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2:54 pm, Jul 24, 2008

Alameda County
Environmental Health

July 22, 2008

Mr. Barney Chan
Hazardous Materials Specialist
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, 2nd Floor
Alameda, CA 94502

RE: RO#0000010 and RO#0000187_First Semi-Annual 2008 Groundwater Monitoring and Remediation System Operation and Maintenance Report - Port of Oakland, 651 and 555 Maritime Street, Oakland, CA_2008-07-22

Dear Mr. Chan:

Please find enclosed the report entitled *First Semi-Annual 2008 Groundwater Monitoring and Remediation System Operation and Maintenance Report - Port of Oakland, 651 and 555 Maritime Street, Oakland, CA* ("Report") dated July 2008, prepared by Micro Search Environmental Corporation ("MSE Group") on behalf of the Port of Oakland ("Port"). This Report is being submitted in accordance with Alameda County Health Care Services Agency ("County") requirements, as specified in County letters dated March 23, 2006¹ and January 19, 2007.²

The Port has retained the MSE Group to perform groundwater monitoring and maintenance of the remediation system. Results of the first 2008 semi-annual sampling event are contained in the enclosed report. The next monitoring event will be performed during the November/December 2008 time frame. If you have any questions or comments regarding the results, please contact Jeff Rubin at (510) 627-1134.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached report prepared by the MSE Group are true and correct to the best of my knowledge. Please note that the report is stamped by a Registered Professional Engineer in the State of California.

Sincerely,

Jeffrey R. Jones
Supervisor
Environmental Programs and Planning

Jeffrey L. Rubin, CPSS, REA
Port Associate Environmental Scientist
Environmental Programs and Planning

Enclosure: noted

Cc (w encl.): Michele Heffes
James McCarty (Baseline Environmental)

Cc (w/o encl.): John Turney (MSE Group)
Yane Nordhav (Baseline Environmental)

¹ Letter from Mr. Barney Chan (County) to Mr. Jeff Rubin (Port), regarding *Fuel Leak Cases RO0000010 and RO0000185, 2277 and 2225 7th St., Oakland, CA 94607*, dated March 23, 2006.

² Letter from Mr. Barney Chan (County) to Mr. Jeff Rubin (Port), regarding *Fuel Leak Cases RO0000010 and RO0000185, 2277 and 2225 7th St., Oakland, CA 94607*, dated January 19, 2007.

*First Semi-Annual 2008 Groundwater Monitoring
and
Remediation System Operation and Maintenance Report*

*651 and 555 Maritime Street
Oakland, California*

July 2008

Prepared on behalf of:

Port of Oakland
530 Water Street
Oakland, California 94607

Prepared by:



302 Pendleton Way
Oakland, CA 94621
Phone: 510.383.9600
Fax: 510.383.9300



July 22, 2008

Mr. Jeffrey L. Rubin, CPSS REA
Associate Environmental Scientist
Port of Oakland
530 Water Street
Oakland, California 94607

Subject: First Semi-Annual 2008 Groundwater Monitoring and Remediation System Operation and Maintenance Report, Port of Oakland, 651 and 555 Maritime Street, Oakland, California

Dear Mr. Rubin:

Enclosed please find the First Semi-Annual 2008 Groundwater Monitoring and Remediation System Operation and Maintenance Report for 651 and 555 Maritime Street (formerly 2277 and 2225 Seventh Street, Alameda County Local Oversight Program case numbers RO0000010 and RO0000187, respectively). This report has been prepared for submittal to Alameda County Health Care Services, Department of Environmental Health (ACHCS) on behalf of the Port of Oakland (the Port) as required in ACHCS' letter to the Port dated March 23, 2006. The ACHCS requires semi-annual groundwater monitoring and reporting at these two parcels.

Since assuming operations of the product recovery system on January 1, 2008, the MSE Group (MSE) has continued to operate the product recovery system at the sites during this reporting period. The remediation system recovered approximately 65 gallons of free-phase product during the six month period from January 2008 through June 2008, and approximately 461 gallons since beginning operation on December 14, 2004.

If you have any questions or comments, please contact John Turney of MSE at (925) 787-8304.

Sincerely,

A handwritten signature in blue ink that reads "John H. Turney".

John H. Turney, P.E.
Project Manager



Enclosure

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January through June 2008

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1.0 INTRODUCTION

This July 2008 Semi-Annual Groundwater Monitoring and Remediation System Operation and Maintenance Report for 651 and 555 Maritime Street (formerly 2277 and 2225 Seventh Street) in Oakland, California (Site)¹ (Figure 1) has been prepared by the MSE Group (MSE) on behalf of the Port of Oakland (Port). This is the first semi-annual report for 2008, and includes the period from January through June of 2008. The Site has been impacted by petroleum releases from past operations of underground storage tanks (USTs) and the Alameda County Health Care Services (ACHCS) is providing regulatory oversight under the Local Oversight Program (LOP). The ACHCS LOP case number for 2277 Seventh Street is RO0000010 and for 2225 Seventh Street RO0000187.

The Site encompasses approximately 13 acres. The Port developed the eight acres of the eastern portion of the Site in 2004 into the Harbor Facilities Complex with an address of 651 Maritime Street. The remaining five acres of the Site were redeveloped by the Port in 2006 into the Maritime Support Center with an address of 555 Maritime Street and is currently leased to Shippers Transport Express (STE) (Figure 2).

In 1993, Uribe and Associates (Uribe) removed four Port-owned USTs from 2277 Seventh Street. Uribe collected soil samples from beneath the tanks at the time of UST removal and submitted them for laboratory analyses. The laboratory reported that the soil contained petroleum hydrocarbons in the diesel and gasoline range, as well as benzene, toluene, ethylbenzene, and total xylenes (BTEX) compounds. Uribe also observed free-phase product on the groundwater within the excavation. In 1994, Uribe installed three groundwater monitoring wells at 2277 Seventh Street (MW-1 through MW-3) and in 1995 Alisto Engineering Group (Alisto) installed five additional wells (MW-4 through MW-8). Quarterly groundwater monitoring was initiated in 1996 in accordance with a workplan (Uribe, 1994) approved by ACHCS, dated 18 April 1995.

Former Port tenant Ringsby Terminals (formerly Dongary Investments) and/or its tenant owned and operated nine USTs at 2225 Seventh Street. One of the tanks in the cluster failed a tank integrity test in 1989 and National Environmental Service Company (NESCO) removed the UST in March 1990. During the UST removal, NESCO collected soil and groundwater samples from the excavation. Analytical results indicated the presence of diesel and BTEX. Ramcon Engineering and Environmental Contracting (RAMCON) removed seven of the USTs (six diesel and one bulk fuel oil) in 1992. RAMCON observed a hole in the bulk fuel tank and an unspecified petroleum product created a sheen on the groundwater in the excavation. During a separate event in 1992, RAMCON removed the remaining UST (a waste oil tank). Soil samples collected from that excavation indicated the presence of diesel, motor oil, benzene, xylenes, and polynuclear aromatic compounds (PAHs). A liquid sample collected from the excavation contained diesel product. In 1993, RAMCON installed three groundwater monitoring wells

¹ The Site has been referred to in the past as the “Shippers” and “Ringsby” sites, based on the Port tenants occupying the site at the time of release discoveries. In addition, prior to site redevelopment in 2004, the site was referred to as 2277 and 2225 Seventh Street; the Site addresses after redevelopment are 651 and 555 Maritime Street.

(MW-1 through MW-3) at the 2225 Seventh Street site and in 1994 quarterly groundwater monitoring began, as required by ACHCS.²

The impacted groundwater area consists of a co-mingled plume containing dissolved and free-phase hydrocarbons in the diesel range (Figure 2). In addition, MW-4 on the 2277 Seventh Street parcel has historically contained dissolved hydrocarbons in the gasoline range.

In 1996, the Port installed a remediation system at 2277 Seventh Street to recover the free-phase product. The free product recovery system was operated until it was removed in 2003. Removal of this product recovery system was approved by the ACHCS on 27 March 2003, with the stipulation that a new free product recovery system should be installed. In 1998, Harding Lawson Associates abandoned MW-8 to make possible the expansion of the railroad tracks north of 2277 Seventh Street and a replacement well, MW-8A, was installed in 2001. To facilitate the construction of the new Harbor Facilities Complex, groundwater monitoring wells MW-6 and MW-7 at 2277 Seventh Street and MW-1, MW-2, and MW-3 at 2225 Seventh Street were abandoned in 2002.

The Port has monitored groundwater quality at the Site since 1994. MSE, on the behalf of the Port, currently monitors groundwater quality using a network of six groundwater monitoring wells: MW-1, MW-2, MW-3, MW-4, MW-5, and MW-8A (Figure 2). The ACHCS approved a modification of the groundwater monitoring frequency from quarterly to semi-annually in a letter to the Port dated 23 March 2006. The first semi-annual monitoring event occurred on 28 July 2006. The ACHCS also approved the use of Oxygen Releasing Compound™ (ORC) socks in MW-4 in that same letter. The ORC increases the dissolved oxygen (DO) concentration in groundwater and stimulates aerobic bio-degradation of the petroleum hydrocarbons reported in the groundwater at that location.

2.0 FIELD ACTIVITIES

On May 30, 2008, approximately one week prior to conducting semi-annual groundwater monitoring, MSE removed the ORC socks from MW-4 that had been placed in MW-4 following the November 2007 semi-annual groundwater monitoring event.

On June 5, 2008, MSE measured the depth to groundwater (and product, if present) from the top of the well casing (TOC) to the nearest one-hundredth of a foot in the monitoring wells using a dual-phase interface probe. MSE decontaminated the dual-phase interface probe after each use by washing with an Alconox™ and water solution and then triple rinsing with deionized water.

MSE detected measurable free-phase product in monitoring wells MW-1 and MW-3; therefore, groundwater samples were not collected from these wells.

Prior to sampling, MSE purged monitoring wells MW-2, MW-4, MW-5, and MW-8A of at least three well casing volumes of groundwater using a peristaltic pump equipped with new disposable

² Letter from ACHCS to Dongary Investments dated 26 July 1994.

polyethylene and silicon tubing. Purging continued until the electrical conductivity, pH, DO, oxidation and reduction potential, and temperature of the groundwater had stabilized. The monitoring details for each well are provided on the groundwater sampling forms in Appendix A.

MSE collected groundwater samples from MW-2, MW-4, MW-5, and MW-8A using a peristaltic pump with the intake of the tubing placed a foot from the bottom of the well. A duplicate sample was collected from MW-4. MSE decanted the groundwater samples directly into certified-clean containers from the discharge end of the tubing. MSE labeled the sample containers with sample location, date, and time and then stored the samples in a cooler containing ice. The water samples were submitted to Curtis and Tompkins, Ltd. (C&T) – a California certified analytical laboratory – under chain-of-custody protocol and requested the following analyses:

- Total purgeable petroleum hydrocarbons in the gasoline range (TPHg) in accordance with United States Environmental Protection Agency (EPA) Method 8015M;
- Total petroleum hydrocarbons in the diesel (TPHd) and motor oil (TPHmo) range in accordance with EPA Method 8015M with silica gel cleanup; and
- BTEX and methyl tertiary-butyl ether (MTBE) in accordance with EPA Method 8260B.

MSE generated approximately 20 gallons of purge water and decontamination water during the monitoring event. MSE placed the purge water into a 55-gallon drum, which was labeled with the Port's contact information and stored in a hazardous material storage locker located within Harbor Facilities Complex. The Port's environmental services contractor will arrange for proper purge water disposal.

3.0 ANALYTICAL RESULTS

Analytical results for the groundwater samples collected in June 2008 are summarized on Figure 3 and Table 1. The laboratory analytical reports are provided in Appendix B. Historical analytical results for the Site, including samples collected by others, are summarized in Appendix C, Table C-2.

3.1 TPHg

The laboratory reported TPHg in the groundwater sample from monitoring well MW-4 at a concentration of 67 micrograms per liter ($\mu\text{g/L}$) (91 $\mu\text{g/L}$ was reported in the duplicate sample). The laboratory report indicated that the sample exhibited a chromatographic pattern that does not match the gasoline standard. The laboratory did not report TPHg above the reporting limit in any of the groundwater samples from the other monitoring wells.

3.2 BTEX and MTBE

The laboratory reported benzene in the groundwater sample from MW-4 at a concentration of 14 $\mu\text{g/L}$ (15 $\mu\text{g/L}$ was reported in the duplicate sample). The laboratory did not report any BTEX constituents above the reporting limits in any of the samples from the other sampled monitoring

wells. The laboratory did not report any MTBE above the reporting limit in any of the collected groundwater samples.

3.3 TPHd and TPHmo

The laboratory did not identify TPHd and TPHmo in any of the groundwater samples collected from the monitoring well network above laboratory reporting limits.

4.0 GROUNDWATER FLOW DIRECTION

MSE used surveyed elevations of the top of each groundwater monitoring well casing and the measured depth to groundwater to calculate the groundwater elevation and flow direction.

The groundwater elevation and product thickness data are summarized in Table 2. Product thickness is discussed in more detail below. Groundwater contours for June 2008 are presented on Figure 4. The groundwater flow direction at the time of measurement was toward the northeast at a gradient of 0.007 foot/foot. Historical groundwater and product levels for the Site are included in Appendix C, Table C-1.

5.0 QUALITY ANALYSIS AND QUALITY CONTROL

MSE collected a field duplicate sample from monitoring well MW-4 (MW-4Dup) to check sample collection procedures and an equipment blank (QC-EB) to check the sample equipment as a possible source of contaminants. Groundwater samples were stored with a trip blank (QC-TB) prepared by C&T until delivered to the laboratory to check for cross-contamination. MW-4Dup and the equipment blank were analyzed for TPHd, TPHg, and BTEX. The trip blank as analyzed for volatile analytes TPHg and BTEX only.

The analytical laboratory reported concentrations of TPHg and benzene in groundwater samples from both MW-4 and MW-4Dup. The relative percent difference (RPD) between the original and the duplicate sample was six and zero percent for TPHg and benzene, respectively:

$$\text{TPHg RPD } |91-67|/[(91+67)/2] = 30\%$$

$$\text{Benzene RPD } |15-14|/[(15+14)/2] = 7\%$$

The RPD for TPHg is greater than the analytical laboratory's allowable RPD for matrix spike duplicates (20%), while the RPD for benzene is less than the analytical laboratory's maximum allowable RPD for matrix spike duplicates (20%). This indicates that the sample collection methodology may not have been as good as it could have been.

MSE prepared an equipment blank by transferring deionized water into sample containers using the same technique as was used to collect groundwater samples. The laboratory did not report any TPHg, TPHmo, BTEX, or MTBE in the equipment blank prepared by MSE, but did report TPHd, which was not detected in any other sample. Upon questioning the sample technician, this may have come from shrink wrap around the dionized water bottle that may have become contaminated from material at the site.

C&T prepared a trip blank as a quality control water sample prepared by an analytical laboratory using deionized water. The QC-TB was stored in a cooler to accompany groundwater samples from collection to transport to the laboratory. The laboratory did not report any TPHg, BTEX, or MTBE in the trip blank, indicating that the groundwater samples were not compromised from sample preservation, transportation, storage, and analysis.

MSE also reviewed the laboratory data for completeness and accuracy (see Quality Control Checklist in Appendix B). All of the laboratory QA/QC goals were met, with the exception of high surrogate recoveries were observed for bromofluorobenzene (FID) and trifluorotoluene (FID) in the MS/MSD for batch QA/QC 139097 and the LCS/MS/MSD for batch QA/QC 139140. MW-5 (lab # 203794-003) was analyzed with more than 1 milliliter (mL) of headspace in the VOA vial.

Based on the above QA/QC evaluation, MSE considers the data collected during the first semiannual 2008 groundwater monitoring event sufficiently valid to provide a reasonable representation of Site conditions.

6.0 PRODUCT THICKNESS

MSE measured product thickness in monitoring wells MW-1 and MW-3 during the groundwater monitoring event on June 5, 2008. Product thickness in MW-1 was measured at 0.10 foot and in MW-3 at 1.45 foot (Table 2). Product has been removed from MW-3 in January and February 2008 using a peristaltic pump and polyethylene tubing as part of O&M activities. The product thickness in MW-3 has ranged from approximately 0.45 to 1.25 feet from January to June 2008 (Table 3). MSE placed product recovered from MW-3 in a 500-gallon concrete encased aboveground storage tank (Convault).

Product has also been observed in product recovery wells RW-1, RW-3, RW-4, RW-5, RW-6, RW-7, RW-8, and RW-9. RW-1 typically only contains a sheen. No product has been observed in RW-2. The observed area of free-phase product is shown on Figure 2.

7.0 PRODUCT RECOVERY SYSTEM SUMMARY

The Port installed the Free Product Recovery (FPR) system at the Harbor Facilities Complex in 2004 as required by the ACHCS in a letter dated 27 March 2003. The FPR system includes nine recovery wells, RW-1 through RW-9 (Figure 2). The Port installed a utility box around each recovery well wellhead, which includes plumbing for the airline, product discharge line, and a vacuum line. The Port operates six air-actuated skimmer pumps manufactured by Xitech Instruments, Inc. in the nine recovery wells. The placement of skimmer pumps depends on where free-phase product is detected. A programmable controller is used to set the frequency and duration that each skimmer pump runs. The skimmers discharge recovered product into a 500-gallon Convault equipped with primary and secondary containment. The Convault is also equipped with a sensor that activates a warning light and shuts off air supply to the skimmers if the tank is full.

MSE measured the product level in the recovery wells and checked the position of the pumps in the wells during the first six months of 2008. MSE adjusted the skimmer pumps depth, changed filters, and cleaned the skimmer pumps as necessary. Adjustments were made to the frequency and duration of operation for each skimmer pump. A summary of the operations and maintenance activities are included in Table 3.

In early June 2007, the product recovery system was upgraded to include application of low vacuum on the wellheads to improve product recovery. Inducing a vacuum on the wellhead results in an air discharge containing petroleum vapors, which are treated by two vessels arranged in series containing 1,000 pounds of vapor-phase granular activated carbon (GAC), each. Treatment and discharge conditions are provided in a Permit-to-Operate from the Bay Area Air Quality Management District (BAAQMD).

Prior to enhancement of the product recovery system with the installation of the low-vacuum blower, approximately 178 gallons of product were removed in 32 months (December 2004 through July 2007). After installation of the blower, an additional 283 gallons of product were recovered in eleven months (August 2007 through June 2008). A total of 461 gallons of product have been recovered since operation of the new product recovery system began.

8.0 ORC TREATMENT – MW-4

On May 30, 2008, seven days before groundwater monitoring was performed at the site, MSE removed the ORC sock from MW-4. The DO concentration measured in MW-4 during groundwater monitoring on June 5, 2008, was 0.7 mg/L. The DO level in MW-4 was similar to other wells by the time the samples were collected (MW-2 was 0.8 mg/L, MW-5 was 0.7 mg/L, and MW-8A was 0.8 mg/L at the time sampled). The laboratory reported TPHg at 67 µg/L in the groundwater sample from MW-4, down from 100 µg/L in June 2007 and 300 µg/L in November 2006 (Appendix C). The laboratory reported benzene at 14 µg/L in the groundwater sample from MW-4, up from 10 µg/L in June 2007 and down from 42 µg/L in November 2006 (Appendix C). Following sampling on June 5, 2008, a new ORC sock was placed in MW-4.

9.0 CONCLUSIONS AND RECOMMENDATIONS

The results from the first semi-annual 2008 groundwater monitoring event indicated that the free-phase product plume is stable; free-phase product was confined to the wells that historically contained free product; MW-1 and MW-3. Dissolved TPHd and TPHmo were not reported in any of the groundwater samples collected in June 2008, demonstrating the limited mobility of the free-phase product in the subsurface.

Reported concentrations of TPHg and benzene are confined to groundwater samples from MW-4 and the results indicate the concentrations are stable. The TPHg and benzene levels are well below the San Francisco Regional Water Quality Control Board's (RWQCB) Environmental Screening Levels (ESL) for commercial/industrial land uses where groundwater is not a drinking water source (RWQCB, 2007).³

³ The ESL for TPHg is 500 µg/L and the ESL for benzene is 870 µg/L.

