Groundwater Monitoring and Remediation Progress Evaluation Report Spring 2009 Semiannual Sampling Event Municipal Service Center 7101 Edgewater Drive Oakland, California

June 12, 2009
028-10060-04

Prepared for:
City of Oakland, Public Works Agency
Environmental Services Division
250 Frank H. Ogawa Plaza, Suite 5301
Oakland, California

LFR an ARCADIS company

June 9, 2009 028-10060-04

Mr. Gopal Nair
City of Oakland, Public Works Department
Environmental Sciences Division
250 Frank H. Ogawa Plaza, Suite 5301
Oakland, California 94612

Subject: Groundwater Monitoring and Remediation Progress Evaluation Report, Spring 2009 Semiannual Sampling Event, Municipal Service Center, 7101 Edgewater Drive, Oakland, California

Dear Mr. Nair:

LFR Inc. is pleased to present this report summarizing data collected during the Spring 2009 semiannual groundwater monitoring event at the Municipal Service Center, located at 7101 Edgewater Drive in Oakland, California ("the Site"). These activities were performed in a manner consistent with previous sampling events conducted at the Site. An evaluation of the remedial methods and progress at the site is also included in this report.

If you have any questions regarding this report, please call me at (650) 469-7224.

Sincerely,

Charles H. Pardini, P.G. #6444
Principal Geologist
Operations Manager – Los Altos

Attachment

650.469.7230 m
650.469.7235 f
www.lfr.com
5150 El Camino Real, Suite D-21
Los Altos, California 94022
Offices Nationwide

CONTENTS

TABLES

FIGURES

APPENDICES

CERTIFICATION

All hydrogeologic and geologic information, conclusions, and recommendations in this document have been prepared under the supervision of and reviewed by an LFR Inc. California Professional Geologist.*

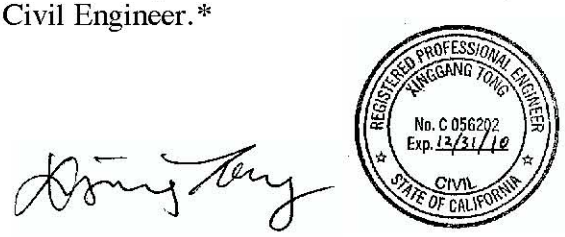
Charles H. Pardini
Principal Geologist
California Professional Geologist (6444)

6/9/09
Date

* A professional geologist's certification of conditions comprises a declaration of his or her professional judgment. It does not constitute a warranty or guarantee, expressed or implied, nor does it relieve any other party of its responsibility to abide by contract documents, applicable codes, standards, regulations, and ordinances.

CERTIFICATION

The Remediation Progress Evaluation Section in this document has been prepared under the supervision of and reviewed by an OTG EnviroEngineering Solutions, Inc. Civil Engineer.*



June 9, 2009

Xinggang Tong, PhD, PE — Date
Principal Engineer
California Civil Engineer (C056202)

* A professional civil engineer's certification of conditions comprises a declaration of his or her professional judgment. It does not constitute a warranty or guarantee, expressed or implied, nor does it relieve any other party of its responsibility to abide by contract documents, applicable codes, standards, regulations, and ordinances.

1.0 INTRODUCTION

This report presents the results of the Spring 2009 semiannual groundwater monitoring event conducted on April 1 and 2, 2009 ("the current monitoring event") at the Municipal Service Center (MSC), located at 7101 Edgewater Drive in Oakland, California ("the Site"; Figure 1). LFR Inc. (LFR) conducted monitoring activities at the Site in accordance with Assignment No. G08-LFR-05.

This report summarizes the monitoring activities conducted during the current monitoring event as well as the analytical results, distribution of contaminants in groundwater, conclusions, and recommendations. An evaluation of the remedial methods and progress at the Site is presented in Section 6 of this report. Also discussed are the anticipated semiannual monitoring activities to be performed in September/October 2009.

2.0 SITE BACKGROUND AND CORRECTIVE ACTION MEASURES

Eighteen 2-inch-diameter groundwater monitoring wells (MW-1 through MW-18) were installed on and off site to depths ranging from 13 feet below ground surface (bgs) to 20 feet bgs, at various times from 1989 to 2003. These wells have been monitored regularly since their installation. MW-3 and MW-4 were abandoned and sealed in 1999 (Ninyo & Moore 2004). In addition, six 6-inch-diameter wells (TBW-1 through TBW-6) were installed during backfilling of the excavation of former fuel hydrant lines in the early 1990s. TBW-1 through TBW-4 were abandoned and sealed in June 2007 by Baseline Environmental Consulting ("Baseline").

Eighteen 4-inch-diameter remediation wells and four 2-inch-diameter test/observation wells were installed on site to depths ranging from 13 feet bgs to 17 feet bgs, in December 2001 and January 2002 by others, according to Uribe & Associates' ("Uribe's") "Test/Observation Well Installation Report, U & A Project 291-03," dated April 2, 2002 (Uribe 2002). Seven of the wells (RW-Al, RW-A2, OB-A1, RW-B1, RW-B2, RW-B3, and RW-B4) were installed in the vicinity of Plumes A and B. Fifteen of the wells (RW-C1, RW-C2, RW-C3, RW-C4, RW-C5, RW-C6, RW-C7, OB-C1, RW-D1, RW-D2, RW-D3, RW-D4, RW-D5, OB-D1, and OB-D2) were installed in the vicinity of Plumes C and D. Each well, except OB-A1, was surveyed subsequent to the installation event. Six additional extraction wells (RW-D6 through RW-D11) were installed within the Plume D area in March 2007 by URS Corporation. These six wells are 6 inches in diameter and installed to an approximate depth of 20 feet bgs. The well locations are shown on Figures 2 and 3. The plume locations are shown on Figure 3.

According to the "Second Quarter 2003 Monitoring Report" (Uribe 2003), approximately 10,000 gallons of a groundwater/free product mixture were removed from on-site wells RW-B3 and RW-B4 (Plume B) in September and October 2002,

using a trailer-mounted, dual-phase extraction unit with a 10-horsepower vacuum pump. Additionally, approximately 10,000 gallons of liquid were removed from wells RW-C3, RW-C4, RW-C5, and RW-C7 (Plume C) through five daily extractions over a two-month period. The liquid was pumped into a 21,000-gallon aboveground storage tank to allow separation of oil from water and drained through three 2,000-pound granular-activated carbon filters (in series). After filtration, the wastewater was discharged into a local storm drain. A National Pollutant Discharge Elimination System (NPDES) permit was issued prior to discharge.

Within the same time period, hydrogen peroxide, followed by water, was injected periodically into wells OB-Al, RW-Al, RW-A2, TBW-3, and TBW-4 (Plume A); MW-16 and MW-17 (Plume B); and MW-5 (active tank area), to promote in situ bioremediation. Hydrogen peroxide has also been injected periodically into wells in the Plume C area since July 2004.

In addition, construction of an extraction system to remove separate-phase hydrocarbons (SPH) within the vicinity of Plume D began in March 2006. Seven existing wells (RW-D1, RW-D2, RW-D3, RW-D4, RW-D5, TBW-5, and RW-1) were converted to extraction wells by URS Corporation. The extraction system was completed in April 2006, and the system began operation in mid-May 2006. Groundwater extracted from the seven wells was treated through an oil/water separator, followed by three 2,000-pound liquid-phase activated carbon units in series, and was discharged into the local storm drain via an NPDES permit. Extracted soil vapor was treated through a thermal oxidizer and discharged into the atmosphere via a permit issued by the Bay Area Air Quality Management District. Six additional wells were installed within the vicinity of Plume D in March 2007 (RW-D6, RW-D7, RW-D8, RW-D9, RW-D10, and RW-D11) and were connected to the extraction system on June 11, 2007. Quarterly remediation system performance reports were submitted separately from this monitoring report to the Alameda County Environmental Health Department (ACEH) and to the Regional Water Quality Control Board – San Francisco Bay Region (RWQCB).

3.0 SPRING 2009 SEMIANNUAL MONITORING ACTIVITIES

3.1 Field Activities

The field activities, which included depth-to-groundwater/product measurement and well sampling, were conducted in accordance with the City of Oakland MSC Schedule and Protocol Table presented in Appendix A.

On April 1, 2009, LFR personnel measured depth to water and depth to SPH using an electric oil/water interface probe in the following wells: MW-1, MW-2, MW-5 through MW-17, TBW-6, RW-A1, RW-A2, OB-A1, RW-B1 through RW-B4, RW-C1 through RW-C7, OB-C1, OB-D1, and OB-D2. A number of monitoring wells have been eliminated from the monitoring program. Monitoring wells MW-3 and MW-4 have

been abandoned and sealed (Ninyo & Moore 2004). Wells TBW-1, TBW-2, TBW-3, and TBW-4 were abandoned and sealed by Baseline in June 2007. Wells TBW-5, RW-D1 through RW-D11, and RW-1 were converted to extraction wells and could not be accessed for depth-to-groundwater and depth-to-SPH measurements because of the associated piping and well head connections.

The oil/water interface probe was decontaminated with liquinox and distilled water before use in each well to avoid potential cross contamination. Current and historical product thickness measurements, depth-to-groundwater measurements, and groundwater elevations calculated from groundwater measurements are presented in Table 1. Monitoring and remediation well locations are shown on Figures 2 and 3.

On April 1 and 2, 2009, LFR personnel collected groundwater samples from monitoring wells MW-1, MW-2, MW-5, and MW-7 through MW-17. The sample collected from well MW-16 was analyzed for a limited number of parameters due to the poor recharge of groundwater within the well during the current monitoring event. A sample was not collected from MW-6 due to the presence of SPH (Table 1).

Prior to sampling, a clean, disposable, polyvinyl chloride (PVC) sampling bailer was used to purge a minimum of three well-casing volumes of groundwater from each of the 14 monitoring wells sampled during the current monitoring event. The wells were allowed to recover to at least 80 percent of their original static groundwater levels before sampling. Dissolved oxygen, temperature, pH, conductivity, and turbidity were measured for each well volume purged. Additionally, characteristics of the water (color, turbidity, odor, sheen) were noted on the field data sheets, which are included in Appendix B.

After the wells were purged, samples were collected using the disposable, PVC, bottom-discharging bailer that was used to purge the well. The samples were transferred from the bailer to the appropriate sample containers, labeled, and placed in a “wet chilled” cooler containing ice, under chain-of-custody protocol. The samples were secured in the cooler and transferred to Curtis & Tompkins, Ltd., Analytical Laboratories (C&T), a California Department of Health Services–certified environmental laboratory located in Berkeley, California. Purged and decontamination water generated during sampling activities was transferred into an on-site storage tank that was part of the on-site extraction and treatment system maintained by the City of Oakland.

3.2 Sample Analyses

The groundwater samples were analyzed by C&T for the following parameters:

- total petroleum hydrocarbons (TPH) as gasoline (TPHg) using U.S. Environmental Protection Agency (U.S. EPA) Method 8260B
- TPH as kerosene (TPHk), TPH as diesel (TPHd), and TPH as motor oil (TPHmo) using U.S. EPA Method 8015B, with a silica-gel cleanup

- the aromatic hydrocarbons benzene, toluene, ethylbenzene, and total xylenes (collectively known as BTEX) and methyl tertiary-butyl ether (MTBE) using U.S. EPA Method 8260B

4.0 MONITORING RESULTS

4.1 Shallow Groundwater Topography

Depth to groundwater was measured on April 1, 2009, using a Solinst oil/water interface meter (Table 1). Prior to groundwater measurement, the well caps were removed from all wells to allow the water column within each well to come into equilibrium with atmospheric pressure. Groundwater elevations were determined using well survey data from the "Second Quarter 2003 Monitoring Report, City of Oakland Municipal Service Center" (Uribe 2003).

Groundwater elevations in the monitoring wells ranged from 6.75 feet mean sea level (msl) at MW-1 to -0.33 foot msl at MW-2 (Figure 2). Groundwater flow direction, measured between wells MW-1 and MW-10, is toward the northwest in the northern section of the Site at approximately 0.012 foot/foot (ft/ft), and toward the southwest (measured between wells MW-11 and MW-15) at approximately 0.015 ft/ft in the southern portion of the Site. A groundwater high (groundwater elevation of 8.09 feet msl) is observed in the vicinity of remediation well RW-A2, located in the vicinity of Plume A in the southern portion of the Site (Figure 3). This observed groundwater high may be due to the presence of coarse-grained backfill in the area. The variation in the groundwater gradient may be due to differences in lithologic characteristics in the subsurface, preferential pathways (possibly due to backfilled utility trenches and underground storage tank pits). In addition, a depression in the groundwater surface was observed in the vicinity of the Plume D remediation wells. The groundwater flow direction for this sampling period was similar to that reported by Ninyo & Moore in its July 14, 2004 Spring Semiannual Groundwater Monitoring Report for the Site, and in more recent LFR monitoring reports.

4.2 Occurrence of Separate-Phase Hydrocarbons

Floating SPH was observed in wells MW-6 (0.03 foot), OB-C1 (approximately 0.64 foot), and TBW-6 (sheen) during this monitoring event. RW-C7 also indicated 0.01 foot of SPH with the oil/water interface probe; however, a large dumpster was obstructing the well and the presence of SPH could not be confirmed with a bailer. The results of the SPH assessment are presented in Table 1. Plumes B, C, and D showed a significant decrease in lateral extent of SPH compared to the April 2004 monitoring event. The monitoring wells in the Plume A area continue to not contain measurable amounts of SPH. Within the Plume B area, only MW-6 contained measurable amounts of SPH during the current monitoring event. The lateral extent of Plume C is depicted on Figure 3 in the vicinity of OB-C1 and RW-C7. Wells in the Plume D area (TBW-5, RW-D1 through RW-D11 and RW-1) could not be accessed for SPH measurements due

to active extraction. However, sheen was observed in TBW-6, which is located near the Plume D area.

4.3 Contaminant Distribution in Groundwater

The analytical data from this groundwater monitoring event are presented in Table 1, along with historical analytical results. Laboratory analytical data reports are included in Appendix C. Historical data for volatile organic compounds, semivolatile organic compounds, Leaking Underground Fuel Tank metals, and other metals are provided in Appendix D (Tables D-1, D-2, D-3, and D-4, respectively).

For quality assurance/quality control (QA/QC), LFR collected a duplicate sample from well MW-2 and analyzed it for TPHg, TPHk, TPHd, TPHmo, BTEX, and MTBE. Analytical results for the duplicate sample were consistent with those for the primary samples collected from well MW-2.

4.3.1 Screening Criteria

LFR critically reviewed the screening criteria that had historically been applied to the groundwater quality results. Based upon this review, it was concluded that the previously used screening criteria were not as applicable considering the current conditions observed at the Site as other, more recently developed, screening criteria. The groundwater quality results had previously been compared to the San Francisco Airport Ecological Protection Zone (SFAEPZ) Tier I Standard and the RWQCB Environmental Screening Level (ESL) for Surface Water Screening Levels Marine Habitats. These standards/screening levels both relate to the quality of the water in San Francisco Bay but not groundwater.

Based upon a review of the RWQCB's screening level guidance document, LFR recommends that groundwater quality results be compared to the RWQCB ESLs for Groundwater Screening Levels (groundwater is not a current or potential drinking water resource; RWQCB 2008; Table F-1b) because they are the most applicable screening criteria for the current site conditions.

A comparison of the previous screening criteria and the recommended screening criteria is included in the table below. The groundwater quality results will be compared to the recommended screening criteria in this semiannual monitoring report.

Analyte	Previous Screening Criteria		Recommended Screening Criteria
	SFAEPZ Tier 1 Standard (µg/)	ESL Surface Water (Table F-2b) (µg/)	ESL Groundwater (Table F-1b) (µg/)
Benzene	71	71	46
Toluene	NA	40	130
Ethylbenzene	29,000	30	43
Total Xylenes	NA	100	100
MTBE	NA	180	1800
TPH gasoline	3700	210	210
TPH diesel	640	210	210
TPH motor oil	640	210	210
TPH kerosene	NA	NA	210

Notes:
µg/l = micrograms per liter
NA = screening criteria not previously applied to analyte

4.3.2 Benzene

Benzene concentrations detected above laboratory analytical detection limits (LADLs) were reported in groundwater samples collected from five of the 14 monitoring wells sampled during the current monitoring event. The maximum benzene concentration was detected in well MW-9 at 82 micrograms per liter (µg/l).

Benzene was also reported in groundwater samples collected from wells MW-1 (79 µg/l), MW-2 (1.3 µg/l; 1.5 µg/l in the duplicate sample), MW-5 (8.8 µg/l), and MW-11 (0.98 µg/l).

The benzene concentrations detected during the April 2009 sampling event were generally consistent with historical concentrations for most monitoring and remediation wells.

The RWQCB ESL Groundwater Screening Level (groundwater is not a current or potential drinking water resource) for benzene is 46 µg/l (RWQCB 2008; Table F-1b). Benzene concentrations were above the RWQCB ESL for benzene (46 µg/l) in samples collected from two monitoring wells (MW-1 and MW-9).

MW-9 is the only well bounding the Site and San Leandro Bay ("the Bay") that exceeded regulatory standards. The benzene concentration measured in this well significantly increased from the benzene concentration measured in November 2008 (below laboratory detection limit of 0.5 µg/l), but was similar to that measured in March 2008 (66 µg/l).

4.3.3 Toluene

Toluene was reported in groundwater samples collected from three of the 14 monitoring wells sampled during the current monitoring event. The maximum toluene concentration was detected in MW-1 at 6.4 µg/l.

Toluene was also reported in groundwater samples collected from wells MW-5 (2.5 µg/l) and MW-9 (1.4 µg/l).

The RWQCB ESL Groundwater Screening Level (groundwater is not a current or potential drinking water resource) for toluene is 130 µg/l (RWQCB 2008; Table F-1b). Concentrations of toluene above the ESL of 130 µg/l were not detected in samples collected from the monitoring wells during the April 2009 sampling event.

4.3.4 Ethylbenzene

Ethylbenzene was reported in groundwater samples collected from three of the 14 monitoring wells sampled during the current monitoring event. The maximum ethylbenzene concentration was detected in MW-5 at 380 µg/l. Ethylbenzene was also reported in groundwater samples collected from wells MW-1 (2.9 µg/l) and MW-11 (2.9 µg/l).

The RWQCB ESL Groundwater Screening Level (groundwater is not a current or potential drinking water resource) for ethylbenzene is 43 µg/l (RWQCB 2008; Table F-1b). Ethylbenzene was detected in a sample collected from one monitoring well (MW-5) above the ESL of 43 µg/l during the April 2009 sampling event.

4.3.5 Total Xylenes

Total xylenes were reported in groundwater samples collected from four of the 14 monitoring wells sampled during the current monitoring event. The maximum total xylenes concentration was detected in MW-5 at 13.3 µg/l.

Total xylenes were also reported in samples collected from wells MW-1 (5.1 µg/l), MW-9 (1.0 µg/l), and MW-15 (0.82 µg/l).

The RWQCB ESL Groundwater Screening Level (groundwater is not a current or potential drinking water resource) for total xylenes is 100 µg/l (RWQCB 2008; Table F-1b). Concentrations of total xylenes were not detected above the ESL of 100 µg/l in samples collected from the monitoring wells during the April 2009 sampling event.

4.3.6 MTBE

MTBE was reported in groundwater samples collected from three of the 14 monitoring wells sampled during the current monitoring event. The maximum MTBE concentration was detected in MW-5 at 15 µg/l. MTBE was also reported in samples collected from wells MW-7 at 1.3 µg/l and MW-11 at 13 µg/l.

The RWQCB ESL Groundwater Screening Level (groundwater is not a current or potential drinking water resource) for MTBE is 1,800 µg/l (RWQCB 2008; Table F-1b). Concentrations of MTBE were not detected above the ESL of 1,800 µg/l in samples collected from the monitoring wells during the April 2009 sampling event.

4.3.7 TPHg

TPHg was reported in groundwater samples collected from six of the 14 monitoring wells sampled during the current monitoring event. The maximum TPHg concentration was detected in MW-5 at 4,800 µg/l. TPHg was also detected in wells MW-1 (1,300 µg/l), MW-9 (70 µg/l), MW-11 (94 µg/l), MW-12 (100 µg/l), and MW-16 (59 µg/l).

The RWQCB ESL Groundwater Screening Level (groundwater is not a current or potential drinking water resource) for TPHg is 210 µg/l (RWQCB 2008; Table F-1b). TPHg was detected above the ESL of 210 µg/l in samples collected from two monitoring wells (MW-1 and MW-5).

TPHg was not detected above the ESL in any monitoring wells bounding the Site and the Bay, indicating that elevated TPHg concentrations do not appear to be migrating off site.

4.3.8 TPHd

TPHd was reported in groundwater samples collected from six of the 14 monitoring wells sampled during the current monitoring event. Well MW-16 was not analyzed for TPHd due to a limited sample volume. The maximum TPHd concentration was detected in MW-5 at 730 µg/l. TPHd was also detected in wells MW-1 (480 µg/l), MW-9 (130 µg/l), MW-12 (330 µg/l), MW-13 (110 µg/l), and MW-15 (85 µg/l).

The RWQCB ESL Groundwater Screening Level (groundwater is not a current or potential drinking water resource) for TPHd (middle distillates) is 210 µg/l (RWQCB 2008; Table F-1b). TPHd concentrations were above the ESL of 210 µg/l in samples collected from three monitoring wells (MW-1, MW-5, and MW-12).

4.3.9 TPHmo

TPHmo was reported in groundwater samples collected from two of the 14 monitoring wells sampled during the current monitoring event. Well MW-16 was not analyzed for TPHmo due to a limited sample volume. The maximum TPHmo concentration was detected in MW-13 at 610 μg/l. TPHmo was also detected in well MW-9 at 380 μg/l.

The RWQCB ESL Groundwater Screening Level (groundwater is not a current or potential drinking water resource) for TPHmo (middle distillates) is 210 μg/l (RWQCB 2008; Table F-1b). TPHmo concentrations were above the ESL of 210 μg/l in samples collected from two monitoring wells (MW-9 and MW-13).

The TPHmo concentration measured in MW-13 was consistent with the concentration detected in November 2008 (630 μg/l). TPHmo was not detected in MW-9 above the laboratory detection limit of 300 μg/l in November 2009.

MW-9 and MW-13 are the only wells between the Site and the Bay that exceeded regulatory standards. TPHmo was not detected above the ESL in any monitoring wells bounding the Site and the Bay in wells sampled during this monitoring event. However, in November 2008, MW-16 was the only monitoring well between the Site and the Bay that exceeded the ESL for TPHmo. Because a sample could not be collected from well MW-16 for TPHmo analysis during this monitoring event, it is unknown if this situation remained or changed.

4.3.10 TPHk

TPHk was reported in groundwater samples collected from four of the 14 monitoring wells sampled during the current monitoring event. Well MW-16 was not analyzed for TPHk due to a limited sample volume. The maximum TPHk concentration was detected in MW-5 at 840 μg/l. TPHk was also detected in wells MW-1 (540 μg/l), MW-9 (53 μg/l), and MW-12 (300 μg/l).

The RWQCB ESL Groundwater Screening Level (groundwater is not a current or potential drinking water resource) for TPHk (middle distillates) is 210 μg/l (RWQCB 2008; Table F-1b). TPHk concentrations were above the ESL of 210 μg/l in samples collected from three monitoring wells (MW-1, MW-5, and MW-12).

4.4 Laboratory Analysis

Current laboratory analytical results and historical results are presented in Table 1. Copies of laboratory data sheets and chain-of-custody documents are included in Appendix C.

5.0 LABORATORY QUALITY ASSURANCE AND QUALITY CONTROL

A laboratory QA/QC review was performed on the laboratory analytical data to evaluate the quality and usability of the analytical results. The following sections summarize the QA/QC review.

5.1 Method Holding Times

The procedures used to extract and analyze the collected samples were reviewed by LFR personnel and were found to be within the appropriate holding times for all samples.

5.2 Blanks

One field blank (MW-12-FB) was collected along with the corresponding groundwater sample and was analyzed for TPHg, TPHk, TPHd, TPHmo, BTEX, and MTBE. Additionally, laboratory method blank results were reviewed for detection of target analytes. No target analytes were detected in the field blank. These results indicate that sample collection methods were effective, and that transportation and laboratory procedures were not a source of contamination.

5.3 Laboratory Control Samples

Laboratory quality control samples were conducted by C&T for TPHg, TPHd, TPHk, TPHmo, and BTEX. All samples were within the percentage recovery range required by the laboratory.

5.4 Surrogates

All surrogates, including hexacosane, bromofluorobenzene, and trifluorotoluene for TPHg, TPHd, TPHk, and TPHmo, and bromofluorobenzene, 1,2-dichloroethane-d4, and toluene-d8 for BTEX, were used for laboratory QA/QC analysis. All of the surrogates were within the acceptable laboratory recovery limits.

5.5 False-Positive Petroleum Hydrocarbon Identification

Qualifiers were reported in the laboratory analytical reports as noted in previous sections.

6.0 REMEDIATION PROGRESS EVALUATION

As requested in a November 7, 2008 letter from ACEH, an evaluation of the remedial progress at the Site is included in this semiannual monitoring report. The evaluation

includes a description of the remediation system, operation and maintenance activities, and a discussion of the remedial progress.

6.1 Description of Remediation System

The remediation system consists of extracting liquid (free-phase product and groundwater) and soil vapor from 13 wells located in the Plume D area, separation of free-phase product from groundwater, treatment of groundwater by activated carbon, discharge of treated water to the local storm drain in accordance with the NPDES permit, treatment of soil vapor, and discharge of treated vapor to the atmosphere in accordance with an air discharge permit. A process and instrumentation diagram of the remediation system is provided on Figure 4. Design details were included in Appendix A of *Startup Report of Groundwater Remediation at City of Oakland Municipal Services Center* (OTG June 2006).

