365-001B	MW-1	W	220	1	92	e11
1207365-002B	MW-2C	W	ND	1	91	
1207365-003B	MW-3A	W	620	1	94	e4
1207365-004B	MW-4A	W	170	1	91	e11
1207365-005B	MW-3C	W	ND	1	91	
1207365-006B	MW-5A	W	ND	1	91	b1
1207365-007B	MW-5B	W	ND	1	88	b1
1207365-008B	MW-5C	W	ND	1	88	b1
1207365-009B	MW-6A	W	ND	1	92	
1207365-010B	MW-7B	W	ND	1	93	
1207365-011B	MW-7C	W	ND	1	92	
1207365-012B	MW-8A	W	440	1	92	e11,e7,e2
1207365-013B	MW-8C	W	ND	1	92	b1
1207365-014B	MW-9A	W	ND	1	115	
1207365-015B	MW-9C	W	ND	1	97	

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/matrix interference.

%SS = Percent Recovery of Surrogate Standard. DF = Dilution Factor

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

- b1) aqueous sample that contains greater than ~1 vol. % sediment
- e2) diesel range compounds are significant; no recognizable pattern
- e4) gasoline range compounds are significant.
- e7) oil range compounds are significant
- e11) stoddard solvent/mineral spirit (?)





Pangea Environmental Svcs., Inc.  1710 Franklin Street, Ste. 200  Oakland, CA 94612	Client Project ID: 5175 Broadway; Rockridge Heights	Date Sampled: 07/12/12-07/13/12
	Client Contact: Tina De La Fuente	Date Received: 07/13/12
	Client P.O.:	Date Extracted 07/13/12
		Date Analyzed 07/14/12-07/19/12

**Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up\***

Extraction method: SW3510C/3630C

Analytical methods: SW8015B

Work Order: 1207365

Lab ID	Client ID	Matrix	TPH-Diesel (C10-C23)	DF	% SS	Comments
1207365-016B	MW-10A	W	ND	1	92	b1
1207365-017B	DPE-1	W	290	1	88	e11
1207365-018B	DPE-2	W	480	1	93	e4
1207365-019B	DPE-3	W	350	1	92	e11
1207365-020B	DPE-4	W	520	1	91	e11,e7,e2
1207365-021B	DPE-5	W	ND	1	92	
1207365-022B	DPE-6	W	920	1	93	e4,e2,b1
1207365-023B	AS-1	W	ND	1	92	

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/matrix interference.

%SS = Percent Recovery of Surrogate Standard. DF = Dilution Factor

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

- b1) aqueous sample that contains greater than ~1 vol. % sediment
- e2) diesel range compounds are significant; no recognizable pattern
- e4) gasoline range compounds are significant.
- e7) oil range compounds are significant
- e11) stoddard solvent/mineral spirit (?)



**QC SUMMARY REPORT FOR SW8015B**

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 69010

WorkOrder: 1207365

EPA Method: SW8015B		Extraction: SW3510C/3630C					Spiked Sample ID: N/A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	MS / MSD	RPD	LCS	
TPH-Diesel (C10-C23)	N/A	1000	N/A	N/A	N/A	124	N/A	N/A	70 - 130	
%SS:	N/A	625	N/A	N/A	N/A	102	N/A	N/A	70 - 130	

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

BATCH 69010 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1207365-022B	07/12/12 3:12 PM	07/13/12	07/19/12 2:28 PM	1207365-023B	07/13/12 11:07 AM	07/13/12	07/15/12 12:53 PM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.  
 $\% \text{ Recovery} = 100 * (\text{MS-Sample}) / (\text{Amount Spiked}); \text{RPD} = 100 * (\text{MS} - \text{MSD}) / ((\text{MS} + \text{MSD}) / 2).$   
 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: 69123

WorkOrder: 1207365

EPA Method: SW8015B		Extraction: SW3510C/3630C					Spiked Sample ID: N/A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	MS / MSD	RPD	LCS	
TPH-Diesel (C10-C23)	N/A	1000	N/A	N/A	N/A	108	N/A	N/A	70 - 130	
%SS:	N/A	625	N/A	N/A	N/A	108	N/A	N/A	70 - 130	