Petroleum hydrocarbons, or petroleum hydrocarbon constituents such as BTEX, have not been reported in the groundwater samples from MW-2 since 16 December 2004, from MW-5 since 28 July 2006, and in MW-8A since 28 July 2006 (Appendix C, Table C-2). Based on the fact that dissolved-phase petroleum hydrocarbons in the groundwater do not appear to be migrating beyond the area of the free-phase product plume, it is recommended that the frequency of groundwater monitoring be reduced to annual. The Port will continue to recover free-phase product and monitor product thickness in the recovery wells. Contingent on approval from the ACHCS, the groundwater sampling would be performed annually during June or July each year with an Annual Groundwater Monitoring and O&M Report submitted to the ACHCS by the first week of September.

10.0 REFERENCES

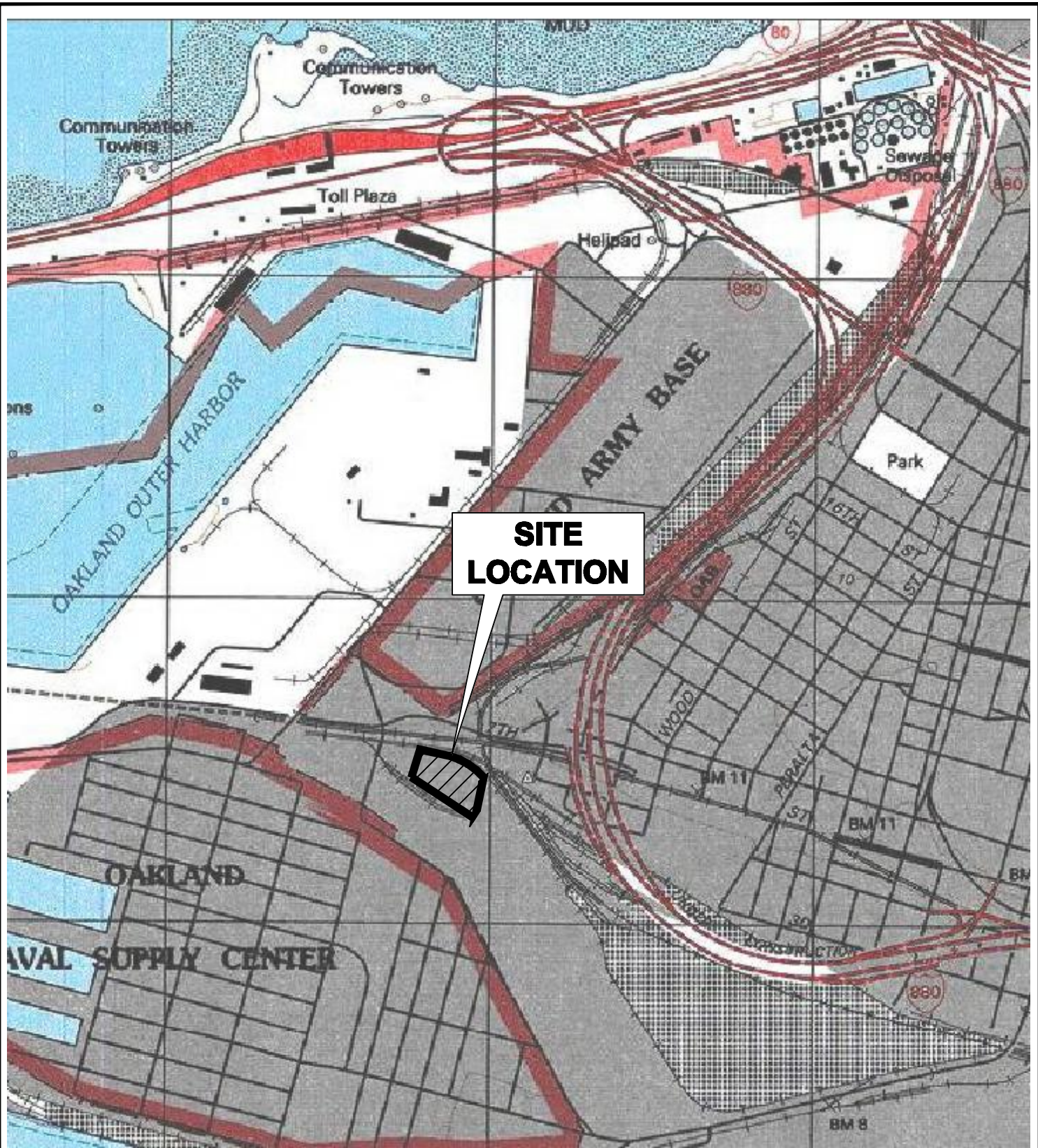
RWQCB, 2007; California Regional Water Quality Control Board, San Francisco Bay Region; 2007; *Screening For Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final*, November.


Uribe, 1994; Uribe and Associates, 1994, Port of Oakland Building C-401, 2277 7th Street, Oakland, Report of Underground Storage Tank Removals, Appendix G – Workplan for Additional Site Characterization Activities, 23 February.

11.0 LIMITATIONS

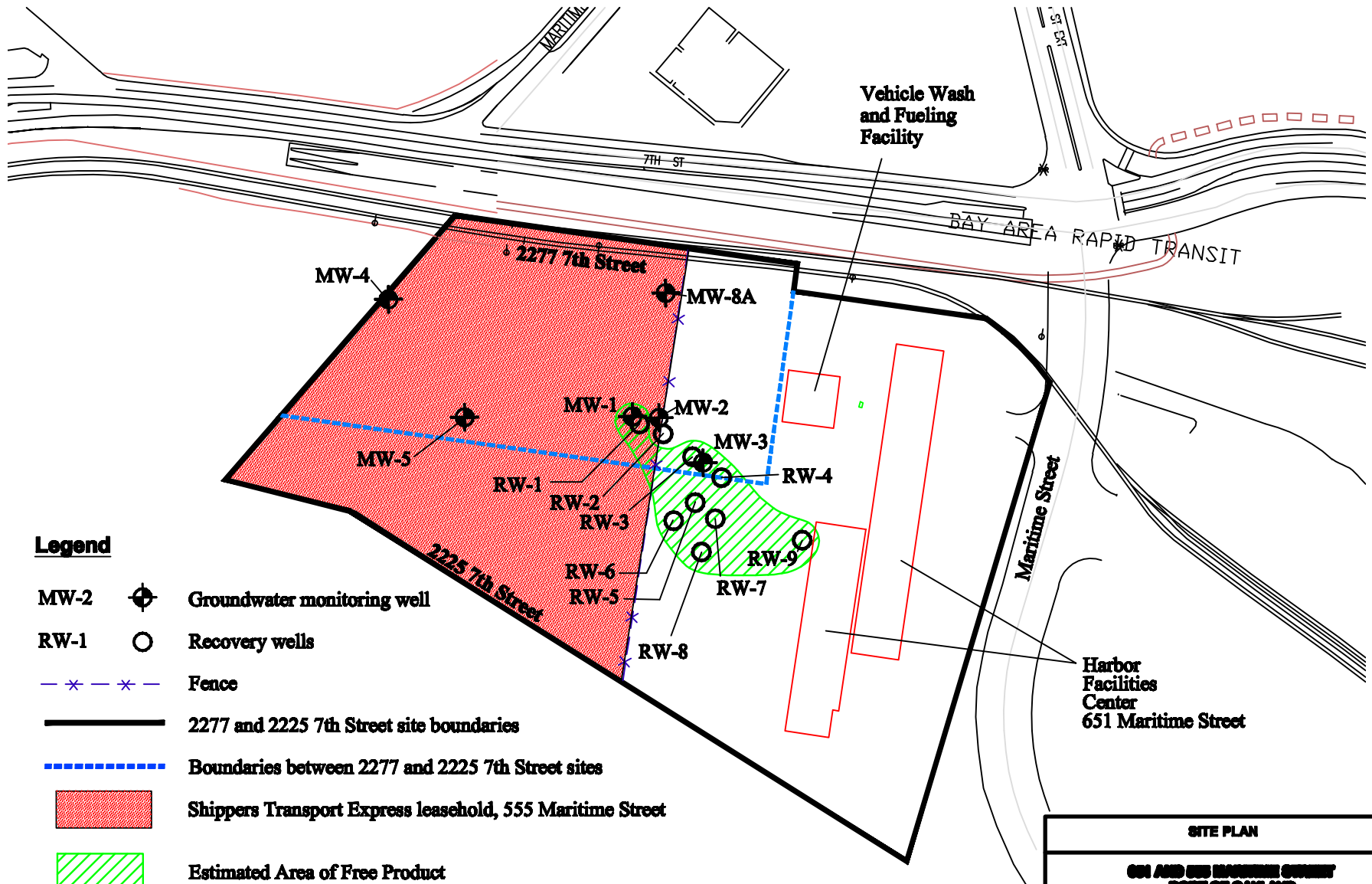
The conclusions presented in this report are professional opinions based on the indicated data described in this report. They are intended only for the purpose, site, and project indicated. Opinions and recommendations presented herein apply to site conditions existing at the time of our study. Changes in the conditions of the subject property can occur with time, because of natural processes or the works of man, on the subject sites or on adjacent properties. Changes in applicable standards can also occur as the result of legislation or from the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or in part, by changes beyond our control.

FIGURES






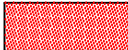
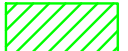


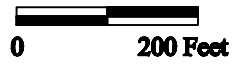
SITE LOCATION MAP		
651 AND 655 MARITIME STREET PORT OF OAKLAND OAKLAND, CALIFORNIA		
 MSE GROUP	Date: 07/22/2008	Figure: 1
	SAmr_0806.dwg	

302 PENDLETON WAY
 OAKLAND, CA 94621
 (510) 383-8800



Legend

- MW-2  Groundwater monitoring well
- RW-1  Recovery wells
-  Fence
-  2277 and 2225 7th Street site boundaries
-  Boundaries between 2277 and 2225 7th Street sites
-  Shippers Transport Express leasehold, 555 Maritime Street
-  Estimated Area of Free Product



SITE PLAN			
601 AND 605 MARITIME STREET PORT OF OAKLAND OAKLAND, CALIFORNIA			
MSE <small>GROUP</small>	SUPERVISOR OAKLAND, CALIFORNIA (949) 486-6000	Date: 07/22/2008	Figure: 2
	2008-12A.dwg		





MW-8A	06/05/08
TPHg	<50
TPHd	<50
TPHmo	<300
Benzene	<0.5
Toluene	<0.5
Ethylbenzene	<0.5
Total Xylenes	<0.5
MTBE	<0.5

MW-4	06/05/08	Duplicate
TPHg	67	91
TPHd	<50	<50
TPHmo	<300	<300
Benzene	14	15
Toluene	<0.5	<0.5
Ethylbenzene	<0.5	<0.5
Total Xylenes	<0.5	<0.5
MTBE	<0.5	<0.5

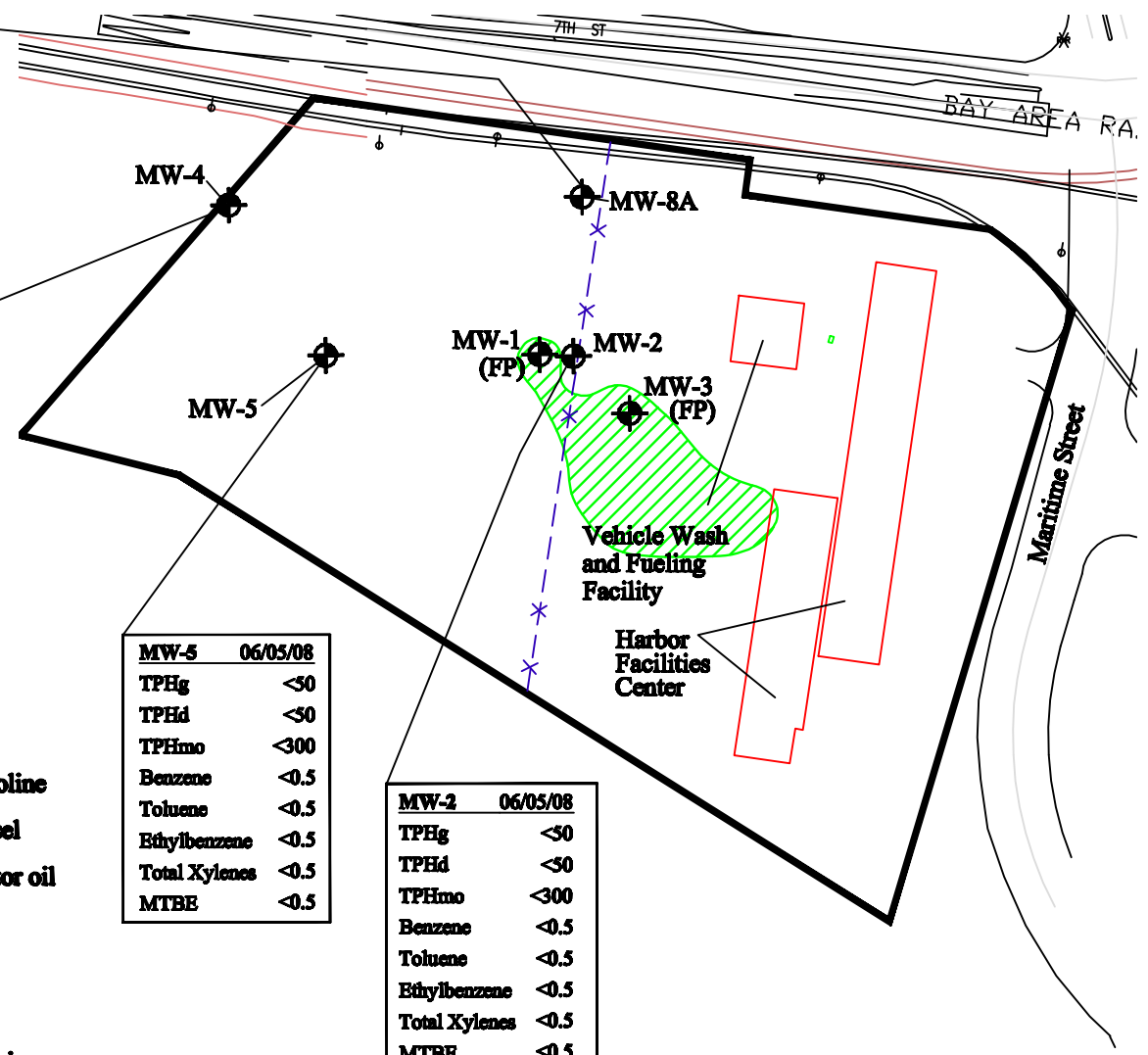
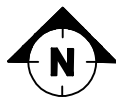
MW-5	06/05/08
TPHg	<50
TPHd	<50
TPHmo	<300
Benzene	<0.5
Toluene	<0.5
Ethylbenzene	<0.5
Total Xylenes	<0.5
MTBE	<0.5

MW-2	06/05/08
TPHg	<50
TPHd	<50
TPHmo	<300
Benzene	<0.5
Toluene	<0.5
Ethylbenzene	<0.5
Total Xylenes	<0.5
MTBE	<0.5

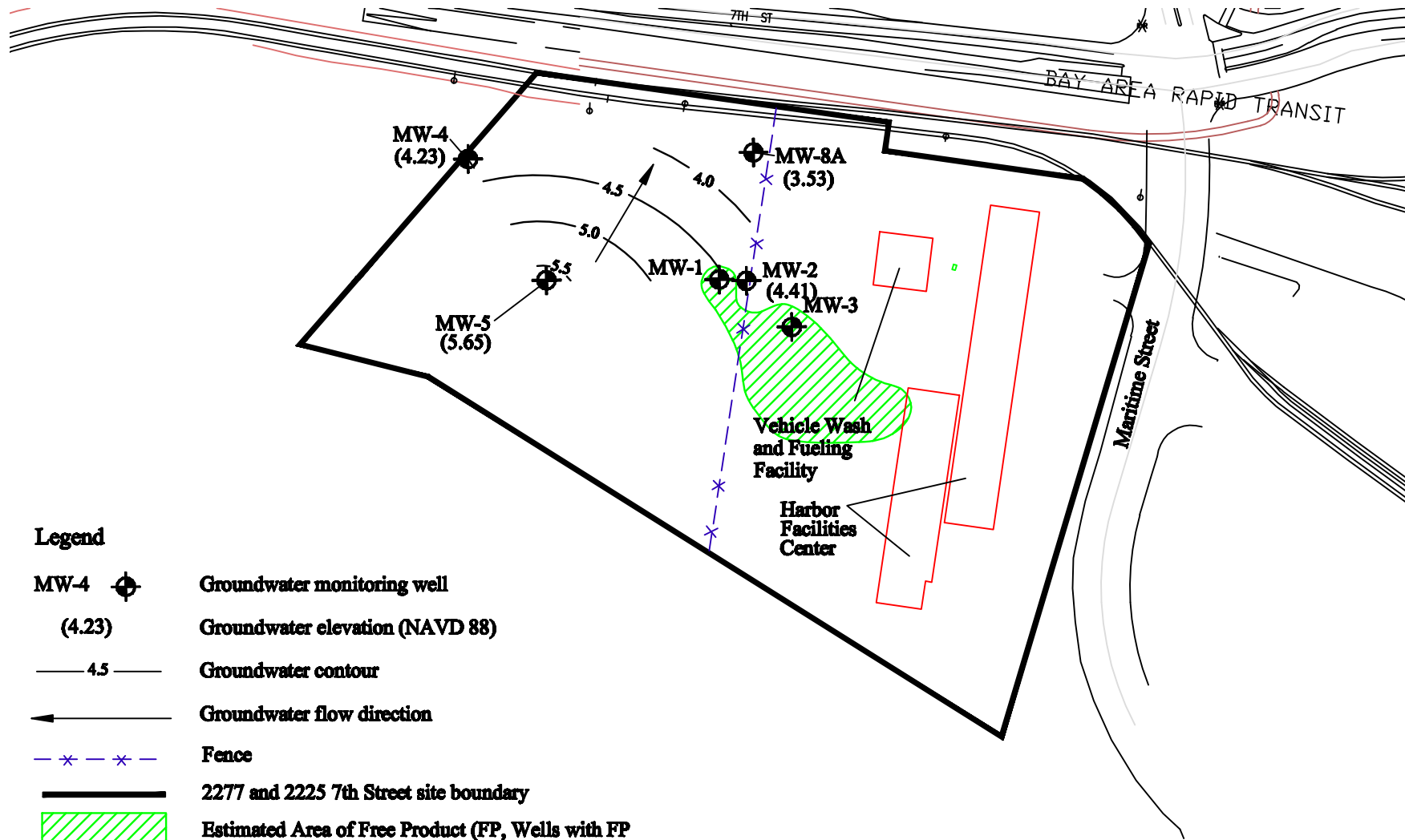
Legend

- MW-2  Groundwater monitoring well
- TPHg Total petroleum hydrocarbons as gasoline
- TPHd Total petroleum hydrocarbons as diesel
- TPHmo Total petroleum hydrocarbons as motor oil
- MTBE Methyl tert-butyl ether
- (FP) Free phase product in well
-  Existing fence
-  2277 and 2225 7th Street site boundaries
-  Estimated Area of Free Product





Notes: 1. Concentrations are in micrograms per liter.
2. Samples collected June 5, 2008.



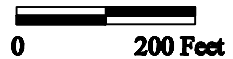
APPROVAL SIGNATURES			
ONE AND ONE EIGHTH STREET PORT OF OAKLAND OAKLAND, CALIFORNIA			
MSE <small>GROUP</small>	SEPERATION WY <small>OAKLAND, CALIFORNIA</small> <small>(949) 282-6000</small>	Date 06/05/08	Page 3
	2008-08A.dwg		



Legend

- MW-4  Groundwater monitoring well
- (4.23) Groundwater elevation (NAVD 88)
- 4.5 — Groundwater contour
-  Groundwater flow direction
- * - * - Fence
-  2277 and 2225 7th Street site boundary
-  Estimated Area of Free Product (FP, Wells with FP not used for groundwater contour.)

Notes: North American Vertical Datum of 1988.



GROUNDWATER MONITORING - JUNE 2009		
501 AND 505 MARITIME STREET PORT OF OAKLAND OAKLAND, CALIFORNIA		
MSE GROUP	REGULATORY OAKLAND, CALIFORNIA PROJECTS	Date 07/20/2009
	Page 4	
2009-10A.dwg		

TABLES

Table 1: Groundwater Analytical Results - June 2008

Port of Oakland
651 and 555 Maritime Street
Oakland, California

Monitoring Well	Date	TPHg µg/L	TPHd µg/L	TPHmo µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Total Xylenes µg/L	MTBE µg/L
MW-2	6/5/2008	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
MW-4	6/5/2008	67 Y	<50	<300	14	<0.5	<0.5	<0.5	<0.5
MW-4 dup	6/5/2008	91 Y	<50	<300	15	<0.5	<0.5	<0.5	<0.5
MW-5	6/5/2008	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
MW-8A	6/5/2008	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
QC-EB	6/5/2008	<50	300 Y	<300	<0.5	<0.5	<0.5	<0.5	<0.5
QC-TB	6/5/2008	<50	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:

See Figure 3 for monitoring well locations and concentrations.