The 13 active extraction wells are: RW-D1 through RW-D11, TBW-5, and RW-1. Their locations are shown on Figure 3. Wells RW-D1 through RW-D5 were constructed in December 2001 and wells RW-D6 through RW-D11 were constructed in March 2007, specifically for remediation purposes. Wells RW-1 and TBW-5 were installed during backfilling of the excavation of former fuel hydrant lines in the early 1990s. All wells, except RW-D6 through RW-D11, are equipped with total fluid recovery pneumatic pumps specifically designed for viscous petroleum product recovery. All wells are also piped into a high vacuum extraction system that can produce up to 28 inches of mercury vacuum. This vacuum extraction system can be operated in either soil-vapor extraction-only mode or simultaneous soil-vapor and liquid extraction-mode (dual-phase extraction, DPE). The extracted soil vapor is abated by a thermal oxidizer operated at temperatures between 1,400 and 1,650 degrees Fahrenheit.

The liquid extracted by the pneumatic pumps and the vacuum unit is pumped into an oil/water separator. Recovered oil is contained in 55-gallon drums, which are sent to an off-site oil recycling facility. Groundwater is treated through three granular activated carbon (GAC) units connected in series before being discharged into local storm drain. Each GAC unit contains 2,000 pounds of GAC. Figure 5 illustrates the groundwater treatment portion of the remediation system and identifies sampling ports.

6.2 Operation and Monitoring of Remediation System

On May 22, 2006, the pneumatic pumps were turned on to initiate the remediation process. The vacuum extraction portion remained off line. Because the free-phase product appears to be a mixture of gasoline, diesel, and some other highly viscous organics (petroleum tank bottom or coal tar-like material), the vacuum extraction, if turned on, will vaporize gasoline and a portion of the diesel and will make the removal of the viscous product even more difficult. Therefore, the remediation scheme includes first using the pneumatic pumps to remove the free-phase product as much as is

practically achievable, and then using the vacuum extraction system to enhance the removal of the remaining petroleum hydrocarbons.

The volume of free-phase product recovered by the pneumatic pumps decreased steadily from the startup in May 2006 through April 2007. On May 14, 2007, RW-D2, RW-D4, and RW-D5 were switched to vacuum DPE operation, while RW-D1, RW-D3, TBW-5, and RW-1 remained under pneumatic pump extraction. On June 11, 2007, the six newly installed wells (RW-D6 through RW-D11) and the remaining pneumatic extraction wells (RW-D1, RW-D3, TBW-5, and RW-D5) were also brought on-line under DPE operations. The pneumatic extraction portion of the remediation system was discontinued.

Monthly, quarterly, semiannual, and annual groundwater and air samples were collected and analyzed from the system per the NPDES permit and the air permit requirement. Operational and monitoring results are summarized in Tables 2 through 8. Quarterly NPDES discharge monitoring reports were submitted to the ACEH and the RWQCB.

6.3 Evaluation of Remediation Progress

The Interim Guidance from the State Water Resource Control Board (December 1995) and the Supplemental Instructions from the RWQCB (January 1996) identify free-phase product in the subsurface as a source of contamination which requires removal actions. Once sources are removed, monitored natural attenuation is one of the potential final remedial alternatives for petroleum hydrocarbons dissolved in groundwater and absorbed in the soil matrix. The goal of the implemented remediation system is to remove free-phase product. The implemented remediation system was approved by the ACEH in a letter to the City dated November 8, 2001.

The 13 extraction wells are located within the Plume D area, which was the largest of the four plumes exhibiting free-phase product during the site characterization study by Baseline Environmental Consulting in 2000 (Baseline January 2001). Free-phase product, groundwater, and soil vapor extracted were not monitored at individual wells. Extracted streams from individual wells were combined before entering the oil/water separator or the knockout tank of the vacuum extraction system. Samples were collected from the combined stream for chemical analyses. Therefore, the remediation data discussed below represents the entire Plume D area and not individual extraction wells.

The trends of TPH and BTEX concentrations from the extracted groundwater are plotted on Figures 6 and 7. TPHg concentration decreased from approximately 55,000 μg/l in the first two months of extraction (May and June 2006) to 1,400 μg/l in the first quarter 2009, an approximately 3,900 percent reduction during the two years and three quarters of remediation. The decrease in BTEX concentrations was even more dramatic: a 30,000 percent reduction for benzene, 20,000 percent reduction for

toluene, 15,000 percent reduction for ethyl benzene, and 2,800 percent reduction for total xylenes.

TPHd and TPHmo concentrations were relatively constant throughout the remediation period at concentrations of approximately 10,000 µg/l and 3,000 µg/l, respectively. These results are consistent with the remediation method used - the vacuum extraction vaporizes volatiles (TPHg and BTEX) from groundwater and soil matrix into soil gas, and removes soil gas effectively. However, the TPHd and TPHmo are significantly less volatile and are removed primarily through the extracted groundwater.

Concentrations of TPH volatile (gasoline plus the volatile portion of diesel) and benzene in the extracted soil gas are presented on Figure 8. TPH volatile concentration decreased from over 2,000 parts per million by volume (ppmv) in 2007 to approximately 500 ppmv in the first quarter 2009. Benzene decreased from approximately 10 ppmv to approximately 1 ppmv.

The total TPH mass (gasoline plus diesel) removed is plotted on Figure 9. A total of 57,944 pounds of TPH has been removed through the first quarter 2009, of which 1.3% (738 pounds) was removed through the extracted groundwater, 4.6% (2,683 pounds) was removed through free-phase product recovered, and 94.1% (54,523 pounds) was removed through soil vapor extracted.

The extracted liquid contained free-phase product from May 2006 (system startup) through August 2007, which was recovered through an oil/water separator. Free-phase product was not observed in the extracted liquid after August 2007. The vacuum extraction system was shutdown on November 14, 2008 and all piping inside the extraction wells was temporarily removed. The wells were allowed four days to recover. On November 18, 2008, a water sample was removed from each well using a new, disposable clear bailer for a visual check of floating product. Neither free-phase product nor sheen was observed in any of the 13 extraction wells located within the Plume D area. Prior to the start of the remediation, free-phase product was measured up to 3.25 ft within the Plume D area (RW-D3 on April 28, 2004). The remediation system has achieved its design goal of removing free-phase product from the Plume D area.

The semiannual groundwater monitoring conducted in November 2008 also included sampling selected remediation wells. Analytical results are included in Table 1. Samples collected from four remediation wells (RW-D1, RW-D4, RW-D7, and RW-D10) within the Plume D area were analyzed for the first time for TPHg, TPHd, TPHmo, TPHk, BTEX, and MTBE. Benzene concentrations were reported at 2.7 µg/l (RW-D10), 100 µg/l (RW-D7), 210 µg/l (RW-D4), and 270 µg/l (RW-D1). Benzene has an Environmental Screening Level (ESL) of 46 µg/l for non-drinking water source groundwater (RWQCB May 2008). Reported concentrations of TPHg, TPHd, TPHmo, and TPHk in samples collected from the four wells all exceeded their respective ESLs (210 µg/l). MW-13 is a monitoring well directly downgradient from the Plume D area. BTEX concentrations detected in well MW-13 were below the reporting limit of 0.5 µg/l; TPHg and TPHk were below the reporting limit of 50 µg/l; and TPHd and

TPHmo were only present at 110 μg/l and 610 μg/l, respectively, in the April 2009 monitoring event.

Free-phase product was not observed in the Plume C remediation wells (RW-C1 through RW-C7) in the November 2008 monitoring event. However, free-phase product has been consistently observed in the observation well OB-C1 since its first monitoring event in April 2004. To remove the free-phase product and to prevent further downgradient migration, the City has retained LFR to expand the existing vacuum dual-phase extraction to Plume C. The plan is to connect OB-C1 and the remediation wells into the vacuum extraction system. Construction started in May 2009 and is expected to be complete in early June 2009. Once completed, both Plumes C and D will undergo vacuum extraction through December 2009. At that time, another remediation progress evaluation will be conducted to determine the need of further operation of the remediation system.

It appears that free-phase product has been nearly completely removed from Plumes A and B by the product recovery operations conducted in 2002 and the following periodic hydrogen peroxide injections. Free-phase product has not been observed in Plume A area wells (RW-A1, RW-A2, and OB-A1) since October 2004. In fact, the November 2008 reported concentrations from RW-A1 and RW-A2 were all below their respective ESLs, except TPHd in RW-A2, which was reported at 590 μg/l. Free-phase product was also not observed in Plume B area wells, except MW-6, where globules of product were noted during bailing of groundwater in the two 2008 monitoring events, and 0.03 foot in the latest monitoring event. It appears that a very limited amount of free-phase product still exists in the well vicinity. RW-B1, which is located about 20 feet from MW-6 in a downgradient to crossgradient direction, has not had free-phase product since 2007. Monthly hydrogen peroxide injections will be continued at MW-6 and RW-B1 in 2009 to promote biodegradation. The biodegradation should eventually remove the very limited amount of free-phase product in the area.

7.0 CONCLUSIONS AND RECOMMENDATIONS

The following summarizes the data collected during the Spring 2009 sampling event and presents the recommendations for the Fall 2009 monitoring period.

- Groundwater elevations in the monitoring wells ranged from 6.75 feet msl at MW-1 to -0.33 foot msl at MW-2. The direction of shallow groundwater flow is toward the northwest in the northern section of the Site at a 0.012 ft/ft gradient and toward the southwest in the southern portion of the Site at 0.015 ft/ft. A groundwater high was observed in the vicinity of well RW-A2 (Plume A) in the southern portion of the Site. This groundwater high is probably the result of higher subsurface permeability in areas of excavation backfill. A depression in the groundwater surface was observed in the vicinity of the Plume D extraction wells due to the active groundwater extraction in the area.

- SPH was observed in four wells: TBW-6 (sheen), OB-C1 (approximately 0.64 foot), RW-C7 (approximately 0.01 foot), and MW-6 (approximately 0.03 foot). SPH was not detected in any other wells monitored during the current monitoring event.
- Benzene was detected above LADL in five of the 14 of wells sampled. The maximum concentration of benzene detected in shallow groundwater was 82 μg/l in well MW-9. Concentrations of benzene are above the RWQCB ESL Groundwater Screening Level (groundwater is not a current or potential drinking water resource) for benzene of 46 μg/l in two of the wells sampled.
- Toluene was detected above LADL in three of the 14 wells sampled. The maximum concentration of toluene detected in shallow groundwater was 6.4 μg/l in well MW-1. No concentrations of toluene exceeded the RWQCB ESL Groundwater Screening Level (groundwater is not a current or potential drinking water resource) for toluene of 130 μg/l during the April 2009 event.
- Ethylbenzene was detected above LADL in three of the 14 wells sampled. The maximum concentration of ethylbenzene was detected in shallow groundwater at 380 μg/l in well MW-5. No ethylbenzene concentrations exceeded the SFAEPZ Tier I Standard (29,000 μg/l). The concentration of ethylbenzene is above the RWQCB ESL Groundwater Screening Level (groundwater is not a current or potential drinking water resource) for ethylbenzene of 43 μg/l in one well sampled.
- Total xylenes were detected above LADL in four of the 143 wells sampled. The maximum concentration of xylenes detected in shallow groundwater was 13.3 μg/l in well MW-5. No concentrations of total xylenes exceeded the RWQCB ESL Groundwater Screening Level (groundwater is not a current or potential drinking water resource) for ethylbenzene of 100 μg/l during the April 2009 event.
- MTBE was detected above LADL in three of the 14 wells sampled. The maximum concentration of MTBE detected in shallow groundwater was 15 μg/l in well MW-5. No concentrations of MTBE exceeded the RWQCB ESL Groundwater Screening Level (groundwater is not a current or potential drinking water resource) for MTBE of 1,800 μg/l during the April 2009 event.
- TPHg was detected in six of the 14 wells sampled. The maximum concentration of TPHg detected in shallow groundwater was 4,800 μg/l in well MW-5. TPHg concentrations were above the RWQCB ESL Groundwater Screening Level (groundwater is not a current or potential drinking water resource) for TPHg of 210 μg/l in two of the wells sampled.
- TPHd was detected above LADL in six of the 14 wells sampled. The maximum concentration detected was present in well MW-5 at a concentration of 730 μg/l. TPHd concentrations were above the RWQCB ESL Groundwater Screening Level (groundwater is not a current or potential drinking water resource) for TPHd (middle distillates) of 210 μg/l in three of the wells sampled.
- TPHmo was detected in two of the 14 wells sampled and had a maximum concentration of 610 μg/l in well MW-13. TPHmo concentrations were above the RWQCB ESL Groundwater Screening Level (groundwater is not a current or

potential drinking water resource) for TPHd (middle distillates) of 210 µg/l in two wells sampled.

- TPHk was detected above laboratory analytical limits in four of the 14 wells sampled. The maximum concentration of TPHk detected was present in well MW-5 (840 µg/l). TPHk concentrations were above the RWQCB ESL Groundwater Screening Level (groundwater is not a current or potential drinking water resource) for TPHk (middle distillates) of 210 µg/l in three wells sampled.

Based on the results of the Spring 2009 groundwater monitoring event, LFR makes the following recommendations:

- Continue semiannual groundwater monitoring on site due to the elevated concentrations of TPHg, TPHd, TPHmo, and benzene reported during the current monitoring event.
- Continue monitoring SPH, which was present in four monitoring wells at the Site.
- Continue in situ remediation using hydrogen peroxide and continue groundwater extraction.
- Conduct post-DPE expansion monitoring in selected wells during the September/October monitoring event to assess the effectiveness of the expanded remediation system.
- Prior to the end of 2009, a site-specific risk assessment will be conducted at the Site. The details of the risk assessment methodology will be described in a work plan to be submitted to ACEH.

8.0 LIMITATIONS

The environmental services described in this report have been conducted in general accordance with current regulatory guidelines and the standard of care exercised by environmental consultants performing similar work in the project area. No other warranty, expressed or implied, is made regarding the professional opinions presented in this report. Please note this study did not include an evaluation of geotechnical conditions or potential geologic hazards.

Our conclusions, recommendations, and opinions are based on an analysis of the observed site conditions and the referenced literature. It should be understood that the conditions of a site can change with time as a result of natural processes or the activities of man at the site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which LFR has no control.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein.

LFR should be contacted if the reader requires any additional information or has questions regarding the content, interpretations presented, or completeness of this document.

9.0 SELECTED REFERENCES

Baseline Environmental Consulting (Baseline). 2001. Site History and Characterization. January.

California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB). 2002. Authorization to Discharge Treated Groundwater Under the Requirements of Order No. 01-100, NPDES Permit No. CAG 912002. April 23.

———. 2007. Notice of General Permit Coverage for Discharge from the City of Oakland Municipal Service Center located at 7101 Edgewater Drive, Oakland, Alameda County, CA 94621, under the Requirements of Order No. R2-2006-0075, NPDES Permit No. CAG912002 (Fuel General Permit), March 12.

———. 2008. Screening for Environmental Concerned Sites with Contaminated Soil and Groundwater. Interim Final – November 2007 (Revised May 2008). May.

LFR Inc. (LFR). 2009. Groundwater Monitoring Report, Fall Semiannual, Municipal Service Center 7101 Edgewater Drive, Oakland, California. February 4.

Ninyo & Moore. 2004. Groundwater Monitoring Report, Spring Semiannual, Municipal Service Center, 7101 Edgewater Drive, Oakland, California, Assignment No. G03-N&M-10. July 14.

OTG Enviroengineering Solutions, Inc. 2006. Startup Report, Groundwater Remediation at City of Oakland Municipal Services Center. June.

Uribe & Associates (Uribe). 2002. Test/Observation Well Installation Report, U & A Project 291-03. April 2.

———. 2003. Final Report, Second Quarter 2003 Monitoring Report, City of Oakland Municipal Service Center. May.

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
MW-1														
10/4/89	10.20	---	---	8020		---	---	---	540	65	26	14	22	---
10/4/89	10.20	---	---	8240		---	---	---	---	120	46	43	78	---
4/27/93	10.20	---	---	8020		---	---	---	<1,000	<1.0	<1.0	<1.0	<1.0	---
4/19/95	10.20	---	---	8020		---	---	---	3,200	880	15	23	21	---
7/27/95	10.20	4.62	5.58	8020		---	---	---	980	130	3.6	1.4	5.6	---
11/20/95	10.20	6.08	4.12	8020		---	---	---	400	99	2.8	1.1	4.6	---
2/21/96	10.20	4.62	5.58	8020		---	---	---	1,700	340	8.4	5.3	16	---
5/13/96	10.20	4.33	5.87	8020		---	---	---	7,300	2,000	30	42	38	---
8/27/96	10.20	5.25	4.95	8020		---	---	---	380	61	2.4	<0.5	4.2	---
2/23/98	10.20	1.75	8.45	8020		<50	<500	<50	820	160	4.9	3	9.7	---
8/19/98	10.20	4.78	5.42	8020	SGC	1,200	---	---	780	69	4.1	0.84	8.5	<5.0
11/11/98	10.20	5.64	4.56	---		---	---	---	---	---	---	---	---	---
2/23/99	10.20	3.41	6.79	8020	SGC	1,200	1,600	<50	1,100	190	5	3	12	<5.0
5/27/99	10.20	3.96	6.24	---		---	---	---	---	---	---	---	---	---
8/24/99	10.20	4.92	5.28	8020	SGC	640	1,900	<50	370	37	0.9	<0.5	1.9	<5.0
11/22/99	10.20	5.46	4.74	---		---								
1/18/00	10.05	5.41	4.64	---		---	---	---	---	---	---	---	---	---
1/19/00	10.05	---	---	8020	SGC	50	<200	<50	660	43	2.3	1.1	6	<5.0
5/11/00	10.05	4.63	5.42	---		---	---	---	---	---	---	---	---	---
8/24/00	10.05	5.07	4.98	---		---	---	---	---	---	---	---	---	---
8/25/00	10.05	---	---	8020	SGC	340	<250	290	480	53	1.4	<0.5	2.9	<5.0
11/28/00	10.05	5.60	4.45	---		---	---	---	---	---	---	---	---	---
2/27/01	10.05	3.95	6.10	8020	Filtered+SGC	270	<250	<61	1,500	110	6.3	<1.5	9.9	<15
5/17/01	10.05	4.00	6.05	---		---	---	---	---	---	---	---	---	---
8/16/01	10.05	4.17	5.88		Filtered+SGC	280	<200B	<100	4,000	640	9.7	5.7	13	<5.0
12/15/01	10.05	5.52	4.53	---		---	---	---	---	---	---	---	---	---
4/9/02	10.05	3.78	6.27	8021	SGC	1,100	1,000	---	2,000	320	5.38	3.08	6.24	<5
6/21/02	10.05	4.92	5.13	---		---	---	---	---	---	---	---	---	---
9/13/02	10.05	5.52	4.53	8021	SGC	88 b,c	<300	88	260	9.6	<0.5	<0.5	1.0	<2
4/22/03	10.05	4.41	5.64	8021B	SGC	570 L Y	<300	660	1,900 Z	400.0	9.6	5.4	8.1	<2.0
4/28/04	10.05	3.95	6.10	8260B	SGC	<100	<400	<100	154	20	<1.0	<1.0	2.3	<1.0
10/29/04	10.05	5.68	4.37	8260B	SGC	230 L Y	<300	240	340 H Z	6.4	0.6	<0.5	1.4	<0.5
9/2/05 [1]	10.05	4.35	5.70	8260B	SGC	140 L Y	<300	170	350	6.6	1.0	<0.5	2.3	<0.5
4/4/2006 [3]	10.05	2.24	7.81	8260B	SGC	830 L Y	<300	1,100 L Y	3,700	470	13	7.8	6.3	<3.6
9/6/06	10.05	4.98	5.07	8260B	SGC	3,400 H L	400 L	3,100 H	480	4.2	1.0	<0.5	1.9	<0.5
4/5/07	10.05	3.56	6.49	8260B	SGC	500 L Y	<300	490 L Y	1,500 Y	170	7.2	3.6	5.7	<1.3
10/2/07	10.05	5.59	4.46	8260B	SGC	600 Y	<300	710 Y	460 Y	6.1	1.1	<0.5	1.2	<0.5
3/20/08 [8]	10.05	3.53	6.52	8260B	SGC	1,000 Y	<300	960	1,600 Y	53	4.1	1.2	6.3	<0.5

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
11/21/08 [10]	10.05	5.48	4.57	8260B	SGC	110 Y	<300	87 Y	210 Y	2.4	0.52	<0.50	1.3	<0.50
4/1/09	10.05	3.30	6.75	8260B	SGC	480 Y	<300	540	1,300 Y	79	6.40	2.9	5.1	<0.50
MW-2														
10/4/89	10.47	---	---	8020		---	---	---	<30	<0.3	<0.3	<0.3	<0.3	---
10/4/89	10.47	---	---	8240		---	---	---	---	2	<2.0	<2.0	<2.0	---
4/27/93	10.47	---	---	8020		---	---	---	<1,000	<1.0	<1.0	<1.0	<1.0	---
4/19/95	10.47	---	---	8020		---	---	---	<50	1.8	<0.5	<0.5	<0.5	---
7/27/95	10.47	6.22	4.25	8020		---	---	---	<50	2.3	<0.5	<0.5	<0.5	---
11/20/95	10.47	7.49	2.98	8020		---	---	---	<50	2.2	<0.5	<0.5	<0.5	---
2/12/96	10.47	6.68	3.79	8020		---	---	---	<50	1.7	<0.5	<0.5	0.5	---
5/13/96	10.47	6.32	4.15	8020		---	---	---	---	2	<0.5	<0.5	<0.5	---
8/27/96	10.47	6.84	3.63	8020		---	---	---	---	2.4	<0.5	<0.5	<0.5	---
2/24/98	10.47	5.44	5.03	8020		<50	<500	<50	---	1.6	<0.5	<0.5	<0.5	---
8/19/98	10.47	6.56	3.91	8020	SGC	330	---	---	<50	4.1	3.4	0.8	2.6	<5.0
11/11/98	10.47	7.37	3.10	---		---	---	---	---	---	---	---	---	---
2/23/99	10.47	8.68	1.79	8020	SGC	200	900	<50	<50	3.5	0.6	0.6	1.2	<5.0
5/27/99	10.47	5.20	5.27	---		---	---	---	---	---	---	---	---	---
8/24/99	10.47	6.75	3.72	8020	SGC	140	700	<50	<50	2.6	<0.5	<0.5	<0.5	<5.0
11/22/99	10.47	7.58	2.89	---		---	---	---	---	---	---	---	---	---
1/18/00	10.47	7.41	3.06	8020	SGC	60 a	660	<50	<50	2.1	<0.5	<0.5	<0.5	<5.0
5/11/00	10.47	6.43	4.04	---		---	---	---	---	---	---	---	---	---
8/24/00	10.47	8.91	1.56	8020	SGC	170	440	130	<50	2.4	<0.5	<0.5	<0.5	<5.0
11/28/00	10.47	7.35	3.12	---		---	---	---	---	---	---	---	---	---
2/27/01	10.47	6.70	3.77	8020	Filtered+SGC	<59	<240	<59	<50	3.6	<0.5	<0.5	<0.5	<5
5/17/01	10.47	6.90	3.57	---		---	---	---	---	---	---	---	---	---
8/16/01	10.47	6.95	3.52		Filtered+SGC	<50	200B	<100	<50	<0.5	<0.5	<0.5	<0.5	<5.0
12/15/01	10.47	7.21	3.26	---		---	---	---	---	---	---	---	---	---
4/5/02	10.47	6.02	4.45	8021	SGC	200	400	---	<50	2.9	<0.5	<0.5	<0.5	<5
6/21/02	10.47	8.07	2.40	---		---	---	---	---	---	---	---	---	---
9/17/02	10.47	7.12	3.35	8021	SGC	<50	<300	<50	<50	2.1	<0.5	<0.5	<0.5	<2
4/23/03	10.47	6.36	4.11	8021B	SGC	<50	<300	<50	<50	1.6	<.50	<.50	<.50	<2.0
4/28/04	10.47	5.99	4.48	8260B	SGC	<100	<400	<100	<100	<0.5	<1.0	<1.0	1.3	<1.0
9/1/05 [1]	10.47	6.08	4.39	8260B	SGC	<50	<300	<50	<50	2.8	<0.5	<0.5	<0.5	0.8
4/4/2006 [3]	10.47	4.96	5.51	8260B	SGC	<50	<300	<50	<50	2.1	<0.5	<0.5	0.5	0.5
9/6/06	10.47	9.31	1.16	---	---	---	---	---	---	---	---	---	---	---
4/5/07	10.47	9.21	1.26	8260B	SGC	<50	<300	<50	<50	1.6	<0.5	<0.5	<0.5	<0.5
10/2/07	10.47	10.81	-0.34	---	---	---	---	---	---	---	---	---	---	---
3/20/08 [8]	10.47	12.36	-1.89	8260B	SGC	<50	<300	<50	<50	1.5	<0.5	<0.5	<0.5	<0.5