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

BATCH 69123 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1207365-001B	07/13/12 12:45 PM	07/13/12	07/14/12 5:41 PM	1207365-002B	07/13/12 1:25 PM	07/13/12	07/14/12 2:12 PM
1207365-003B	07/13/12 1:25 PM	07/13/12	07/19/12 11:55 PM	1207365-004B	07/13/12 10:55 AM	07/13/12	07/15/12 1:35 AM
1207365-005B	07/13/12 10:18 AM	07/13/12	07/14/12 6:49 PM	1207365-006B	07/13/12 9:15 AM	07/13/12	07/14/12 10:13 PM
1207365-007B	07/13/12 1:55 PM	07/13/12	07/15/12 6:24 AM	1207365-008B	07/13/12 8:53 AM	07/13/12	07/15/12 3:15 PM
1207365-009B	07/13/12 12:20 PM	07/13/12	07/15/12 9:27 AM	1207365-010B	07/12/12 4:24 PM	07/13/12	07/17/12 11:08 PM
1207365-011B	07/13/12 1:45 PM	07/13/12	07/14/12 5:58 AM	1207365-012B	07/13/12 2:05 PM	07/13/12	07/14/12 11:21 PM
1207365-013B	07/13/12 2:17 PM	07/13/12	07/14/12 10:28 AM	1207365-014B	07/12/12 3:57 PM	07/13/12	07/15/12 5:18 AM
1207365-015B	07/12/12 4:07 PM	07/13/12	07/14/12 1:03 PM	1207365-016B	07/12/12 10:55 AM	07/13/12	07/15/12 12:28 AM
1207365-017B	07/12/12 2:26 PM	07/13/12	07/15/12 5:18 AM	1207365-018B	07/12/12 4:47 PM	07/13/12	07/15/12 10:35 AM
1207365-019B	07/12/12 4:36 PM	07/13/12	07/14/12 4:51 AM	1207365-020B	07/13/12 2:29 PM	07/13/12	07/15/12 11:44 AM
1207365-021B	07/12/12 4:57 PM	07/13/12	07/15/12 6:05 AM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.  
 $\% \text{ Recovery} = 100 * (\text{MS-Sample}) / (\text{Amount Spiked}); \text{RPD} = 100 * (\text{MS} - \text{MSD}) / ((\text{MS} + \text{MSD}) / 2).$   
 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 SW8021B/8015Bm**

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 69139

WorkOrder: 1207365

EPA Method: SW8021B/8015Bm		Extraction: SW5030B					Spiked Sample ID: 1207365-006A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	MS / MSD	RPD	LCS	
TPH(btex) <sup>£</sup>	ND	60	102	95.5	6.65	98.4	70 - 130	20	70 - 130	
MTBE	ND	10	85.2	90.2	5.75	82.1	70 - 130	20	70 - 130	
Benzene	ND	10	97.8	105	7.46	95.8	70 - 130	20	70 - 130	
Toluene	ND	10	101	108	6.84	96.8	70 - 130	20	70 - 130	
Ethylbenzene	ND	10	103	108	4.82	97.3	70 - 130	20	70 - 130	
Xylenes	ND	30	105	109	4.14	101	70 - 130	20	70 - 130	
%SS:	89	10	94	99	5.36	94	70 - 130	20	70 - 130	

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

BATCH 69139 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1207365-005A	07/13/12 10:18 AM	07/15/12	07/15/12 6:37 AM	1207365-006A	07/13/12 9:15 AM	07/14/12	07/14/12 9:48 AM
1207365-007A	07/13/12 1:55 PM	07/14/12	07/14/12 10:18 AM	1207365-008A	07/13/12 8:53 AM	07/14/12	07/14/12 10:48 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.  
 £ TPH(btex) = sum of BTEX areas from the FID.  
 # cluttered chromatogram; sample peak coelutes with surrogate peak.  
 N/A = not enough sample to perform matrix spike and matrix spike duplicate.  
 NR = matrix interference and/or 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, or inconsistency in sample containers.