µg/L = micrograms per liter.

TPHg = total petroleum hydrocarbons in gasoline range.

TPHd = total petroleum hydrocarbons in diesel range.

TPHmo = total petroleum hydrocarbons in motor oil range.

MTBE = methyl tert-butyl ether.

QC-EB = equipment blank quality control sample.

QC-TB = trip blank quality control sample.

<xx = not detected by the laboratory above the reporting limit, the value following the less than sign.

Bold indicates the analyte was reported above the laboratory reporting limit.

NA = not analyzed.

Y = sample exhibits a chromatographic pattern that does not resemble the standard.

Table 2: Groundwater Elevation - June 2008

Port of Oakland
651 and 555 Maritime Street
Oakland, California

Monitoring Well	Date Measured	Top of Casing Elevation¹ (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation¹ (feet)
MW-1	6/5/2008	15.79	11.36	11.46	0.10	4.33
MW-2	6/5/2008	16.42	NP	12.01	--	4.41
MW-3	6/5/2008	15.65	10.51	11.96	1.45	3.69
MW-4	6/5/2008	15.90	NP	11.67	--	4.23
MW-5	6/5/2008	15.39	NP	9.74	--	5.65
MW-8A	6/5/2008	14.98	NP	11.45	--	3.53

Notes:

See Figure 4 for monitoring well locations and groundwater contour.

NP = no product detected with the interface probe.

-- = no measurable product in the well.

btc = below top of the well casing.

NAVD 88 = North American Vertical Datum of 1988.

¹ Elevation data relative to NAVD 88 datum.

**TABLE 3: Product Thickness Measurements and
Operations and Maintenance Activities - January through June 2008**

Port of Oakland
651 and 555 Maritime Street
Oakland, California

Site Visit Date: 1/4/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	10.90	11.83	0.93	P=7, D=10	Off	
RW-4	10.20	10.44	0.24	P=1, D=10	Off	
RW-5	8.79	8.89	0.10	Off	Off	
RW-6	9.20	9.36	0.16	C=3, D=15	Off	
RW-7	8.49	8.88	0.39	C=4, D=15	Off	
RW-8	9.70	10.00	0.30	P=1, D=10	Off	
RW-9	10.69	11.00	0.31	P=7, D=15	Off	
MW-3	10.75	11.41	0.66		Off	
Depth to product in Convault			1.12 feet	Depth to water in Convault		1.28 feet
Approximate total volume recovered			353 gallons	Volume of Product in Convault 42 gallons		
PID Readings on vapor:			Inlet: 40.9 ppmv	Midpoint: 0 ppmv	Final: 0 ppmv	

Site Visit Date: 1/11/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1					Off	
RW-2					Off	
RW-3	10.94	11.81	0.87	P=7, D=10	Off	
RW-4	10.19	10.47	0.28	P=1, D=10	Off	
RW-5	8.69	8.80	0.11	Off	Off	
RW-6	9.25	9.38	0.13	C=3, D=15	Off	
RW-7	8.46	8.88	0.42	C=4, D=15	Off	
RW-8	9.75	10.05	0.30	P=1, D=10	Off	
RW-9	10.68	10.79	0.11	P=1, P=7, D=15	Off	
MW-3	10.70	11.95	1.25		Off	Recovered 3 gal. of product.
Depth to product in Convault			1.13 feet	Depth to water in Convault		1.29 feet
Approximate total volume recovered			351 gallons	Volume of Product in Convault 42 gallons		
PID Readings on vapor:			Inlet: 40 ppmv	Midpoint: 0 ppmv	Final: 0 ppmv	

**TABLE 3: Product Thickness Measurements and
Operations and Maintenance Activities - January through June 2008**

Port of Oakland
651 and 555 Maritime Street
Oakland, California

Site Visit Date: 1/18/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	10.90	11.86	0.96	P=7, D=10	Off	
RW-4	10.21	10.49	0.28	P=1, D=10	Off	
RW-5	8.70	8.81	0.11	Off	Off	
RW-6	9.29	9.36	0.07	C=3, D=15	Off	
RW-7	8.50	8.86	0.36	C=4, D=15	Off	
RW-8	9.79	10.15	0.36	P=1, D=10	Off	
RW-9	10.66	10.72	0.06	P=7, D=15	Off	
MW-3	10.79	11.98	1.19		Off	
Depth to product in Convault			1.13 feet	Depth to water in Convault		1.27 feet
Approximate total volume recovered			351 gallons	Volume of Product in Convault 37 gallons		
PID Readings on vapor:			Inlet: 48 ppmv	Midpoint: 0 ppmv	Final: 0 ppmv	

Site Visit Date: 1/25/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	10.87	11.88	1.01	P=7, D=10	Off	
RW-4	10.24	10.51	0.27	P=1, D=10	Off	
RW-5	8.71	8.79	0.08	Off	Off	
RW-6	9.24	9.33	0.09	C=3, D=15	Off	
RW-7	8.47	8.81	0.34	C=4, D=15	Off	
RW-8	9.74	10.18	0.44	P=1, D=10	Off	
RW-9	10.69	10.79	0.10	P=7, D=15	Off	
MW-3	10.94	11.90	0.96		Off	
Depth to product in Convault			-- feet	Depth to water in Convault		-- feet
Approximate total volume recovered			-- gallons	Volume of Product in Convault -- gallons		
PID Readings on vapor:			Inlet: 48 ppmv	Midpoint: 0 ppmv	Final: 0 ppmv	

**TABLE 3: Product Thickness Measurements and
Operations and Maintenance Activities - January through June 2008**

Port of Oakland
651 and 555 Maritime Street
Oakland, California

Site Visit Date: 2/1/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	10.77	11.91	1.14	P=7, D=10	Off	
RW-4	9.79	9.95	0.16	P=1, D=10	Off	
RW-5	8.00	8.17	0.17	Off	Off	
RW-6	8.24	8.41	0.17	C=3, D=15	Off	
RW-7	8.12	8.45	0.33	C=4, D=15	Off	
RW-8	9.71	10.00	0.29	P=1, D=10	Off	
RW-9	10.71	11.05	0.34	P=7, D=15	Off	
MW-3	10.86	11.91	1.05		Off	Unable to pump.
Depth to product in Convault			1.77 feet	Depth to water in Convault		1.95 feet
Approximate total volume recovered			183 gallons	Volume of Product in Convault 47 gallons		
PID Readings on vapor:			Inlet: 40 ppmv	Midpoint: 0 ppmv	Final: 0 ppmv	

Site Visit Date: 2/8/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	10.70	11.94	1.24	P=7, D=10	Off	
RW-4	9.77	9.94	0.17	P=1, D=10	Off	
RW-5	8.20	8.36	0.16	Off	Off	
RW-6	8.21	8.38	0.17	C=3, D=15	Off	
RW-7	8.10	8.33	0.23	C=4, D=15	Off	
RW-8	8.65	8.74	0.09	P=1, D=10	Off	
RW-9	9.69	9.95	0.26	P=7, D=15	Off	
MW-3	10.71	11.20	0.49		Off	
Depth to product in Convault			-- feet	Depth to water		-- feet
Approximate total volume recovered			-- gallons	Volume of Product in Convault -- gallons		
PID Readings on vapor:			Inlet: 40 ppmv	Midpoint: 0 ppmv	Final: 0 ppmv	

**TABLE 3: Product Thickness Measurements and
Operations and Maintenance Activities - January through June 2008**

Port of Oakland
651 and 555 Maritime Street
Oakland, California

Site Visit Date: 2/15/2008											
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments					
RW-1	--	--	--		Off						
RW-2	--	--	--		Off						
RW-3	10.71	11.86	1.15	P=7, D=10	Off						
RW-4	9.65	9.88	0.23	P=1, D=10	Off						
RW-5	8.81	8.89	0.08	Off	Off						
RW-6	8.23	8.41	0.18	C=3, D=15	Off						
RW-7	8.10	8.33	0.23	C=4, D=15	Off						
RW-8	8.71	8.78	0.07	P=1, D=10	Off						
RW-9	8.95	9.34	0.39	P=7, D=15	Off						
MW-3	10.79	11.24	0.45		Off						
Depth to product in Convault		--	feet	Depth to water in Convault		--	feet	Volume of Product in Convault		--	gallons
Approximate total volume recovered		--	gallons	PID Readings on vapor:		Inlet:	40 ppmv	Midpoint:	0 ppmv	Final:	0 ppmv

Site Visit Date: 2/25/2008											
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments					
RW-1	--	--	--		Off						
RW-2	--	--	--		Off						
RW-3	9.41	13.25	3.84	P=7, D=10	Off						
RW-4	9.25	9.95	0.70	P=1, D=10	Off						
RW-5	--	--	--	Off	Off	Unable to check - truck parked on top.					
RW-6	8.12	8.20	0.08	C=3, D=15	Off						
RW-7	7.15	7.33	0.18	C=4, D=15	Off						
RW-8	7.25	7.55	0.30	P=1, D=10	Off	Need to fix petcock.					
RW-9	9.85	9.95	0.10	P=7, D=15	Off						
MW-3	--	--	--		Off	Truck parked on top. Returned to site 2/26 to pump well. Removed 17 gal.					
Depth to product in Convault		1.80	feet	Depth to water in Convault		2	feet	Volume of Product in Convault		52	gallons
Approximate total volume recovered		175	gallons	PID Readings on vapor:		Inlet:	40.6 ppmv	Midpoint:	0 ppmv	Final:	0 ppmv

**TABLE 3: Product Thickness Measurements and
Operations and Maintenance Activities - January through June 2008**

Port of Oakland
651 and 555 Maritime Street
Oakland, California

Site Visit Date: 2/28/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	10.20	11.40	1.20	P=7, D=10	Off	
RW-4	9.29	9.95	0.66	P=1, D=10	Off	
RW-5	7.84	8.66	0.82	Off	Off	
RW-6	8.80	8.90	0.10	C=3, D=15	Off	
RW-7	7.29	7.56	0.27	C=4, D=15	Off	
RW-8	7.22	7.56	0.34	P=1, D=10	Off	
RW-9	9.80	9.95	0.15	P=7, D=15	Off	
MW-3	10.39	11.55	1.16		Off	
Depth to product in Convault			1.80 feet	Depth to water in Convault		2.00 feet
Approximate total volume recovered			175 gallons	Volume of Product in Convault 52 gallons		
PID Readings on vapor:			Inlet: 40.7 ppmv	Midpoint: 0 ppmv	Final: 0 ppmv	

Site Visit Date: 3/7/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	10.27	12.15	1.88	P=7, D=10	Off	
RW-4		9.57		P=1, D=10	Off	
RW-5	8.20	8.75	0.55	Off	Off	
RW-6	8.00	8.15	0.15	C=3, D=15	Off	
RW-7	7.65	7.70	0.05	C=4, D=15	Off	
RW-8	8.30	8.35	0.05	P=1, D=10	Off	
RW-9	8.10	8.32	0.22	P=7, D=15	Off	
MW-3	--	--	--		Off	Truck parked on top of well.
Depth to product in Convault			1.79 feet	Depth to water in Convault		1.91 feet
Approximate total volume recovered			178 gallons	Volume of Product in Convault 31 gallons		
PID Readings on vapor:			Inlet: 40 ppmv	Midpoint: 0 ppmv	Final: 0 ppmv	

**TABLE 3: Product Thickness Measurements and
Operations and Maintenance Activities - January through June 2008**

Port of Oakland
651 and 555 Maritime Street
Oakland, California

Site Visit Date: 3/12/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	10.22	12.19	1.97	P=7, D=10	Off	
RW-4	9.77	9.80	0.03	P=1, D=10	Off	
RW-5	8.21	8.79	0.58	Off	Off	
RW-6	8.01	8.14	0.13	C=3, D=15	Off	
RW-7	7.66	7.74	0.08	C=4, D=15	Off	
RW-8	7.21	7.39	0.18	P=1, D=10	Off	
RW-9	8.14	8.30	0.16	P=7, D=15	Off	
MW-3	--	--	--		Off	Truck parked on top of well.
Depth to product in Convault			1.79 feet	Depth to water in Convault		1.91 feet
Approximate total volume recovered			178 gallons	Volume of Product in Convault 31 gallons		
PID Readings on vapor:			Inlet: 40.6 ppmv	Midpoint: 0 ppmv	Final: 0 ppmv	

Site Visit Date: 3/21/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	10.48	11.95	1.47	P=7, D=10	Off	
RW-4	9.78	9.81	0.03	P=1, D=10	Off	
RW-5	8.29	8.49	0.20	Off	Off	
RW-6	8.80	9.20	0.40	C=3, D=15	Off	
RW-7	8.10	8.29	0.19	C=4, D=15	Off	
RW-8	9.29	7.44	-1.85	P=1, D=10	Off	
RW-9	8.20	8.35	0.15	P=7, D=15	Off	
MW-3	--	--	--		Off	Truck parked on top of well.
Depth to product in Convault			1.79 feet	Depth to water in Convault		1.91 feet
Approximate total volume recovered			178 gallons	Volume of Product in Convault 31 gallons		
PID Readings on vapor:			Inlet: 40.6 ppmv	Midpoint: 0 ppmv	Final: 0 ppmv	

**TABLE 3: Product Thickness Measurements and
Operations and Maintenance Activities - January through June 2008**

Port of Oakland
651 and 555 Maritime Street
Oakland, California

Site Visit Date: 3/28/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	10.55	11.75	1.20	P=7, D=10	Off	
RW-4	9.79	9.82	0.03	P=1, D=10	Off	
RW-5	8.30	8.50	0.20	Off	Off	
RW-6	8.80	9.25	0.45	C=3, D=15	Off	
RW-7	8.15	8.20	0.05	C=4, D=15	Off	
RW-8	9.30	9.40	0.10	P=1, D=10	Off	
RW-9	10.04	10.25	0.21	P=7, D=15	Off	Product in line, Station #2.
MW-3	--	--	--		Off	Truck parked on top of well.
Depth to product in Convault			1.78 feet	Depth to water in Convault		1.91 feet
Approximate total volume recovered			181 gallons	Volume of Product in Convault 34 gallons		
PID Readings on vapor:			Inlet: 21.9 ppmv	Midpoint: 0 ppmv	Final: 0 ppmv	Flowrate: 44 CFM

Site Visit Date: 4/4/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	10.83	11.69	0.86	P=7, D=10	Off	
RW-4	9.93	10.24	0.31	P=1, D=10	Off	
RW-5	--	--	--	Off	Off	Truck parked on well vault
RW-6	8.31	9.15	0.84	C=3, D=15	Off	
RW-7	7.80	8.02	0.22	C=4, D=15	Off	
RW-8	8.99	9.10	0.11	P=1, D=10	Off	
RW-9	8.37	9.48	1.11	P=7, D=15	Off	
MW-3	--	--	--		Off	Truck parked on well vault
Depth to product in Convault			1.75 feet	Depth to water in Convault		1.91 feet
Approximate total volume recovered			189 gallons	Volume of Product in Convault 42 gallons		
PID Readings on vapor:			Inlet: 71.5 ppmv	Midpoint: 0 ppmv	Final: 0 ppmv	

**TABLE 3: Product Thickness Measurements and
Operations and Maintenance Activities - January through June 2008**

Port of Oakland
651 and 555 Maritime Street
Oakland, California

Site Visit Date: 4/11/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	10.85	11.71	0.86	P=7, D=10	Off	
RW-4	9.95	10.26	0.31	P=1, D=10	Off	
RW-5	--	--	--	Off	Off	Truck parked on well vault
RW-6	8.33	9.17	0.84	C=3, D=15	Off	
RW-7	7.79	8.10	0.31	C=4, D=15	Off	
RW-8	8.95	9.09	0.14	P=1, D=10	Off	
RW-9	8.36	9.46	1.10	P=7, D=15	Off	
MW-3	10.77	11.54	0.77		Off	
Depth to product in Convault			1.77 feet	Depth to water in Convault		1.91 feet
Approximate total volume recovered			183 gallons	Volume of Product in Convault 37 gallons		
PID Readings on vapor:			Inlet: 68 ppmv	Midpoint: 0 ppmv	Final: 0 ppmv	

Site Visit Date: 4/18/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	10.85	11.70	0.85	P=7, D=10	Off	
RW-4	10.00	10.25	0.25	P=1, D=10	Off	
RW-5	--	--	--	Off	Off	Truck parked on well vault
RW-6	8.33	9.17	0.84	C=3, D=15	11	Product in line
RW-7	7.75	7.80	0.05	C=4, D=15	15	
RW-8	8.98	9.10	0.12	P=1, D=10	14	
RW-9	8.35	9.42	1.07	P=7, D=15	Off	
MW-3	10.75	11.57	0.82		Off	
Depth to product in Convault			1.75 feet	Depth to water in Convault		1.90 feet
Approximate total volume recovered			189 gallons	Volume of Product in Convault 39 gallons		
PID Readings on vapor:			Inlet: ppmv	Midpoint: 0 ppmv	Final: 0 ppmv	

**TABLE 3: Product Thickness Measurements and
Operations and Maintenance Activities - January through June 2008**

Port of Oakland
651 and 555 Maritime Street
Oakland, California

Site Visit Date: 4/25/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	10.63	11.69	1.06	P=7, D=10	14	
RW-4	10.10	10.25	0.15	P=1, D=10	13	
RW-5	--	--	--	Off	Off	
RW-6	8.36	9.19	0.83	C=3, D=15	13	
RW-7	7.77	7.81	0.04	C=4, D=15	14	
RW-8	8.99	9.11	0.12	P=1, D=10	11	
RW-9	8.37	9.41	1.04	P=7, D=15	Off	
MW-3	10.77	11.55	0.78		Off	
Depth to product in Convault			1.70 feet	Depth to water in Convault		1.88 feet
Approximate total volume recovered			202 gallons	Volume of Product in Convault 47 gallons		
PID Readings on vapor:			Inlet: 77 ppmv	Midpoint: 0 ppmv	Final: 0 ppmv	

Site Visit Date: 5/2/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	10.64	11.66	1.02	P=7, D=10	14	
RW-4	10.09	10.23	0.14	P=1, D=10	13	
RW-5	--	--	--	Off	Off	
RW-6	8.33	9.17	0.84	C=3, D=15	13	
RW-7	7.75	7.81	0.06	C=4, D=15	14	
RW-8	8.89	9.16	0.27	P=1, D=10	11	
RW-9	8.34	9.41	1.07	P=7, D=15	Off	
MW-3	10.70	11.57	0.87		Off	
Depth to product in Convault			1.68 feet	Depth to water in Convault		1.87 feet
Approximate total volume recovered			207 gallons	Volume of Product in Convault 50 gallons		
PID Readings on vapor:			Inlet: 75 ppmv	Midpoint: 0 ppmv	Final: 0 ppmv	

**TABLE 3: Product Thickness Measurements and
Operations and Maintenance Activities - January through June 2008**

Port of Oakland
651 and 555 Maritime Street
Oakland, California

Site Visit Date: 5/9/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	10.66	11.65	0.99	P=7, D=10	14	
RW-4	10.01	10.24	0.23	P=1, D=10	13	
RW-5	--	--	--	Off	Off	
RW-6	8.39	9.18	0.79	C=3, D=15	13	
RW-7	7.77	7.80	0.03	C=4, D=15	14	
RW-8	8.88	9.19	0.31	P=1, D=10	11	
RW-9	8.37	9.40	1.03	P=7, D=15	Off	
MW-3	10.77	11.57	0.80		Off	
Depth to product in Convault			1.68 feet	Depth to water in Convault		1.87 feet
Approximate total volume recovered			207 gallons	Volume of Product in Convault 50 gallons		
PID Readings on vapor:			Inlet: 75 ppmv	Midpoint: 0 ppmv	Final: 0 ppmv	