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
11/18/08	10.47	11.07	-0.60	8260B	---	---	---	---	---	---	---	---	---	---
4/1/09	10.47	10.80	-0.33	8260B	SGC	<50	<300	<50	<50	1.3	<0.5	<0.5	<0.5	<0.5
4/1/09 dup	---	---	---	8260B	SGC	<50	<300	<50	<50	1.5	<0.5	<0.5	<0.5	<0.5
MW-3														
10/4/89	---	---	---	8020		---	---	---	<30	<0.3	<0.3	<0.3	<0.3	---
10/4/89	---	---	---	8240		---	---	---	---	<2.0	<2.0	<2.0	<2.0	---
2/23/98	---	---	---	---		<50	<500	<50	---	---	---	---	---	---
11/11/98	---	5.83	---	---		---	---	---	---	---	---	---	---	---
2/23/99	---	---	---	---	Submerged	---	---	---	---	---	---	---	---	---
5/27/99	---	1.68	---	---		---	---	---	---	---	---	---	---	---
8/24/99	---	4.76	---	---		---	---	---	---	---	---	---	---	---
11/22/99	---	6.46	---	---		---	---	---	---	---	---	---	---	---
11/22/99	---	---	---	---	Destroyed	---	---	---	---	---	---	---	---	---
MW-4														
10/4/89	7.89	---	---	8020		---	---	---	<30	<0.3	<0.3	<0.3	<0.3	---
10/4/89	7.89	---	---	8240		---	---	---	---	<2.0	<2.0	<2.0	<2.0	---
11/11/98	7.89	6.25	1.64	---		---	---	---	---	---	---	---	---	---
2/23/99	7.89	3.10	4.79	---		---	---	---	---	---	---	---	---	---
5/27/99	7.89	4.03	3.86	---		---	---	---	---	---	---	---	---	---
8/24/99	7.89	5.07	2.82	---		---	---	---	---	---	---	---	---	---
11/22/99	7.89	6.32	1.57	---		---	---	---	---	---	---	---	---	---
11/22/99	---	---	---	---	Destroyed	---	---	---	---	---	---	---	---	---
MW-5														
12/13/91	11.15	---	---	8020		1,900	---	---	13,000	1,500	190	970	2,500	---
12/13/91	11.15	---	---	8020	Dup	---	---	---	16,000	1,400	180	870	2,500	---
12/13/91	11.15	---	---	8240		---	---	---	---	1,800	<250	1,000	3,800	---
12/13/91	11.15	---	---	8240	Dup	---	---	---	---	1,600	<250	980	3,500	---
4/27/93	11.15	---	---	8240		12,000	---	---	35,000	2,100	<1.0	1,800	2,700	---
4/19/95	11.15	---	---	8240		880	4,700	---	14,000	490	51	610	1,200	---
7/27/95	11.15	6.29	4.86	8240		590	5,000	---	22,000	1,300	54	1,500	2,400	---
11/20/95	11.15	6.98	4.17	8020		<50	<50	<50	8,900	430	31	610	880	---
2/21/96	11.15	5.97	5.18	8020		480	<50	<50	1,000	540	65	700	970	---
5/13/96	11.15	6.25	4.90	8020		<50	<50	<50	5,900	430	26	580	760	---
5/13/96	11.15	---	---	8020	Dup	<50	<50	<50	7,300	360	22	49	640	---
8/27/96	11.15	6.40	4.75	8020		2,000	<51	<51	6,600	430	27	600	650	---
8/27/96	11.15	---	---	8020	Dup	6,600	<51	<51	6,300	410	25	580	620	---

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
2/23/98	11.15	4.22	6.93	8020		<50	<500	<50	740	19	1.4	41	34	---
8/19/98	11.15	6.14	5.01	8020		1,400	<250	1700	5,800	500	25	730	300	5,900
8/19/98	11.15	6.14	5.01	8260	SGC	---	---	---	---	---	---	---	---	6,700
11/11/98	11.15	6.51	4.64	---		---	---	---	---	---	---	---	---	---
2/23/99	11.15	3.59	7.56	8020	SGC	2,000	700	<50	6,700	300	26	800	690	1,600
5/27/99	11.15	5.71	5.44	---		---	---	---	---	---	---	---	---	---
8/24/99	11.15	6.02	5.13	8020	SGC	220	2,000	<50	2,100 e	190 e	5.5	340 e	78	380 e
11/22/99	11.15	6.16	4.99	---		---	---	---	---	---	---	---	---	---
1/18/00	11.15	6.60	4.55	---		---	---	---	---	---	---	---	---	---
1/19/00	11.15	---	---	8020	SGC	100	320	<50	3,000	66 e	6.3	400 e	90	300 E (1,300)
5/11/00	11.15	5.62	5.53	---		---	---	---	---	---	---	---	---	---
8/24/00	11.15	6.32	4.83	8020	SGC	4,800	560	6,600	12,000	220	21	430	91	1,200 (1,400)
11/28/00	11.15	6.47	4.68	---		---	---	---	---	---	---	---	---	---
2/27/01	11.15	4.40	6.75	8020	Filtered+SGC	230	<250	<61	6,300	150	7	350	55	830
5/17/01	11.15	5.77	5.38	8020	Filtered+SGC	190	<200	<50	7,500	140	7	580	101	170
8/16/01	11.15	4.87	6.28		Filtered+SGC	320	500B	<100	2,300	46	<5	110	24	850
12/15/01	11.15	5.50	5.65	---		---	---	---	---	---	---	---	---	---
4/9/02	11.15	5.15	6.00	8021	SGC	480	260	---	8,000	110	5.95	650	53.9	166
6/21/02	11.15	6.01	5.14	8021	SGC	200 a,b,c	<300	190	4,600	130	33	380	56	440
9/12/02	11.15	6.40	4.75	8021	SGC	620 b,c	<300	650	4,000 J	120	<0.5	260	16	580
4/22/03	11.15	4.69	6.46	8021B	SGC	1600 L Y	<300	1800	6000	91	<1.0	870	59.4	150 C
4/28/04	11.15	5.70	5.45	8260B	SGC	<650	<400	<810	4780	34	<1.0	560	44	47
10/29/04	11.15	5.73	5.42	8260B	SGC	840 L Y	<300	940	3000	18	2.1	280	16.1	94
9/2/05 [1]	11.15	6.08	5.07	8260B	SGC	510 L Y	<300	640	1600	13	1.4	55	8.6	92
4/5/06 [3]	11.15	3.64	7.51	8260B	SGC	840 L Y	<300	850 H	3,400	14	2.1	280	13	31
9/6/06	11.15	6.21	4.94	8260B	SGC	340 Y	<300	400 Y	2000	8.3	1.1	8.2	6.8	50
4/5/07	11.15	5.31	5.84	8260B	SGC	340 L Y	<300	310 L Y	3,100 Y	9.3	<2.0	230	13	38
10/2/07	11.15	6.51	4.64	8260B	SGC	400 Y	<300	440	3,000 Y	11	1.4	100	6.8	46
3/20/08 [8]	11.15	5.37	5.78	8260B	SGC	1,400 Y	<300	1,400	4,100 Y	8.4	1.7	270	12	23
11/21/08 [10]	11.15	6.51	4.64	8260B	SGC	660 Y	<300	690 Y	2,600	11	1.7	240	6.5	20
4/2/09 [12]	11.15	4.89	6.26	8260B	SGC	730 Y	<300	840	4,800 Y	8.8	2.5	380	13.3	15
MW-6														
12/13/91	10.98	---	---	8020		520	---	---	780	110	2.7	<2.5	5.5	---
12/13/91	10.98	---	---	8240		---	---	---	---	95	5	<5	<5	---
4/27/93	10.98	---	---	8020		<1,000	---	---	<1,000	430	4	5	10	---
4/19/95	10.98	---	---	8020		6,700	---	---	5,700	40	<0.8	3.9	29	---
4/19/95	10.98	---	---	8020	Dup	3,700	---	---	3,000	310	3.1	2.7	100	---

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
7/27/95	10.98	7.09	3.89	8020		3,900	---	---	6,100	430	15	200	600	---
7/27/95	10.98	---	---	8020	Dup	2,600	---	---	6,300	420	15	200	600	---
11/20/95	10.98	7.89	3.09	8020		850	---	---	6,800	160	4.6	8	240	---
11/20/95	10.98	---	---	8020	Dup	---	---	---	3,600	130	11	4.4	200	---
2/21/96	10.98	7.40	3.58	8020	Filtered+SGC	1,700	---	---	2,800	230	2.8	3.8	44	---
2/21/96	10.98	---	---	8020	Dup	2,500	---	---	2,200	280	3	4	4.6	---
5/13/96	10.98	7.10	3.88	8020		400	<50	<50	3,100	430	12	5.2	67	---
8/27/96	10.98	7.42	3.56	8020		3,100	---	---	4,200	300	9.3	110	110	---
8/19/98	10.98	---	---	---	SPH: 0.125 ft.	---	---	---	---	---	---	---	---	---
11/11/98	10.98	7.09	3.93	---	SPH: 0.05 ft.	---	---	---	---	---	---	---	---	---
2/23/99	10.98	7.31	3.67	---	SPH: NM	---	---	---	---	---	---	---	---	---
5/27/99	10.98	6.91	4.25	---	SPH: 0.20 ft.	---	---	---	---	---	---	---	---	---
8/24/99	10.98	7.46	3.72	---	SPH: 0.03 ft.	---	---	---	---	---	---	---	---	---
11/22/99	10.98	7.96	3.15	---	SPH: 0.16 ft.	---	---	---	---	---	---	---	---	---
1/18/00	10.98	8.08	3.05	---	SPH: 0.19 ft.	---	---	---	---	---	---	---	---	---
5/11/00	10.98	7.52	4.47	---	SPH: 0.01 ft.	---	---	---	---	---	---	---	---	---
8/24/00	10.98	7.50	3.53	---	SPH: 0.06 ft.	---	---	---	---	---	---	---	---	---
11/28/00	10.98	6.39	4.62	---	SPH: 0.04 ft.	---	---	---	---	---	---	---	---	---
2/26/01	10.98	7.80	3.50	8020	SPH: 0.40 ft., f	820	<240	<60	6,100	181	<5	14.2	<5	<50
2/26/01	10.98	---	---	8260B		---	---	---	---	270	3	9	3	(19)
5/17/01	10.98	7.57	3.66	---	SPH: 0.32 ft.	---	---	---	---	---	---	---	---	---
8/16/01	10.98	7.75	3.49		SPH: 0.32 ft., f	740	200B	<100	4,200	360	4.6	13	12	14
12/15/01	10.98	7.58	3.40	---	SPH: 0.07 ft.	---	---	---	---	---	---	---	---	---
4/3/02	10.98	6.92	4.06	---	SPH: 0.11 ft.	---	---	---	---	---	---	---	---	---
6/21/02	10.98	7.05	3.93	---	SPH: 0.19 ft.	---	---	---	---	---	---	---	---	---
9/12/02	10.98	7.22	4.02	---	SPH: 0.33 ft.	---	---	---	---	---	---	---	---	---
4/22/03	10.98	4.71	6.27	---	SPH: 0.16 ft.	---	---	---	---	---	---	---	---	---
4/28/04	10.98	5.09	5.89		SPH: 0.23 ft.	---	---	---	---	---	---	---	---	---
10/27/04	10.98	6.12	4.86	--	SPH: product on probe	---	---	---	---	---	---	---	---	---
8/31/05	10.98	6.11	4.87	--	SPH: 0.95 ft.	---	---	---	---	---	---	---	---	---
3/27/06	10.98	4.11	---	--	SPH: 0.57 ft.	---	---	---	---	---	---	---	---	---
9/6/06	10.98	5.42	5.56	8260B	SPH: 0.01 ft.	180 Y	<300	200 Y	1,300	330	3.9	<1.7	3.7	4.8
9/6/06	10.98	---	---	8260B	Dup	2,400 H L	<300	2,300 H	1,200	350	3.6	<1.3	3.4	4.7
4/4/07	10.98	4.37	6.61	8260B	SGC	3,300	<300	3,000 H	1,400 H Y	520	<4.2	<4.2	<4.2	4.5
10/2/07	10.98	7.25	3.73	8260B	SGC	2,400	340 Y	2000	890 Y	270	3.8	5.5	3	7.8

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
3/20/08 [8]	10.98	6.59	4.39	8260B	SPH: Residual Product noted while bailing/ SGC	7,200	820	5,900	1,100 Y	500	3.5	5.9	3.1	7.7
11/21/08 [10]	10.98	6.06	4.92	8260B	SPH: Residual Product noted while bailing/ SGC	1,500 Y	<300	1,200 Y	450 Y	96	1.9	<0.50	1.2	5.7
4/1/09	10.98	4.48	6.50	---	SPH: 0.03 ft.	---	---	---	---	---	---	---	---	---
MW-7														
12/13/91	11.51	---	---	8020		<50	---	---	<50	<0.5	<0.5	<0.5	<0.5	---
12/13/91	11.51	---	---	8240		---	---	---	---	<5	<5	<5	<5	---
4/27/93	11.51	---	---	8240		<1,000	---	---	<1,000	<1.0	<1.0	<1.0	<1.0	---
4/19/95	11.51	---	---	8240		<50	<1,000	---	<50	<2.0	<2.0	<2.0	<2.0	---
7/27/95	11.51	6.87	4.64	8240		<50	<1,000	---	<50	<2.0	<2.0	<2.0	<2.0	---
11/20/95	11.51	8.48	3.03	8020		<50	---	---	<50	<0.5	<0.5	<0.5	1.5	---
2/21/96	11.51	6.29	5.22	8020		<50	---	---	<50	<0.5	<0.5	<0.5	<0.5	---
5/13/96	11.51	6.95	4.56	8020		<50	---	---	---	<0.5	<0.5	<0.5	<0.5	---
8/27/96	11.51	6.80	4.71	8020		---	---	---	---	<0.5	<0.5	<0.5	<0.5	---
8/19/98	11.51	6.88	4.63	---		---	---	---	---	---	---	---	---	---
11/11/98	11.51	7.40	4.11	---		---	---	---	---	---	---	---	---	---
2/23/99	11.51	5.57	5.94	8020		<50	<200	<50	80	<0.5	<0.5	<0.5	1	<5.0
5/27/99	11.51	6.56	4.95	---		---	---	---	---	---	---	---	---	---
8/24/99	11.51	6.29	5.22	8020	SGC	<50	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	5
11/22/99	11.51	6.80	4.71	---		---	---	---	---	---	---	---	---	---
1/18/00	11.51	7.31	4.20	---		---	---	---	---	---	---	---	---	---
1/19/00	11.51	---	---	8020	SGC	<50	<200	<50	54	1.5	1.5	2.4	3.8	<5.0
5/11/00	11.51	6.41	5.10	---		---	---	---	---	---	---	---	---	---
8/24/00	11.51	7.11	4.40	8020		<50	<250	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
11/28/00	11.51	7.30	4.21	---		---	---	---	---	---	---	---	---	---
2/27/01	11.51	5.75	5.76	8020	Filtered+SGC	<50	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5
5/17/01	11.51	6.65	4.86	---		---	---	---	---	---	---	---	---	---
8/16/01	11.51	5.97	5.54		Filtered+SGC	<50	600B	<100	<50	<0.5	<0.5	<0.5	<0.5	<5
12/15/01	11.51	6.43	5.08	---		---	---	---	---	---	---	---	---	---
4/8/02	11.51	6.17	5.34	8021	SGC	80	<200	---	<50	<0.5	0.5	0.6	<0.5	<5
6/21/02	11.51	6.75	4.76	8021	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	3.3
9/12/02	11.51	7.05	4.46	8021	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	2.6
4/22/03	11.51	6.24	5.27	8021B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	4 C
4/28/04	11.51	6.61	4.90	8260B	SGC	<100	<400	<100	<100	1.6	<1.0	<1.0	<1.0	<1.0

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
9/2/05 [1]	11.51	6.56	4.95	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	3.2
4/5/06 [3]	11.51	4.58	6.93	8260B	SGC	<50	<300	<50	<50	2.7	<0.5	<0.5	<0.5	<0.5
9/6/06	11.51	6.67	4.84	---	---	---	---	---	---	---	---	---	---	---
4/5/07	11.51	6.13	5.38	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	2.7
10/2/07	11.51	7.07	4.44	---	---	---	---	---	---	---	---	---	---	---
3/20/08 [8]	11.51	6.24	5.27	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	2.7
3/20/08 dup	---	---	---	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	2.6
11/18/08	11.51	7.40	4.11	---	---	---	---	---	---	---	---	---	---	---
4/2/09 [12]	11.51	6.95	4.56	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	1.3
MW-8														
11/20/96	12.22	---	---	8020		880	---	---	<50	0.66	<0.5	<0.5	<0.5	---
11/20/97	12.22	9.59	2.63	8020		200	---	---	<50	<0.5	<0.5	<0.5	<0.5	2
2/24/98	12.22	8.42	3.80	8020		<50	<500	<50	<50	<0.5	<0.5	<0.5	<0.5	---
6/8/98	12.22	9.57	2.65	8020		1,200	1,000	<50	<50	<0.5	<0.5	<0.5	<0.5	---
8/19/98	12.22	9.49	2.73	8020	SGC	<50	<250	<50	<50	1.6	3.4	1	2.8	<5.0
11/11/98	12.22	9.64	2.58	8020	SGC	<50	<200	<50	<50	0.9	0.8	0.6	2.3	<5.0
2/23/99	12.22	11.53	0.69	8020		700	1,500	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
5/27/99	12.22	9.65	2.57	8020		<50	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
8/24/99	12.22	9.62	2.60	8020	SGC	70	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
11/22/99	12.22	9.64	2.58	8020	SGC	57	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
1/18/00	12.22	8.31	3.91	8020	SGC	<50	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
5/11/00	12.22	9.69	2.53	8020	SGC	<50	<200	<50	<50	<0.5	1.3	<0.5	2.1	<5.0
8/24/00	12.22	9.40	2.82	---		---	---	---	---	---	---	---	---	---
8/25/00	12.22	---	---	8020	SGC	85	<250	<50	<50					
11/28/00	12.22	9.40	2.83	8020	SGC	<50	910	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
2/27/01	12.22	9.50	2.72	8020	Filtered+SGC	<50	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
5/17/01	12.22	9.71	2.51	---		---	---	---	---	---	---	---	---	---
5/18/01	12.22	---	---	8020	Filtered+SGC	<50	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
8/16/01	12.22	9.80	2.42		Filtered+SGC	<50	<200	<100	<50	<0.5	<0.5	<0.5	<0.5	<5
12/15/01	12.22	9.28	2.94	8021	SGC	390	1,300	<50	<50	<0.5	<0.5	<0.5	<0.5	<5
4/8/02	12.22	9.55	2.67	8021	SGC	440	800	---	<50	<0.5	<0.5	<0.5	<0.5	<5
6/21/02	12.22	9.71	2.51	---		---	---	---	---	---	---	---	---	---
9/18/02	12.22	9.86	2.36	8021	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<2
4/22/03	12.22	9.54	2.68	8021B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<2
4/28/04	12.22	---	---	---		---	---	---	---	---	---	---	---	---
10/27/04	12.22	NM[4]	---	---		---	---	---	---	---	---	---	---	---
4/5/06 [3]	12.22	8.73	3.49	8260B	SGC	54 Y	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
9/6/06	12.22	9.50	2.72	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
4/3/07	12.22	9.58	2.64	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
10/3/07	12.22	9.54	2.68	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
3/21/08 [8]	12.22	9.61	2.61	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
11/19/08 [10]	12.22	9.58	2.64	8260B	SGC	<50	<300	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50
4/2/09 [12]	12.22	9.54	2.68	8260B	SGC	<50	<300	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-9														
11/20/96	10.77	---	---	8020		1,900	---	---	240	21	0.81	1.8	2.2	---
11/20/97	10.77	7.91	2.86	8020		---	---	---	300	20	<0.5	<0.5	1.8	<1.0
2/24/98	10.77	6.11	4.66	8020		<50	<500	<50	2,200	540	5.6	1.6	4.9	---
6/8/98	10.77	7.14	3.63	8020		1,800	890	<50	840	450	6.1	3.3	5.3	---
8/19/98	10.77	7.88	2.89	8020	SGC	190	<250	160	740	370	8.6	0.99	7.3	<5.0
11/11/98	10.77	8.23	2.54	8020	SGC	<50	230	<50	700	130	4.3	<0.5	3.9	<5.0
2/23/99	10.77	6.65	4.12	8020		1,100	3,700	<50	1,100	620	9.7	1.5	7.7	<5.0
5/27/99	10.77	7.70	3.07	8020	SGC	70	300	<50	950	470	11	1.5	9.2	<5.0
8/24/99	10.77	8.12	2.65	8020	SGC	890	1,700	<50	290	45	2.8	<0.5	3	<5.0
11/22/99	10.77	8.33	2.44	8020	SGC	1,000	6,000	<50	170	12	1.8	<0.5	2	<5.0
1/18/00	10.77	8.63	2.14	8020	SGC	200 a	2,300	<50	160	5.7	1.9	0.6	4.2	<5.0
5/11/00	10.77	7.70	3.07	8020	SGC	180 a	980	<100	1,050	280	7.0	<2.5	5.9	<25
8/24/00	10.77	8.31	2.46	---		---	---	---	---	---	---	---	---	---
8/25/00	10.77	---	---	8020	SGC	580	2,200	170	180	23	2.4	<0.5	2.7	<5.0
11/28/00	10.77	8.45	2.32	8020	SGC	200	1,600	<50	130	1.9	<0.5	<0.5	<0.5	<5.0
11/28/00	10.77	8.45	2.32	---	Filtered+SGC	<50	<200	<50	---	---	---	---	---	---
2/26/01	10.77	6.40	4.37	8020	Filtered+SGC	120	<200	<50	142	33	1.8	<0.5	<0.5	<5.0
5/17/01	10.77	9.88	0.89	---		---	---	---	---	---	---	---	---	---
5/18/01	10.77	---	---	8020	Filtered+SGC	<50	<200	<50	74	4.6	<0.5	<0.5	<0.5	<5.0
8/16/01	10.77	8.05	2.72		Filtered+SGC	<50	<200	<100	70	0.62	<0.5	<0.5	<0.5	<5
12/16/01	10.77	7.75	3.02	8021	SGC	1,400	4,100	<50	210	15	1.6	<0.5	2.2	<5
4/5/02	10.77	7.50	3.27	8021	SGC	870	1,000	---	1,498	367	11	2.1	7.8	<5
6/20/02	10.77	8.27	2.50	8021	SGC	<50	<300	<50	430	180	5.7	2.4	4.15	<2
9/18/02	10.77	8.25	2.52	8021	SGC	63 b,c	<300	60	250	49	5.8	<0.5	3.1	<2
4/22/03	10.77	7.25	3.52	8021B	SGC	<50	<300	<50	69	4.1 C	<0.5	<0.5	0.9	<2
4/28/04	10.77	---	---	---		---	---	---	---	---	---	---	---	---
10/27/04	10.77	NM[4]	---	---		---	---	---	---	---	---	---	---	---
9/6/06	10.77	8.44	2.33	8260B	SGC	210 Y	<300	150 Y	240	58	5.3	<0.5	5.68	<0.5
4/3/07	10.77	8.28	2.49	8260B	SGC	180 H Y	<300	140 H	240 Z	27	4.2	<0.5	5.32	<0.5
4/3/07	10.77	---	---	8260B	Dup	190 H Y	<300	160 H	260 Z	28	4.5	<0.5	5.87	<0.5

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
10/3/07	10.77	8.58	2.19	8260B	SGC	110 Y	<300	110 Y Z	240 Y	1	2.4	<0.5	3.53	<0.5
3/20/08 [8]	10.77	8.46	2.31	8260B	SGC	170 Y	<300	150 Y	230	65	4.2	<0.5	5.13	<0.5
3/20/08 dup	---	---	---	8260B	SGC	190 Y	<300	180 Y	250	66	4.4	<0.5	5.5	<0.5
11/21/08 [10]	10.77	8.63	2.14	8260B	SGC	<50	<300	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50
4/2/09 [12]	10.77	8.08	2.69	8260B	SGC	130 Y	380	53 Y	70 Y	82	1.4	<0.50	1.0	<0.50
MW-10														
11/20/96	10.59	---	---	8020		940	---	---	<50	49	0.59	0.54	1.2	---
11/20/97	10.59	7.70	2.89	8020		---	---	---	<50	<0.5	<0.5	<0.5	<0.5	---
2/24/98	10.59	4.39	6.20	8020		<50	<500	<50	<50	<0.5	<0.5	<0.5	<0.5	---
6/8/98	10.59	6.94	3.65	8020		500	<500	<50	<50	7.3	<0.5	<0.5	<0.5	---
8/19/98	10.59	6.99	3.60	8020	SGC	240	520	110	<50	<0.5	<0.5	<0.5	<0.5	<5.0
11/11/98	10.59	7.57	3.02	8020	SGC	<50	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
2/23/99	10.59	5.51	5.08	8020		170	1,200	<50	<50	1.3	<0.5	<0.5	<0.5	<5.0
5/27/99	10.59	6.72	3.87	8020	SGC	<50	<200	<50	350	170	1.5	0.5	2.3	<5.0
8/24/99	10.59	7.27	3.32	8020	SGC	140	300	<50	380	160 e	<0.5	<0.5	2.6	<5.0
11/22/99	10.59	7.71	2.88	8020	SGC	570	3,400	<50	110	5.1	<0.5	<0.5	0.72	<5.0
1/18/00	10.59	7.77	2.82	---		---	---	---	---	---	---	---	---	---
1/19/00	10.59	---	---	8020	SGC	120 a,b	1,200	<50	100	<0.5	<0.5	0.8	<0.5	<5.0
5/11/00	10.59	7.00	3.59	8020	SGC	110 a	990	<50	145	1.62	0.5	0.5	0.9	<5.0
8/24/00	10.59	7.31	3.28	---		---	---	---	---	---	---	---	---	---
8/25/00	10.59	---	---	8020	SGC	430	1,300	110	<50	1.0	<0.5	<0.5	<0.5	<5.0
11/28/00	10.59	7.90	2.69	8020	SGC	220	1,500	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
2/27/01	10.59	5.80	4.79	8020	Filtered+SGC	85	<230	<57	<50	1.3	<0.5	<0.5	<0.5	<5.0
5/17/01	10.59	6.27	4.32	---		---	---	---	---	---	---	---	---	---
5/18/01	10.59	---	---	8020	Filtered+SGC	<50	<200	<50	<50	0.7	<0.5	<0.5	<0.5	<5.0
8/16/01	10.59	8.75	1.84		Filtered+SGC	<50	<200	<100	<50	<0.5	<0.5	<0.5	<0.5	<5
12/16/01	10.59	6.97	3.62	8021	SGC	410	2,100	<50	<50	2.4	<0.5	<0.5	<0.5	<5
4/8/02	10.59	6.51	4.08	8021	SGC	220	300	---	<50	1.1	<0.5	<0.5	<0.5	<5
6/20/02	10.59	8.10	2.49	8021	SGC	1,100 a,c	6,200	<50	120	34	<0.5	<0.5	<0.5	<2
9/17/02	10.59	7.66	2.93	8021	SGC	150 a,c	880	<50	130 a,c,j	32	<0.5	2.3	<0.5	<2
4/22/03	10.59	6.81	3.78	8021B	SGC	<50	<300	<50	51	1.0 C	<.50	1.2	<.50	<2
4/28/04	10.59	6.70	3.89	8260B	SGC	<100	<400	<100	114	14	<1.0	6.9	5.2	3.5
10/28/04	10.59	6.98	3.61	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
9/1/05 [1]	10.59	6.76	3.83	8260B	SGC	<50	<300	<50	110	2.4	<0.5	<0.5	0.7	<0.5
4/5/06 [3]	10.59	4.86	5.73	8260B	SGC	<50	<300	<50	<50	2.1	<0.5	<0.5	<0.5	<0.5
9/6/06	10.59	9.01	1.58	8260B	SGC	98 H Y	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
4/4/07	10.59	8.99	1.60	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
10/3/07	10.59	9.78	0.81	8260B	SGC	<50	<300	<50	<50	30	<0.5	<0.5	<0.5	<0.5