**QC SUMMARY REPORT FOR SW8021B/8015Bm**

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 69196

WorkOrder: 1207365

EPA Method: SW8021B/8015Bm		Extraction: SW5030B					Spiked Sample ID: 1207364-005A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	MS / MSD	RPD	LCS	
TPH(btex) <sup>£</sup>	ND	60	106	100	5.66	105	70 - 130	20	70 - 130	
MTBE	ND	10	80.6	82	1.63	93.9	70 - 130	20	70 - 130	
Benzene	ND	10	101	100	0.614	98.8	70 - 130	20	70 - 130	
Toluene	ND	10	103	99.7	3.45	102	70 - 130	20	70 - 130	
Ethylbenzene	ND	10	106	104	2.11	104	70 - 130	20	70 - 130	
Xylenes	ND	30	109	106	2.25	105	70 - 130	20	70 - 130	
%SS:	90	10	94	93	0.983	96	70 - 130	20	70 - 130	

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

BATCH 69196 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1207365-003A	07/13/12 1:25 PM	07/17/12	07/17/12 11:57 PM	1207365-004A	07/13/12 10:55 AM	07/18/12	07/18/12 3:56 AM
1207365-017A	07/12/12 2:26 PM	07/18/12	07/18/12 4:26 AM	1207365-022A	07/12/12 3:12 PM	07/18/12	07/18/12 4:56 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.  
 £ TPH(btex) = sum of BTEX areas from the FID.  
 # cluttered chromatogram; sample peak coelutes with surrogate peak.  
 N/A = not enough sample to perform matrix spike and matrix spike duplicate.  
 NR = matrix interference and/or 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, or inconsistency in sample containers.



**QC SUMMARY REPORT FOR SW8021B/8015Bm**

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 69199

WorkOrder: 1207365

EPA Method: SW8021B/8015Bm		Extraction: SW5030B					Spiked Sample ID: 1207365-009A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	MS / MSD	RPD	LCS	
TPH(btex) <sup>£</sup>	ND	60	106	103	3.03	91.8	70 - 130	20	70 - 130	
MTBE	ND	10	80.6	84.8	5.11	79	70 - 130	20	70 - 130	
Benzene	ND	10	99.6	103	3.46	86.6	70 - 130	20	70 - 130	
Toluene	ND	10	101	107	5.63	87.1	70 - 130	20	70 - 130	
Ethylbenzene	ND	10	104	107	3.21	89.4	70 - 130	20	70 - 130	
Xylenes	ND	30	105	110	4.18	91.3	70 - 130	20	70 - 130	
%SS:	96	10	94	95	0.399	93	70 - 130	20	70 - 130	

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

BATCH 69199 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1207365-001A	07/13/12 12:45 PM	07/16/12	07/16/12 6:25 PM	1207365-002A	07/13/12 1:25 PM	07/16/12	07/16/12 6:54 PM
1207365-009A	07/13/12 12:20 PM	07/16/12	07/16/12 7:24 PM	1207365-010A	07/12/12 4:24 PM	07/18/12	07/18/12 10:00 PM
1207365-011A	07/13/12 1:45 PM	07/16/12	07/16/12 8:23 PM	1207365-012A	07/13/12 2:05 PM	07/18/12	07/18/12 9:25 AM
1207365-013A	07/13/12 2:17 PM	07/16/12	07/16/12 9:50 PM	1207365-014A	07/12/12 3:57 PM	07/16/12	07/16/12 10:19 PM
1207365-015A	07/12/12 4:07 PM	07/18/12	07/18/12 5:26 AM	1207365-016A	07/12/12 10:55 AM	07/18/12	07/18/12 6:26 AM
1207365-018A	07/12/12 4:47 PM	07/18/12	07/18/12 7:23 PM	1207365-019A	07/12/12 4:36 PM	07/18/12	07/18/12 7:52 PM
1207365-020A	07/13/12 2:29 PM	07/18/12	07/18/12 10:26 AM	1207365-021A	07/12/12 4:57 PM	07/18/12	07/18/12 8:51 PM
1207365-023A	07/13/12 11:07 AM	07/20/12	07/20/12 12:48 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.  
 £ TPH(btex) = sum of BTEX areas from the FID.  
 # cluttered chromatogram; sample peak coelutes with surrogate peak.  
 N/A = not enough sample to perform matrix spike and matrix spike duplicate.  
 NR = matrix interference and/or 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, or inconsistency in sample containers.