Site Visit Date: 5/16/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	10.66	11.65	0.99	P=7, D=10	14	
RW-4	10.10	10.22	0.12	P=1, D=10	13	
RW-5	--	--	--	Off	Off	
RW-6	8.41	9.17	0.76	C=3, D=15	13	
RW-7	7.78	7.83	0.05	C=4, D=15	14	
RW-8	8.86	9.15	0.29	P=1, D=10	11	
RW-9	8.35	9.46	1.11	P=7, D=15	Off	
MW-3	10.79	11.61	0.82		Off	
Depth to product in Convault			1.65 feet	Depth to water in Convault		1.82 feet
Approximate total volume recovered			215 gallons	Volume of Product in Convault 44 gallons		
PID Readings on vapor:			Inlet: 77 ppmv	Midpoint: 0 ppmv	Final: 0 ppmv	

**TABLE 3: Product Thickness Measurements and
Operations and Maintenance Activities - January through June 2008**

Port of Oakland
651 and 555 Maritime Street
Oakland, California

Site Visit Date: 5/23/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	10.64	11.62	0.98	P=7, D=10	14	
RW-4	10.13	10.19	0.06	P=1, D=10	13	
RW-5	--	--	--	Off	Off	
RW-6	8.39	9.20	0.81	C=3, D=15	13	
RW-7	7.81	7.87	0.06	C=4, D=15	14	
RW-8	8.89	9.18	0.29	P=1, D=10	11	
RW-9	8.33	9.43	1.10	P=7, D=15	Off	
MW-3	10.80	11.69	0.89		Off	
Depth to product in Convault			1.60 feet	Depth to water in Convault		1.81 feet
Approximate total volume recovered			228 gallons	Volume of Product in Convault 55 gallons		
PID Readings on vapor:			Inlet: 86 ppmv	Midpoint: 0 ppmv	Final: 0 ppmv	

Site Visit Date: 5/30/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	10.96	11.00	0.04	P=7, D=10	10	
RW-4	10.67	11.19	0.52	P=2, D=10	12	
RW-5	--	--	--	Off	Off	
RW-6	8.71	10.29	1.58	C=2, D=15	11	
RW-7	8.10	9.33	1.23	P=1, D=10	11	
RW-8	9.30	10.55	1.25	P=1, D=10	12	
RW-9	9.89	11.17	1.28	P=5, D=10	10	
MW-3	10.85	11.77	0.92		Off	
Depth to product in Convault			2.30 feet	Depth to water in Convault		2.32 feet
Approximate total volume recovered			45 gallons	Convault emptied.		
PID Readings on vapor:			Inlet: 69 ppmv	Midpoint: 0.2 ppmv	Final: 0 ppmv	Flowrate: 46 CFM

**TABLE 3: Product Thickness Measurements and
Operations and Maintenance Activities - January through June 2008**

Port of Oakland
651 and 555 Maritime Street
Oakland, California

Site Visit Date: 6/6/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	11.11	11.31	0.20	P=7, D=10	12	
RW-4	10.71	11.50	0.79	P=2, D=10	11	
RW-5	--	--	--	Off	Off	
RW-6	8.55	10.25	1.70	C=2, D=10	12	
RW-7	8.17	9.38	1.21	C=3, D=10	13	
RW-8	9.29	10.81	1.52	P=1, D=10	12	
RW-9	9.90	11.10	1.20	P=5, D=10	12	
MW-3	10.81	11.65	0.84		Off	
Depth to product in Convault			2.33 feet	Depth to water in Convault		2.35 feet
Approximate total volume recovered			37 gallons	Volume of Product in Convault 5 gallons		
PID Readings on vapor:			Inlet: 65 ppmv	Midpoint: 0.2 ppmv	Final: 0 ppmv	Flowrate: 44 CFM

Site Visit Date: 6/13/2008						
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments
RW-1	--	--	--		Off	
RW-2	--	--	--		Off	
RW-3	10.95	10.99	0.04	P=7, D=10	12	
RW-4	10.69	11.15	0.46	P=2, D=10	12	
RW-5	--	--	--	Off	Off	
RW-6	8.58	10.22	1.64	C=2, D=10	11	
RW-7	8.15	9.35	1.20	P=1, D=10	11	
RW-8	9.27	10.50	1.23	P=1, D=10	12	
RW-9	9.89	11.15	1.26	P=5, D=10	12	
MW-3	--	--	--		Off	
Depth to product in Convault			2.34 feet	Depth to water in Convault		2.36 feet
Approximate total volume recovered			34 gallons	Volume of Product in Convault 5 gallons		
PID Readings on vapor:			Inlet: 66 ppmv	Midpoint: 0.2 ppmv	Final: 0 ppmv	Flowrate: 43 CFM

**TABLE 3: Product Thickness Measurements and
Operations and Maintenance Activities - January through June 2008**

Port of Oakland
651 and 555 Maritime Street
Oakland, California

Site Visit Date: 6/20/2008								
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments		
RW-1	--	--	--		Off			
RW-2	--	--	--		Off			
RW-3	11.14	11.31	0.17	P=7, D=10	13			
RW-4	10.23	11.07	0.84	P=2, D=10	11			
RW-5	--	--	--	Off	Off	Truck parked on top. No one available to move it.		
RW-6	8.57	10.23	1.66	C=2, D=10	10			
RW-7	8.20	9.40	1.20	C=3, D=10	13			
RW-8	9.25	10.77	1.52	P=1, D=10	12			
RW-9	9.88	11.09	1.21	P=5, D=10	Off			
MW-3	--	--	--		Off	Street cleaning vehicle parked on top. No one available to move [it].		
Depth to product in Convault			2.40 feet	Depth to water in Convault		2.44 feet	Volume of Product in Convault	10 gallons
Approximate total volume recovered			18 gallons					
PID Readings on vapor:			Inlet: 63 ppmv	Midpoint: 0.4 ppmv	Final: 0 ppmv	Flowrate: 44 CFM		

Site Visit Date: 6/27/2008								
Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Cycles/Period and Duration	Vacuum (in. H ₂ O)	Comments		
RW-1	--	--	--		Off			
RW-2	--	--	--		Off			
RW-3	10.55	11.40	0.85	P=7, D=10	10			
RW-4	10.10	11.94	1.84	P=1, D=10	14			
RW-5	--	--	--	Off	Off	Truck is once again parked on top of location. No one available to remove truck.		
RW-6	8.40	9.56	1.16	C=3, D=15	10			
RW-7	7.85	8.00	0.15	C=4, D=15	14			
RW-8	9.08	9.20	0.12	P=1, D=10	11			
RW-9	8.40	9.55	1.15	P=7, D=15	10			
MW-3	10.80	11.62	0.82		Off			
Depth to product in Convault			2.42 feet	Depth to water in Convault		2.45 feet	Volume of Product in Convault	8 gallons
Approximate total volume recovered			13 gallons					
PID Readings on vapor:			Inlet: 62.5 ppmv	Midpoint: 0.2 ppmv	Final: 0 ppmv	Flowrate: 44 CFM		

**TABLE 3: Product Thickness Measurements and
Operations and Maintenance Activities - January through June 2008**

Port of Oakland
651 and 555 Maritime Street
Oakland, California

Notes:

See Figure 2 for recovery well locations.

D = Duration (length of time in minutes the skimmer will run upon activation)

P = Period (P=1 would indicate skimmer activated every day; P=4 would be skimmer activated every fourth day)

C = Cycles (C=2 would indicate skimmer activated twice per day; C=4 would indicate skimmer activated four times per day)

CFM = cubic feet per minute

gal . = gallons

H₂O = water

lbs = pounds

PID = Photo-ionization detector (hydrocarbons in gas measurement)

ppmv = parts per million by volume

-- = not measured.

Sheen = less than 0.01 foot thickness of product.

Product purging in is conducted using a peristaltic pump.

APPENDIX A
GROUNDWATER SAMPLING FORMS

GROUNDWATER SAMPLING

Well No.:

MW-1

Project No.	<input type="text"/>	Recorded by:	Mike Jones, MSE	Date:	06/05/08
Project Name:	Harbor Facilities Center	Depth of well from TOC (feet):	17.65		
Location:	Port of Oakland	Well diameter (inches):	2		
	2277 7th Street, Oakland	Screened interval from TOC (feet):	7.65-17.65		
Weather:	Sunny, light wind	TOC elevation, NAVD88 (feet):	15.79		
Precip. in past 5 days (in.)	0	Groundwater elevation (feet):			
Source:	Oakland Fire Services Agency "ONO"	Water level from TOC (feet):	11.36	Time:	14:04
Water level instrument:	Dual-phase interface probe (Solinst)	Product level from TOC (feet):	11.40	Time:	14:04

CALCULATION OF WELL VOLUME:

$(\text{well depth} - \text{water level}) \times (\text{well radius})^2 \times \pi \times \text{gal/ft}^3$
 $(17.65 \text{ ft} - \text{ft}) \times 0.083 \text{ ft}^2 \times \pi \times 7.48 \text{ gal/ft}^3 =$ gallons in one casing volume
 total gallons removed

CALIBRATION:

	Time	Temp (°C)	pH	DO (%)	ORP (mV)	EC (µmho/cm)	NTU
Calibration Standard:							
Before Purging:							
After Purging:							

FIELD MEASUREMENTS:

Time	Temp (°C)	pH	DO (mg/L)	ORP (mV)	EC (µmho/cm)	NTU	Cumulative Gallons Removed

Purge method:	<input type="text"/>	Sample Time:	-
Duplicate/blank number:	<input type="text"/>	Duplicate Sample Time:	-
Sampling equipment:	<input type="text"/>	VOA attachment:	<input type="text"/>
Sample containers:	N/A	Laboratory:	N/A
Sample analyses:	N/A	Rinsate disposal:	<input type="text"/>
Decontamination method:	Triple rinse Aquinox		
Comments:	Triple rinse [with distilled water]		

TOC = top of casing
 bgs = below ground surface

GROUNDWATER SAMPLING

Well No.:

MW-2

Project No.		Recorded by:	Mike Jones, MSE	Date:	06/05/08
Project Name:	Harbor Facilities Center	Depth of well from TOC (feet):			17.78
Location:	Port of Oakland	Well diameter (inches):			2
	2277 7th Street, Oakland	Screened interval from TOC (feet):			8.06-18.06
Weather:	Sunny, light wind	TOC elevation, NAVD88 (feet):			16.42
Precip. in past 5 days (in.)	0	Groundwater elevation (feet):			4.41
Source:	Oakland Fire Services Agency "ONO"	Water level from TOC (feet):	12.01	Time:	12:10
Water level instrument:	Dual-phase interface probe (Solinst)	Product level from TOC (feet):	NA	Time:	-

CALCULATION OF WELL VOLUME:

$(\text{well depth} - \text{water level}) \times (\text{well radius})^2 \times \pi \times \text{gal/ft}^3$
 $(18.06 \text{ ft} - \text{ft}) \times 0.083 \text{ ft}^2 \times \pi \times 7.48 \text{ gal/ft}^3 =$

0.43
1.5

 gallons in one casing volume
 total gallons removed

[Note: One casing volume should be = 0.9 gallons.]

CALIBRATION:

	Time	Temp (°C)	pH	DO (%)	ORP (mV)	EC (µmho/cm)	NTU
Calibration Standard:							
Before Purging:							
After Purging:							

FIELD MEASUREMENTS:

Time	Temp (°C)	pH	DO (mg/L)	ORP (mV)	EC (µmho/cm)	NTU	Cumulative Gallons Removed
12:30	20	7.4	0.7	80	1.7	25	0.43
12:33	20	7.2	0.8	80	1.5	20	0.86
12:35	20	7.1	0.8	80	1.5	20	1.5

Purge method:	GEO peristaltic pump	Sample Time:	12:35
Duplicate/blank number:	-	Duplicate Sample Time:	-
Sampling equipment:	GEO peristaltic pump	VOA attachment:	-
Sample containers:	Three 40-ml VOAs and two 1-L AG	Laboratory:	Curtis & Tompkins
Sample analyses:	TPHg, TPHd, BTEX, MTBE	Rinsate disposal:	
Decontamination method:	Triple rinse Aquinox		
Comments:	Triple rinse [with distilled water]		

TOC = top of casing
 bgs = below ground surface

GROUNDWATER SAMPLING

Well No.:

MW-3

Project No.	<input type="text"/>	Recorded by:	Mike Jones, MSE	Date:	06/05/08
Project Name:	Harbor Facilities Center	Depth of well from TOC (feet):			17.47
Location:	Port of Oakland	Well diameter (inches):			2
	2277 7th Street, Oakland	Screened interval from TOC (feet):			7.47-17.47
Weather:	Sunny, light wind	TOC elevation, NAVD88 (feet):			15.65
Precip. in past 5 days (in.)	0	Groundwater elevation (feet):			
Source:	Oakland Fire Services Agency "ONO"	Water level from TOC (feet):	11.96	Time:	12:50
Water level instrument:	Dual-phase interface probe (Solinst)	Product level from TOC (feet):	10.51	Time:	12:50

CALCULATION OF WELL VOLUME:

$(\text{well depth} - \text{water level}) \times (\text{well radius})^2 \times \pi \times \text{gal/ft}^3$
 $(17.47 \text{ ft} - \quad \text{ft}) \times 0.083 \text{ ft}^2 \times \pi \times 7.48 \text{ gal/ft}^3 =$

<input type="text"/>	gallons in one casing volume
<input type="text"/>	total gallons removed

CALIBRATION:

	Time	Temp (°C)	pH	DO (%)	ORP (mV)	EC (µmho/cm)	NTU
Calibration Standard:							
Before Purging:							
After Purging:							

FIELD MEASUREMENTS:

Time	Temp (°C)	pH	DO (mg/L)	ORP (mV)	EC (µmho/cm)	NTU	Cumulative Gallons Removed

Purge method:	<input type="text"/>	Sample Time:	<input type="text" value="-"/>
Duplicate/blank number:	<input type="text"/>	Duplicate Sample Time:	<input type="text" value="-"/>
Sampling equipment:	<input type="text"/>	VOA attachment:	<input type="text"/>
Sample containers:	N/A	Laboratory:	N/A
Sample analyses:	N/A	Rinsate disposal:	<input type="text"/>
Decontamination method:	Triple rinse Aquinox		
Comments:	Triple rinse [with distilled water]		

TOC = top of casing
 bgs = below ground surface

GROUNDWATER SAMPLING

Well No.:

MW-4

Project No.		Recorded by:	Mike Jones, MSE	Date:	06/05/08
Project Name:	Harbor Facilities Center	Depth of well from TOC (feet):			22.00
Location:	Port of Oakland	Well diameter (inches):			2
	2277 7th Street, Oakland	Screened interval from TOC (feet):			11.25-22.05
Weather:	Sunny, light wind	TOC elevation, NAVD88 (feet):			15.90
Precip. in past 5 days (in.)	0	Groundwater elevation (feet):			4.23
Source:	Oakland Fire Services Agency "ONO"	Water level from TOC (feet):	11.67	Time:	15:22
Water level instrument:	Dual-phase interface probe (Solinst)	Product level from TOC (feet):	-	Time:	-

CALCULATION OF WELL VOLUME:

(well depth - water level) x (well radius)² x π x gal/ft³
 (22.05 ft - ft) x 0.083 ft)² x π x 7.48 gal/ft³ =

0.857 = 1	gallons in one casing volume
2.57 = 3	total gallons removed

[Note: One casing volume should be = 1.7 gallons.]

CALIBRATION:

	Time	Temp (°C)	pH	DO (%)	ORP (mV)	EC (µmho/cm)	NTU
Calibration Standard:							
Before Purging:							
After Purging:							

FIELD MEASUREMENTS:

Time	Temp (°C)	pH	DO (mg/L)	ORP (mV)	EC (µmho/cm)	NTU	Cumulative Gallons Removed
15:37	21	7.2	0.7	-41	1.2	22	1
15:48	21	7.3	0.8	-42	1.2	22	2
16:00	21	7.2	0.7	-41	1.2	22	3

Purge method:	GEO peristaltic pump	Sample Time:	16:00
Duplicate/blank number:	MW-4D	Duplicate Sample Time:	16:10
Sampling equipment:	GEO peristaltic pump	VOA attachment:	
Sample containers:	Three 40-ml VOAs and two 1-L AG	Laboratory:	Curtis & Tompkins
Sample analyses:	TPHg, TPHd, BTEX, MTBE	Rinsate disposal:	
Decontamination method:	Triple rinse Aquinox		
Comments:	Triple rinse [with distilled water]		

TOC = top of casing
 bgs = below ground surface

GROUNDWATER SAMPLING

Well No.:

MW-5

Project No.		Recorded by:	Mike Jones, MSE	Date:	06/05/08
Project Name:	Harbor Facilities Center	Depth of well from TOC (feet):			20.77
Location:	Port of Oakland	Well diameter (inches):			2
	2277 7th Street, Oakland	Screened interval from TOC (feet):			10.4-20.8
Weather:	Sunny, light wind, 68°F	TOC elevation, NAVD88 (feet):			15.39
Precip. in past 5 days (in.)	0	Groundwater elevation (feet):			5.65
Source:	Oakland Fire Services Agency "ONO"	Water level from TOC (feet):	9.74	Time:	14:20
Water level instrument:	Dual-phase interface probe (Solinst)	Product level from TOC (feet):	-	Time:	-

CALCULATION OF WELL VOLUME:

(well depth - water level) x (well radius)² x π x gal/ft³
 (20.8 ft - ft) x 0.083 ft)² x π x 7.48 gal/ft³ =

0.91	gallons in one casing volume
2.74	total gallons removed

[Note: One casing volume should be = 1.8 gallons.]

CALIBRATION:

	Time	Temp (°C)	pH	DO (%)	ORP (mV)	EC (µmho/cm)	NTU
Calibration Standard:							
Before Purging:							
After Purging:							

FIELD MEASUREMENTS:

Time	Temp (°C)	pH	DO (mg/L)	ORP (mV)	EC (µmho/cm)	NTU	Cumulative Gallons Removed
14:45	23	7.6	0.6	28	2.4	27	1
14:50	21	7.2	0.7	20	2.5	22	2
14:55	20	7	0.7		2.4	22	3

Purge method:	GEO peristaltic pump	Sample Time:	14:55
Duplicate/blank number:		Duplicate Sample Time:	-
Sampling equipment:	GEO peristaltic pump	VOA attachment:	-
Sample containers:	Three 40-ml VOAs and two 1-L AG	Laboratory:	Curtis & Tompkins
Sample analyses:	TPHg, TPHd, BTEX, MTBE	Rinsate disposal:	
Decontamination method:	Triple rinse Aquinox		
Comments:	Triple rinse [with distilled water]		

TOC = top of casing
 bgs = below ground surface

GROUNDWATER SAMPLING

Well No.: **MW-8A**

Project No.		Recorded by:	Mike Jones, MSE	Date:	06/05/08
Project Name:	Harbor Facilities Center	Depth of well from TOC (feet):	23.49	Well diameter (inches):	2
Location:	Port of Oakland 2277 7th Street, Oakland	Screened interval from TOC (feet):	7.54-22.54	TOC elevation, NAVD88 (feet):	14.98
Weather:	Sunny, light wind	Groundwater elevation (feet):		Water level from TOC (feet):	11.45
Precip. in past 5 days (in.)	0	Product level from TOC (feet):	-	Time:	13:00
Source:	Oakland Fire Services Agency "ONO"			Time:	-
Water level instrument:	Dual-phase interface probe (Solinst)				

CALCULATION OF WELL VOLUME:

$(\text{well depth} - \text{water level}) \times (\text{well radius})^2 \times \pi \times \text{gal/ft}^3$
 $(23.14 \text{ ft} - \text{ft}) \times 0.083 \text{ ft}^2 \times \pi \times 7.48 \text{ gal/ft}^3 =$

0.99	gallons in one casing volume
2.99 = 3	total gallons removed

[Note: One casing volume should be = 1.9 gallons.]