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
3/21/08 [8]	10.59	10.20	0.39	8260B	SGC	<50	<300	<50	<50	3.9	<0.5	<0.5	<0.5	<0.5
11/19/08 [10]	10.59	9.55	1.04	8260B	SGC	<50	<300	<50	<50	11	<0.50	<0.50	<0.50	<0.50
11/19/08 dup	---	---	---	8260B	SGC	<50	<300	<50	<50	11	<0.50	<0.50	<0.50	<0.50
4/1/09	10.59	7.52	3.07	8260B	SGC	<50	<300	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-11														
1/18/00	11.60	7.08	4.52	---		---	---	---	---	---	---	---	---	---
1/19/00	11.60	---	---	8020	SGC	<50	500	<50	220	<0.5	<0.5	<0.5	<0.5	<5.0
5/11/00	11.60	5.95	5.65	8020	SGC	<50	430	<50	600	23	2.1	18	15	<5.0
8/24/00	11.60	6.58	5.02	8020		<50	<250	<50	110	5.9	<0.5	0.73	0.64	<5.0
11/28/00	11.60	6.91	4.69	8020	SGC	<50	<200	<50	180	4	<0.5	1.9	<0.5	<5.0
2/27/01	11.60	5.65	5.95	8020	Filtered+SGC	86	<240	<60	720	29	5.2	38	36	<5.0
5/17/01	11.60	6.85	4.75	8020	Filtered+SGC	<50	<200	<50	720	36	3.4	15	18	9.7
8/16/01	11.60	6.01	5.59		Filtered+SGC	<50	500B	<100	110	4.8	<0.5	1.4	<0.5	<5
12/15/01	11.60	6.26	5.34	8021	SGC	200	300	<50	170	1.7	0.6	2.4	1.8	<2
4/5/02	11.60	5.47	6.13	8021	SGC	160	<200	---	330	8.9	2.0	6.9	8.7	<5
6/21/02	11.60	6.17	5.43	8021	SGC	<50	<300	<50	280	16	1.8	8.7	9.6	3.6
9/12/02	11.60	6.60	5.00	8021	SGC	<50	<300	<50	93	<0.5	<0.5	1.1	<0.5	2.1
4/24/03	11.60	5.71	5.89	8021B	SGC	<50	<300	<50	320	21	2.1	12	6.13	8.9
4/28/04	11.60	5.92	5.68	8260B	SGC	<100	<400	<100	360	18	<1.0	6.5	4.5	4
10/27/04	11.60	6.59	5.01	8260B	SGC	---	---	---	---	---	---	---	---	---
9/2/05 [1]	11.60	6.22	5.38	8260B	SGC	<50	<300	<50	85	<0.5	<0.5	<0.5	<0.5	4.5
4/4/06 [3]	11.60	4.17	7.43	8260B	SGC	71 L Y	<300	75 L Y	230	5.7	0.9	14	7.0	6.5
4/4/06	11.60	---	---	8260B	dup	<50	<300	55 L Y	220	6.5	1.0	15	7.3	7.4
9/6/06	11.60	6.46	5.14	---	---	---	---	---	---	---	---	---	---	---
4/5/07	11.60	5.60	6.00	8260B	SGC	66 Y	<300	55 Y	270 Y	9.6	0.7	7.3	2.4	11
10/2/07	11.60	6.83	4.77	---	---	---	---	---	---	---	---	---	---	---
3/20/08 [8]	11.60	6.83	4.77	8260B	SGC	<50	<300	<50	160	3.5	<0.5	5.4	0.92	13
11/18/08	11.60	7.00	4.60	---	---	---	---	---	---	---	---	---	---	---
4/2/09 [12]	11.60	5.24	6.36	8260B	SGC	<50	<300	<50	94 Y	0.98	<0.50	2.9	<0.50	13
MW-12														
1/18/00	10.43	8.11	2.32	---		---	---	---	---	---	---	---	---	---
1/19/00	10.43	---	---	8020	SGC	1,800 a	11,000	<50	200	<0.5	3.4	1.5	8.4	<5.0
5/11/00	10.43	6.78	3.65	8020	SGC	2,400 a	4,900	<100	370	<0.5	<0.5	<0.5	0.9	<5.0
8/24/00	10.43	7.56	2.87	---		---	---	---	---	---	---	---	---	---
8/25/00	10.43	---	---	8020	SGC	3,500	5,000	3,700	170	<0.5	<0.5	<0.5	<0.5	<5.0
11/28/00	10.43	8.13	2.30	8020	SGC	2,100	14,000	<50	290	<0.5	<0.5	<0.5	<0.5	<5.0
11/28/00	10.43	8.13	2.30	---	Filtered+SGC	50	<200	<50	---	---	---	---	---	---

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
2/27/01	10.43	6.00	4.43	8020	Filtered+SGC	320	<250	66	110	1.4	<0.5	<0.5	<0.5	<5.0
5/17/01	10.43	7.01	3.42	8020	Filtered+SGC	<50	<200	<50	220	<0.5	<0.5	<0.5	<0.5	<5.0
8/16/01	10.43	8.47	1.96	8020	Filtered+SGC	200	300B	<100	160	<0.5	<0.5	<0.5	<0.5	<5
4/8/02	10.43	6.65	3.78	8021	SGC	500	500	---	180	<0.5	<0.5	0.7	<1.5	<5
6/21/02	10.43	7.10	3.33	8021	SGC	1,100 a,b,c	3,000 h	640	180	<0.5	<0.5	0.63	1.62	<2
9/17/02	10.43	7.75	2.68	8021	SGC	220 a,b,c	360	190	130	<0.5	<0.5	<0.5	<0.5	<2
4/22/03	10.43	6.60	3.83	8021B	SGC	140 L Y	<300	120	150	<0.5	<0.5	<0.5	<0.5	<2
4/28/04	10.43	6.60	3.83	8260B	SGC	<550	1,020	<100	<100	<0.5	<1.0	<1.0	<1.0	<1.0
10/29/04	10.43	7.87	2.56	8260B	SGC	240 H L Y	460	180	170 H	<0.5	<0.5	<0.5	<0.5	<0.5
9/2/05 [1]	10.43	7.04	3.39	8260B	SGC	<50	<300	<50	170	<0.5	<0.5	<0.5	<0.5	<0.5
9/2/05 [1]	10.43	7.04	3.39	8260B	SGC	110 L Y	<300	120	150	<0.5	<0.5	<0.5	<0.5	<0.5
4/4/06 [3]	10.43	4.49	5.94	8260B	SGC	110 Y	<300	110 Y	110	<0.5	<0.5	<0.5	<0.5	<0.5
9/6/06	10.43	7.43	3.00	8260B	SGC	230 Y	<300	200 Y	120	<0.5	<0.5	<0.5	<0.5	<0.5
4/5/07	10.43	6.58	3.85	8260B	SGC	340 H Y	360 H L	230 H Y	160 Y	<0.5	<0.5	<0.5	<0.5	<0.5
10/2/07	10.43	8.14	2.29	8260B	SGC	290 Y	<300	230	160 Y	<0.5	<0.5	<0.5	<0.5	<0.5
3/19/08	10.43	6.45	3.98	8260B	SGC	620 Y	340	430	130 Y	<0.5	<0.5	<0.5	<0.5	<0.5
11/21/08 [10]	10.43	8.27	2.16	8260B	SGC	170 Y	<300	120 Y	59 Y	<0.50	<0.50	<0.50	<0.50	<0.50
4/1/09	10.43	6.30	4.13	8260B	SGC	330 Y	<300	300	100 Y	<0.50	<0.50	<0.50	<0.50	<0.50
MW-13														
1/18/00	11.34	9.63	1.71	8020	SGC	8,800 a	120,000	<50	<50	<0.5	0.8	<0.5	<0.5	<5.0
5/11/00	11.34	10.12	1.22	8020	SGC	11,000 a	110,000	<500	70	1.6	5.4	1.2	7.6	<5.0
8/24/00	11.34	10.22	1.12	---		---	---	---	---	---	---	---	---	---
8/25/00	11.34	---	---	8020	SGC	3,100	13,000	1,200	<50	<0.5	<0.5	<0.5	<0.5	<5.0
11/28/00	11.34	10.50	0.84	8020	SGC	2,400	36,000	<1300	<50	<0.5	<0.5	<0.5	<0.5	<5.0
11/28/00	11.34	10.50	0.84	---	Filtered+SGC	280	1,100	<50	---	---	---	---	---	---
2/26/01	11.34	9.60	1.74	8020	Filtered+SGC	100	<260	<64	<50	<0.5	<0.5	<0.5	<0.5	<5.0
5/17/01	11.34	10.10	1.24	---		---	---	---	---	---	---	---	---	---
5/18/01	11.34	---	---	8020	Filtered+SGC	<50	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
8/16/01	11.34	10.50	0.84		Filtered+SGC	<50	300B	<100	<50	<0.5	<0.5	<0.5	<0.5	<5
12/16/01	11.34	9.43	1.91	8021	SGC	1,900	18,000	<250	<50	<0.5	<0.5	<0.5	<0.5	<5
4/8/02	11.34	10.24	1.10	8021	SGC	440	900	---	<50	<0.5	<0.5	<0.5	<0.5	<5
6/20/02	11.34	10.75	0.59	8021	SGC	270 a,c	1,500 h	<50	<50	<0.5	<0.5	<0.5	<0.5	<2
9/18/02	11.34	10.60	0.74	8021	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<2
4/22/03	11.34	10.46	0.88	8021B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<2.0
4/28/04	11.34	10.22	1.12	8260B	SGC	<100	799	<100	<100	<0.5	<1.0	<1.0	<1.0	<1.0
10/28/04	11.34	9.50	1.84	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
9/1/05 [1]	11.34	9.56	1.78	8260B	SGC	<50	320	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
4/5/06 [3]	11.34	7.86	3.48	8260B	SGC	180 H Y	910	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
9/6/06	11.34	10.53	0.81	8260B	SGC	150 H Y	730	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
4/4/07	11.34	9.73	1.61	8260B	SGC	58 H Y	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
10/3/07	11.34	10.18	1.16	8260B	SGC	120 Y	460	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
3/20/08 [8]	11.34	9.54	1.80	8260B	SGC	53 Y	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
11/21/08 [10]	11.34	10.41	0.93	8260B	SGC	120 Y	630	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50
4/2/09 [12]	11.34	10.41	0.93	260B	SGC	110 Y	610	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-14														
1/18/00	10.05	7.37	2.68	8020	SGC	1,700 a	22,000	<50	120	<0.5	<0.5	<0.5	<0.5	<5.0
5/11/00	10.05	6.73	3.32	8020	SGC	360 a	4,300	<100	120	<0.5	<0.5	<0.5	0.5	<5.0
8/24/00	10.05	7.30	2.75	---		---	---	---	---	---	---	---	---	---
8/25/00	10.05	---	---	8020	SGC	1,000	3,100	460	90	6.3	<0.5	<0.5	<0.5	<5.0
11/28/00	10.05	7.40	2.65	8020	SGC	380	6,400	<250	140	7.4	<0.5	<0.5	<0.5	<5.0
11/28/00	10.05	7.40	2.65	---	Filtered+SGC	<50	<200	<50	---	---	---	---	---	---
2/26/01	10.05	6.20	3.85	8020	Filtered+SGC	150	<230	<58	73	2.3	<0.5	<0.5	<0.5	<5.0
5/17/01	10.05	7.74	2.31	---		---	---	---	---	---	---	---	---	---
5/18/01	10.05	---	---	8020	Filtered+SGC	120	<200	<50	100	11	<0.5	<0.5	<0.5	<5.0
8/16/01	10.05	7.85	2.20		Filtered+SGC	<50	<200	<100	60	<0.5	<0.5	<0.5	<0.5	<5
12/16/01	10.05	6.60	3.45	8021	SGC	1,110	3,000	<50	<50	<0.5	<0.5	<0.5	<0.5	<5
4/9/02	10.05	6.58	3.47	8021	SGC	870	1,100	---	250	<0.5	<0.5	<0.5	<0.5	<5
6/20/02	10.05	7.52	2.53	8021	SGC	<50	310 h	<50	<50	<0.5	<0.5	<0.5	<0.5	<2
9/18/02	10.05	7.55	2.50	8021	SGC	<50	<300	<50	<50	1.3	<0.5	0.80	<0.5	<2
4/22/03	10.05	6.71	3.34	8021B	SGC	<50	<300	<50	61	4.2	<0.5	1.0	<0.5	12.0
4/28/04	10.05	6.81	3.24	8260B	SGC	<230	<400	<100	241	1.4	<1.0	<1.0	<1.0	<1.0
10/28/04	10.05	6.99	3.06	8260B	SGC	<50	<300	<50	56	3.5	<0.5	<0.5	<0.5	0.5
10/28/04	10.05	---	---	8260B	dup	<50	<300	<50	53	1.9	<0.5	<0.5	<0.5	<0.5
9/1/05 [1]	10.05	7.60	2.45	8260B	SGC	<50	<300	<50	79	6.7	<0.5	<0.5	<0.5	0.7
4/5/06 [3]	10.05	5.91	4.14	8260B	SGC	50 Y	<300	<50	<50	1.7	<0.5	<0.5	<0.5	<0.5
9/6/06	10.05	7.70	2.35	8260B	SGC	140 H Y	<300	79 H Y	60	<0.5	<0.5	<0.5	<0.5	0.51
4/4/07	10.05	7.52	2.53	8260B	SGC	100 H Y	<300	50 H Y	<50	<0.5	<0.5	<0.5	<0.5	<0.5
4/4/07	10.05	---	---	8260B	Dup	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
10/3/07	10.05	8.45	1.60	8260B	SGC	61 Y	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
3/20/08 [8]	10.05	7.80	2.25	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
11/21/08 [10]	10.05	8.45	1.60	8260B	SGC	150 Y	660	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50
4/2/09 [12]	10.05	7.20	2.85	8260B	SGC	<50	<300	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-15														
1/18/00	12.36	10.56	1.80	8020	SGC	12,000 a	89,000	<50	110	3.8	2.1	1	4.6	<5.0

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
5/11/00	12.36	10.03	2.33	8020	SGC	120 a	590	<50	90	0.9	0.9	<0.5	3.3	<5.0
8/24/00	12.36	10.22	2.14	---		---	---	---	---	---	---	---	---	---
8/25/00	12.36	---	---	8020	SGC	1,900	8,600	1,000	<50	1.9	<0.5	<0.5	1.5	<5.0
11/28/00	12.36	10.30	2.06	8020	SGC	2,500	36,000	<1300	80	1.7	<0.5	<0.5	1.6	<5.0
11/28/00	12.36	10.30	2.06	---	Filtered+SGC	73	<200	<50	---	---	---	---	---	---
2/26/01	12.36	9.30	3.06	8020	Filtered+SGC	190	<240	<60	55	0.6	<0.5	<0.5	0.5	<5.0
5/17/01	12.36	10.09	2.27	---		---	---	---	---	---	---	---	---	---
5/18/01	12.36	---	---	8020	Filtered+SGC	210	<230	<57	66	1.5	<0.5	<0.5	2.1	<5.0
8/16/01	12.36	10.20	2.16		Filtered+SGC	<50	B500	<100	<50	<0.5	<0.5	<0.5	2.4	<5
12/16/01	12.36	9.80	2.56	8021	SGC	3,800	15,000	<250	<50	<0.5	<0.5	<0.5	2	<5
4/5/02	12.36	9.58	2.78	8021	SGC	1,000	1,400	---	<50	<0.5	<0.5	<0.5	2.3	<5
6/20/02	12.36	10.24	2.12	8021	SGC	670 a,c	2,700 h	95 c,i	<50	0.83	<0.5	<0.5	2.20	<2
9/18/02	12.36	9.89	2.47	8021	SGC	70 a,c	<300	<50	<50	<0.5	<0.5	1.5	1.71	<2
4/22/03	12.36	9.55	2.81	8021B	SGC	<50	<300	<50	<50	1 C	<.50	1.4	1.9	<2
4/28/04	12.36	9.68	2.68	8260B	SGC	<250	567	<100	<100	<0.5	<1.0	<1.0	<1.0	2.8
10/28/04	12.36	9.58	2.78	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	2.2	<0.5
9/1/05 [1]	12.36	9.56	2.80	8260B	SGC	420 Y	<300	120 H Y	55	<0.5	<0.5	<0.5	2.0	<0.5
4/5/06 [3]	12.36	8.76	3.60	8260B	SGC	300 H Y	760	87 H Y	<50	<0.5	<0.5	<0.5	2.4	<0.5
9/6/06	12.36	9.98	2.38	8260B	SGC	220 H Y	400	80 H Y	<50	<0.5	<0.5	<0.5	2.06	<0.5
4/3/07	12.36	10.05	2.31	8260B	SGC	130 H Y	<300	63 H Y	<50	<0.5	<0.5	<0.5	2.38	<0.5
10/3/07	12.36	10.16	2.20	8260B	SGC	150 Y	550	<50	55 Y	<0.5	<0.5	<0.5	1.96	<0.5
3/20/08 [8]	12.36	10.08	2.28	8260B	SGC	88 Y	<300	<50	<50	<0.5	<0.5	<0.5	2.02	<0.5
11/19/08 [10]	12.36	10.28	2.08	8260B	SGC	110 Y	<300	<50	<50	<0.50	<0.50	<0.50	1.78	<0.50
4/2/09 [12]	12.36	9.91	2.45	8260B	SGC	85 Y	<300	<50	<50	<0.50	<0.50	<0.50	0.82	<0.50
MW-16														
1/18/00	13.57	10.22	3.43	---	SPH: 0.1 ft.	---	---	---	---	---	---	---	---	---
5/11/00	13.57	13.31	0.27	---	SPH: 0.01 ft.	---	---	---	---	---	---	---	---	---
8/24/00	13.57	8.91	4.66	---	SPH: NM	---	---	---	---	---	---	---	---	---
11/28/00	13.57	13.05	0.86	---	SPH: 0.42 ft.	---	---	---	---	---	---	---	---	---
2/26/01	13.57	13.10	0.79	---	SPH: 0.40 ft.	---	---	---	---	---	---	---	---	---
5/17/01	13.57	12.62G	---	---	SPH: NM	---	---	---	---	---	---	---	---	---
8/16/01	13.57	11.94G	---	---	SPH: NM	---	---	---	---	---	---	---	---	---
12/15/01	13.57	NM	---	---	SPH: NM	---	---	---	---	---	---	---	---	---
4/3/02	13.57	12.88	0.69	---		---	---	---	---	---	---	---	---	---
6/21/02	12.22	NM	---	---	SPH: NM	---	---	---	---	---	---	---	---	---
4/22/03	12.22				Well cap stuck									
4/28/04	12.22	12.48	-0.26	8260B	SGC	<230	1030	<260	2000	150	<1.0	46	<1.0	<1.0

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
10/28/04	12.22	11.97	0.25	8260B	SGC	450 L Y	<300	480	1100	18	1.7	29	1.7	<0.5
8/31/05	12.22	12.09	0.13	---	SPH: None	---	---	---	---	---	---	---	---	---
4/5/06 (3)	12.22	3.80	8.42	8260B	SGC	95 H Y	420	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
9/6/06	12.22	---	---	---	Dry	---	---	---	---	---	---	---	---	---
4/4/07 (5)	12.22	10.72	1.5	8260B	SGC	---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<0.5
10/3/07	12.22	10.92	1.3	8260B	SGC	2,300 Y	4300	1700	480 Y	31	1.7	4.5	1.6	<0.5
3/19/08 (9)	12.22	10.72	1.5	---	---	---	---	---	---	---	---	---	---	---
11/19/08 (10)	12.22	12.33	-0.11	8260B	SGC	52,000 Y	110,000	31,000	150 Y	21	1.7	2.7	1.1	<0.50
4/2/09 (12)	12.22	11.25	0.97	8260B	SGC	---	---	---	59 Y	<0.5	<0.5	<0.5	<0.5	<0.5
MW-17														
1/18/00	9.86	5.35	4.51	8020	SGC	850 a	21,000	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
5/11/00	9.86	9.85	0.01	8020	SGC	150 a	2,900	<100	<50	<0.5	<0.5	<0.5	<0.5	<5.0
8/24/00	9.86	8.59	1.27	---		---	---	---	---	---	---	---	---	---
8/25/00	9.86	---	---	8020	SGC	190	610	71	<50	0.58	<0.5	<0.5	<0.5	<5.0
11/28/00	9.86	9.25	0.61	8020	SGC	<250	2,400	<250	<50	<0.5	<0.5	<0.5	<0.5	<5.0
11/28/00	9.86	9.25	0.61	---	Filtered+SGC	<50	<200	<50	---	---	---	---	---	---
2/26/01	9.86	9.40	0.46	8020	Filtered+SGC	<50	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
5/17/01	9.86	8.32	1.54	---		---	---	---	---	---	---	---	---	---
5/18/01	9.86	---	---	8020	Filtered+SGC	<50	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
8/16/01	9.86	10.35	-0.49		Filtered+SGC	<50	400B	<100	<50	<0.5	<0.5	<0.5	<0.5	<5.0
12/16/01	9.86	8.01	1.85	8021	SGC	940	1,000	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
4/9/02	9.86	9.76	0.10	8021	SGC	590	880	---	60	<0.5	<0.5	1.6	<0.5	<5.0
6/21/02	9.86	9.79	0.07	8021	SGC	99 a,c	650 h	<50	<50	<0.5	<0.5	<0.5	<0.5	<2
9/18/02	9.86	8.25	1.61	8021	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<2
4/23/03	9.86	9.75	0.11	8021B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<2
4/28/04	9.86	8.90	0.96	8260B	SGC	<100	<400	<100	<100	<0.5	<1.0	2.4	<1.0	<1.0
10/28/04	9.86	8.32	1.54	`	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
9/1/05 (1)	9.86	8.38	1.48	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
4/5/06 (3)	9.86	6.86	3.00	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
9/6/06	9.86	9.85	0.01	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
4/3/07	9.86	7.67	2.19	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
10/3/07	9.86	7.97	1.89	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
10/3/07 dupe	---	---	---	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
3/20/08 (8)	9.86	6.70	3.16	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
11/19/08 (10)	9.86	9.53	0.33	8260B	SGC	<50	<300	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50
4/2/09 (12)	9.86	9.56	0.30	8260B	SGC	<50	<300	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
MW-18														
4/24/03	---	6.49		8021B	SGC	<50	<300	<50	<50	<0.5	<0.5	2.4	<0.5	<2
					Developed to monitor a utility trench, not									
4/28/04	---				sampled									
8/31/05	---	---	---	---		---	---	---	---	---	---	---	---	---
3/27/06	---	---	---	---		---	---	---	---	---	---	---	---	---
9/6/06	---	---	---	---		---	---	---	---	---	---	---	---	---
TBW-1														
2/23/99	---	6.25	---	---	SPH: 0.10 ft.	---	---	---	---	---	---	---	---	---
5/27/99	---	5.29	---	---	SPH: 0.01 ft.	---	---	---	---	---	---	---	---	---
8/24/99	---	6.99	---	---	SPH: 0.18 ft.	---	---	---	---	---	---	---	---	---
11/22/99	---	---	---	---	Inaccessible	---	---	---	---	---	---	---	---	---
1/18/00	---	---	---	---	Inaccessible	---	---	---	---	---	---	---	---	---
5/11/00	---	6.90	---	---	SPH: 0.10 ft.	---	---	---	---	---	---	---	---	---
8/24/00	---	7.12	---	---	SPH: NM	---	---	---	---	---	---	---	---	---
11/28/00	---	7.75	---	---	SPH: 0.36 ft.	---	---	---	---	---	---	---	---	---
2/27/01	---	9.06	---	---	SPH: 0.51 ft.	---	---	---	---	---	---	---	---	---
5/17/01	---	6.98	---	---	SPH: 0.28 ft.	---	---	---	---	---	---	---	---	---
8/16/01	---	6.62	---	---	SPH: 0.66 ft., f	1,100	700B	<100	17,000	2,100	75	730	850	<1
12/15/01	---	6.86	---	---	SPH 0.35 ft.	---	---	---	---	---	---	---	---	---
4/3/02	---	6.14	---	---	SPH: None	---	---	---	---	---	---	---	---	---
9/12/02	---	7.52	---	---	SPH: None	---	---	---	---	---	---	---	---	---
4/22/03	---	6.41	---	---	SPH: None	---	---	---	---	---	---	---	---	---
4/28/04	---	6.33	---	---	SPH: None	---	---	---	---	---	---	---	---	---
10/28/04	---	NM	---	---		---	---	---	---	---	---	---	---	---
8/31/05	---	6.50	---	---	Well cap smashed 6"	---	---	---	---	---	---	---	---	---
3/27/06	---	5.20	---	---	SPH: None	---	---	---	---	---	---	---	---	---
9/6/06	---	NM	---	---	SPH: None	---	---	---	---	---	---	---	---	---
4/4/07	---	8.26	---	---	---	---	---	---	---	---	---	---	---	---
10/2/07	---	NM	---	---	Abandoned	---	---	---	---	---	---	---	---	---
TBW-2														
6/21/02	---	8.28	---	---		**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
4/22/03	---	6.70	---	---	SPH globules	---	---	---	---	---	---	---	---	---
4/28/04	---	6.61	---	---	SPH: None	---	---	---	---	---	---	---	---	---