CALIBRATION:

	Time	Temp (°C)	pH	DO (%)	ORP (mV)	EC (µmho/cm)	NTU
Calibration Standard:							
Before Purging:							
After Purging:							

FIELD MEASUREMENTS:

Time	Temp (°C)	pH	DO (mg/L)	ORP (mV)	EC (µmho/cm)	NTU	Cumulative Gallons Removed
13:20	19	7.0	0.8	47	2.4	20	1
13:25	19	7.0	0.8	74	2.4	20	2
13:30	19	7.1	0.8	74	2.3	20	3

Purge method:	GEO peristaltic pump	Sample Time:	13:30
Duplicate/blank number:	-	Duplicate Sample Time:	-
Sampling equipment:	GEO peristaltic pump	VOA attachment:	-
Sample containers:	Three 40-ml VOAs and two 1-L AG	Laboratory:	Curtis & Tompkins
Sample analyses:	TPHg, TPHd, BTEX, MTBE	Rinsate disposal:	
Decontamination method:	Triple rinse Aquinox		
Comments:	Triple rinse [with distilled water]		

TOC = top of casing
bgs = below ground surface

APPENDIX B
LABORATORY ANALYTICAL REPORT

CASE NARRATIVE

Laboratory number: 203794
Client: Microsearch Environmental Group
Project: 202386
Location: Ringsby Port of Oakland
Request Date: 06/06/08
Samples Received: 06/06/08

This hardcopy data package contains sample and QC results for seven water samples, requested for the above referenced project on 06/06/08. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):

High surrogate recoveries were observed for bromofluorobenzene (FID) and trifluorotoluene (FID) in the MS/MSD for batch 139097 and the LCS/MS/MSD for batch 139140. MW-5 (lab # 203794-003) was analyzed with more than 1 mL of headspace in the VOA vial. No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):

No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):

No analytical problems were encountered.

Total Volatile Hydrocarbons			
Lab #:	203794	Location:	Ringsby Port of Oakland
Client:	Microsearch Environmental Group	Prep:	EPA 5030B
Project#:	202386	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	06/05/08
Units:	ug/L	Received:	06/06/08
Diln Fac:	1.000		

Field ID:	MW-4	Batch#:	139097
Type:	SAMPLE	Analyzed:	06/10/08
Lab ID:	203794-004		

Analyte	Result	RL
Gasoline C7-C12	67 Y	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	82	69-140
Bromofluorobenzene (FID)	76	73-144

Field ID:	MW-4D	Batch#:	139097
Type:	SAMPLE	Analyzed:	06/10/08
Lab ID:	203794-005		

Analyte	Result	RL
Gasoline C7-C12	91 Y	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	83	69-140
Bromofluorobenzene (FID)	80	73-144

Field ID:	QCEB	Batch#:	139097
Type:	SAMPLE	Analyzed:	06/10/08
Lab ID:	203794-006		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	89	69-140
Bromofluorobenzene (FID)	85	73-144

Y= Sample exhibits chromatographic pattern which does not resemble standard
 ND= Not Detected
 RL= Reporting Limit

Total Volatile Hydrocarbons

Lab #: 203794	Location: Ringsby Port of Oakland
Client: Microsearch Environmental Group	Prep: EPA 5030B
Project#: 202386	Analysis: EPA 8015B
Matrix: Water	Sampled: 06/05/08
Units: ug/L	Received: 06/06/08
Diln Fac: 1.000	

Field ID: QCTB	Batch#: 139097
Type: SAMPLE	Analyzed: 06/10/08
Lab ID: 203794-007	

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	89	69-140
Bromofluorobenzene (FID)	87	73-144

Type: BLANK	Batch#: 139097
Lab ID: QC445802	Analyzed: 06/10/08

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	117	69-140
Bromofluorobenzene (FID)	110	73-144

Type: BLANK	Batch#: 139140
Lab ID: QC446006	Analyzed: 06/11/08

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	105	69-140
Bromofluorobenzene (FID)	97	73-144

Y= Sample exhibits chromatographic pattern which does not resemble standard
 ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	203794	Location:	Ringsby Port of Oakland
Client:	Microsearch Environmental Group	Prep:	EPA 5030B
Project#:	202386	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC445803	Batch#:	139097
Matrix:	Water	Analyzed:	06/10/08
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,009	101	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	108	69-140
Bromofluorobenzene (FID)	116	73-144

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	203794	Location:	Ringsby Port of Oakland
Client:	Microsearch Environmental Group	Prep:	EPA 5030B
Project#:	202386	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	139097
MSS Lab ID:	203778-002	Sampled:	06/05/08
Matrix:	Water	Received:	06/06/08
Units:	ug/L	Analyzed:	06/10/08
Diln Fac:	1.000		

Type: MS Lab ID: QC445850

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	21.62	2,000	1,897	94	67-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	163 *	69-140
Bromofluorobenzene (FID)	197 *	73-144

Type: MSD Lab ID: QC445851

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,983	98	67-120	4	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	170 *	69-140
Bromofluorobenzene (FID)	199 *	73-144

*= Value outside of QC limits; see narrative

RPD= Relative Percent Difference

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	203794	Location:	Ringsby Port of Oakland
Client:	Microsearch Environmental Group	Prep:	EPA 5030B
Project#:	202386	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC446007	Batch#:	139140
Matrix:	Water	Analyzed:	06/11/08
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	924.8	92	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	142 *	69-140
Bromofluorobenzene (FID)	164 *	73-144

*= Value outside of QC limits; see narrative

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	203794	Location:	Ringsby Port of Oakland
Client:	Microsearch Environmental Group	Prep:	EPA 5030B
Project#:	202386	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	139140
MSS Lab ID:	203847-002	Sampled:	06/09/08
Matrix:	Water	Received:	06/10/08
Units:	ug/L	Analyzed:	06/11/08
Diln Fac:	1.000		

Type: MS Lab ID: QC446008

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	14.13	2,000	1,921	95	67-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	148 *	69-140
Bromofluorobenzene (FID)	169 *	73-144

Type: MSD Lab ID: QC446009

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,930	96	67-120	0	20

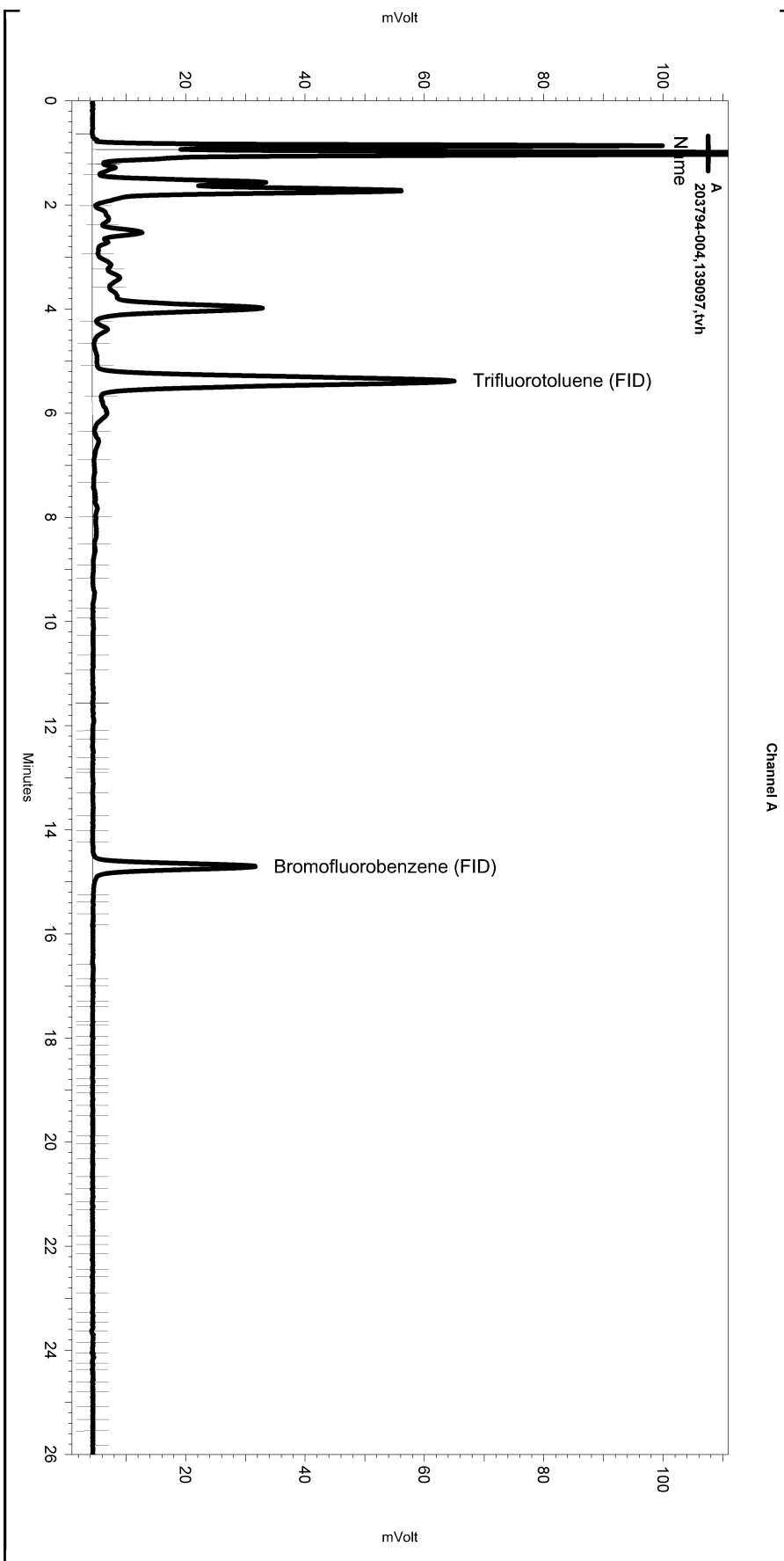
Surrogate	%REC	Limits
Trifluorotoluene (FID)	141 *	69-140
Bromofluorobenzene (FID)	157 *	73-144

*= Value outside of QC limits; see narrative

RPD= Relative Percent Difference

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 Sample Name: 203794-004,139097.tvh
 Data File: \\Lims\gdrive\ezchrom\Projects\GC05\Data\162_020
 Instrument: GC05 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC05\Method\tvhbtxe157.met

Software Version 3.1.7
 Run Date: 6/10/2008 8:26:42 PM
 Analysis Date: 6/11/2008 8:59:18 AM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: A 1.3



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 Integration Events

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Width	0	0	0.2
Yes	Threshold	0	0	50

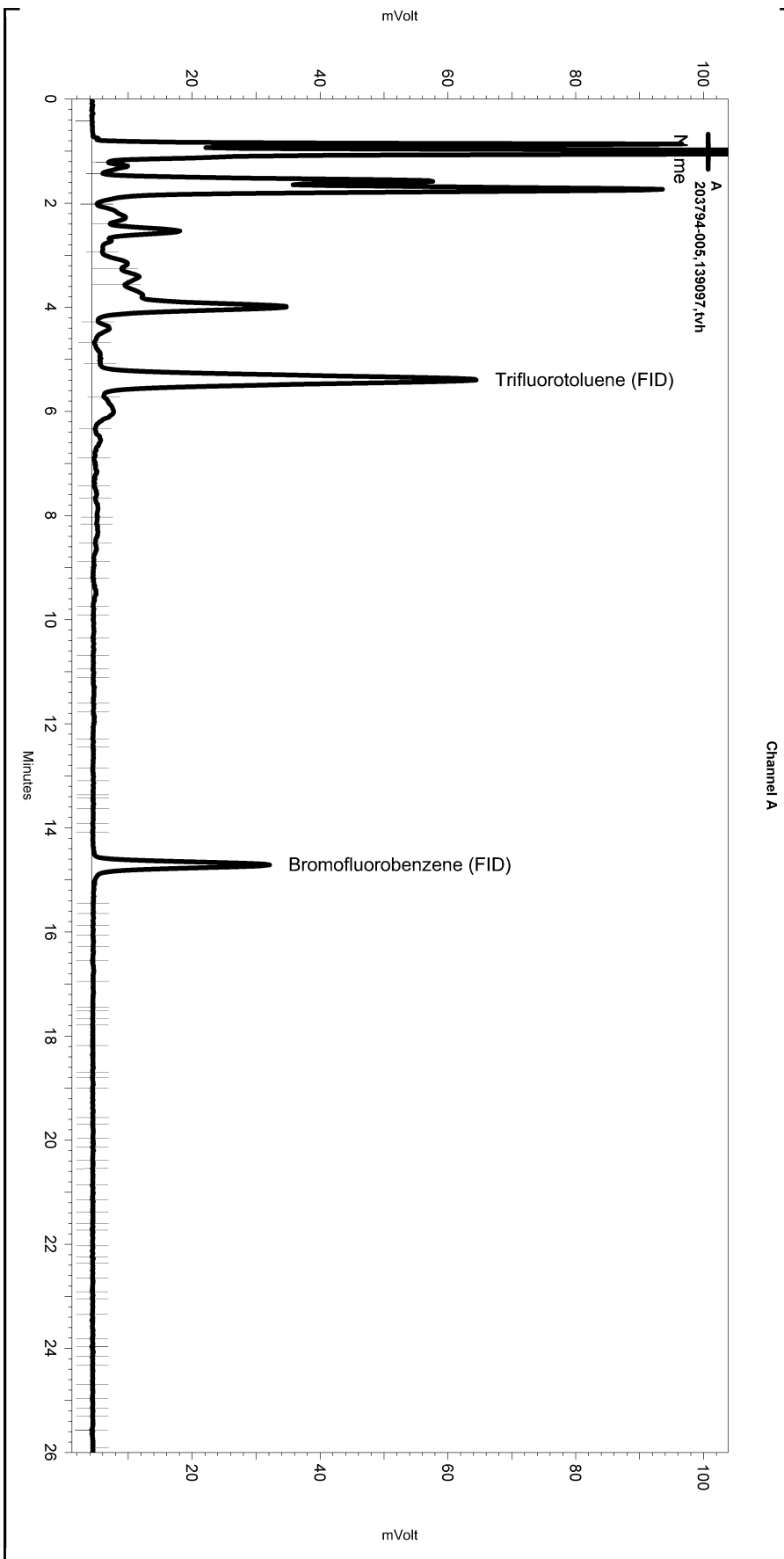
 Manual Integration Fixes

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Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Split Peak	5.077	0	0

Sequence File: \\Lims\gdrive\ezchrom\Projects\GC05\Sequence\162.seq
 Sample Name: 203794-005,139097.tvh
 Data File: \\Lims\gdrive\ezchrom\Projects\GC05\Data\162_021
 Instrument: GC05 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC05\Method\TVHBTXE157.met

Software Version 3.1.7
 Run Date: 6/10/2008 9:02:14 PM
 Analysis Date: 6/11/2008 9:00:44 AM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: C 1.3



 ---< General Method Parameters >-----

No items selected for this section

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No items selected for this section

 Integration Events

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Width	0	0	0.2
Yes	Threshold	0	0	50

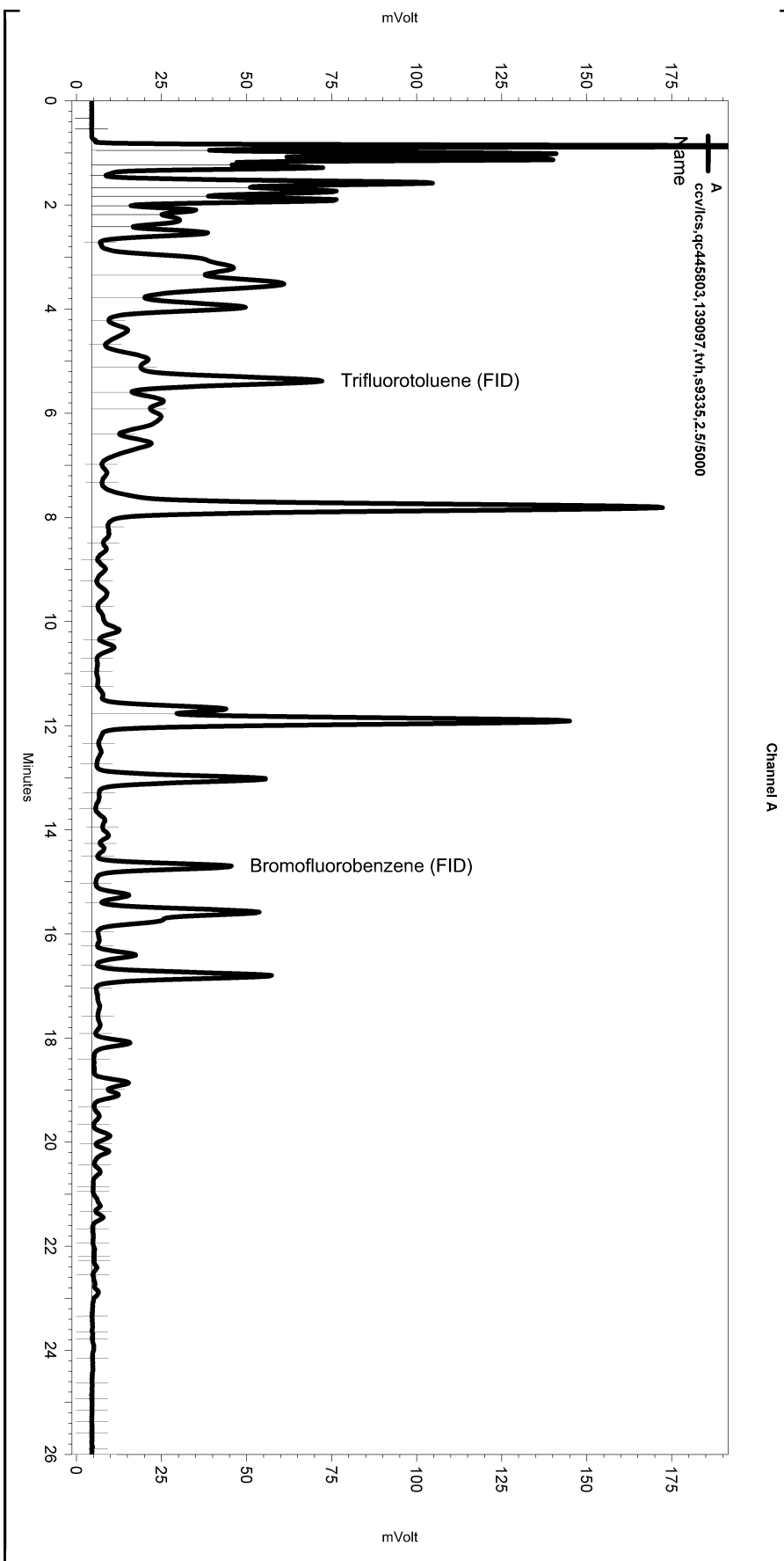
 Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC05\Data\162_021

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Split Peak	5.078	0	0

Sequence File: \\Lims\gdrive\ezchrom\Projects\GC05\Sequence\162.seq
 Sample Name: ccv/lcs,qc445803,139097,tvh,s9335,2.5/5000
 Data File: \\Lims\gdrive\ezchrom\Projects\GC05\Data\162_003
 Instrument: GC05 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC05\Method\TVHBTXE157.met

Software Version 3.1.7
 Run Date: 6/10/2008 9:13:42 AM
 Analysis Date: 6/11/2008 7:21:46 AM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: {Data Description}



 ---< General Method Parameters >-----

No items selected for this section

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No items selected for this section

Integration Events

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Width	0	0	0.2
Yes	Threshold	0	0	50

Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC05\Data\162_003

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
None				

Total Extractable Hydrocarbons			
Lab #:	203794	Location:	Ringsby Port of Oakland
Client:	Microsearch Environmental Group	Prep:	EPA 3520C
Project#:	202386	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	06/05/08
Units:	ug/L	Received:	06/06/08
Diln Fac:	1.000	Prepared:	06/09/08
Batch#:	139080	Analyzed:	06/11/08

Field ID: MW-2 Lab ID: 203794-001
 Type: SAMPLE Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
Hexacosane	89	63-130

Field ID: MW-8A Lab ID: 203794-002
 Type: SAMPLE Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
Hexacosane	90	63-130

Field ID: MW-5 Lab ID: 203794-003
 Type: SAMPLE Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
Hexacosane	83	63-130

Field ID: MW-4 Lab ID: 203794-004
 Type: SAMPLE Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
Hexacosane	80	63-130

Y= Sample exhibits chromatographic pattern which does not resemble standard
 ND= Not Detected
 RL= Reporting Limit

Total Extractable Hydrocarbons			
Lab #:	203794	Location:	Ringsby Port of Oakland
Client:	Microsearch Environmental Group	Prep:	EPA 3520C
Project#:	202386	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	06/05/08
Units:	ug/L	Received:	06/06/08
Diln Fac:	1.000	Prepared:	06/09/08
Batch#:	139080	Analyzed:	06/11/08

Field ID: MW-4D Lab ID: 203794-005
 Type: SAMPLE Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
Hexacosane	84	63-130

Field ID: QCEB Lab ID: 203794-006
 Type: SAMPLE Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	300 Y	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
Hexacosane	94	63-130