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
10/28/04	---	7.31	---	---	SPH: None	---	---	---	---	---	---	---	---	---
8/31/05	---	NM	---	---		---	---	---	---	---	---	---	---	---
3/27/06	---	NM[4]	---	---		---	---	---	---	---	---	---	---	---
9/6/06	---	NM[4]	---	---	SPH: None	---	---	---	---	---	---	---	---	---
4/4/07	---	NM[4]	---	---	---	---	---	---	---	---	---	---	---	---
10/2/07	---	NM	---	---	Abandoned	---	---	---	---	---	---	---	---	---
TBW-3														
8/19/98	---	2.67	---	8020	SGC	810,000	---	---	920	3.2	<0.5	<0.5	0.77	<10
8/19/98	---	2.67	---	8260		---	---	---	---	---	---	---	---	<5.0
2/23/98	---	1.25	---	8020		3,800	3,000	<50	110	1.6	<0.5	<0.5	<0.5	<5.0
5/27/99	---	---	---	---	DTW: NM	---	---	---	---	---	---	---	---	---
8/24/99	---	3.25	---	---	SPH globules	---	---	---	---	---	---	---	---	---
11/22/99	---	3.68	---	---		---	---	---	---	---	---	---	---	---
1/18/00	9.92	3.73	6.19	---	SPH globules	---	---	---	---	---	---	---	---	---
5/11/00	9.92	2.07	7.85	---		---	---	---	---	---	---	---	---	---
8/24/00	9.92	2.82	7.10	---	SPH: sheen	44,000	13,000	34,000	570	4.7	<0.5	<0.5	<0.5	<5.0
11/28/00	9.92	---	---	---		---	---	---	---	---	---	---	---	---
2/27/01	9.92	1.29	8.63	8020	Filtered+SGC	560	<230	<57	120	1.5	<0.5	<0.5	<0.5	<5.0
5/17/01	9.92	2.47	7.45	---		---	---	---	---	---	---	---	---	---
8/16/01	9.92	1.81	8.11		Filtered+SGC	1,500	400B	<100	180	<0.5	<0.5	<0.5	<0.5	<1
12/15/01	9.92	2.52	---	---	SPH: 0.02 ft.	---	---	---	---	---	---	---	---	---
4/3/02	9.92	1.50	---	---	SPH: None	---	---	---	---	---	---	---	---	---
6/21/02	9.92	2.37	7.55	---	SPH: None	---	---	---	---	---	---	---	---	---
9/12/02	9.92	3.48	6.44	---	SPH: None	---	---	---	---	---	---	---	---	---
4/22/03	9.92	1.45	8.47	---	Sheen	---	---	---	---	---	---	---	---	---
4/28/04	9.92	2.26	7.66	---	SPH: None	---	---	---	---	---	---	---	---	---
10/28/04	9.92	3.42	6.50	---	Sheen	---	---	---	---	---	---	---	---	---
8/31/05	9.92	2.99	6.93	---	SPH: None	---	---	---	---	---	---	---	---	---
3/27/06	9.92	0.49	9.43	---	SPH: None	---	---	---	---	---	---	---	---	---
9/6/06	9.92	3.42	6.50	---	SPH:0.01 ft.	---	---	---	---	---	---	---	---	---
4/4/07	9.92	1.93	7.99											
10/2/07	---	NM	---	---	Abandoned	---	---	---	---	---	---	---	---	---
TBW-4														
2/27/01	---	1.35	---	8020	Filtered+SGC	410	<230	<57	250	1.9	<0.5	<0.5	<0.5	<5.0
5/17/01	---	2.52	---	---		---	---	---	---	---	---	---	---	---
8/16/01	---	1.88	---	---	Filtered+SGC	2,600	700B	<100	390	<0.5	<0.5	<0.5	<0.5	<5
6/21/02	---	2.32	---	---		---	---	---	---	---	---	---	---	---

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
4/22/03	---	1.41	---	---	Sheen	---	---	---	---	---	---	---	---	---
4/28/04	---	2.21	---	---		---	---	---	---	---	---	---	---	---
10/27/04	---	3.37	---	---	Sheen	---	---	---	---	---	---	---	---	---
8/31/05	---	2.92	---	---		---	---	---	---	---	---	---	---	---
3/27/06	---	0.49	---	---	SPH: None	---	---	---	---	---	---	---	---	---
9/6/06	---	3.37	---	---	SPH:0.01 ft.	---	---	---	---	---	---	---	---	---
4/4/07	---	1.88	---	---	---	---	---	---	---	---	---	---	---	---
10/2/07	---	NM	---	---	Abandoned	---	---	---	---	---	---	---	---	---
TBW-5														
2/23/99	---	9.72	---	---	SPH: 1.45 ft.	---	---	---	---	---	---	---	---	---
5/27/99	---	7.03	---	---	SPH: 1.13 ft.	---	---	---	---	---	---	---	---	---
8/24/99	---	6.52	---	---	SPH: 1.33 ft.	---	---	---	---	---	---	---	---	---
11/22/99	---	8.31	---	---	SPH: 1.29 ft.	---	---	---	---	---	---	---	---	---
1/18/00	10.22	6.20	4.74	---	SPH: 0.90 ft.	---	---	---	---	---	---	---	---	---
5/11/00	10.22	9.41	1.05	---	SPH: 0.30 ft.	---	---	---	---	---	---	---	---	---
8/24/00	10.22	9.62	0.81	---	SPH: 0.26 ft.	---	---	---	---	---	---	---	---	---
11/28/00	10.22	10.25	0.34	---	SPH: 0.46 ft.	---	---	---	---	---	---	---	---	---
2/27/01	10.22	9.06	1.45	---	SPH: 0.36 ft.	---	---	---	---	---	---	---	---	---
5/17/01	10.22	8.75	1.47	---	SPH: 0.67 ft.	---	---	---	---	---	---	---	---	---
8/16/01	10.22	8.32	2.51	8020	SPH: 0.76 ft., f	550	400B	< 100	30,000	2,900	100	1,500	5,100	< 1
12/15/01	10.22	9.09	1.13	---	SPH: 0.36 ft.	---	---	---	---	---	---	---	---	---
4/3/02 [6]														
6/21/02	10.22	7.87	2.35	---	SPH: 0.03 ft.	---	---	---	---	---	---	---	---	---
9/12/01	10.22	7.26	2.97	---	SPH: 0.01 ft.	---	---	---	---	---	---	---	---	---
4/22/03	10.22	6.22	4.00	---	SPH: 0.06 ft.	---	---	---	---	---	---	---	---	---
4/28/04	10.22	6.26	3.96	---	SPH: 0.21 ft.	---	---	---	---	---	---	---	---	---
10/27/04	10.22	3.62	6.60	---	SPH: None	---	---	---	---	---	---	---	---	---

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
8/31/05	10.22	6.41	---	---	SPH: 0.30 ft.	---	---	---	---	---	---	---	---	---
3/27/06	10.22	NM[2]	---	---		---	---	---	---	---	---	---	---	---
9/6/06	10.22	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
4/4/07	10.22	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
10/2/07	---	NM	---	---	SPH: viscous residual	---	---	---	---	---	---	---	---	---
3/19/08	---	NM	---	---	SPH: None	---	---	---	---	---	---	---	---	---
11/18/08	10.22	9.32	0.9	---	---	---	---	---	---	---	---	---	---	---
4/1/09	---	NM	---	---	NA	---	---	---	---	---	---	---	---	---
TBW-6														
2/23/99	---	2.09	---	8020		160	600	<50	60	<0.5	<0.5	<0.5	<0.5	<5.0
5/27/99	---	3.31	---	---		---	---	---	---	---	---	---	---	---
8/24/99	---	7.29	---	8020	SGC	180	400	<50	130	<0.5	<0.5	<0.5	<0.5	<5.0
11/22/99	---	4.37	---	---		---	---	---	---	---	---	---	---	---
1/18/00	9.49	3.83	5.66	---		---	---	---	---	---	---	---	---	---
1/19/00	9.49	---	---	8020	SGC	55 C	<200	<50	170	0.6	<0.5	<0.5	<0.5	<5.0
5/11/00	9.49	2.51	6.98	---		---	---	---	---	---	---	---	---	---
8/24/00	9.49	4.34	5.15	---		---	---	---	---	---	---	---	---	---
8/25/00	9.49	---	---	8020	SGC	320	<250	200	<50	<0.5	<0.5	<0.5	<0.5	<5.0
11/28/00	9.49	4.74	4.75	---		---	---	---	---	---	---	---	---	---
2/27/01	9.49	2.30	7.19	8020	Filtered+SGC	<57	<230	<57	<50	<0.5	<0.5	<0.5	<0.5	<5.0
5/17/01	9.49	3.35	6.14	---		---	---	---	---	---	---	---	---	---
8/16/01	9.49	3.85	5.64		Filtered+SGC	<50	<200	<100	<50	<0.5	<0.5	<0.5	<0.5	<5
12/15/01	9.49	3.96	5.53	---		---	---	---	---	---	---	---	---	---
4/3/02	9.49	2.51	6.98	---		---	---	---	---	---	---	---	---	---
6/21/02	9.49	3.58	5.91	---		---	---	---	---	---	---	---	---	---
9/12/02	9.49	6.07	4.56	---	SPH: 1.42 ft.	---	---	---	---	---	---	---	---	---
4/23/03	9.49	2.42	7.07	---		---	---	---	---	---	---	---	---	---
4/28/04	9.49	3.21	6.28	---		---	---	---	---	---	---	---	---	---
10/27/04	9.49	4.49	5.00	---	SPH: None	---	---	---	---	---	---	---	---	---
8/31/05	9.49	4.43	---	---	SPH: 0.52 ft.	---	---	---	---	---	---	---	---	---
3/27/06	9.49	1.90	7.59	---	SPH: None	---	---	---	---	---	---	---	---	---
9/6/06	9.49	4.33	5.16	---	SPH:0.01 ft.	---	---	---	---	---	---	---	---	---
4/4/07	9.49	3.08	6.41	---	---	---	---	---	---	---	---	---	---	---
10/2/07	9.49	4.98	4.51	---	SPH: None	---	---	---	---	---	---	---	---	---
3/19/08	9.49	3.16	6.33	---	SPH: None	---	---	---	---	---	---	---	---	---
11/18/08	9.49	5.32	4.17	---	SPH: None	---	---	---	---	---	---	---	---	---
4/1/09	9.49	2.87	6.62	---	SPH: sheen	---	---	---	---	---	---	---	---	---

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
RW-A1														
4/22/03	---	1.81	---	---		---	---	---	---	---	---	---	---	---
4/28/04	10.09	2.52	7.57	---		---	---	---	---	---	---	---	---	---
10/27/04	10.09	3.03	7.06	---	SPH: None	---	---	---	---	---	---	---	---	---
8/31/05	10.09	3.31	6.78	---	SPH: None	---	---	---	---	---	---	---	---	---
3/27/06	10.09	0.62	9.47	---	SPH: None	---	---	---	---	---	---	---	---	---
9/6/06	10.09	3.52	6.57	---	SPH: None	---	---	---	---	---	---	---	---	---
4/3/07	10.09	2.93	7.16	---	---	---	---	---	---	---	---	---	---	---
10/2/07	10.09	NM[7]	---	---	---	---	---	---	---	---	---	---	---	---
3/19/08	10.09	3.16	6.93	---	SPH: None	---	---	---	---	---	---	---	---	---
11/20/08 [10]	10.09	4.49	5.60	8260B	SGC	56 Y	<300	<50	<50	8.8	<0.50	<0.50	<0.50	4.5
4/1/09	10.09	2.48	7.61	---	SPH: None	---	---	---	---	---	---	---	---	---
RW-A2														
4/22/03	---	1.22	---	---	Sheen	---	---	---	---	---	---	---	---	---
4/28/04	9.67	2.01	7.66	---		---	---	---	---	---	---	---	---	---
10/27/04	9.67	3.20	6.47	---	SPH: None	---	---	---	---	---	---	---	---	---
8/31/05	9.67	2.75	6.92	---	SPH: None	---	---	---	---	---	---	---	---	---
3/27/06	9.67	0.30	9.37	---	SPH: None	---	---	---	---	---	---	---	---	---
9/6/06	9.67	3.19	6.48	---	SPH: 0.01 ft.	---	---	---	---	---	---	---	---	---
4/4/07	9.67	1.70	7.97	8260B	SGC	200 Y	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
10/2/07	9.67	3.81	5.86	---	SPH: None	---	---	---	---	---	---	---	---	---
3/19/08	9.67	1.71	7.96	---	SPH: None	---	---	---	---	---	---	---	---	---
11/20/08 [10]	9.67	3.96	5.71	8260B	SGC	590 Y	<300	160 Y	<50	<0.50	<0.50	<0.50	<0.50	<0.50
4/1/09	9.67	1.58	8.09	---	SPH: None	---	---	---	---	---	---	---	---	---
OB-A1														
4/22/03	---	2.24	---	---	SPH: .01 ft.	---	---	---	---	---	---	---	---	---
4/28/04	---	3.01	---	---	SPH: None	---	---	---	---	---	---	---	---	---
10/27/04	---	5.11	---	---	SPH: None (strong odor)	---	---	---	---	---	---	---	---	---
8/31/05	---	4.10	---	---	SPH: None	---	---	---	---	---	---	---	---	---
3/27/06	---	1.25	---	---	SPH: None	---	---	---	---	---	---	---	---	---
9/7/06	---	4.49	---	---		---	---	---	---	---	---	---	---	---
4/4/07	---	2.72	---	---	---	---	---	---	---	---	---	---	---	---
10/2/07	---	5.34	---	---	---	---	---	---	---	---	---	---	---	---
3/19/08	---	2.73	---	---	SPH: None	---	---	---	---	---	---	---	---	---
11/18/08	---	5.31	---	---	---	---	---	---	---	---	---	---	---	---

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
4/1/09	---	2.61	---	---	---	---	---	---	---	---	---	---	---	---
RW-B1														
4/22/03	---	7.26	---	---	Sheen	---	---	---	---	---	---	---	---	---
4/28/04	11.22	7.20	4.02	---		---	---	---	---	---	---	---	---	---
10/27/04	11.22	7.80	3.42	---	SPH: None	---	---	---	---	---	---	---	---	---
8/31/05	11.22	7.14	4.08	---	SPH: None	---	---	---	---	---	---	---	---	---
3/27/06	11.22	6.10	5.12	---	SPH: None	---	---	---	---	---	---	---	---	---
9/6/06	11.22	7.39	3.83	---	SPH:0.01 ft.	---	---	---	---	---	---	---	---	---
4/4/07	11.22	7.06	4.16	8260B	SGC	130 L	<300	100 H	220	410	23	9.4	16	6.3
10/2/07	11.22	7.70	3.52	---	SPH: None	---	---	---	---	---	---	---	---	---
3/19/08	11.22	7.06	4.16	---	SPH: None	---	---	---	---	---	---	---	---	---
11/18/08	11.22	7.90	3.32	---	SPH: None	---	---	---	---	---	---	---	---	---
4/1/09	11.22	7.15	4.07	---	SPH: None	---	---	---	---	---	---	---	---	---
RW-B2														
4/22/03	---	7.29	---	---	Sheen, Odor	---	---	---	---	---	---	---	---	---
4/28/04	11.23	7.20	4.03	---		---	---	---	---	---	---	---	---	---
10/27/04	11.23	7.81	3.42	---	SPH: None	---	---	---	---	---	---	---	---	---
8/31/05	11.23	7.14	4.09	---	SPH: None	---	---	---	---	---	---	---	---	---
3/27/06	11.23	6.09	5.14	---	SPH: None	---	---	---	---	---	---	---	---	---
9/6/06	11.23	7.39	3.84	---	SPH: None	---	---	---	---	---	---	---	---	---
4/4/07	11.23	9.84	1.39	8260B	SGC	500 L Y	<300	500 L	11000	3400	2700	190	1100	<10
10/2/07	11.23	7.71	3.52	---	SPH: None	---	---	---	---	---	---	---	---	---
3/19/08	11.23	7.07	4.16	---	SPH: None (strong odor)	---	---	---	---	---	---	---	---	---
11/20/08 [10]	11.23	7.92	3.31	8260B	SGC	190 Y	<300	150 Y	7,900 Y	3,200	2,100	140	720	<25
4/1/09	11.23	7.16	4.07	---	SPH: None	---	---	---	---	---	---	---	---	---
RW-B3														
4/22/03	---	9.90	---	---	visible Product	---	---	---	---	---	---	---	---	---
4/28/04	11.14	13.20	-2.06	---	SPH: 3.09	---	---	---	---	---	---	---	---	---
10/27/04	11.14	9.33	1.81	---	SPH: None	---	---	---	---	---	---	---	---	---
8/31/05	11.14	9.60	1.54	---	SPH: 0.01	---	---	---	---	---	---	---	---	---
3/27/06	11.14	9.08	2.06	---	SPH: None	---	---	---	---	---	---	---	---	---
9/6/06	11.14	9.61	1.53	---	SPH: None	---	---	---	---	---	---	---	---	---
4/4/07	11.14	9.84	1.30	8260B	SGC	3,600 L Y	880	4,000 L	7900	4300	130	520	357	<31
10/2/07	11.14	9.56	1.58	---	SPH: None	---	---	---	---	---	---	---	---	---
3/19/08	---	NM [7]	---	---	NM	---	---	---	---	---	---	---	---	---

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
11/18/08	11.14	9.57	1.57	---	---	---	---	---	---	---	---	---	---	---
4/1/09	11.14	9.80	1.34	---	---	---	---	---	---	---	---	---	---	---
RW-B4														
4/22/03	---	10.55	---	---	SPH: .55 ft.	---	---	---	---	---	---	---	---	---
4/28/04	11.29	10.22	1.07	---	SPH: None	---	---	---	---	---	---	---	---	---
10/27/04	11.29	9.55	1.74	---	SPH: None	---	---	---	---	---	---	---	---	---
8/31/05	11.29	9.70	1.59	---	SPH: None	---	---	---	---	---	---	---	---	---
3/27/06	11.29	9.23	2.06	---	SPH: None	---	---	---	---	---	---	---	---	---
9/6/06	11.29	9.69	1.60	---	SPH: None	---	---	---	---	---	---	---	---	---
4/4/07	11.29	10.04	1.25	8260B	SGC	3,500 Y	360	4,000 L	16000	3200	150	460	1430	<8.3
10/2/07	11.29	9.72	1.57	---	SPH: None	---	---	---	---	---	---	---	---	---
3/19/08	11.29	9.87	1.42	---	SPH: None (odor)	---	---	---	---	---	---	---	---	---
11/20/08 [10]	11.29	9.75	1.54	8260B	SGC	3,100 Y	2,900	930	6,000 Y	3,100	100	270	679	<25
4/1/09	11.29	9.87	1.42	---	SPH: None	---	---	---	---	---	---	---	---	---
RW-C1														
4/24/03	---	8.34	---	---		---	---	---	---	---	---	---	---	---
4/28/04	10.44	8.00	2.44	---		---	---	---	---	---	---	---	---	---
10/27/04	10.44	7.59	2.85	---	SPH: None	---	---	---	---	---	---	---	---	---
8/31/05	10.44	5.81	4.63	---	SPH: None	---	---	---	---	---	---	---	---	---
3/27/06	10.44	1.94	8.50	---	SPH: None	---	---	---	---	---	---	---	---	---
9/6/06	10.44	6.71	3.73	---	SPH: 0.01 ft.	---	---	---	---	---	---	---	---	---
4/5/07	10.44	6.66	3.78	8260B	---	220 H Y	1300	63 H Y	<50	<0.50	<0.50	<0.50	<0.50	<0.50
10/2/07	10.44	8.48	1.96	---	SPH: 0.01 ft.	---	---	---	---	---	---	---	---	---
3/19/08	10.44	8.56	1.88	---	SPH: None	---	---	---	---	---	---	---	---	---
11/20/08 [10]	10.44	8.29	2.15	8260B	SGC	290 Y	1,200	76 Y	<50	6.4	<0.50	<0.50	0.51	<0.50
4/1/09	10.44	8.16	2.28	---	SPH: None	---	---	---	---	---	---	---	---	---
RW-C2														
4/24/03	---	6.22	---	---	SPH: .03 ft.	---	---	---	---	---	---	---	---	---
4/28/04	10.58	6.19	4.39	---	SPH: 0.06 ft	---	---	---	---	---	---	---	---	---
10/27/04	10.58	7.00	3.58	---	SPH: Present	---	---	---	---	---	---	---	---	---
8/31/05	10.58	6.30	4.28	---	SPH: 0.01 ft.	---	---	---	---	---	---	---	---	---
3/27/06	10.58	5.10	5.48	---	SPH: None	---	---	---	---	---	---	---	---	---
9/6/06	10.58	8.19	2.39	---	SPH: 0.12 ft.	---	---	---	---	---	---	---	---	---
4/4/07	10.58	8.28	2.30	---	---	---	---	---	---	---	---	---	---	---
10/2/07	10.58	9.75	0.83	---	SPH: 0.015 ft.	---	---	---	---	---	---	---	---	---
10/3/07	10.58	9.39	1.19	---	SPH: None	---	---	---	---	---	---	---	---	---

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
11/18/08	10.58	9.38	1.20	---	---	---	---	---	---	---	---	---	---	---
4/1/09	10.58	7.64	2.94	---	---	---	---	---	---	---	---	---	---	---
RW-C3														
4/24/03	---	6.36	---	---		---	---	---	---	---	---	---	---	---
4/28/04	10.71	6.25	4.46	---		---	---	---	---	---	---	---	---	---
10/27/04	10.71	7.10	3.61	---	SPH: None	---	---	---	---	---	---	---	---	---
8/31/05	10.71	6.39	4.32	---	SPH: None	---	---	---	---	---	---	---	---	---
3/27/06	10.71	5.30	5.41	---	SPH: None	---	---	---	---	---	---	---	---	---
9/6/06	10.71	8.10	2.61	---	SPH: 0.01 ft.	---	---	---	---	---	---	---	---	---
4/5/07	10.71	7.97	2.74	8260B	SPH: None	540 H L Y	360 H L	430 H L Y	520	13	14	32	54	<0.5
10/2/07	10.71	8.59	2.12	---	SPH: 0.01 ft.	---	---	---	---	---	---	---	---	---
3/19/08	10.71	8.38	2.33	---	SPH: None	---	---	---	---	---	---	---	---	---
11/20/08 [10]	10.71	8.61	2.10	8260B	SGC	720 Y [11]	1600 [11]	170 Y [11]	<50	1.1	<0.50	0.67	<0.50	<0.50
4/1/09	10.71	6.98	3.73	---	SPH: None	---	---	---	---	---	---	---	---	---
RW-C4														
4/22/03	---	7.15	---	---	Strong odor	---	---	---	---	---	---	---	---	---
4/28/04	11.32	6.95	4.37	---	SPH: 0.01 ft	---	---	---	---	---	---	---	---	---
10/27/04	11.32	7.45	3.87	---	SPH: None	---	---	---	---	---	---	---	---	---
8/31/05	11.32	6.71	4.61	---	SPH: None	---	---	---	---	---	---	---	---	---
3/27/06	11.32	6.47	4.85	---	SPH: None	---	---	---	---	---	---	---	---	---
9/6/06	11.32	8.16	3.16	---	SPH: 0.01 ft.	---	---	---	---	---	---	---	---	---
4/4/07	11.32	8.50	2.82	---	---	---	---	---	---	---	---	---	---	---
10/2/07	11.32	8.62	2.70	---	SPH: None	---	---	---	---	---	---	---	---	---
3/19/08	11.32	9.13	2.19	---	SPH: None	---	---	---	---	---	---	---	---	---
11/18/08	11.32	8.99	2.33	---	---	---	---	---	---	---	---	---	---	---
4/1/09	11.32	8.52	2.80	---	---	---	---	---	---	---	---	---	---	---
RW-C5														
4/22/03	---	6.46	---	---		---	---	---	---	---	---	---	---	---
4/28/04	10.79	6.39	4.40	---		---	---	---	---	---	---	---	---	---
10/27/04	10.79	7.21	3.58	---	SPH: Present	---	---	---	---	---	---	---	---	---
8/31/05	10.79	6.51	4.28	---	SPH: None	---	---	---	---	---	---	---	---	---
3/27/06	10.79	5.33	5.46	---	SPH: None	---	---	---	---	---	---	---	---	---
9/6/06	10.79	8.03	2.76	---	SPH: 0.01 ft.	---	---	---	---	---	---	---	---	---
4/4/07	10.79	8.27	2.52	8260B	SGC	3,800 Y	310	4,100 L	12000	3400	170	520	1300	<25
10/2/07	10.79	8.95	1.84	---	SPH: None	---	---	---	---	---	---	---	---	---
3/19/08	10.79	8.82	1.97	---	SPH: 0.01 ft.	---	---	---	---	---	---	---	---	---