Type: BLANK Cleanup Method: EPA 3630C
 Lab ID: QC445729

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
Hexacosane	100	63-130

Y= Sample exhibits chromatographic pattern which does not resemble standard
 ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	203794	Location:	Ringsby Port of Oakland
Client:	Microsearch Environmental Group	Prep:	EPA 3520C
Project#:	202386	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC445730	Batch#:	139080
Matrix:	Water	Prepared:	06/09/08
Units:	ug/L	Analyzed:	06/11/08

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	1,891	76	61-120

Surrogate	%REC	Limits
Hexacosane	92	63-130

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	203794	Location:	Ringsby Port of Oakland
Client:	Microsearch Environmental Group	Prep:	EPA 3520C
Project#:	202386	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	139080
MSS Lab ID:	203772-004	Sampled:	06/04/08
Matrix:	Water	Received:	06/05/08
Units:	ug/L	Prepared:	06/09/08
Diln Fac:	1.000	Analyzed:	06/11/08

Type: MS Cleanup Method: EPA 3630C
 Lab ID: QC445731

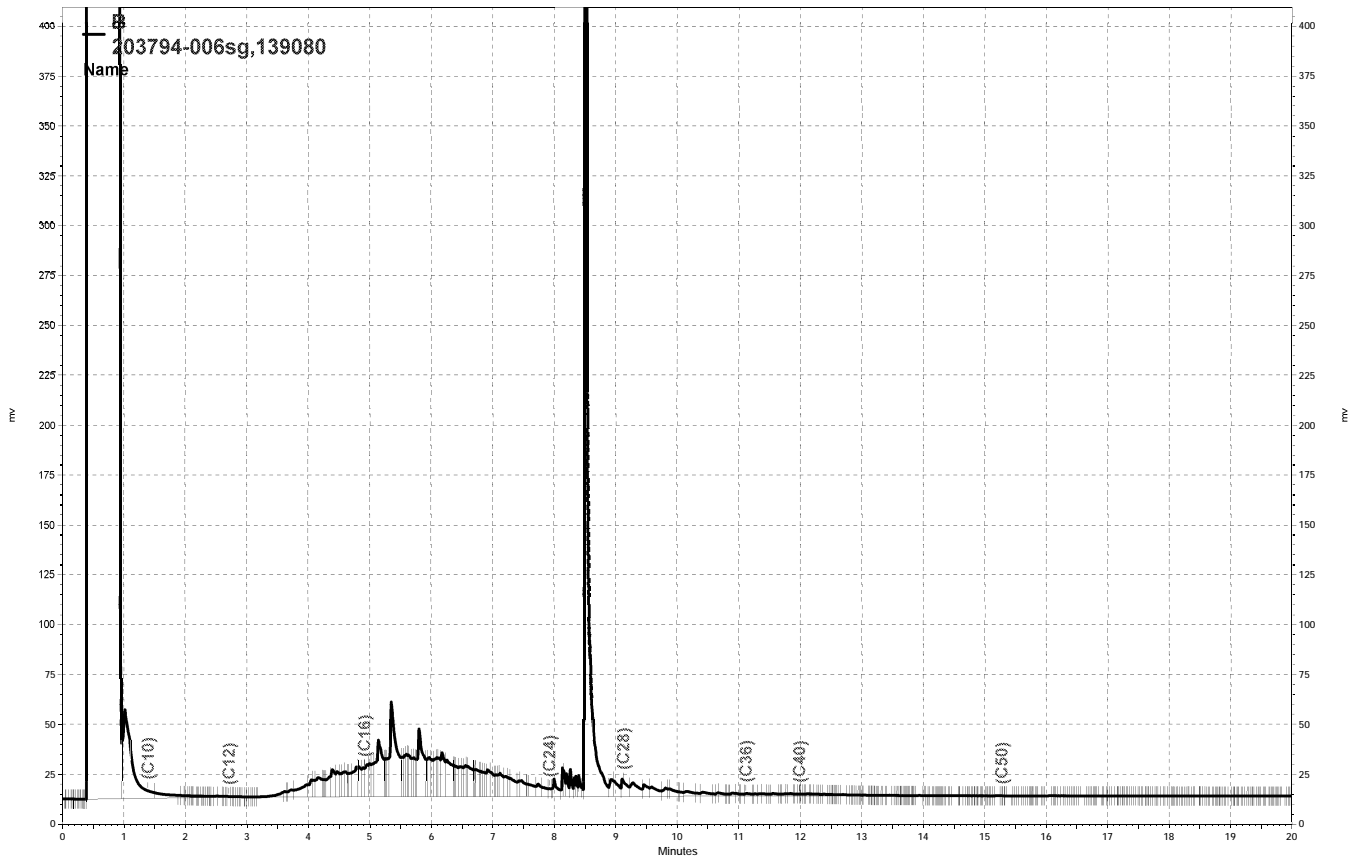
Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	41.63	2,500	1,537	60	58-126

Surrogate	%REC	Limits
Hexacosane	77	63-130

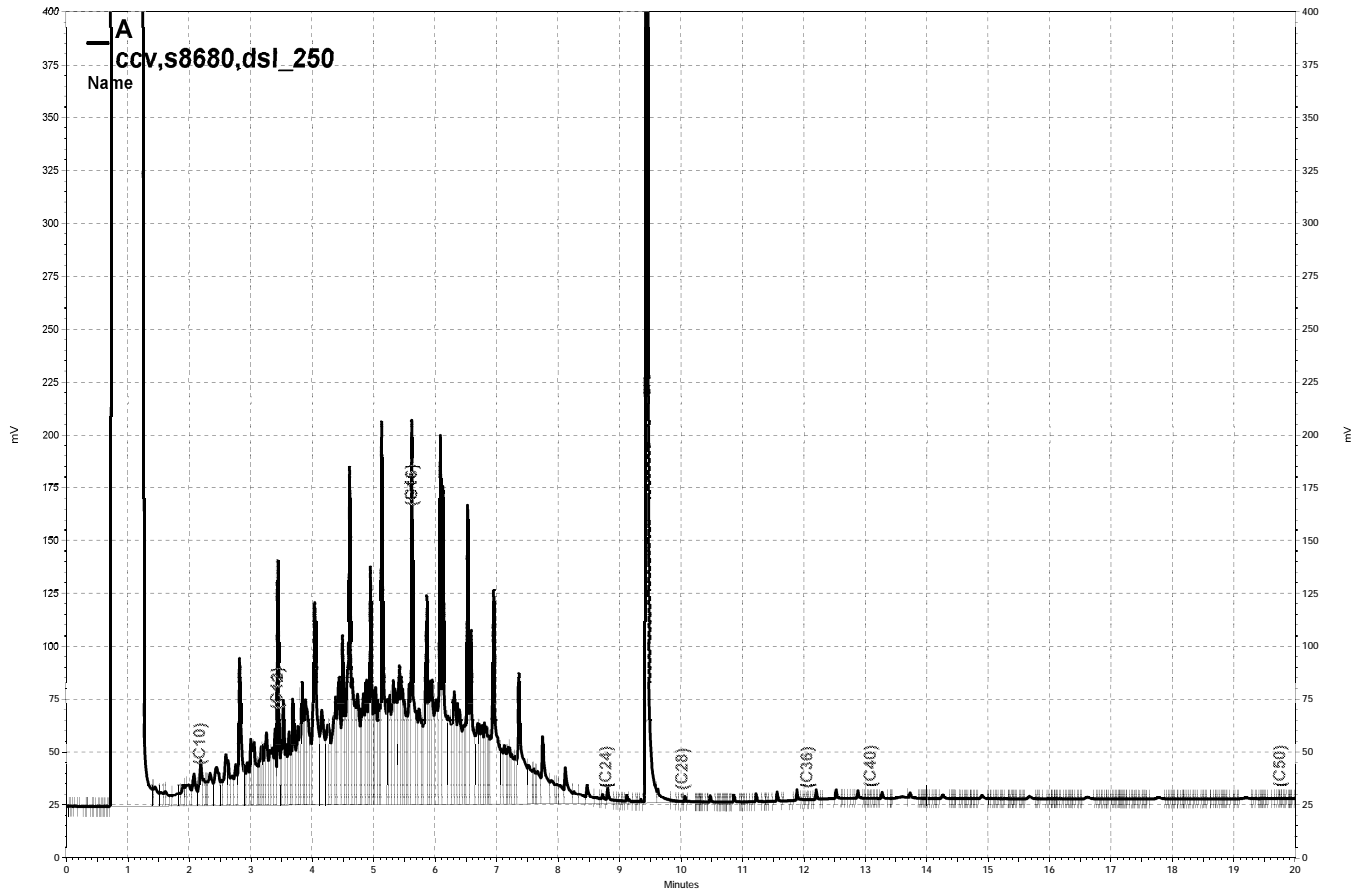
Type: MSD Cleanup Method: EPA 3630C
 Lab ID: QC445732

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	1,861	73	58-126	19	31

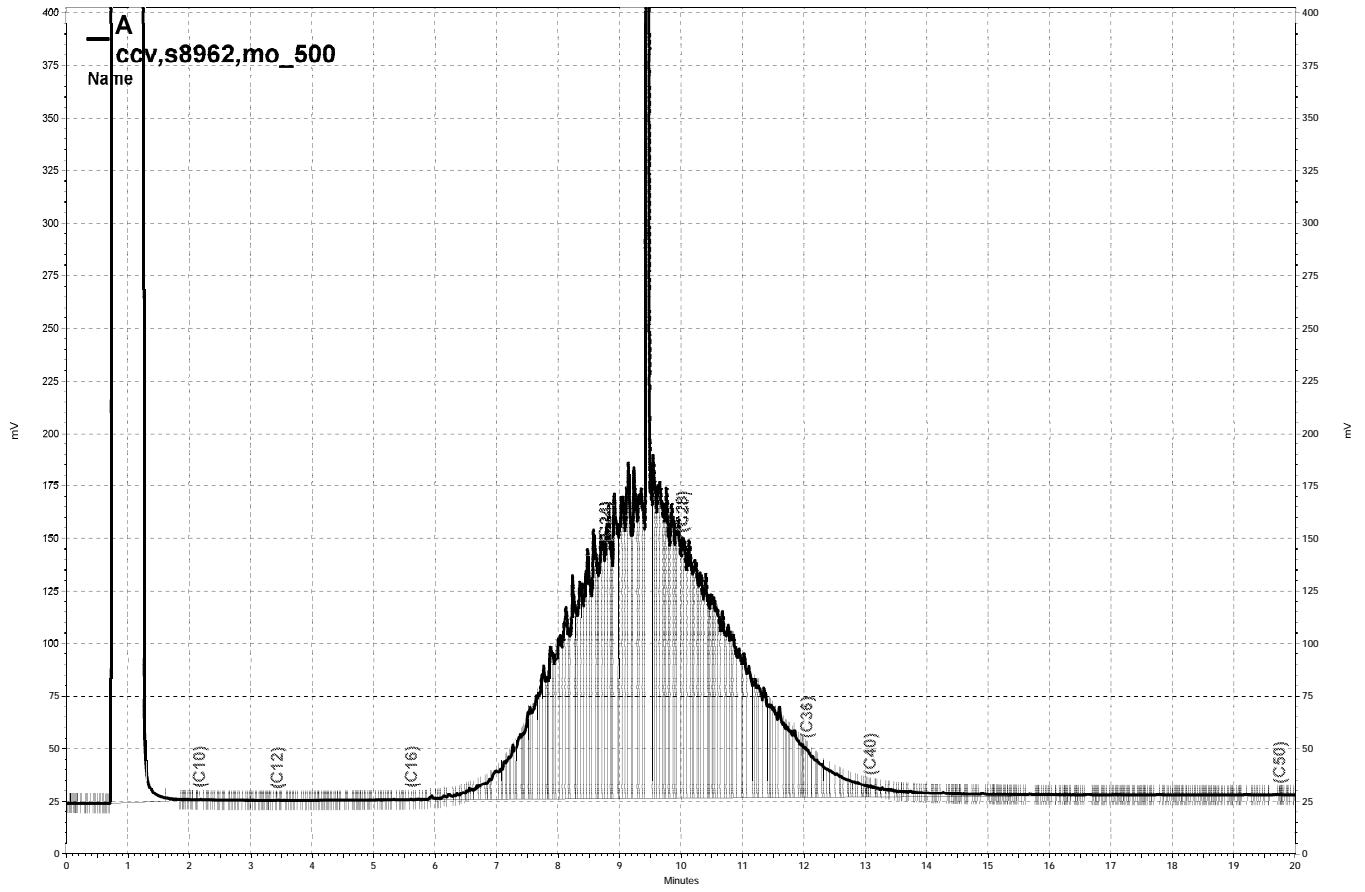
Surrogate	%REC	Limits
Hexacosane	93	63-130



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Purgeable Aromatics by GC/MS

Lab #:	203794	Location:	Ringsby Port of Oakland
Client:	Microsearch Environmental Group	Prep:	EPA 5030B
Project#:	202386	Analysis:	EPA 8260B
Field ID:	MW-2	Batch#:	139029
Lab ID:	203794-001	Sampled:	06/05/08
Matrix:	Water	Received:	06/06/08
Units:	ug/L	Analyzed:	06/08/08
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	98	76-138
Toluene-d8	94	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Aromatics by GC/MS

Lab #:	203794	Location:	Ringsby Port of Oakland
Client:	Microsearch Environmental Group	Prep:	EPA 5030B
Project#:	202386	Analysis:	EPA 8260B
Field ID:	MW-8A	Batch#:	139029
Lab ID:	203794-002	Sampled:	06/05/08
Matrix:	Water	Received:	06/06/08
Units:	ug/L	Analyzed:	06/08/08
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	100	76-138
Toluene-d8	91	80-120
Bromofluorobenzene	107	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Aromatics by GC/MS

Lab #:	203794	Location:	Ringsby Port of Oakland
Client:	Microsearch Environmental Group	Prep:	EPA 5030B
Project#:	202386	Analysis:	EPA 8260B
Field ID:	MW-5	Batch#:	139029
Lab ID:	203794-003	Sampled:	06/05/08
Matrix:	Water	Received:	06/06/08
Units:	ug/L	Analyzed:	06/08/08
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	100	76-138
Toluene-d8	92	80-120
Bromofluorobenzene	110	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Aromatics by GC/MS

Lab #:	203794	Location:	Ringsby Port of Oakland
Client:	Microsearch Environmental Group	Prep:	EPA 5030B
Project#:	202386	Analysis:	EPA 8260B
Field ID:	MW-4	Batch#:	139042
Lab ID:	203794-004	Sampled:	06/05/08
Matrix:	Water	Received:	06/06/08
Units:	ug/L	Analyzed:	06/09/08
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	14	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	115	76-138
Toluene-d8	93	80-120
Bromofluorobenzene	106	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Aromatics by GC/MS

Lab #:	203794	Location:	Ringsby Port of Oakland
Client:	Microsearch Environmental Group	Prep:	EPA 5030B
Project#:	202386	Analysis:	EPA 8260B
Field ID:	MW-4D	Batch#:	139029
Lab ID:	203794-005	Sampled:	06/05/08
Matrix:	Water	Received:	06/06/08
Units:	ug/L	Analyzed:	06/08/08
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	15	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	109	76-138
Toluene-d8	93	80-120
Bromofluorobenzene	105	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Aromatics by GC/MS

Lab #:	203794	Location:	Ringsby Port of Oakland
Client:	Microsearch Environmental Group	Prep:	EPA 5030B
Project#:	202386	Analysis:	EPA 8260B
Field ID:	QCEB	Batch#:	139029
Lab ID:	203794-006	Sampled:	06/05/08
Matrix:	Water	Received:	06/06/08
Units:	ug/L	Analyzed:	06/08/08
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	110	76-138
Toluene-d8	96	80-120
Bromofluorobenzene	106	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Aromatics by GC/MS

Lab #:	203794	Location:	Ringsby Port of Oakland
Client:	Microsearch Environmental Group	Prep:	EPA 5030B
Project#:	202386	Analysis:	EPA 8260B
Field ID:	QCTB	Batch#:	139029
Lab ID:	203794-007	Sampled:	06/05/08
Matrix:	Water	Received:	06/06/08
Units:	ug/L	Analyzed:	06/08/08
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	110	76-138
Toluene-d8	93	80-120
Bromofluorobenzene	109	80-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Aromatics by GC/MS			
Lab #:	203794	Location:	Ringsby Port of Oakland
Client:	Microsearch Environmental Group	Prep:	EPA 5030B
Project#:	202386	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC445515	Batch#:	139029
Matrix:	Water	Analyzed:	06/08/08
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	107	76-138
Toluene-d8	95	80-120
Bromofluorobenzene	111	80-120

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Aromatics by GC/MS			
Lab #:	203794	Location:	Ringsby Port of Oakland
Client:	Microsearch Environmental Group	Prep:	EPA 5030B
Project#:	202386	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	139029
Units:	ug/L	Analyzed:	06/08/08
Diln Fac:	1.000		

Type: BS Lab ID: QC445516

Analyte	Spiked	Result	%REC	Limits
MTBE	25.00	24.35	97	60-136
Benzene	25.00	24.57	98	80-120
Toluene	25.00	22.64	91	80-121
Ethylbenzene	25.00	27.29	109	80-124
m,p-Xylenes	50.00	50.86	102	80-128
o-Xylene	25.00	24.08	96	80-123

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	107	76-138
Toluene-d8	95	80-120
Bromofluorobenzene	111	80-120

Type: BSD Lab ID: QC445517

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	25.00	22.75	91	60-136	7	20
Benzene	25.00	23.63	95	80-120	4	20
Toluene	25.00	22.28	89	80-121	2	20
Ethylbenzene	25.00	27.00	108	80-124	1	20
m,p-Xylenes	50.00	45.59	91	80-128	11	20
o-Xylene	25.00	23.46	94	80-123	3	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	103	76-138
Toluene-d8	93	80-120
Bromofluorobenzene	106	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Aromatics by GC/MS			
Lab #:	203794	Location:	Ringsby Port of Oakland
Client:	Microsearch Environmental Group	Prep:	EPA 5030B
Project#:	202386	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	139042
Units:	ug/L	Analyzed:	06/09/08
Diln Fac:	1.000		

Type: BS Lab ID: QC445565

Analyte	Spiked	Result	%REC	Limits
MTBE	25.00	21.72	87	60-136
Benzene	25.00	23.80	95	80-120
Toluene	25.00	21.26	85	80-121
Ethylbenzene	25.00	27.62	110	80-124
m,p-Xylenes	50.00	50.46	101	80-128
o-Xylene	25.00	25.49	102	80-123

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	109	76-138
Toluene-d8	93	80-120
Bromofluorobenzene	107	80-120

Type: BSD Lab ID: QC445566

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	25.00	21.23	85	60-136	2	20
Benzene	25.00	22.21	89	80-120	7	20
Toluene	25.00	20.75	83	80-121	2	20
Ethylbenzene	25.00	26.77	107	80-124	3	20
m,p-Xylenes	50.00	48.06	96	80-128	5	20
o-Xylene	25.00	23.44	94	80-123	8	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	104	76-138
Toluene-d8	92	80-120
Bromofluorobenzene	110	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Aromatics by GC/MS			
Lab #:	203794	Location:	Ringsby Port of Oakland
Client:	Microsearch Environmental Group	Prep:	EPA 5030B
Project#:	202386	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC445567	Batch#:	139042
Matrix:	Water	Analyzed:	06/09/08
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	106	76-138
Toluene-d8	93	80-120
Bromofluorobenzene	106	80-120