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
11/20/08 [10]	10.79	8.92	1.87	8260B	SPH: None/ SGC	3,700 Y	430	3,300	5,800 Y	2,900	91	120	437	<20
11/20/08 dup	---	---	---	8260B	SGC: Oder	3,400 Y	<300	3,100	3,900 Y	2,700	78	91	358	<25
4/1/09	10.79	7.88	2.91	---	SPH: None	---	---	---	---	---	---	---	---	---
RW-C6														
4/22/03	---	6.05	---	---	SPH: 0.07 ft.	---	---	---	---	---	---	---	---	---
4/28/04	10.31	6.30	4.01	---	SPH: 0.05 ft.	---	---	---	---	---	---	---	---	---
10/27/04	10.31	6.85	---	---	SPH: 0.15 ft.	---	---	---	---	---	---	---	---	---
8/31/05	10.31	6.81	---	---	SPH: 0.93 ft.	---	---	---	---	---	---	---	---	---
3/27/06	10.31	5.66	---	---	SPH: 0.96 ft.	---	---	---	---	---	---	---	---	---
9/6/06	10.31	7.96	2.35	---	SPH: 0.18ft.	---	---	---	---	---	---	---	---	---
4/4/07	10.31	NM[4]	---	---	---	---	---	---	---	---	---	---	---	---
10/2/07	10.31	8.45	1.86	---	SPH: residual	---	---	---	---	---	---	---	---	---
3/19/08	10.31	8.32	1.99	---	SPH: None	---	---	---	---	---	---	---	---	---
11/18/08	10.31	8.42	1.89	---	SPH: Oder	---	---	---	---	---	---	---	---	---
4/1/09	10.31	7.36	2.95	---	SPH: None	---	---	---	---	---	---	---	---	---
RW-C7														
4/22/03	---	6.51	---	---	visible Product	---	---	---	---	---	---	---	---	---
4/28/04	10.12	6.60	3.52	---	SPH: 0.02 ft.	---	---	---	---	---	---	---	---	---
10/27/04	10.12	NM	---	---	---	---	---	---	---	---	---	---	---	---
8/31/05	10.12	NM	---	---	---	---	---	---	---	---	---	---	---	---
3/27/06	10.12	NM[4]	---	---	---	---	---	---	---	---	---	---	---	---
9/6/06	10.12	8.34	1.78	---	SPH: 0.01 ft.	---	---	---	---	---	---	---	---	---
4/4/07	10.12	NM[4]	---	---	---	---	---	---	---	---	---	---	---	---
10/2/07	10.12	9.01	1.11	---	SPH: None	---	---	---	---	---	---	---	---	---
3/19/08	10.12	8.85	1.27	---	SPH: None	---	---	---	---	---	---	---	---	---
11/18/08	10.12	8.97	1.15	---	---	---	---	---	---	---	---	---	---	---
4/1/09	10.12	7.89	2.23	---	SPH: 0.01 ft.	---	---	---	---	---	---	---	---	---
OB-C1														
4/22/03	---	6.26	---	---		---	---	---	---	---	---	---	---	---
4/28/04	10.39	7.39	3.00	---	SPH: 1.27 ft.	---	---	---	---	---	---	---	---	---
10/27/04	10.39	8.06	2.33	---	SPH: 1.08 ft.	---	---	---	---	---	---	---	---	---
8/31/05	10.39	7.84	---	---	SPH: 1.55 ft.	---	---	---	---	---	---	---	---	---
3/27/06	10.39	6.15	---	---	SPH: 1.05 ft.	---	---	---	---	---	---	---	---	---
9/6/06	---	NM[4]	---	---	Buried	---	---	---	---	---	---	---	---	---
4/4/07	10.39	7.78	2.61	---	---	---	---	---	---	---	---	---	---	---
10/2/07	10.39	8.67	1.72	---	SPH: 0.02 ft.	---	---	---	---	---	---	---	---	---

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
3/19/08	10.39	8.49	1.90	---	SPH: 0.29 ft.	---	---	---	---	---	---	---	---	---
11/18/08	10.39	8.57	1.82	---	SPH: 0.03 ft.	---	---	---	---	---	---	---	---	---
4/1/09	10.39	7.96	2.43	---	SPH: 0.64 ft.	---	---	---	---	---	---	---	---	---
RW-D1														
4/22/03	---	6.97	---	---		---	---	---	---	---	---	---	---	---
4/28/04	10.18	5.62	4.56	---		---	---	---	---	---	---	---	---	---
10/27/04	10.18	6.67	3.51	---	SPH: Present	---	---	---	---	---	---	---	---	---
8/31/05	10.18	5.75	---	---	SPH: 0.02 ft.	---	---	---	---	---	---	---	---	---
3/27/06	10.18	NM[(2)]	---	---	---	---	---	---	---	---	---	---	---	---
9/6/06	10.18	NM[(2)]	---	---	No Access	---	---	---	---	---	---	---	---	---
4/4/07	10.18	NM[(2)]	---	---	---	---	---	---	---	---	---	---	---	---
10/2/07	10.18	NM[(2)]	---	---	---	---	---	---	---	---	---	---	---	---
3/19/08	---	NM[(2)]	---	---	---	---	---	---	---	---	---	---	---	---
11/19/08	10.18	11.29	-1.11	6260B	SGC	11,000 Y	4,900	9,400	5,100 Y	270	85	150	710	<2.0
4/1/09	---	NM[(2)]	---	---	---	---	---	---	---	---	---	---	---	---
RW-D2														
4/22/03	---	7.15	---	---	SPH 1.25 ft.	---	---	---	---	---	---	---	---	---
4/28/04	10.33	7.45	2.88	---	SPH: 0.1 ft.	---	---	---	---	---	---	---	---	---
10/27/04	10.33	6.41	3.92	---	SPH: Present	---	---	---	---	---	---	---	---	---
8/31/05	10.33	8.44	---	---	SPH: 3.12 ft.	---	---	---	---	---	---	---	---	---
3/27/06	10.33	NM[(2)]	---	---	---	---	---	---	---	---	---	---	---	---
9/6/06	10.33	NM[(2)]	---	---	No Access	---	---	---	---	---	---	---	---	---
4/4/07	10.33	NM[(2)]	---	---	---	---	---	---	---	---	---	---	---	---
10/2/07	10.33	NM[(2)]	---	---	---	---	---	---	---	---	---	---	---	---
3/19/08	---	NM[(2)]	---	---	---	---	---	---	---	---	---	---	---	---
11/18/08	10.33	10.95	-0.62	---	---	---	---	---	---	---	---	---	---	---
4/1/09	---	NM[(2)]	---	---	---	---	---	---	---	---	---	---	---	---
RW-D3														
4/22/03	---	6.89	---	---	SPH: 1.58 ft.	---	---	---	---	---	---	---	---	---
4/28/04	10.07	8.18	1.89	---	SPH: 3.25 ft.	---	---	---	---	---	---	---	---	---
10/27/04	10.07	6.37	3.70	---	SPH: Present	---	---	---	---	---	---	---	---	---
8/31/05	10.07	7.72	---	---	SPH: 2.46	---	---	---	---	---	---	---	---	---
3/27/06	10.07	NM[(2)]	---	---	---	---	---	---	---	---	---	---	---	---
9/6/06	10.07	NM[(2)]	---	---	No Access	---	---	---	---	---	---	---	---	---

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
4/4/07	10.07	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
10/2/07	10.07	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
3/19/08	---	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
11/18/08	10.07	10.10	-0.03	---	---	---	---	---	---	---	---	---	---	---
4/1/09	---	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
RW-D4														
4/22/03	---	8.11	---	---	SPH: 1.98 ft.	---	---	---	---	---	---	---	---	---
4/28/04	10.22	7.99	2.23	---	SPH: 2.09 ft.	---	---	---	---	---	---	---	---	---
10/27/04	10.22	6.49	3.73	---	SPH: Present	---	---	---	---	---	---	---	---	---
8/31/05	10.22	8.09	---	---	SPH: 2.12 ft.	---	---	---	---	---	---	---	---	---
3/27/06	10.22	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
9/6/06	10.22	NM[2]	---	---	No Access	---	---	---	---	---	---	---	---	---
4/4/07	10.22	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
10/2/07	10.22	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
3/19/08	---	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
11/19/08 [10]	10.22	9.10	1.12	8260B	SGC	55,000	9,700	46,000	7,600 Y	210	17	270	280	<1.7
4/1/09	---	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
RW-D5														
4/22/03	---	6.04	---	---	SPH: 0.07 ft.	---	---	---	---	---	---	---	---	---
4/28/04	9.99	5.96	4.03	---	SPH: None	---	---	---	---	---	---	---	---	---
10/27/04	9.99	6.48	3.51	---	SPH: Present	---	---	---	---	---	---	---	---	---
8/31/05	9.99	7.02*	---	---	SPH: 1.01 ft.	---	---	---	---	---	---	---	---	---
3/27/06	9.99	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
9/6/06	9.99	NM[2]	---	---	No Access	---	---	---	---	---	---	---	---	---
4/4/07	9.99	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
10/2/07	9.99	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
3/19/08	---	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
11/18/08	9.99	9.45	0.54	---	---	---	---	---	---	---	---	---	---	---
4/1/09	---	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
RW-D6														
11/18/08	---	11.10	---	---	---	---	---	---	---	---	---	---	---	---
4/1/09	---	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
RW-D7														

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
11/19/08 [10]	---	9.62	---	8260B	SGC	54,000 Y	59,000	43,000	3,400	100	54	13	830	<3.1
4/1/09	---	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
RW-D8														
11/18/08	---	8.48	---	---	---	---	---	---	---	---	---	---	---	---
4/1/09	---	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
RW-D9														
11/18/08	---	9.70	---	---	---	---	---	---	---	---	---	---	---	---
4/1/09	---	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
RW-D10														
11/18/08	---	8.84	---	8260B	SGC	1,000 Y	650	760	640 Y	2.7	0.69	5.6	17.71	<0.50
4/1/09	---	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
RW-D11														
11/18/08	---	8.66	---	---	---	---	---	---	---	---	---	---	---	---
4/1/09	---	NM[2]	---	---	---	---	---	---	---	---	---	---	---	---
OB-D1														
4/22/03	---	5.41	---	---	Strong Odor	---	---	---	---	---	---	---	---	---
4/28/04	9.46	5.31	4.15	---	Strong Odor	---	---	---	---	---	---	---	---	---
10/27/04	9.46	5.89	3.57	---	---	---	---	---	---	---	---	---	---	---
8/31/05	9.46	5.42	---	---	SPH: None	---	---	---	---	---	---	---	---	---
3/27/06	9.46	3.09	6.37	---	SPH: None	---	---	---	---	---	---	---	---	---
9/6/06	9.46	8.31	1.15	---	SPH: 0.01 ft.	---	---	---	---	---	---	---	---	---
4/4/07	9.46	7.77	1.69	---	---	---	---	---	---	---	---	---	---	---
10/2/07	9.46	8.66	0.80	---	SPH: None	---	---	---	---	---	---	---	---	---
3/19/08	9.46	8.90	0.56	---	SPH: None	---	---	---	---	---	---	---	---	---
11/18/08	9.46	8.41	1.05	---	---	---	---	---	---	---	---	---	---	---
4/1/09	9.46	8.50	0.96	---	SPH: sheen	---	---	---	---	---	---	---	---	---
OB-D2														
4/22/03	---	5.14	---	---		---	---	---	---	---	---	---	---	---
4/28/04	9.95	5.25	4.70	---		---	---	---	---	---	---	---	---	---
10/27/04	9.95	6.42	3.53	---	SPH: None	---	---	---	---	---	---	---	---	---
8/31/05	9.95	5.71	---	---	SPH: 0.01 ft.	---	---	---	---	---	---	---	---	---
3/27/06	9.95	2.32	7.63	---	SPH: None	---	---	---	---	---	---	---	---	---
9/6/06	9.95	8.39	1.56	---	SPH: 0.01 ft.	---	---	---	---	---	---	---	---	---

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
4/4/07	9.95	7.94	2.01	---	---	---	---	---	---	---	---	---	---	---
10/2/07	9.95	9.07	0.88	---	SPH: None	---	---	---	---	---	---	---	---	---
3/19/08	9.95	8.64	1.31	---	SPH: None	---	---	---	---	---	---	---	---	---
11/18/08	9.95	8.94	1.01	---	---	---	---	---	---	---	---	---	---	---
4/1/09	9.95	7.00	2.95	---	SPH: None	---	---	---	---	---	---	---	---	---
RW-1														
4/22/03	---	6.43	---	---		---	---	---	---	---	---	---	---	---
4/28/04	---	5.73	---	---		---	---	---	---	---	---	---	---	---
10/27/04	---	6.34	---	---	SPH: None	---	---	---	---	---	---	---	---	---
8/31/05	---	5.83	---	---	SPH: None	---	---	---	---	---	---	---	---	---
3/27/06	---	NM[(2)]	---	---	---	---	---	---	---	---	---	---	---	---
9/6/06	---	NM[(2)]	---	---	No Access	---	---	---	---	---	---	---	---	---
4/4/07	---	NM[(2)]	---	---	---	---	---	---	---	---	---	---	---	---
10/2/07	---	NM[(2)]	---	---	---	---	---	---	---	---	---	---	---	---
3/19/08	---	NM[(2)]	---	---	---	---	---	---	---	---	---	---	---	---
11/18/08	---	8.81	---	---	---	---	---	---	---	---	---	---	---	---
4/1/09	---	NM[(2)]	---	---	---	---	---	---	---	---	---	---	---	---
Field Blank														
10/28/04	---	---	---	8260B		---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<0.5
9/1/05	---	---	---	8260B		<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
9/2/05	---	---	---	8260B		---	---	---	<50	---	---	---	---	---
4/4/06	---	---	---	8260B		<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
9/7/06	---	---	---	8260B		<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
4/3/07	---	---	---	8260B		<50	<300	<50	<50	<0.5	0.54	<0.5	<0.5	<0.5
10/2/07	---	---	---	8260B		<50	<300	<50	<50	<0.5	0.5	<0.5	<0.5	<0.5
3/20/08	---	---	---	8260B	SGC	<50	<300	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5
11/19/08	---	---	---	8260B	SGC	<50	<300	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50
11/20/08	---	---	---	8260B	SGC	<50	<300	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50
11/21/08	---	---	---	8260B	SGC	<50	<300	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50
4/1/09	---	---	---	8260B	SGC	<50	<300	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50
Trip Blank														
8/19/98	---	---	---	8020		---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<5.0
11/22/99	---	---	---	8020		---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<5.0
11/28/00	---	---	---	8020		---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<5.0
2/27/01	---	---	---	8020	Filtered+SGC	---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<5.0
5/17/01	---	---	---	8020	SGC	---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<5.0

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
12/16/01	---	---	---	8021		---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<5.0
4/5/02	---	---	---	8021	Trip Blank 1	---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<5
4/5/02	---	---	---	8021	Trip Blank 2	---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<5
6/21/02	---	---	---	8021	Trip Blank 1	---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<5
9/12/02	---	---	---	8021	Trip Blank 1	---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<2
9/13/02	---	---	---	8021	Trip Blank 2	---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<2
4/23/03	---	---	---	8021B	Trip Blank 1	---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<2
4/28/04	---	---	---	8260B	Trip Blank 1	---	---	---	<100	<0.5	<1.0	<1.0	<1.0	<1.0
10/29/04	---	---	---	8260B	Trip Blank 2	---	---	---	<50	---	---	---	---	---
4/3/07	---	---	---	8260B	Trip Blank 1	---	---	---	---	<0.5	<0.5	<0.5	<0.5	<0.5
10/2/07	---	---	---	8260B	Trip Blank 1	---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:

Groundwater elevations corrected for the presence of free product according to the calculation: GW Elevation = TOC - DTW + (0.8 x SPH thickness)

(1) = Depth to groundwater measured on August 31, 2005.
(2) = Converted to an extraction well, and access port is too small for the oil/water probe.
(3) = Depth to groundwater measured on March 27, 2006.
(4) = Could not locate well.
(5) = Well dewatered, field staff unable to collect all samples.
(6) = Well has active remediation unit/recovery.
(7) = Well was covered by car or heavy equipment.
(8) = Depth to groundwater measured on March 19, 2008.
(9) = Well dewatered, field staff unable to collect samples.
(10) = Depth to groundwater measured on 11/18/2008.
(11) = Low surrogate recovery was observed for hexacosane. The sample was re extracted, but was outside the EPA recommended hold time.
(12) = Depth to groundwater measured on 4/1/2009

--- = Not measured/analyzed

BTEX = Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8020 or 8240/8260
DTW = Depth to water
Dup = Duplicate sample
Filtered = Groundwater samples were filtered through a 0.45-micron glass membrane filter.
ID = Identification
MTBE = Methyl tertiary-butyl ether by EPA Method 8020 or 8260. Confirmation 8260 results shown in parentheses.
NM = Not measured. Well obstructed or could not be located.
SPH = Separate-phase hydrocarbons; measured thickness
SGC = Silica gel cleanup based on Method 3630B prior to TPH-d, TPH-k, or TPH-mo analysis, following California Regional Water Quality Control Board February 16, 1999 memorandum

Table 1
Summary of Groundwater Analytical Data, Petroleum Hydrocarbons
Municipal Service Center
7101 Edgewater Drive, Oakland, California
Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	BTEX Method	Notes	TPH-d (µg/l)	TPH-mo (µg/l)	TPH-k (µg/l)	TPH-g (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)

TBW = Tank backfill well
TOC = Top of casing
TPH-d = Total petroleum hydrocarbons quantitated as diesel - analyzed by EPA Method 8015B
TPH-g = Total petroleum hydrocarbons quantitated as gasoline - analyzed by EPA Method 8015B
TPH-k = Total petroleum hydrocarbons quantitated as kerosene - analyzed by EPA Method 8015B
TPH-mo = Total petroleum hydrocarbons quantitated as motor oil - analyzed by EPA Method 8015B

a = The analytical laboratory reviewed the data and noted that petroleum hydrocarbons quantified in the diesel range actually resemble heavier fuels at the front end of the motor oil pattern.
b= The analytical laboratory reviewed the data and noted that petroleum hydrocarbons quantified in the diesel range actually resemble lighter fuels; the response looks like lower carbon chain compounds close to the gasoline range.
c= The analytical laboratory reviewed the data and noted that the sample exhibits a fuel pattern that does not resemble the standard.
e= Results are estimated due to concentrations exceeding the calibration range
f= Filtration with 0.45-micron glass membrane filter and silica gel treatment
h= The analytical laboratory reviewed the data and noted that petroleum hydrocarbons quantified in the motor oil range are actually from the front end of the kerosene oil pattern.
i= The analytical laboratory reviewed the data and noted that petroleum hydrocarbons quantified in the motor oil range are actually from the back end of the kerosene oil pattern.
j= The analytical laboratory reviewed the data and noted that the sample exhibited an unknown peak or peaks.
B= Results flagged with "B" indicate motor oil was detected in the method blank.
C= Footnote assigned by Ninyo and Moore, not defined in their historical tables.
E= Footnote assigned by Ninyo and Moore, not defined in their historical tables.
H= Heavier hydrocarbons contributed to the quantitation.
J= Value qualified as "estimated"
L= Lighter hydrocarbons contributed to the quantitation.
Y= Sample exhibits chromatographic pattern that does not resemble standard.
Z= Sample exhibits unknown single peak or peaks

Table 2
Operational Data and Field-Measured Parameters
City of Oakland Municipal Services Center Groundwater Remediation Project

Date	Time	Effluent (E-1)				Influent (I-1)			Btw-1	Btw-2	Totalizer Reading (gallons)	Monthly Treated (gallons)	Monthly Ave. Rate (gpm)	Cumulative Floating Product Recovered (gallons)	Notes
		pH	Temp. (ºC)	E. cond. (mS/cm)	Turbidity (NTU)	pH	Temp. (ºC)	E. cond. (mS/cm)							
5/22/2006	7:00	--	--	--	--	--	--	--	--	--	1,389	--	--	--	Before turn on system
5/22/2006	11:25	8.30	20.4	8.81	0.20	7.12	21.4	10.20	sampled	--	2,050	--	--	--	treated water held in tank
5/22/2006	14:15	--	--	--	--	--	--	--	--	--	2,414	--	--	--	stopped, waiting for analy data
5/24/2006	13:00	--	--	--	--	--	--	--	--	--	2,414	--	--	--	system on, start discharge
5/30/2006	12:30	7.48	19.4	8.25	0.04	6.98	23.1	8.32	sampled	--	14,230	--	--	20	
5/31/2006	10:00	--	--	--	--	--	--	--	--	--	18,980	17,591	1.705	--	
6/2/2006	16:30	--	--	--	--	--	--	--	sampled	sampled	31,080	--	--	--	
6/9/2006	8:30	--	--	--	--	--	--	--	--	--	48,610	--	--	--	
6/16/2006	10:20	--	--	--	--	--	--	--	--	--	67,755	--	--	--	
6/19/2006	9:40	--	--	--	--	--	--	--	--	--	74,670	--	--	--	
6/22/2006	11:00	--	--	--	--	--	--	--	--	--	90,480	--	--	--	
6/26/2006	9:00	7.32	22.3	13.00	0.10	7.37	23.3	13.40	sampled	sampled	106,950	--	--	--	Monthly monitoring
6/30/2006	9:00	--	--	--	--	--	--	--	--	--	122,860	103,880	2.405	100	
7/5/2006	10:00	--	--	--	--	--	--	--	--	--	140,500	--	--	--	Two full drums of product
7/12/2006	9:30	--	--	--	--	--	--	--	sampled	sampled	163,230	--	--	--	
7/19/2006	9:30	--	--	--	--	--	--	--	--	--	182,740	--	--	--	
7/25/2006	9:30	7.35	23.6	12.50	0.04	7.40	24.2	13.10	sampled	--	197,030	--	--	--	Monthly monitoring
7/31/2006	19:30	--	--	--	--	--	--	--	--	--	212,010	89,150	1.997	155	
8/2/2006	19:30	--	--	--	--	--	--	--	--	--	216,790	--	--	165	Three full drums of product
8/9/2006	9:00	--	--	--	--	--	--	--	--	--	233,260	--	--	--	Morgan removed 3 drums product
8/11/2006	9:30	6.95	21.5	12.80	0.10	7.25	22.3	12.60	sampled	sampled	238,380	--	--	--	Monthly monitoring
8/14/2006	8:00	--	--	--	--	--	--	--	--	--	246,180	--	--	--	Lowered pumps in wells
8/17/2006	11:30	--	--	--	--	--	--	--	--	--	255,030	--	--	--	
8/28/2006	11:30	--	--	--	--	--	--	--	--	--	283,080	--	--	--	
9/1/2006	18:30	--	--	--	--	--	--	--	--	--	294,910	82,900	1.801	220	One full drum of product on site
9/5/2006	11:00	7.00	19.7	12.30	0.10	7.10	22.8	11.50	sampled	sampled	301,450	--	--	--	Monthly & Qtrly monitoring
9/9/2006	18:00	--	--	--	--	--	--	--	--	--	310,750	--	--	--	
9/17/2006	13:00	--	--	--	--	--	--	--	--	--	333,310	--	--	--	
9/22/2006	13:30	--	--	--	--	--	--	--	--	--	349,210	--	--	--	
9/27/2006	10:00	--	--	--	--	--	--	--	--	--	364,350	--	--	--	
9/29/2006	15:00	--	--	--	--	--	--	--	--	--	371,290	--	--	--	
10/2/2006	14:30	--	--	--	--	--	--	--	--	--	380,360	85,450	1.925	245	
10/4/2006	11:00	7.10	19.4	12.67	0.04	7.30	21.5	12.22	sampled	sampled	386,160	--	--	--	Monthly monitoring
10/9/2006	13:00	--	--	--	--	--	--	--	--	--	402,090	--	--	--	
10/16/2006	11:00	--	--	--	--	--	--	--	--	--	417,310	--	--	--	
10/23/2006	17:00	--	--	--	--	--	--	--	--	--	436,170	--	--	--	
10/27/2006	18:30	--	--	--	--	--	--	--	--	--	443,640	--	--	--	
10/30/2006	11:00	--	--	--	--	--	--	--	--	--	448,220	--	--	275	Two full drums of product
11/1/2006	10:30	--	--	--	--	--	--	--	--	--	453,340	72,980	1.689	--	
11/8/2006	11:00	7.35	18.6	10.03	0.10	7.03	21.7	10.79	sampled	sampled	461,210	--	--	--	Monthly & quarterly monitoring
11/14/2006	12:30	--	--	--	--	--	--	--	--	--	483,660	--	--	--	
11/20/2006	10:30	--	--	--	--	--	--	--	--	--	487,970	--	--	--	
12/1/2006	11:30	--	--	--	--	--	--	--	--	--	499,540	46,200	1.069	295	
12/6/2006	11:00	7.10	12.3	15.40	0.08	8.45	14.8	17.70	sampled	sampled	504,500	--	--	--	Monthly monitoring
12/15/2006	10:00	--	--	--	--	--	--	--	--	--	513,050	--	--	--	