ND= Not Detected

RL= Reporting Limit

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL AND ELEVATION DATA

TABLE C-1 : Historical Groundwater Elevation Data

Port of Oakland, 651 and 555 Maritime Street
Oakland, California

Monitoring Well	Date Measured	Elevation ¹ - Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation ¹ (feet)
MW-1	04/18/2000	14.14	NM	8.21	0	5.93
	05/22/2000	14.14	NM	8.51	0	5.97
	07/10/2001	14.14	8.8	10	1.2	4.14
	12/12/2001	14.14	NA	NA	NA	NC
	03/08/2002	14.14	NM	NA	NA	NC
	06/13/2002	14.14	8.7	10	1.3	NC
	09/26/2002	14.14	8.6	9.5	0.9	NC
	03/17/2003	14.14	7.61	8.88	1.27	NC
	06/18/2003	14.14	8.2	9.44	1.24	NC
	09/03/2003	14.14	8.5	9.4	0.9	NC
	11/26/2003	14.14	8.85	9.25	0.4	NC
	03/05/2004	14.14	6.76	7.07	0.31	NC
	06/02/2004	14.14	8.26	8.71	0.45	NC
	09/03/2004	14.14	8.7	9.11	0.41	NC
	12/16/2004	14.14	7.75	7.92	0.17	NC
	03/29/2005	14.14	6.21	6.38	0.17	NC
	06/14/2005	14.14	7.41	7.61	0.2	NC
	08/10/2005	14.14	8.05	8.55	0.5	NC
	09/29/2005	14.14	8.28	8.95	0.67	NC
	12/21/2005	14.14	5.7	5.9	0.2	NC
	03/24/2006	14.14	5.98	6.27	0.29	NC
	07/28/2006	14.14	7.88	8.35	0.47	NC
	11/29/2006	NA	10.58	10.81	0.23	NA
	06/01/2007	16.29	11.11	11.45	0.34	NC
	11/14/2007	16.29	10.87	10.93	0.06	NC
	6/5/2008	16.29	11.36	11.46	0.10	NC
	MW-2	12/31/1997	14.36	NP	8.73	0
04/13/1998		14.36	NP	7.72	0	6.64
11/06/1998		14.36	NP	9.43	0	4.93
03/19/1999		14.36	NP	8.21	0	6.15
06/24/1999		14.36	NP	8.91	0	5.45
09/28/1999		14.36	NP	9.42	0	4.94
11/12/1999		14.36	NP	9.63	0	4.73
02/11/2000		14.36	NP	8.54	0	5.82
05/22/2000		14.36	NP	8.1	0	6.26
09/06/2000		14.36	NP	8.79	0	5.57
12/19/2000		14.36	NP	9.19	0	5.17
02/21/2001		14.36	NP	7.99	0	6.37
04/03/2001		14.36	NP	8.23	0	6.13
07/10/2001		14.36	NP	8.7	0	5.66
12/12/2001		14.36	NP	8.16	0	6.2
01/22/2002		14.36	NP	7.64	0	6.72
03/08/2002		14.36	NP	8.31	0	6.05
06/13/2002		14.36	NP	8.64	0	5.72
09/26/2002		14.36	NP	8.95	0	5.41
12/12/2002		14.36	NP	9.17	0	5.19

TABLE C-1 : Historical Groundwater Elevation Data

Port of Oakland, 651 and 555 Maritime Street
Oakland, California

Monitoring Well	Date Measured	Elevation ¹ - Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation ¹ (feet)
MW-2	03/17/2003	14.36	NP	7.77	0	6.59
	06/18/2003	14.36	NP	8.44	0	5.92
	09/03/2003	14.36	NP	8.98	0	5.38
	11/26/2003	17.21	NP	12.01	0	5.2
	03/05/2004	17.21	NP	9.75	0	7.46
	06/02/2004	17.21	NP	11.22	0	5.99
	09/03/2004	17.21	NP	11.62	0	5.59
	12/16/2004	17.21	NP	10.8	0	6.41
	03/29/2005	17.21	NP	9.67	0	7.54
	06/14/2005	17.21	NP	10.68	0	6.53
	08/10/2005	17.21	NP	11.05	0	6.16
	09/29/2005	17.21	NP	11.32	0	5.89
	12/21/2005	16.96	NP	9.57	0	7.39
	03/24/2006	16.96	NP	9.55	0	7.41
	07/28/2006	16.96	NP	10.85	0	6.11
	11/29/2006	NA	NP	11.69	0	NA
	06/01/2007	16.92	NP	11.72	0	5.2
11/14/2007	16.92	NP	12.28	0	4.64	
6/5/2008	16.92	NP	12.01	--	4.91	
MW-3	11/06/1998	14.22	8.84	9.94	1.1	NC
	03/19/1999	14.22	7.52	8.05	0.53	NC
	06/24/1999	14.22	8.38	8.56	0.18	NC
	11/12/1999	14.22	9.14	9.23	0.09	NC
	02/11/2000	14.22	7.97	8.37	0.4	NC
	03/01/2000	14.22	6.59	7.24	0.65	NC
	03/21/2000	14.22	6.5	6.56	0.06	NC
	05/22/2000	14.22	7.51	8.05	0.54	NC
	06/26/2000	14.22	7.82	8.2	0.38	NC
	07/25/2000	14.22	7.9	8.92	1.02	NC
	08/31/2000	14.22	8.15	9.5	1.35	NC
	09/06/2000	14.22	8.21	9.42	1.21	NC
	09/21/2000	14.22	8.3	8.88	0.58	NC
	12/19/2000	14.22	8.6	9.65	1.05	NC
	02/22/2001	14.22	6.36	8.15	1.79	NC
	04/03/2001	14.22	7.48	8.88	1.4	NC
	04/23/2001	14.22	7.85	9.1	1.25	NC
	05/30/2001	14.22	7.75	9.1	1.35	NC
	07/10/2001	14.22	8.1	9.6	1.5	NC
	03/08/2002	14.22	7.8	8	0.2	NC
	04/03/2002	14.22	7.6	7.7	0.1	NC
	04/23/2002	14.22	7.9	8.4	0.5	NC
	04/25/2002	14.22	7.9	8.8	0.9	NC
	05/10/2002	14.22	8.1	8.2	0.1	NC
	05/24/2002	14.22	8.05	8.1	0.05	NC
	06/13/2002	14.22	8.1	8.7	0.6	NC
	07/05/2002	14.22	8.1	8.95	0.85	NC

TABLE C-1 : Historical Groundwater Elevation Data

Port of Oakland, 651 and 555 Maritime Street
Oakland, California

Monitoring Well	Date Measured	Elevation ¹ - Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation ¹ (feet)
MW-3	07/19/2002	14.22	8.1	8.9	0.8	NC
	07/30/2002	14.22	8.1	8.9	0.8	NC
	08/14/2002	14.22	8.1	8.9	0.8	NC
	09/13/2002	14.22	8.3	9.3	1	NC
	09/26/2002	14.22	8.3	9	0.7	NC
	10/14/2002	14.22	8.6	9.5	0.9	NC
	11/04/2002	14.22	8.75	9.99	1.24	NC
	11/21/2002	14.22	8.59	11.29	2.7	NC
	12/06/2002	14.22	8.56	9.3	0.74	NC
	12/18/2002	14.22	7.35	8.43	1.08	NC
	12/30/2002	14.22	6.5	7.15	0.65	NC
	01/02/2003	14.22	6.2	6.2	0	8.02
	01/03/2003	14.22	6.21	6.21	0	8.01
	01/14/2003	14.22	6.2	6.21	0.01	8.01
	01/30/2003	14.22	6.81	6.85	0.04	7.37
	02/18/2002	14.22	7.09	7.15	0.06	NC
	02/26/2003	14.22	7.04	7.11	0.07	NC
	03/13/2003	14.22	7.22	8.11	0.89	NC
	03/17/2003	14.22	7.15	7.5	0.35	NC
	04/16/2003	14.22	7.27	8.25	0.98	NC
	06/18/2003	14.22	7.78	9	1.22	NC
	09/03/2003	14.22	8.31	9.96	1.65	NC
	11/26/2003	16.18	10.79	12.85	2.06	NC
	03/05/2004	16.18	8.39	9.85	1.46	NC
	06/02/2004	16.18	10.03	11.35	1.32	NC
	09/03/2004	16.18	10.46	12.06	1.6	NC
	12/16/2004	16.18	9.41	10.38	0.97	NC
	03/29/2005	16.18	8.17	9.01	0.84	NC
	06/14/2005	16.18	9.59	10.55	0.96	NC
	08/10/2005	16.18	9.91	11.15	1.24	NC
	09/29/2005	16.18	10.21	11.61	1.4	NC
	12/21/2005	16.18	8.21	8.28	0.07	NC
	03/24/2006	16.18	8.2	8.82	0.62	NC
07/28/2006	16.18	9.81	9.83	0.02	NC	
11/29/2006	NA	10.72	11.7	0.98	NA	
06/01/2007	16.15	10.77	11.46	0.69	NC	
11/14/2007	16.15	10.98	12.19	1.21	NC	
6/5/2008	16.15	10.51	11.96	1.45	NC	
MW-4	12/31/1997	13.15	NP	7.09	0	6.06
	04/13/1998	13.15	NP	7.71	0	5.44
	11/06/1998	13.15	NP	8.69	0	4.46
	03/19/1999	13.15	NP	8	0	5.15
	06/24/1999	13.15	NP	8.45	0	4.7
	09/28/1999	13.15	NP	8.73	0	4.42
	11/12/1999	13.15	NP	8.83	0	4.32
	02/11/2000	13.15	NP	7.71	0	5.44

TABLE C-1 : Historical Groundwater Elevation Data

Port of Oakland, 651 and 555 Maritime Street
Oakland, California

Monitoring Well	Date Measured	Elevation ¹ - Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation ¹ (feet)
MW-4	05/22/2000	13.15	NP	8.09	0	5.06
	09/06/2000	13.15	NP	8.32	0	4.83
	12/19/2000	13.15	NP	8.47	0	4.68
	02/21/2001	13.15	NP	7.51	0	5.64
	04/03/2001	13.15	NP	8.13	0	5.02
	07/10/2001	13.15	NP	8.12	0	5.03
	12/12/2001	13.15	NP	7.65	0	5.5
	01/22/2002	13.15	NP	7.6	0	5.55
	03/08/2002	13.15	NP	7.96	0	5.19
	06/13/2002	13.15	NP	8.2	0	4.95
	09/26/2002	13.15	NP	8.21	0	4.94
	12/12/2002	13.15	NP	8.38	0	4.77
	03/17/2003	13.15	NP	7.72	0	5.43
	06/18/2003	13.15	NP	8.02	0	5.13
	09/03/2003	13.15	NP	8.29	0	4.86
	11/26/2003	13.15	NP	8.69	0	4.46
	03/05/2004	13.15	NP	7.45	0	5.7
	06/02/2004	13.15	NP	8.25	0	4.9
	09/03/2004	13.15	NP	8.31	0	4.84
	12/16/2004	13.15	NP	7.96	0	5.19
	03/29/2005	13.15	NP	7.11	0	6.04
	06/14/2005	13.15	NP	7.9	0	5.25
	08/10/2005	13.15	NP	7.86	0	5.29
	09/29/2005	13.15	NP	8	0	5.15
	12/21/2005	13.15	NP	7.3	0	5.85
	03/24/2006	13.15	NP	7.05	0	6.1
	07/28/2006	13.15	NP	7.92	0	5.23
	11/29/2006	NA	NP	11.63	0	NA
06/01/2007	16.40	NP	11.82	0	4.58	
11/14/2007	16.40	NP	11.88	0	4.52	
6/5/2008	16.40	NP	11.67	--	4.73	
MW-5	12/31/1997	13.49	NP	6.38	0	7.11
	04/13/1998	13.49	NP	5.56	0	7.93
	11/06/1998	13.49	NP	6.59	0	6.9
	03/19/1999	13.49	NP	6.2	0	7.29
	06/24/1999	13.49	NP	6.73	0	6.76
	09/28/1999	13.49	NP	6.91	0	6.58
	11/12/1999	13.49	NP	7.06	0	6.43
	02/11/2000	13.49	NP	7	0	6.49
	05/22/2000	13.49	NP	6.21	0	7.28
	09/06/2000	13.49	NP	6.56	0	6.93
	12/19/2000	13.49	NP	6.68	0	6.81
	02/21/2001	13.49	NP	6.08	0	7.41
	04/03/2001	13.49	NP	6.38	0	7.11
	07/10/2001	13.49	NP	6.58	0	6.91
	12/12/2001	13.49	NP	6.4	0	7.09

TABLE C-1 : Historical Groundwater Elevation Data

Port of Oakland, 651 and 555 Maritime Street
Oakland, California

Monitoring Well	Date Measured	Elevation ¹ - Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation ¹ (feet)
MW-5	01/22/2002	13.49	NP	6.1	0	7.39
	03/08/2002	13.49	NP	6.1	0	7.39
	06/13/2002	13.49	NP	6.31	0	7.18
	09/26/2002	13.49	NP	6.6	0	6.89
	12/12/2002	13.49	NP	6.75	0	6.74
	03/17/2003	13.49	NP	5.73	0	7.76
	06/18/2003	13.49	NP	6.1	0	7.39
	09/03/2003	13.49	NP	6.5	0	6.99
	11/26/2003	13.49	NP	6.7	0	6.79
	03/05/2004	13.49	NP	5.7	0	7.79
	06/02/2004	13.49	NP	6.27	0	7.22
	09/03/2004	13.49	NP	6.61	0	6.88
	12/16/2004	13.49	NP	6.02	0	7.47
	03/29/2005	13.49	NP	5.25	0	8.24
	06/14/2005	13.49	NP	5.82	0	7.67
	08/10/2005	13.49	NP	6	0	7.49
	09/29/2005	13.49	NP	6.26	0	7.23
	12/21/2005	13.49	NP	5.91	0	7.58
	03/24/2006	13.49	NP	NA ₂	NA ₂	NA ₂
	07/28/2006	13.49	NP	6.08	0	7.41
	11/29/2006	NA	NP	9.39	0	NA
	06/01/2007	15.89	NP	10.6	0	5.29
	11/14/2007	15.89	NP	9.77	0	6.12
6/5/2008	15.89	NP	9.74	--	6.15	
MW-6	06/24/1999	14	NP	8.61	0	5.39
	09/28/1999	14	NP	9.26	0	4.74
	11/12/1999	14	NP	8.01	0	5.99
	02/11/2000	14	NP	7.2	0	6.8
	05/22/2000	14	NP	7.13	0	6.87
	09/06/2000	14	NP	7.12	0	6.88
	12/19/2000	14	NP	7.57	0	6.43
	02/21/2001	14	NP	7.5	0	6.5
	04/03/2001	14	NP	6.88	0	7.12
	07/10/2001	14	NP	7.15	0	6.85
	12/12/2001	14	NP	9.5	0	4.5
	01/22/2002	14	NP	6.69	0	7.31
	03/08/2002	14	NP	6.98	0	7.02
	06/13/2002	14	NP	7.45	0	6.55
	09/26/2002	14	NP	7.95	0	6.05
	12/12/2002	14	NP	7.71	0	6.29
12/18/2002	Monitoring Well Was Destroyed					
MW-7	12/31/1997	14.35	NP	8.88	0	5.47
	04/13/1998	14.35	NP	7.86	0	6.49
	11/06/1998	14.35	NP	9.55	0	4.8
	03/19/1999	14.35	NP	8.41	0	5.94

TABLE C-1 : Historical Groundwater Elevation Data

Port of Oakland, 651 and 555 Maritime Street
Oakland, California

Monitoring Well	Date Measured	Elevation ¹ - Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation ¹ (feet)
MW-7	06/24/1999	14.35	NP	9.08	0	5.27
	09/28/1999	14.35	NP	9.6	0	4.75
	11/12/1999	14.35	NP	9.77	0	4.58
	02/11/2000	14.35	NP	8.67	0	5.68
	05/22/2000	14.35	NP	8.43	0	5.92
	09/06/2000	14.35	NP	8.88	0	5.47
	12/19/2000	14.35	NP	9.21	0	5.14
	02/21/2001	14.35	NP	8.13	0	6.22
	04/03/2001	14.35	NP	8.45	0	5.9
	07/10/2001	14.35	NP	8.87	0	5.48
	12/12/2001	14.35	NP	8.39	0	5.96
	01/22/2002	14.35	NP	7.99	0	6.36
	03/08/2002	14.35	NP	8.51	0	5.84
	06/13/2002	14.35	NP	8.9	0	5.45
	09/26/2002	14.35	NP	9	0	5.35
12/12/2002	14.35	NP	9.28	0	5.07	
	12/18/2002	Monitoring Well Was Destroyed				
MW-8	12/31/1997	12.94	8.49	8.82	0.33	NC
	11/06/1998	12.94	9.25	10.3	1.05	NC
	11/21/1998	Monitoring Well Was Destroyed				
MW-8A	12/12/2001	12.94	NP	7.2	0	NA
	01/22/2002	12.94	NP	7.2	0	5.74
	03/08/2002	12.94	NP	7.7	0	5.24
	06/13/2002	12.94	NP	7.72	0	5.22
	09/26/2002	12.94	NP	7.91	0	5.03
	12/12/2002	12.94	NP	8.15	0	4.79
	03/17/2003	12.94	NP	7.28	0	5.66
	06/18/2003	12.94	NP	7.72	0	5.22
	09/03/2003	12.94	NP	8.18	0	4.76
	11/26/2003	12.94	NP	8.55	0	4.39
	03/05/2004	12.94	NP	6.92	0	6.02
	06/02/2004	12.94	NP	7.92	0	5.02
	09/03/2004	12.94	NP	8.16	0	4.78
	12/16/2004	12.94	NP	7.62	0	5.32
	03/29/2005	12.94	NP	6.63	0	6.31
	06/14/2005	12.94	NP	7.6	0	5.34
	08/10/2005	12.94	NP	7.5	0	5.44
	09/29/2005	12.94	NP	7.76	0	5.18
	12/21/2005	12.94	NP	6.9	0	6.04
	03/24/2006	12.94	NP	6.65	0	6.29
	07/28/2006	12.94	NP	7.34	0	6.65
	11/29/2006	NA	NP	11.41	0	NA
	06/01/2007	15.48	NP	11.26	0	4.22
11/14/2007	15.48	NP	11.4	0	4.08	
	6/5/2008	15.48	NP	11.45	--	4.03

TABLE C-1 : Historical Groundwater Elevation Data

Port of Oakland, 651 and 555 Maritime Street
Oakland, California

Monitoring Well	Date Measured	Elevation¹ - Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation¹ (feet)
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Notes:

Source of data prior to December 2005: Innovative Technical Solutions, Inc. Third Quarter of 2005

Groundwater Monitoring and Product Monitoring Report , 8 November 2005.

NP = no product detected with the interface probe

NC = not calculated due to the presence of free-phase product in the well

btc = below top of the well casing

NA = not available

NM = not measured

1 Elevation data relative to Port of Oakland datum.

2 Well could not be measured due to abundant surface water covering well head.

3 Viscous product not related to the lighter product identified in other wells.

TABLE C-2 : Historical Groundwater Analytical Data
Port of Oakland, 651 and 555 Maritime Street
Oakland, California

Well ID	Date	TPHg (µg/L)	TPHd (µg/L)	TPHmo (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)
MW-1	05/22/2000	3,600	41,000	<3,000	100	13 ⁸	2.9	2.05	3.2 ⁸
	Not sampled further due to the presence of free-phase product.								
MW-2	05/27/1994	87	470	NA	<0.5	<0.5	<0.5	<0.5	NA
	03/29/1995	<50	110	1,400	<0.4	<0.3	<0.3	<0.4	NA
	09/06/1995	<50	NA	NA	<0.4	<0.3	<0.3	<0.4	NA
	01/08/1996	<50	<50	1200	<0.4	<0.3	<0.3	<0.4	NA
	04/04/1996	<50	160	320	<0.5	<0.5	<0.5	<1.0	NA
	07/10/1996	<50	120	1400	<0.4	<0.3	<0.3	<0.4	NA
	12/03/1996	<50	230 ^{1,2}	<250	<0.5	<0.5	<0.5	<1.0	NA
	03/28/1997	<50	714	<250	<0.5	<0.5	<0.5	<1.0	NA
	06/13/1997	51	<50	<250	<0.5	<0.5	<0.5	<1.0	NA
	09/18/1997	82	<50	<250	0.56	<0.5	<0.5	<1.0	NA
	12/31/1997	<50	<47	<280	1.4	<0.5	<0.5	<1.0	NA
	04/13/1998	<50	<50	<300	<0.5	<0.5	<0.5	<1.0	NA
	11/06/1998	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	03/19/1999	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	06/24/1999	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	09/28/1999	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	11/12/1999	<50	120 ^{2,6}	<300	<0.5	<0.5	<0.5	<0.5	6.3 ^{8,9}
	02/11/2000	<50	<50	<300	5.4	<0.5	<0.5	<0.5	<2
	05/22/2000	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
	09/06/2000	<50	<50	<300	0.76 ⁸	<0.5	<0.5	<0.5	<0.5 ¹⁰
	12/19/2000	200 ^{3,11}	<50	<300	39	1.8	<0.5	2.6	<0.5 ^{10,12}
	02/21/2001	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	07/10/2001	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	12/05/2001	<50	<50	<300	4.4	<0.5	<0.5	<0.5	5.0 ¹⁴
	03/08/2002	<50	<50	<500	<0.5	<0.5	<0.5	<0.5	<5.0
	06/13/2002	62 ¹⁵	<57	<570	<0.5	<0.5	<0.5	<0.5	<5.0
	09/26/2002	69 ²	<50	<500	1.8	<0.5	<0.5	<0.5	<5.0
	12/12/2002	<50	<50	<300	0.98	<0.5	<0.5	<0.5	<2.0
	03/17/2003	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	06/18/2003	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	09/03/2003	<50	<50	<300	3.2	<0.5	<0.5	<0.5	<2.0
	11/26/2003	<50	<50	<300	3	<0.5	<0.5	<0.5	<2.0
	03/05/2004	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
06/02/2004	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0	
09/03/2004	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0	
12/16/2004	<50	96 ^{6,15}	<300	<0.5	<0.5	<0.5	<0.5	<2.0	
03/29/2005	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0	
08/10/2005	<50	<50	<250	<0.5	<0.5	<0.5	<0.5	<0.5	
09/29/2005	<50	<50	<250	<0.5	<0.5	<0.5	<0.5	<0.5	
12/21/2005	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5	
03/24/2006	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5	
07/28/2006	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5	
11/29/2006	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5	
06/01/2007	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5	
11/14/2007	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5	
6/5/2008	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5	
MW-3	Not sampled due to the presence of free-phase product.								