Table 2
Operational Data and Field-Measured Parameters
City of Oakland Municipal Services Center Groundwater Remediation Project

Date	Time	Effluent (E-1)				Influent (I-1)			Btw-1	Btw-2	Totalizer Reading (gallons)	Monthly Treated (gallons)	Monthly Ave. Rate (gpm)	Cumulative Floating Product Recovered (gallons)	Notes
		pH	Temp. (ºC)	E. cond. (mS/cm)	Turbidity (NTU)	pH	Temp. (ºC)	E. cond. (mS/cm)							
12/22/2006	14:30	--	--	--	--	--	--	--	--	--	533,130	--	--	--	
12/27/2006	10:00	--	--	--	--	--	--	--	--	--	540,340	--	--	315	2 full drums plus 40 gal product
1/2/2007	9:00	--	--	--	--	--	--	--	--	--	548,820	49,280	1.073	--	
1/10/2007	11:00	--	--	--	--	--	--	--	--	--	559,230	--	--	--	
1/19/2007	10:00	7.15	9.4	19.90	0.04	8.00	13.5	19.50	sampled	sampled	569,740	--	--	--	Monthly monitoring
1/30/2007	10:00	--	--	--	--	--	--	--	--	--	592,780	--	--	330	3 full drums product on site
2/2/2007	10:00	--	--	--	--	--	--	--	--	--	607,920	59,100	1.322	--	
2/8/2007	16:30	--	--	--	--	--	--	--	--	--	615,000	--	--	--	
2/22/2007	10:00	7.12	13.8	15.50	0.04	7.67	15.2	19.13	sampled	sampled	672,610	--	--	--	Monthly monitoring
2/28/2007	10:30	--	--	--	--	--	--	--	--	--	693,430	85,510	2.282	343	
3/9/2007	10:00	--	--	--	--	--	--	--	--	--	729,160	--	--	--	
3/14/2007	11:30	7.25	17.6	13.34	0.04	7.28	18.2	13.05	sampled	sampled	748,440	--	--	--	Monthly & quarterly monitoring
3/21/2007	12:00	--	--	--	--	--	--	--	--	--	776,540	--	--	--	
3/30/2007	10:00	--	--	--	--	--	--	--	--	--	809,690	116,260	2.693	355	3 full drums+25 gal prod on site
4/2/2007	10:00	--	--	--	--	--	--	--	--	--	819,750	--	--	--	
4/13/2007	10:00	--	--	--	--	--	--	--	--	--	849,540	--	--	--	
4/24/2007	10:00	7.45	15.7	7.10	0.08	7.30	18.6	6.90	sampled	sampled	866,110	--	--	--	
4/30/2007	19:00	--	--	--	--	--	--	--	--	--	875,415	65,725	1.455	360	3 full drums+30 gal prod on site
5/4/2007	10:30	--	--	--	--	--	--	--	--	--	880,280	--	--	--	
5/14/2007	12:00	--	--	--	--	--	--	--	--	--	--	--	--	--	DPE online with D2,D4,D5 wells
5/14/2007	18:00	--	--	--	--	--	--	--	--	--	--	--	--	--	DPE in & out vapor sampling
5/17/2007	11:30	7.22	18.0	14.15	0.04	7.55	19.8	14.54	sampled	sampled	907,175	--	--	--	Monthly monitoring
5/22/2007	11:15	--	--	--	--	--	--	--	--	--	952,055	--	--	--	DPE down for Phase II tie-in
5/31/2007	11:00	--	--	--	--	--	--	--	--	--	954,120	78,705	1.782	364	3 full drums+34 gal prod on site
6/11/2007	10:00	--	--	--	--	--	--	--	--	--	954,920	--	--	--	DPE restart with all wells
6/14/2007	10:00	--	--	--	--	--	--	--	--	--	973,900	--	--	--	
6/21/2007	10:00	7.38	19.2	15.13	0.04	7.45	20.1	15.24	sampled	sampled	991,590	--	--	--	Monthly monitoring
6/26/2007	18:40	--	--	--	--	--	--	--	--	--	1,028,960	--	--	--	DPE in & out vapor sampling
6/29/2007	18:30	--	--	--	--	--	--	--	--	--	1,047,840	93,720	2.220	368	3 full drums+38 gal prod on site
7/3/2007	11:30	--	--	--	--	--	--	--	--	--	1,051,974	--	--	--	DPE down, knockout pump fail
7/11/2007	15:00	--	--	--	--	--	--	--	--	--	1,053,090	--	--	--	Changed knockout tank pump
7/16/2007	8:15	--	--	--	--	--	--	--	--	--	1,095,560	--	--	--	DPE down, insulation worn out
7/19/2007	10:00	--	--	--	--	--	--	--	--	--	1,096,110	--	--	--	DPE unit to factory for repair
7/23/2007	11:00	--	--	--	--	--	--	--	--	--	1,096,610	--	--	--	Removed 6 gal oil fr o/w septr
7/27/2007	9:30	7.16	21.0	11.79	--	7.07	19.4	19.57	sampled	sampled	1,096,780	--	--	--	Monthly monitoring
7/31/2007	13:00	--	--	--	--	--	--	--	--	--	1,097,310	49,470	1.081	374	Re-installed DPE, started at 11a
8/7/2007	19:30	--	--	--	--	--	--	--	--	--	1,118,930	--	--	--	Removed 5 gal oily sludge fr DPE
8/17/2007	10:00	--	--	--	--	--	--	--	--	--	1,147,080	--	--	--	Morgan removed 4 drums product
8/28/2007	11:36	7.08	25.9	18.64	4.60	7.13	25.6	18.55	sampled	sampled	1,198,870	--	--	--	Monthly monitoring
8/31/2007	10:30	--	--	--	--	--	--	--	--	--	1,216,800	119,490	2.686	379	
9/7/2007	9:30	--	--	--	--	--	--	--	--	--	1,263,270	--	--	--	
9/14/2007	11:30	--	--	--	--	--	--	--	--	--	1,309,960	--	--	--	Display meter blinks
9/19/2007	10:50	6.96	19.8	18.64	6.92	7.08	20.8	18.65	sampled	sampled	1,340,410	--	--	--	Monthly monitoring
9/26/2007	10:20	--	--	--	--	--	--	--	--	--	1,352,170	--	--	--	Shutdown DPE, T sensor pblm

Table 2
Operational Data and Field-Measured Parameters
City of Oakland Municipal Services Center Groundwater Remediation Project

Date	Time	Effluent (E-1)				Influent (I-1)			Btw-1	Btw-2	Totalizer Reading (gallons)	Monthly Treated (gallons)	Monthly Ave. Rate (gpm)	Cumulative Floating Product Recovered (gallons)	Notes
		pH	Temp. (ºC)	E. cond. (mS/cm)	Turbidity (NTU)	pH	Temp. (ºC)	E. cond. (mS/cm)							
9/28/2007	12:00	--	--	--	--	--	--	--	--	--	1,352,690	135,890	3.363	379	only pneumatic pumps on
10/2/2007	12:00	--	--	--	--	--	--	--	--	--	1,353,380	--	--	--	
10/8/2007	17:30	--	--	--	--	--	--	--	--	--	1,354,020	--	--	--	DPE on at 4:30 pm
10/17/2007	11:00	--	--	--	--	--	--	--	--	--	1,394,995	--	--	--	
10/24/2007	14:13	7.08	25.5	14.32	0.66	7.19	29.6	14.23	sampled	sampled	1,406,110	--	--	--	Monthly monitoring
10/31/2007	10:30	--	--	--	--	--	--	--	--	--	1,418,260	65,570	1.382	379	
11/7/2007	11:00	--	--	--	--	--	--	--	--	--	1,427,640	--	--	--	
11/16/2007	10:30	--	--	--	--	--	--	--	--	--	1,500,460	--	--	--	
11/21/2007	10:21	7.10	20.5	OR	0.30	7.04	20.1	OR	sampled	sampled	1,537,150	--	--	--	Monthly monitoring
11/30/2007	9:30	--	--	--	--	--	--	--	--	--	1,584,070	165,810	3.844	379	
12/7/2007	10:30	--	--	--	--	--	--	--	--	--	1,621,980	--	--	--	
12/13/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Shutdown for carbon change
12/14/2007	13:00	--	--	--	--	--	--	--	--	--	--	--	--	--	DPE on at 1:00 pm
12/17/2007	11:15	--	--	--	--	--	--	--	--	--	1,643,760	--	--	--	
12/20/2007	18:30	7.20	15.1	23.50	0.10	7.20	13.7	25.20	sampled	sampled	1,658,560	--	--	--	Monthly monitoring
12/31/2007	9:00	--	--	--	--	--	--	--	--	--	1,685,340	101,270	2.270	379	
1/4/2008	14:30	--	--	--	--	--	--	--	--	--	1,701,860	--	--	--	
1/15/2008	13:00	--	--	--	--	--	--	--	--	--	1,725,190	--	--	--	
1/21/2008	9:30	--	--	--	--	--	--	--	sampled	sampled	1,742,110	--	--	--	Monthly monitoring
1/30/2008	11:30	--	--	--	--	--	--	--	--	--	1,791,840	106,500	2.457	379	
2/1/2008	15:30	--	--	--	--	--	--	--	--	--	1,799,660	--	--	--	
2/11/2008	11:00	--	--	--	--	--	--	--	--	--	1,826,520	--	--	--	
2/20/2008	11:18	6.95	17.40	12.85	1.15	6.99	20.10	12.71	sampled	sampled	1,844,380	--	--	--	Monthly/Annual Monitoring
2/29/2008	10:30	--	--	--	--	--	--	--	--	--	1,862,840	71,000	1.646	379	
3/3/2008	11:30	--	--	--	--	--	--	--	--	--	1,868,500	--	--	--	
3/14/2008	11:00	--	--	--	--	--	--	--	--	--	1,906,770	--	--	--	
3/18/2008	10:25	7.02	18.40	14.01	2.32	6.99	19.10	12.34	sampled	sampled	1,928,330	--	--	--	Monthly monitoring
3/20/2008	11:00	--	--	--	--	--	--	--	--	--	1,939,430	--	--	--	
3/31/2008	9:00	--	--	--	--	--	--	--	--	--	1,990,150	127,310	2.858	379	
4/7/2008	9:00	--	--	--	--	--	--	--	--	--	2,019,060	--	--	--	
4/14/2008	10:00	--	--	--	--	--	--	--	--	--	2,044,990	--	--	--	
4/18/2008	11:00	--	--	--	--	--	--	--	--	--	2,058,850	--	--	--	
4/23/2008	10:35	7.00	18.60	19.62	1.58	7.03	20.00	19.38	sampled	sampled	2,075,700	--	--	--	Monthly monitoring
4/30/2008	10:00	--	--	--	--	--	--	--	--	--	2,082,390	92,240	2.132	379	
5/15/2008	11:00	--	--	--	--	--	--	--	--	--	2,082,540	--	--	--	
5/20/2008	10:45	7.09	20.40	18.87	6.42	7.10	21.20	18.70	sampled	sampled	2,117,920	--	--	--	Monthly monitoring
5/29/2008	10:30	--	--	--	--	--	--	--	--	--	2,135,490	53,100	1.271	379	
6/2/2008	10:30	--	--	--	--	--	--	--	--	--	2,153,070	--	--	--	
6/9/2008	10:30	--	--	--	--	--	--	--	--	--	2,167,260	--	--	--	
6/16/2008	10:45	7.08	17.50	19.69	1.37	7.15	19.10	19.33	sampled	sampled	2,190,790	--	--	--	Monthly monitoring
6/30/2008	10:30	--	--	--	--	--	--	--	--	--	2,197,580	62,090	1.347	379	
7/8/2008	10:00										2,211,120				
7/16/2008	11:00										2,222,440				
7/22/2008	15:30	7.11	22.30	17.61	0.50	7.16	27.70	19.92	sampled	sampled	2,235,190				monthly monitoring
7/31/2008	19:00										2,251,160	53,580	1.187	379	

Table 2
Operational Data and Field-Measured Parameters
City of Oakland Municipal Services Center Groundwater Remediation Project

Date	Time	Effluent (E-1)				Influent (I-1)			Btw-1	Btw-2	Totalizer Reading (gallons)	Monthly Treated (gallons)	Monthly Ave. Rate (gpm)	Cumulative Floating Product Recovered (gallons)	Notes
		pH	Temp. (ºC)	E. cond. (mS/cm)	Turbidity (NTU)	pH	Temp. (ºC)	E. cond. (mS/cm)							
8/11/2008	10:00										2,266,510				
8/21/2008	12:45	7.20	23.90	14.63	1.00	7.24	25.40	15.26	sampled	sampled	2,282,900				monthly monitoring
8/29/2008	11:00										2,286,920	35,760	0.866	379	
9/11/2008	11:00										2,288,400				
9/26/2008	12:20	7.07	23.50	11.49	3.00	7.12	27.30	11.85	sampled	sampled	2,308,430				monthly monitoring
9/30/2008	19:30										2,325,280	38,360	0.823	379	
10/6/2008	11:00										2,325,310				
10/13/2008	17:45										2,339,300				
10/24/2008	13:00	7.05	22.10	11.75	4.00	7.10	25.80	12.22		sampled	2,365,580				monthly monitoring
10/31/2008	18:00										2,375,580	50,300	1.129	379	
11/10/2008	16:30										2,379,380				
11/14/2008	15:00	7.10	20.40	11.55	4.00	7.15	22.60	12.10	sampled	sampled	2,387,290				shutdown aft sampling for overhaul
11/28/2008	10:00										2,387,290	11,710	0.294	379	
12/31/2008	10:00										2,387,290	0	0.000	379	no operation in Dec 08
1/2/2009	15:00										2,387,290				changed 2nd & 3rd carbon vessels
1/20/2009	12:00										2,387,290	0	0.000	379	no operation in Jan 09, repair
2/2/2009	11:30										2,391,110				
2/9/2009	15:30	7.05	13.00	14.62	1.80	7.10	18.90	14.01	sampled	sampled	2,449,360				annual monitoring
2/19/2009	6:15										2,465,280	77,990	1.934	379	shutdown due to fire
3/23/2009	10:00										2,465,280	0	0.000	379	no operation in March, except testing eq
4/6/2009	14:00										2,490,430				

Abbreviations:

"--" indicates no value obtained for given field

^{o}C = degree Celsius

DPE = dual-phase extraction

gpm = gallon(s) per minute

mS/cm = milliSiemen(s) per centimeter

NTU = nephelometric turbidity unit

OR = sample was out of range (>19.99 mS/cm)

Table 3
Petroleum Hydrocarbon Analytical Data
City of Oakland Municipal Services Center Groundwater Remediation Project

Date	Effluent (E-1)								Influent (I-1)							
	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
	(µg/L)	(µg/L)	(ug/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Eff. Limit	50	50	50	5	5	5	5	5								
5/22/06	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	**52,000**	**25,000 (h,l)**	--	**6,100**	**5,200**	**1,200**	**6,100**	ND (100)
5/30/06	ND (50)	**130 (y, a1)**	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	**57,000**	**9,200 (l,y)**	--	**4,900**	**5,300**	**1,100**	**7,100**	ND (36)
6/2/06	--	ND (50)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6/26/06	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	**50,000**	**10,000 (h,l,y)**	--	**4,800**	**6,900**	**1,100**	**7,200**	ND (50)
7/12/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/25/06	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	**60,000**	**4,000 (l,y)**	--	**5,800**	**8,800**	**1,100**	**9,000**	ND (80)
8/11/06	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	**4.6 (a1a)**	**59,000**	**4,100 (l,y)**	--	**4,900**	**7,300**	**930**	**7,000**	ND (100)
9/5/06	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	**44,000**	**4,800 (l,y)**	--	**4,700**	**4,800**	**1,200**	**5,400**	ND (50)
10/4/06	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	**42,000**	**9,100 (h,l,y)**	--	**5,100**	**7,300**	**1,400**	**6,700**	ND (100)
11/8/06	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	**32,000**	**7,800 (h,l,y)**	--	**3,100**	**3,800**	**590**	**2,880**	ND (50)
12/6/06	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	**55,000**	**7,600 (h,l,y)**	--	**5,800**	**8,600**	**820**	**6,600**	ND (50)
1/19/07	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	**49,000**	**3,600 (l,y)**	--	**3,900**	**5,400**	**390**	**5,900**	ND (50)
2/22/07	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	**38,000**	**7,900 (l,y)**	--	**4,100**	**4,500**	**250**	**5,200**	ND (40)
3/14/07	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	**32,000**	**7,800 (h,l,y)**	--	**2,700**	**2,900**	**310**	**4,100**	ND (13)
4/24/07	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	**11,000**	**6,200 (h,l)**	**1,500 (l)**	**930**	**110**	**26**	**760**	ND (10)
5/17/07	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	**84,000**	**180,000 (h,l,y)**	**27,000 (l)**	**1,100**	**3,100**	**1,200**	**8,800**	ND (100)
6/21/07	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	**8,900**	**7,700 (h,l,y)**	**2,900 (l)**	**460**	**520**	**34**	**1,060**	ND (2.0)
7/27/07	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	**16,000**	**9,100 (h,l,y)**	--	**250**	**770**	ND (2.5)	**2,390**	ND (10)
8/28/07	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	**5,100**	**8,100 (h,l)**	--	**130**	**110**	**11**	**620**	ND (2.0)
9/19/07	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	**3,000**	**12,000 (h,l)**	**6,100 (h,l)**	**78**	**68**	**13**	**230**	ND (0.5)
10/24/07	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	**1,900**	**12,000 (y)**	**2,500**	**22**	**10**	**4.3**	**144**	ND (2.0)
11/21/07	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	**3,600**	**9,000**	**2,700**	**120**	**150**	**2.8**	**440**	--
12/20/07	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	**5,100**	**25,000**	**2,200 (y)**	**160**	**330**	**43**	**750**	ND (2.0)
1/21/08	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	**14,000**	**14,000 (y)**	**1,100**	**100**	**360**	**22**	**2,250**	ND (10)
2/20/08	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND(0.5)	ND (50)	**6,100**	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
3/18/08	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	**2,300**	**9,000**	**2,300**	**43**	**120**	**25**	**430**	ND (2.0)
4/23/08	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	**2,300**	**14,000**	**7,000**	**19**	**66**	**9.7**	**470**	ND (0.5)
5/20/08	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	**2,900**	**20,000**	**2,500**	**23**	**70**	**11**	**390**	ND (2.0)
6/16/08	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	**1,400**	**6,700**	**1,100**	**9**	**23**	**9.3**	**159**	ND (2.0)
7/22/08	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	**2,300**	**9,400 (y)**	**6,300**	**16**	**37**	**5.6**	**280**	ND (2.0)
8/21/08	ND (50)	ND (50)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	**1,300**	**12,000**	--	**10**	**15**	**2.2**	**137**	ND (2.0)
9/26/08	ND (50)	ND (50)	ND (300)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	**1,400**	**14,000**	**5,900**	**18**	**21**	**4.4**	**168**	ND (0.5)
10/24/08	ND (50)	ND (50)	ND (300)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	**1,000**	**10,000**	**6,800**	**14**	**14**	**4.6**	**134**	ND (0.5)
11/14/08	ND (50)	ND (50)	ND (300)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	**1,000**	**8,100**	**3,400**	**15**	**15**	**3**	**155**	ND (0.5)
2/9/09	ND (50)	ND (50)	ND (300)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	**1,400**	**11,000**	**2,000**	**18**	**26**	**7.6**	**240**	ND (0.5)

Table 3
Petroleum Hydrocarbon Analytical Data
City of Oakland Municipal Services Center Groundwater Remediation Project

Date	After 1st Carbon Unit (Btw-1)								After 2nd Carbon Unit (Btw-2)							
	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
	(µg/L)	(µg/L)	(ug/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(ug/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Eff. Limit	50	50		5	5	5	5	5	50	50		5	5	5	5	5
5/22/06	**57 (y)**	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	--	--		--	--	--	--	--
5/30/06	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	--		--	--	--	--	--
6/2/06	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	--	ND (50)		--	--	--	--	--
6/26/06	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)
7/12/06	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	**3.9 (a2)**
7/25/06	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	**2.7**	--	--		--	--	--	--	--
8/11/06	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	**5.1 (a2a)**	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	**5.4 (a2a)**
9/5/06	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	--	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)
10/4/06	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)
11/8/06	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)
12/6/06	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)
1/19/07	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)
2/22/07	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)
3/14/07	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	**3.9**	--	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
4/24/07	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)
5/17/07	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)
6/21/07	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)
7/27/07	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)
8/28/07	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	**5.6 (a)**	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)
9/19/07	ND (50)	ND (50)*		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	**6.7**	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
10/24/07	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	**7.6**	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)
11/21/07	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--
12/20/07	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)
1/21/08	**60 (y)**	**84 (y)**		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)
2/20/08	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	--	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
3/18/08	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)
4/23/08	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
5/20/08	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND(2.0)	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)
6/16/08	ND (50)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND(2.0)	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)
7/22/08	92 (y,z)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND(2.0)	78 (y,z)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)
8/21/08	55 (y)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND(2.0)	ND (50)	--		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
9/26/08	--	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	76 (y,z)	ND (50)	ND (300)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
10/24/08	--	--	--	--	--	--	--	--	ND (50)	ND (50)	ND (300)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
11/14/08	--	ND (50)	ND (300)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	74 (y,z)	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
2/9/09	--	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (50)	ND (50)	ND (300)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
										--						

Table 3
Petroleum Hydrocarbon Analytical Data
City of Oakland Municipal Services Center Groundwater Remediation Project

Notes:

(a1) - false positive detection, confirmed ND on 6/2/06 with samples at E-1, Btw-1, and Btw-2

(a) - Presence confirmed, but RPD between columns exceeds 40 percent

(a2) - false positive detection, confirmed ND after the first carbon unit

(a2a) - false positive detection, confirmed ND with 9/5/06 sample

(h) - heavier hydrocarbons contributed to the quantitation

(l) - lighter hydrocarbons contributed to the quantitation

(y) - sample exhibits chromatographic pattern that does not resemble standard

(z) - sample exhibits unknown single peak or peaks

* - Sample analytical result for TPHd was erroneously switched between Btw-1 and Btw-2 in the laboratory report, due to mislabeling in the field.