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Well ID	Date	TPHg (µg/L)	TPHd (µg/L)	TPHmo (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)
MW-4	09/11/1995	150	<200	500	23	<0.3	<0.3	<0.4	NA
	01/08/1996	790	90	400	170	1.2	0.6	0.6	NA
	04/04/1996	1,100	180	300	320	1.6	1.1	1.2	NA
	07/10/1996	1,200	120	300	470	1.5	0.8	0.8	NA
	12/03/1996	990	220 ^{1,2}	<250	350	3.3	1.3	1.3	NA
	03/28/1997	440 ²	<50	<250	190	1.2	0.64	<1.0	NA
	06/13/1997	1,300	92 ⁵	<250	500	5.5	3.4	2.8	NA
	09/18/1997	1,300	150	<250	550	4.9	2.1	2	NA
	12/31/1997	73 ^{1,2,3}	<47	<280	110 ¹	1.0 ¹	<0.5	<1.0	NA
	04/13/1998	150 ^{2,3}	<50	<300	520	2.9	<2.5	<5.0	NA
11/06/1998	<50	<50	<300	250	1.7	<1.0	<1.0	<4	
03/19/1999	81	<50	<300	250	<1	1.2	<1.0	<4	
Dup.	06/24/1999	190	<50	<300	360	1.4	2.2	1	24
	09/28/1999	750 ^{3,5}	63 ^{3,5}	<300	280	1.5	<1.0	<1.0	<4
	11/12/1999	330 ³	840 ²	<300	740	<2.5	<2.5	<2.5	42 ⁹
	02/11/2000	200 ²	<50	<300	58	0.73	<0.5	<0.5	4.4 ⁸
	05/22/2000	240	<50	<300	500	<2.5	<2.5	<2.5	17
	09/06/2000	530 ^{2,3}	<50	<300	190	0.93	0.6	0.57	<0.5 ¹⁰
	12/19/2000	960 ^{3,11}	70 ⁵	<300	420	<2.5	<2.5	<2.5	<0.5 ^{10,12}
	12/19/2000	1,200 ^{3,11}	<50	<300	440	<2.5	<2.5	<2.5	<0.5 ^{10,12}
	02/21/2001	450 ¹³	<50	<300	120	<0.5	<0.5	<0.5	<0.5 ¹⁰
	07/10/2001	<250	110 ^{2,13}	<300	620	2.6	2.9	<2.5	<0.5 ^{8,10}
12/05/2001	180	<50	<300	61	<0.5	<0.5	<0.5	3.8 ¹⁴	
03/08/2002	490 ²	54 ²	<500	180	<2.5	<2.5	<2.5	<25	
06/13/2002	830 ²	<50	<500	250	<5.0	<5.0	<5.0	<50	
Dup.	06/13/2002	820 ²	<56	<560	240	<5.0	<5.0	<5.0	<50
	09/26/2002	390 ²	57	<500	150	2.1	<1.0	<1.0	<10
Dup.	09/26/2002	500 ²	<50 ¹⁶	<500 ¹⁶	200	1.5	<1.0	<1.0	<10
	12/12/2002	580	<50	<300	240	1.4	0.56	<0.5	<2.0
Dup.	12/12/2002	2,400	<50	<300	680	5	2.3	1.4	<2.0
	03/17/2003	130 ¹⁵	<50	<300	320 ¹⁷	<0.5	<0.5	<0.5	<0.5 ¹⁰
Dup.	03/17/2003	82 ¹⁵	<50	<300	190	0.64 ¹⁷	0.56	0.53	<0.5 ¹⁰
	06/18/2003	360 ^{11,15}	<50	<300	150	<0.5	<0.5	<0.5	<2.0
Dup.	06/18/2003	330 ^{11,15}	<50	<300	140	<0.5	<0.5	<0.5	<2.0
	09/03/2003	140 ^{11,15}	<50	<300	240	1.3	<0.5	<0.5	<2.0
Dup.	09/03/2003	83 ^{11,15}	<50	<300	130	0.58 ¹⁷	<0.5	<0.5	<2.0
	11/26/2003	160 ¹⁵	68 ¹⁵	<300	320	0.91 ¹⁷	<0.5	0.53	<2.0
Dup.	11/26/2003	120 ¹⁵	<50	<300	210	0.66 ¹⁷	<0.5	<0.5	<2.0
	03/05/2004	90 ¹¹	<50	<300	190	1.1	0.55	0.50 ¹⁷	23 ^{14,17} <0.5 ¹⁰
Dup.	03/05/2004	84 ¹¹	<50	<300	180	0.81	<0.5	<0.5	21 ^{14,17} <0.5 ¹⁰
	06/02/2004	620 ¹³	<50	<300	210	0.5517	<0.5	<0.5	<2.0
Dup.	06/02/2004	400 ¹³	<50	<300	130	<0.5	<0.5	<0.5	<2.0
	09/03/2004	780 ^{13,15}	<50	<300	<0.5	1.0 ¹⁷	<0.5	0.57	<2.0
Dup.	09/03/2004	370 ^{13,15}	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	12/16/2004	840	<50	<300	290	1.3 ¹⁷	0.69	0.75	<2.0
Dup.	12/16/2004	670	<50	<300	230	1.3 ¹⁷	<0.5	<0.5	<2.0
	03/29/2005	440 ¹³	<50	<300	140	0.57	<0.5	<0.5	<2.0
Dup.	03/29/2005	540 ¹³	<50	<300	170	0.72	<0.5	<0.5	<2.0

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Well ID	Date	TPHg (µg/L)	TPHd (µg/L)	TPHmo (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)
MW-4 Dup. Dup. Dup. Dup. Dup. Dup. Dup.	08/10/2005	500 ¹⁸	<50	<250	180	<2.5	<2.5	<2.5	<2.5
	09/29/2005	360 ¹⁸	59 ²⁰	<250	160	<5.0	<5.0	<5.0	<5.0
	09/29/2005	420 ¹⁸	<50	<250	150	<5.0	<5.0	<5.0	<5.0
	12/21/2005	110	<50	<300	76	<0.5	<0.5	<0.5	<0.5
	12/21/2005	160	<50	<300	76	<0.5	<0.5	<0.5	<0.5
	03/24/2006	420	51	<300	120	0.8	<0.7	<0.7	<0.7
	03/24/2006	440	<50	<300	130	<0.7	<0.7	<0.7	<0.7
	08/04/2006	560	92 ²	<300	160	<1.3	4.3	<1.3	<1.3
	08/04/2006	590	100 ²	<300	150	<1.3	4.5	<1.3	<1.3
	11/29/2006	300	<50	<300	42	<0.7	1	<0.7	<0.7
	11/29/2006	300	<50	<300	60	<0.7	<0.7	<0.7	<0.7
	06/01/2007	100 ^{13,15}	<50	<300	10	<0.5	<0.5	<0.5	<0.5
	06/01/2007	100 ^{13,15}	<50	<300	11	<0.5	<0.5	<0.5	<0.5
	11/14/2007	54 ¹⁵	<50	<300	2.1	<0.5	<0.5	<0.5	<0.5
	11/14/2007	51 ¹⁵	<50	<300	2.1	<0.5	<0.5	<0.5	<0.5
	6/5/2008	67 ¹⁵	<50	<300	14	<0.5	<0.5	<0.5	<0.5
	6/5/2008	91 ¹⁵	<50	<300	15	<0.5	<0.5	<0.5	<0.5
	MW-5	09/11/1995	90	<300	2,500	3.3	<0.3	<0.3	<0.4
04/04/1996		<50	180	520	<0.5	<0.5	<0.5	<1.0	NA
07/10/1996		<50	120	1,500	<0.4	<0.3	<0.3	<0.4	NA
12/03/1996		<50	200 ^{1,2}	<250	<0.5	<0.5	<0.5	<1.0	NA
03/28/1997		<50	<50	<250	<0.5	<0.5	<0.5	<1.0	NA
06/13/1997		<50	<50	<250	<0.5	<0.5	<0.5	<1.0	NA
09/18/1997		<50	<50	<250	<0.5	<0.5	<0.5	<1.0	NA
12/31/1997		<50	<47	<280	<0.5	<0.5	<0.5	<1.0	NA
04/13/1998		<50	<47	<280	<0.5	<0.5	<0.5	<1.0	NA
11/06/1998		<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
03/19/1999		<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
06/24/1999		<50	<50	<300	<0.5	<0.5	<0.5	<0.5	3.1
09/28/1999		<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
11/12/1999		<50	110 ^{2,6}	<300	<0.5	<0.5	<0.5	<0.5	5.5 ⁹
02/11/2000		<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
05/22/2000		<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
09/06/2000		<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
12/19/2000		<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
02/21/2001		<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
07/10/2001		<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
12/05/2001		<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
03/08/2002		<50	<50	<500	<0.5	<0.5	<0.5	<0.5	<5.0
06/13/2002		<50	<50	<500	<0.5	<0.5	<0.5	<0.5	<5.0
09/26/2002		<50	<50	<500	<0.5	<0.5	<0.5	<0.5	<5.0
12/12/2002		<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
03/17/2003		<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5 ¹⁰
06/18/2003		<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
09/03/2003		<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
11/26/2003		<50	<50	<300	<0.5	<0.5	<0.5	<0.5	4.1 ¹⁴ , <0.5 ¹⁰
03/05/2004		<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
06/02/2004	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0	
09/03/2004	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0	

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Well ID	Date	TPHg (µg/L)	TPHd (µg/L)	TPHmo (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)
MW-5 Dup.	12/16/2004	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	2.2 ¹⁴ , <0.5 ¹⁰ <2.0 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5
	03/29/2005	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	
	08/10/2005	<50	<50	<250	<0.5	<0.5	<0.5	<0.5	
	08/10/2005	<50 ¹⁹	<50 ¹⁹	<250	<0.5	<0.5	<0.5	<0.5	
	09/29/2005	<50	<50	<250	<0.5	<0.5	<0.5	<0.5	
	12/21/2005	<50	180 ^{15,22}	<300	<0.5	<0.5	<0.5	<0.5	
	07/28/2006	<50	180	<300	<0.5	<0.5	<0.5	<0.5	
	11/29/2006	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	
	06/01/2007	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	
	11/14/2007	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	
	6/5/2008	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	
MW-6	11/06/1998	120	12,000	1,200	19	0.65	1.8	<0.5	<2
	03/19/1999	170	3,800	580	21	0.86	1.5	2.9	<2
	06/24/1999	120	1700 ⁷	<300 ⁷	18	<0.5	1	<0.5	54
	09/28/1999	130 ^{3,5}	820	<300	20	0.51	2.2	<0.5	<2
	11/12/1999	150	11,000 ^{2,6}	3,000 ^{3,6}	27	<0.5	2.2	<0.5	13 ⁹
	02/11/2000	270 ²	2,300	<300	23	0.51	2.7	<0.5	5.8
	05/22/2000	350	3,000	<300	18	0.51	<0.5	<0.5	7.7
	09/06/2000	190	610	<300	26	<0.5	1.7	<0.5	<0.5 ¹⁰
	12/19/2000	130 ^{3,11}	620	<300	24	<0.5	1.6	<0.5	<2
	02/21/2001	120 ¹³	440	<300	21	<0.5	0.96	<0.5	<2
	07/10/2001	120	560	<300	29	<0.5	0.99	<0.5	<2
	12/12/2001	53	550	<300	27	<0.5	1.3	<0.5	<2.0
	03/08/2002	160 ²	640 ²	<500	30	<0.5	<0.5	<0.5	5.0 ¹⁴
	06/13/2002	160 ²	670 ²	<500	34	<0.5	<0.5	<0.5	<5.0
	09/26/2002	230 ²	1,400 ²	<500	40	0.64	0.8	<0.5	<5.0
	12/12/2002	53	110	<300	43	<0.5	<0.5	<0.5	<2.0
12/18/2002	Monitoring Well was destroyed.								
MW-7 Dup.	09/06/1995	<50	<300	800	<0.4	<0.3	<0.3	<0.4	NA
	01/08/1996	<50	410	110	<0.4	<0.3	<0.3	<0.4	NA
	04/04/1996	<50	530	340	<0.5	<0.5	<0.5	<1.0	NA
	07/10/1996	80	840	1,700	<0.4	<0.3	<0.3	<0.4	NA
	12/03/1996	<50	280 ^{1,2}	<250	<0.5	<0.5	<0.5	<1.0	NA
	03/28/1997	65 ⁶	94 ²	<250	<0.5	<0.5	<0.5	<1.0	NA
	06/13/1997	<50	100	<250	<0.5	<0.5	<0.5	<1.0	NA
	09/18/1997	<50	240	<250	<0.5	<0.5	<0.5	<1.0	NA
	12/31/1997	<50	53 ^{2,3}	<280	<0.5	<0.5	<0.5	<1.0	NA
	04/13/1998	<50	<48	<290	<0.5	<0.5	<0.5	<1.0	NA
	11/06/1998	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
	03/19/1999	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	5.3
	06/24/1999	73	<50	<300	<0.5	<0.5	<0.5	<0.5	12
	09/28/1999	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	14
	11/12/1999	<50	600 ^{2,6}	420 ³	<0.5	<0.5	<0.5	<0.5	15 ⁹
	02/11/2000	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	51
	05/22/2000	110	53 ²	<300	<0.5	<0.5	<0.5	<0.5	75
	09/06/2000	50 ⁶	<50	<300	<0.5	<0.5	<0.5	<0.5	40 ¹⁰
	12/19/2000	54 ¹¹	51 ⁵	<300	<0.5	<0.5	<0.5	<0.5	47 ^{10,12}
02/21/2001	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	66 ¹⁰	
02/21/2001	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	60 ¹⁰	

TABLE C-2 : Historical Groundwater Analytical Data
 Port of Oakland, 651 and 555 Maritime Street
 Oakland, California

Well ID	Date	TPHg (µg/L)	TPHd (µg/L)	TPHmo (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	
MW-7 Dup. Dup.	07/10/2001	<50	51 ²	<300	<0.5	<0.5	<0.5	<0.5	76 ¹⁰	
	07/10/2001	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	75 ¹⁰	
	12/12/2001	51	<50	<300	<0.5	<0.5	<0.5	<0.5	98 ¹⁴	
	12/12/2001	64	52 ^{13,15}	<300	<0.5	<0.5	<0.5	<0.5	96 ¹⁴	
	03/08/2002	52 ²	<50	<500	<0.5	<0.5	<0.5	<0.5	24 ¹⁴	
	06/13/2002	87 ²	54 ²	<500	<0.5	<0.5	<0.5	<0.5	51	
	09/26/2002	83 ²	84 ²	<500	<0.5	<0.5	<0.5	<0.5	75 ¹⁰	
	12/12/2002	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	58 ¹⁴	
	12/18/2002	Monitoring Well Was Destroyed								
	MW-8A Dup.	12/12/2001	68	720 ^{11,15}	<300	<0.5	<0.5	<0.5	<0.5	<2.0
03/08/2002		<50	760 ²	<570	<0.5	<0.5	<0.5	<0.5	<5.0	
03/08/2002		<50	350 ²	<580	<0.5	<0.5	<0.5	<0.5	<5.0	
06/13/2002		<50	570 ²	<570	<0.5	<0.5	<0.5	<0.5	<5.0	
09/26/2002		<50	410 ²	<500	<0.5	<0.5	<0.5	<0.5	<5.0	
12/12/2002		<50	160 ¹⁵	<300	<0.5	<0.5	<0.5	<0.5	<2.0	
03/17/2003		<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5 ¹⁰	
06/18/2003		<50	74 ¹⁵	<300	<0.5	<0.5	<0.5	<0.5	<2.0	
09/03/2003		<50	<50	<300	<0.5	<0.5	<0.5	<0.5	3.0 ¹⁴ / <0.5 ¹⁰	
11/26/2003		<50	94 ¹⁵	<300	<0.5	<0.5	<0.5	<0.5	<2.0	
03/05/2004		<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0	
06/02/2004		<50	67 ¹⁵	<300	<0.5	<0.5	<0.5	<0.5	<2.0	
09/03/2004		<50	86 ¹⁵	<300	<0.5	<0.5	<0.5	<0.5	<2.0	
12/16/2004		<50	160 ^{6,15}	<300	<0.5	<0.5	<0.5	<0.5	<2.0	
03/29/2005		<50	53	<300	<0.5	<0.5	<0.5	<0.5	<2.0	
08/10/2005		<50 ¹⁹	150 ^{15,19}	<250	<0.5	<0.5	<0.5	<0.5	<0.5	
09/29/2005		<50	66 ²¹	<250	<0.5	<0.5	<0.5	<0.5	<0.5	
12/21/2005		<50	63 ^{15,22}	<300	<0.5	<0.5	<0.5	<0.5	<0.5	
03/24/2006		<50	71	<300	<0.5	<0.5	<0.5	<0.5	<0.5	
07/28/2006		<50	70 ¹⁵	<300	<0.5	<0.5	<0.5	<0.5	<0.5	
11/29/2006	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5		
06/01/2007	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5		
11/14/2007	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5		
6/5/2008	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5		

Notes:

Data prior to December 2005 from 3rd Quarterly Groundwater Monitoring, and Product Recovery Report dated 8 November 2005, by Innovative Technical Solutions, Inc.

µg/L = micrograms per liter

Dup. = duplicate sample

NA = not analyzed

TPHg = total petroleum hydrocarbons in gasoline range.

TPHd = total petroleum hydrocarbons in diesel range.

TPHmo = total petroleum hydrocarbons in motor oil range.

MTBE = methyl tert-butyl ether

1 Analyte found in the associated blank as well as in the sample.

2 Hydrocarbons present do not match profile of laboratory standard.

3 Low boiling point/lighter hydrocarbons are present in the sample.

TABLE C-2 : Historical Groundwater Analytical Data
 Port of Oakland, 651 and 555 Maritime Street
 Oakland, California

Well ID	Date	TPHg (µg/L)	TPHd (µg/L)	TPHmo (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)
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Notes (cont'd.):

- 4 Chromatographic pattern matches known laboratory contaminant.
- 5 Hydrocarbons are present in the requested fuel quantification range, but do not resemble pattern of available fuel standard.
- 6 High boiling point/heavier hydrocarbons are present in sample.
- 7 Sample did not pass laboratory QA/QC and may be biased low.
- 8 Presence of this compound confirmed by second column, however, the confirmation concentration differed from the reported result by more than a factor of two.
- 9 Trip blank contained MTBE at a concentration of 4.2 µg/L.
- 10 MTBE detections confirmed by EPA Test Method 8260; 8260 results displayed.
- 11 Sample exhibits unknown single peak or peaks.
- 12 EPA Method 8260 confirmation analyzed past holding time.
- 13 Lighter hydrocarbons contributed to the quantitation.
- 14 MTBE results from EPA Test Method 8021B.
- 15 Sample exhibits fuel pattern that does not resemble standard.
- 16 Sample extracted out of hold time.
- 17 Presence confirmed, but Relative Percent Difference (RPD) between columns exceeds 40%.
- 18 Unmodified or weakly modified gasoline is significant.
- 19 Liquid sample contains greater than ~1 vol. % sediment.
- 20 Gasoline compounds are significant.
- 21 Diesel range compounds are significant; no recognizable pattern.
- 22 Heavier hydrocarbons contributed to the quantitation.