Abbreviations:

"--" indicates not analyzed for constituent indicated

MTBE = methyl tertiary butyl ether

μg/L = microgram(s) per liter

ND ( ) = non-detected lab values

TPHd = total petroleum hydrocarbons quantifed as diesel

TPHg = total petroleum hydrocarbon quantified as gasoline

TPHmo = total petroleum hydrocarbon quantified as motor oil

Table 4
Inorganic Constituents Analytical Data and Fish Bioassay Results
City of Oakland Municipal Services Center Groundwater Remediation Project

Constituent	Unit	Eff Limit	Effluent (E-1)								
		(< 10 gpm)	5/22/06	5/30/06	6/26/06	9/5/06	11/8/06	3/14/07	8/28/07	2/20/2008	2/9/2009
Antimony	µg/L	6	2.30	1.80	0.12	0.13	0.35	0.15	--	0.47 J	1.70
	g/day	3	0.02137	0.01672	0.00157	0.00138	0.00243	0.00163	--	0.0042159	
Arsenic	µg/L	10	36.00	24.00	7.00	3.00	4.30	1.60	--	4.40	10.00
	g/day	1	0.33444	0.22296	0.09170	0.03177	0.02980	0.01736	--	0.039468	
Beryllium	µg/L	1	ND (0.35)	ND (0.5)	ND (0.055)	ND (0.12)	ND (0.12)	ND (0.17)	--	ND (1.0)	ND (0.1)
	g/day	3	--	--	--	--	--	--	--	--	
Cadmium	µg/L	0.07	1.00	0.50	ND (0.14)	ND (0.17)	ND (0.17)	0.12	--	0.26 J	0.66 (J)
	g/day	1	0.00929	0.00465	--	--	--	0.00130	--	0.0023322	
Total Cr	µg/L	11	3.10	ND (0.5)	0.62	0.86	0.78	0.61	--	0.25 J	0.28 (J)
	g/day	2	0.02880	--	0.00812	0.00911	0.00541	0.00662	--	0.0022425	
Cr +6	µg/L	11	ND (1.0)	ND (10)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
	g/day	2	--	--	--	--	--	--	--	--	
Copper	µg/L	3.1	1.30	0.90	1.30	1.50	1.20	ND (0.28)	--	0.70 J	40
	g/day	3	0.01208	0.00836	0.01703	0.01589	0.00832	--	--	0.006279	
Lead	µg/L	2	ND (0.1)	ND (0.25)	0.26	0.30	0.30	0.75	--	1.70	5.50
	g/day	5	--	--	0.00341	0.00318	0.00208	0.00814	--	0.015249	
Mercury	µg/L	0.025	ND(0.008)	ND(0.2)	ND (0.2)	ND (0.06)	ND (0.02)	0.06	--	ND (0.2)	0.14 (J)
	g/day	0.01	--	--	--	--	--	0.00068	--	--	
Nickel	µg/L	8.2	11.00	67.00	15.00	9.60	2.90	1.50	--	8.10	7.20
	g/day	5	0.10219	0.62243	0.19650	0.10166	0.02010	0.01628	--	0.072657	
Selenium	µg/L	5	3.00	3.00	1.20	ND (0.35)	1.20	ND (0.27)	--	ND (1.0)	0.17 (J)
	g/day	2	0.02787	0.02787	0.01572	--	0.00832	--	--	--	
Silver	µg/L	1.9	ND (0.02)	ND (0.1)	ND (0.041)	ND (0.07)	ND (0.07)	ND (0.079)	--	ND (1.0)	0.23 (J)
	g/day	1	--	--	--	--	--	--	--	--	
Thallium	µg/L	0.1	0.06	ND (0.1)	0.21	ND (0.03)	ND (0.03)	ND (0.3)	--	ND (1.0)	ND (0.03)
	g/day	3	0.00056	--	0.00275	--	--	--	--	--	
Zinc	µg/L	35	2.00	ND (10)	44.00	11.00	1.90	10.00	--	6.40	4.3 (J)
	g/day	10	0.01858		0.57640	0.11649	0.01317	0.10850	--	0.057408	
Cyanide	µg/L	1	ND (0.8)	ND (3)	ND (10)	ND (10)	ND (10)	ND (10)	--	0.08	ND (10)
	g/day		--	--	--	--	--	--	--	0.0007176	
Hardness	mg/L $CaCO_3$		560	960	1,100	1,100	1,500	1,400	--	1,800	
Fish Bioassay -											

Table 4
Inorganic Constituents Analytical Data and Fish Bioassay Results
City of Oakland Municipal Services Center Groundwater Remediation Project

% Survival of Rainbow Trout			--	--	100%	100%	100%	100%	--	100%	95%
Constituent	Unit	Eff Limit	**Influent (I-1)**								
		(<10 gpm)	5/22/06	5/30/06	6/26/06	9/5/06	11/8/06	3/14/07	8/28/07	2/20/08	2/9/09
Antimony	µg/L		ND (60)	ND (1)	--	--	--	1.10	--	0.74 J	1.9
	g/day	3	--	--	--	--	--	0.01194	--	0.006279	
Arsenic	µg/L		7.20	8.50	--	--	--	5.40	--	6.1	13
	g/day	1	0.06689	0.07897	--	--	--	0.05859	--	0.054717	
Beryllium	µg/L		ND (2)	ND (1)	--	--	--	ND (0.17)	--	ND (1.0)	ND (0.1)
	g/day	3	--	--	--	--	--	--	--	--	
Cadmium	µg/L		34.00	10.00	--	--	--	0.33	--	1.6	41
	g/day	1	0.31586	0.09290	--	--	--	0.00358	--	0.014352	
Total Cr	µg/L		ND (10)	ND (1)	--	--	--	0.91	--	0.72 J	0.89 (J)
	g/day	2	--	--	--	--	--	0.00987	--	0.006279	
Cr +6	µg/L		ND (0.5)	ND (0.5)	--	--	--	ND (0.5)	--	ND (0.5)	ND (0.5)
	g/day	2	--	--	--	--	--	--	--	--	
Copper	µg/L		250.00	25.00	--	--	--	ND (0.28)	--	9.2	830
	g/day	3	2.32250	0.23225	--	--	--	--	--	0.082524	
Lead	µg/L		28.00	21.00	--	--	--	8.10	--	18	150
	g/day	5	0.26012	0.19509	--	--	--	0.08789	--	0.16146	
Mercury	µg/L		ND (0.2)	ND (0.2)	--	--	--	0.05	--	ND (0.2)	0.25
	g/day	0.01	--	--	--	--	--	0.00051	--	--	
Nickel	µg/L		68.00	19.00	--	--	--	2.80	--	6.4	130
	g/day	5	0.63172	0.17651	--	--	--	0.03038	--	0.057408	
Selenium	µg/L		9.40	ND (1)	--	--	--	0.31	--	0.34 J	0.60 (J)
	g/day	2	0.08733	--	--	--	--	0.00336	--	0.006279	
Silver	µg/L		ND (5)	ND (1)	--	--	--	ND (0.079)	--	ND (1.0)	1.6
	g/day	1	--	--	--	--	--	--	--	--	
Thallium	µg/L		25.00	ND (1)	--	--	--	ND (0.30)	--	ND (1.0)	ND (0.03)
	g/day	3	0.23225	--	--	--	--	--	--	--	
Zinc	µg/L		31.00	57.00	--	--	--	23.00	--	37	51
	g/day	10	0.28799	0.52953	--	--	--	0.24955	--	0.33189	
Cyanide	µg/L		10.00	10.00	--	--	20.00	30.00	--	0.8	ND (10)
	g/day		0.09290	0.09290	--	--	--	0.32550	--	0.007176	
Abbreviations:											

Table 4
Inorganic Constituents Analytical Data and Fish Bioassay Results
City of Oakland Municipal Services Center Groundwater Remediation Project

"--" indicates no value obtained for given field		J = Estimated value, below reporting limit, but above method detection limit		
Cr +6 = chromium-VI		mg/L $CaCO_3$ = milligram(s) per liter of calcium carbonate		
g/day = grams per day		μg/L= microgram(s) per liter		
gpm = gallon(s) per minute		ND ( ) = non-detected lab value		

Table 5
Organic Constituents Analytical Data
City of Oakland Municipal Services Center Groundwater Remediation Project

	Effluent (E-1)																			
	Max Daily Effluent Limit	5/30/06	9/5/06	3/14/07	8/28/07	9/19/07	10/24/07	11/21/07	12/20/07	1/21/08	2/20/08	3/18/08	4/23/08	5/20/08	6/16/08	8/21/08	9/26/08	10/24/08	11/14/08	2/9/09
VOCs	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(ug/L)
Benzene	5	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Carbon tetrachloride	5	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
Chloroform	5	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
1,1-Dichloroethane	5	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
1,2-Dichloroethane	5	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,1-Dichloroethene	5	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
Ethylbenzene	5	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Methylene chloride	5	ND (0.5)	ND (0.5)	ND (10)	ND (10)	--	--	--	--	--	ND (10)	--	--	--	--	ND (10)	ND (10)	--	--	ND (10)
Tetrachloroethene	5	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
Toluene	5	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
c-1,2-Dichloroethene	5	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
t-1,2-Dichloroethene	5	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
1,1,1-Trichloroethane	5	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
1,1,2-Trichloroethane	5	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
Trichloroethene	5	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
Vinyl chloride	1	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
Total xylenes	5	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
MTBE	5	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	ND (2.0)	ND (0.5)	ND(2.0)	ND (0.5)	ND (2.0)	ND (2.0)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Ethylene dibromide	5	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Trichlorotrifluoroethane	5	ND (5)	ND (5)	ND (5)	ND (1.0)	--	--	--	--	--	--	--	--	--	--	ND (2.0)	ND (2.0)	--	--	ND (5)
TPHg	50	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)
TPHd	50	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)
TAME		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
DIPE		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
ETBE		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
TBA		ND (10)	ND (10)	ND (10)	**140**	**140**	**160**	**160**	ND (10)	ND (10)	ND (10)	--	--	--	--	**130**	**87**	**120**	**92**	ND (10)
Ethanol		ND (1,000)	ND (1,000)	ND (1,000)	ND (1,000)	--	--	--	--	--	ND (1,000)	--	--	--	--	ND(1,000)		--	--	ND(1,000)
Methanol		ND (1,000)	ND (1,000)	ND (1,000)	ND (1,000)	--	--	--	--	--	ND (1,000)	--	--	--	--	ND 1,000)		--	--	ND 1,000)
PAHs (EPA 8310 or 610)																				
All analytes		ND (1.0)	ND (0.1)	ND (0.1)	ND (0.1)	--	--	--	--	--	ND (0.1)	--	--	--	--	ND (0.09)		--	--	ND (0.1)
SVOCs (EPA 8270C or 625)																				
All analytes		ND (5.0)	ND (9.4)	ND (9.6)	ND (9.7)	--	ND (0.5)	ND (0.5)	ND (0.5)	--	ND (9.4)	--	--	--	--	ND (9.4)		--	--	ND (9.6)

Table 5
Organic Constituents Analytical Data
City of Oakland Municipal Services Center Groundwater Remediation Project

		Influent (I-1)																		
		5/30/06	9/5/06	3/14/07	8/28/07	9/19/07	10/24/07	11/21/07	12/20/07	1/21/08	2/20/08	3/18/08	4/23/08	5/20/08	6/16/08	8/21/08	9/26/08	10/24/08	11/14/08	2/9/09
VOCs		(µg/L)		(µg/L)		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)		(µg/L)	(µg/L)	(µg/L)	(ug/L)
Benzene		**4,900**	**--**	**2,700**	--	**78**	**22**	**120**	**160**	**100**	ND (0.5)	**43**	**19**	**23**	**9**	--	**18**	**14**	**15**	**18**
Carbon tetrachloride		ND (36)	**--**	ND (13)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
Chloroform		ND (36)	**--**	ND (13)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
1,1-Dichloroethane		ND (36)	**--**	ND (13)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
1,2-Dichloroethane		ND (36)	**--**	ND (13)	--	**2.2**	--	--	--	--	ND (0.5)	--	--	--	--	--	ND (0.5)	**0.6**	ND (0.5)	**0.7**
1,1-Dichloroethene		ND (36)	**--**	ND (13)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
Ethylbenzene		**1,100**	**--**	**310**	--	**13**	**4.3**	**2.8**	**43**	**22**	ND (0.5)	**25**	**9.7**	**11**	**9.3**	--	**4.4**	**4.6**	**3**	**7.6**
Methylene chloride		ND (36)	**--**	ND (250)	--	--	--	--	--	--	ND (10)	--	--	--	--	--	ND (10)	--	--	ND (10)
Tetrachloroethene		ND (36)	**--**	ND (13)	--	--	--	--	--	--	ND (0.5)	**--**	**--**	**--**	**--**	--	ND (0.5)	--	--	ND (0.5)
Toluene		**5,300**	**--**	**2,900**	--	**68**	**10**	**150**	**330**	**360**	ND (0.5)	**120**	**66**	**70**	**23**	--	**21**	**14**	**15**	**26**
c-1,2-Dichloroethene		ND (36)	**--**	ND (13)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
t-1,2-Dichloroethene		ND (36)	**--**	ND (13)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
1,1,1-Trichloroethane		ND (36)	**--**	ND (13)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
1,1,2-Trichloroethane		ND (36)	**--**	ND (13)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
Trichloroethene		ND (36)	**--**	ND (13)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
Vinyl chloride		ND (36)	**--**	ND (13)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
Total xylenes		**7,100**	**--**	**4,100**	--	**230**	**144**	**440**	**750**	**2,250**	ND (0.5)	**430**	**470**	**390**	**159**	--	**168**	**134**	**155**	**240**
MTBE		ND (36)	**--**	ND (13)	--	ND (0.5)	ND (2.0)	--	ND (2.0)	ND (10)	ND (0.5)	ND (2.0)	ND (0.5)	ND (2.0)	ND (2.0)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Ethylene dibromide		ND (36)	**--**	ND (13)	--	ND (0.5)	--	--	--	--	--	--	--	--	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Trichlorotrifluoroethane		ND (360)	**--**	ND (13)	--	--	--	--	--	--	--	--	--	--	--	--	ND (2.0)	--	--	ND (5)
TPHg		**57,000**	**--**	**32,000**	--	**3,000**	**1,900**	**3,600**	**5,100**	**14,000**	ND (50)	**2,300**	**2,300**	**2,900**	**1,400**	--	**1,400**	**1,000**	**1,000**	**1,400**
TPHd		**9,200**	**--**	**7,800**	--	**12,000 (h,l)**	**12,000 (y)**	**9,000**	**25,000**	**14,000**	**6,100**	**9,000**	**14,000**	**20,000**	**6,700**	--	**14,000**	**10,000**	**8,100**	**11,000**
TAME		ND (36)	**--**	ND (13)	--	ND (0.5)	--	--	--	--	ND (0.5)	--	--	--	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
DIPE		ND (36)	**--**	ND (13)	--	ND (0.5)	--	--	--	--	ND (0.5)	--	--	--	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
ETBE		ND (36)	**--**	ND (13)	--	ND (0.5)	--	--	--	--	ND (0.5)	--	--	--	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
TBA		ND (710)	**--**	ND (25)	--	**40**	--	--	--	--	**71**	--	--	--	--	--	**59**	**58**	**53**	**81**
Ethanol		ND(1,000)	**--**	ND(1,000)	--	--	--	--	--	--	ND (1,000)	--	--	--	--	--		--	--	ND(1,000)
Methanol		ND(1,000)	**--**	ND(1,000)	--	--	--	--	--	--	ND (1,000)	--	--	--	--	--		--	--	ND(1,000)
Isopropylbenzene		**40**	**--**	**16**	--	--	--	--	--	--	ND (0.5)	--	--	--	--	--	ND (0.5)			**0.7**
Propylbenzene		**120**	**--**	**36**	--	--	--	--	--	--	ND (0.5)	--	--	--	--	--	**0.7**			**1.1**
1,3,5-Trimethylbenzene		**410**	**--**	**270**	--	--	--	--	--	--	ND (0.5)	--	--	--	--	--	**36**			**58**
1,2,4-Trimethylbenzene		**1,500**	**--**	**960**	--	--	--	--	--	--	ND (0.5)	--	--	--	--	--	**60**			**86**
Naphthalene		**370**	**--**	**260**	--	--	--	--	--	--	ND (2.0)	--	--	--	--	--	**16**			**22**
PAHs (EPA 8310 or 610)																				
Benzo(a)anthracene		**1.7**	**--**	**0.14**	--	--	--	--	--	--	ND (0.1)	--	--	--	--	--				ND (0.09)
Benzo(a)pyrene		**1.6**	**--**	**0.12**	--	--	--	--	--	--	**0.15**	--	--	--	--	--				ND (0.09)
Benzo(g,h,i)perylene		ND (1.0)	**--**	**0.21**	--	--	--	--	--	--	**0.44**	--	--	--	--	--				ND (0.19)
Chrysene		**2.6**	**--**	**0.17**	--	--	--	--	--	--	**0.13**	--	--	--	--	--				ND (0.09)
Fluoranthene		**3.8**	**--**	**0.63**	--	--	--	--	--	--	ND (0.2)	--	--	--	--	--				ND (0.19)
Naphthalene		**130**	**--**	**230**	--	--	--	--	--	--	ND (0.98)	--	--	--	--	--				**13**
Pyrene		**3.3**	**--**	**0.56**	--	--	--	--	--	--	**0.28**	--	--	--	--	--				**0.11**
Acenaphthene		ND (1.0)	**--**	**130**	--	--	--	--	--	--	ND (0.98)	--	--	--	--	--				**33**
Acenaphthylene		ND (1.0)	**--**	**58**	--	--	--	--	--	--	ND (2.0)	--	--	--	--	--				ND (1.9)
Fluorene		ND (1.0)	**--**	**6.4**	--	--	--	--	--	--	ND (0.2)	--	--	--	--	--				**0.72**
Phenanthrene		ND (1.0)	**--**	**1.6**	--	--	--	--	--	--	ND (0.1)	--	--	--	--	--				ND (0.09)
Anthracene		ND (1.0)	**--**	**0.13**	--	--	--	--	--	--	ND (0.1)	--	--	--	--	--				ND (0.09)
SVOCs (EPA 8270C or 625)																				
Dimethylphthalate		**28**	--	ND (97)	--	--	--	--	--	--	ND (.94)	--	--	--	--	--				ND (48)
bis(2-Ethylhexyl)phthalate		**12**	--	ND (97)	--	--	--	--	--	--	ND (.94)	--	--	--	--	--				ND (48)
Naphthalene		**290**	--	**160**	--	--	--	--	--	--	ND (.94)	--	--	--	--	--				ND (48)
Phenol		**13**	--	**270**	--	--	--	--	--	--	ND (.94)	--	--	--	--	--				ND (48)

Table 5
Organic Constituents Analytical Data
City of Oakland Municipal Services Center Groundwater Remediation Project

All other SVOCs		ND (5)	--	ND (97)	--	--	--	--	--	--	ND (.94)	--	--	--	--	--				ND (48)
									After First Carbon Unit (Btw-1)											
	Max Daily Effluent Limit	5/30/06	9/5/06	3/14/07	8/28/07	9/19/07	10/24/07	11/21/07	12/20/07	1/21/08	2/20/08	3/18/08	4/23/08	5/20/08	6/16/08	8/21/08	9/26/08	10/24/08	11/14/08	2/9/09
VOCs	(µg/L)	(µg/L)	(µg/L)			(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(ug/L)	(µg/L)	(ug/L)	(µg/L)	(ug/L)
Benzene	5	ND (0.5)	ND (0.5)	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	ND (0.5)	--	ND (0.5)	ND (0.5)
Carbon tetrachloride	5	ND (0.5)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
Chloroform	5	ND (0.5)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
1,1-Dichloroethane	5	ND (0.5)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
1,2-Dichloroethane	5	ND (0.5)	--	--	--	ND (0.5)	--	--	--	--	--	--	--	--	--	--	ND (0.5)	--	ND (0.5)	ND (0.5)
1,1-Dichloroethene	5	ND (0.5)	--	--	--		--	--	--	--	--	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
Ethylbenzene	5	ND (0.5)	ND (0.5)	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	ND (0.5)	--	ND (0.5)	ND (0.5)
Methylene chloride	5	ND (0.5)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND (10)	--	--	ND (10)
Tetrachloroethene	5	ND (0.5)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
Toluene	5	ND (0.5)	ND (0.5)	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	ND (0.5)	--	ND (0.5)	ND (0.5)
c-1,2-Dichloroethene	5	ND (0.5)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
t-1,2-Dichloroethene	5	ND (0.5)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
1,1,1-Trichloroethane	5	ND (0.5)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
1,1,2-Trichloroethane	5	ND (0.5)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
Trichloroethylene	5	ND (0.5)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
Vinyl chloride	5	ND (0.5)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND (0.5)	--	--	ND (0.5)
Total xylenes	5	ND (0.5)	ND (0.5)	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	--	ND (0.5)	--	ND (0.5)	ND (0.5)
MTBE	13	ND (0.5)	ND (2)	--	--	**6.7**	**7.6**	--	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (0.5)	ND (2.0)	ND (2.0)	--	ND (0.5)	--	ND (0.5)	ND (0.5)
Ethylene dibromide	5	ND (0.5)	--	--	--	ND (0.5)	--	--	--	--	--	--	--	--	--	--	ND (0.5)	--	ND (0.5)	ND (0.5)
Trichlorotrifluoroethane	5	ND (5)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND (2.0)	--	--	ND (5)
TPHg	50	ND (50)	ND (50)	--	--	ND (50)	ND (50)	ND (50)	ND (50)	**60 (y)**	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	--	--	--	--	--
TPHd	50	ND (50)	ND (50)	--	--	ND (50)*	ND (50)	ND (50)	ND (50)	**84 (y)**	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	--	--	--	ND (50)	--
TAME		ND (0.5)	--	--	--	ND (0.5)	--	--	--	--	--	--	--	--	--	--	ND (0.5)	--	ND (0.5)	ND (0.5)
DIPE		ND (0.5)	--	--	--	ND (0.5)	--	--	--	--	--	--	--	--	--	--	ND (0.5)	--	ND (0.5)	ND (0.5)
ETBE		ND (0.5)	--	--	--	ND (0.5)	--	--	--	--	--	--	--	--	--	--	ND (0.5)	--	ND (0.5)	ND (0.5)
TBA		ND (10)	--	--	--	**86**	--	--	--	--	**--**	--	--	--	--	--	**70**	--	**53**	**67**
Ethanol		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	
Methanol		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	
PAHs (EPA 8310 or 610)		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--		
SVOCs (EPA 8270C or 625)		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--		

Table 5
Organic Constituents Analytical Data
City of Oakland Municipal Services Center Groundwater Remediation Project

	After Second Carbon Unit (Btw-2)																			
	Max Daily Effluent Limit	5/30/06	9/5/06	3/14/07	8/28/07	9/19/07	10/24/07	11/21/07	12/20/07	1/21/08	2/20/08	3/18/08	4/23/08	5/20/08	6/16/08	8/21/08	9/26/08	10/24/08	11/14/08	2/9/2009
VOCs	(µg/L)		(µg/L)	(µg/L)		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(ug/L)
Benzene	5	--	ND (0.5)	ND (0.5)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Carbon tetrachloride	5	--	ND (0.5)	ND (0.5)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
Chloroform	5	--	ND (0.5)	ND (0.5)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
1,1-Dichloroethane	5	--	ND (0.5)	ND (0.5)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
1,2-Dichloroethane	5	--	ND (0.5)	ND (0.5)	--	ND (0.5)	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
1,1-Dichloroethene	5	--	ND (0.5)	ND (0.5)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
Ethylbenzene	5	--	ND (0.5)	ND (0.5)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Methylene chloride	5	--	ND (0.5)	ND (10)	--	--	--	--	--	--	ND (10)	--	--	--	--	ND (10)	ND (10)	--	--	ND (10)
Tetrachloroethene	5	--	ND (0.5)	ND (0.5)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
Toluene	5	--	ND (0.5)	ND (0.5)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
c-1,2-Dichloroethene	5	--	ND (0.5)	ND (0.5)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
t-1,2-Dichloroethene	5	--	ND (0.5)	ND (0.5)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
1,1,1-Trichloroethane	5	--	ND (0.5)	ND (0.5)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
1,1,2-Trichloroethane	5	--	ND (0.5)	ND (0.5)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
Trichloroethene	5	--	ND (0.5)	ND (0.5)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
Vinyl chloride	5	--	ND (0.5)	ND (0.5)	--	--	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	--	--	ND (0.5)
Total xylenes	5	--	ND (0.5)	ND (0.5)	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
MTBE	13	--	ND (0.5)	ND (0.5)	--	ND (0.5)	ND (2.0)	--	ND (2.0)	ND (2.0)	ND (0.5)	ND (2.0)	ND (0.5)	ND (2.0)	ND (2.0)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Ethylene dibromide	5	--	ND (0.5)	ND (0.5)	--	ND (0.5)	--	--	--	--	--	--	--	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Trichlorotrifluoroethane	5	--	ND (5)	ND (5)	--	--	--	--	--	--	--	--	--	--	--	ND (2.0)	ND (2.0)	--	--	ND (5)
TPHg	50	--	--	--	--	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	--	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	76 (y,z)	ND (50)	74 (y,z)	ND (50)
TPHd	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND (50)	ND (50)	ND (50)	--	ND (50)
TAME		--	ND (0.5)	ND (0.5)	--	ND (0.5)	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
DIPE		--	ND (0.5)	ND (0.5)	--	ND (0.5)	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
ETBE		--	ND (0.5)	ND (0.5)	--	ND (0.5)	--	--	--	--	ND (0.5)	--	--	--	--	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
TBA		--	ND (10)	**110**	--	**130**	--	--	--	--	**22**	--	--	--	--	**140**	**100**	**99**	**74**	ND (10)
Ethanol		--	ND(1,000)	--	--	--	--	--	--	--	--	--	--	--	--			--	--	
Methanol		--	--	--	--	--	--	--	--	--	--	--	--	--	--			--	--	
PAHs (EPA 8310 or 610)		--	--	--	--	--	--	--	--	--	--	--	--	--	--					
SVOCs (EPA 8270C or 625)		--	--	--	--	--	--	--	--	--	--	--	--	--	--			--		

Notes:

(h) - heavier hydrocarbons contributed to the quantitation

(l) - lighter hydrocarbons contributed to the quantitation

(y) - sample exhibits chromatographic pattern which does not resemble standard

* - Sample analytical results for TPH-d were erroneously switched between Btw-1 and Btw-2 in the laboratory analytical reports due to mislabeling in the field.

Abbreviations:

"--" indicates not analyzed for constituent indicated	PAHs = polycyclic aromatic hydrocarbons
DIPE = diisopropyl ether	SVOCs = semivolatile organic compounds
EPA = U.S. Environmental Protection Agency	TAME = tertiary amyl ether
ETBE = ethyl tertiary butyl ether	TBA = tertiary butyl alcohol
µg/L = microgram(s) per liter	TPHd = total petroleum hydrocarbons quantified as diesel
MTBE = methyl tertiary butyl ether	TPHg = total petroleum hydrocarbons quantified as gasoline
ND ( ) = non-detected lab value	VOCs = volatile organic compounds

Table 6
Dual-Phase Extraction Vapor Monitoring Data
City of Oakland Municipal Services Center Groundwater Remediation Project

Date	Time	DPE Run-time Meter Reading (cumulative hr)	Vapor Flow Rate (1) (acfm)	Thermo Oxidizer Temp. (ºF)	Vacuum Pump		A-2 Exhaust (Effluent)					A-2 Inlet (Influent)					Notes
					Vacuum (inch Hg)	Discharge Temp (ºF)	POC (2) (ppmv)	Benzene (ppmv)	Toluene (ppmv)	Ethylbenzene (ppmv)	Total Xylenes (ppmv)	POC (2) (ppmv)	Benzene (ppmv)	Toluene (ppmv)	Ethylbenzene (ppmv)	Total Xylenes (ppmv)	
5/14/07	12:00	12.5	275	1440	15	160	1.10	0.042	0.028	0.0059	0.021	2000	18.0	21	6.5	21.4	DPE startup
5/17/07	11:25	83.9	276	1448	15	160	--	--	--	--	--	--	--	--	--	--	NPDES sampling
5/22/07	11:15	203.7	284	1551	15	160	--	--	--	--	--	--	--	--	--	--	shutdown @11:30 PhII tie-in
5/31/07	11:00	203.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
6/11/07	10:00	204	235	1438	16.5	165	--	--	--	--	--	--	--	--	--	--	re-start with all wells
6/14/07	10:00	276.5	280	1455	15	170	--	--	--	--	--	--	--	--	--	--	
6/18/07	19:00	276.7	280	1460	11.5	160	--	--	--	--	--	--	--	--	--	--	
6/21/07	10:00	328.8	276	1450	15	165	--	--	--	--	--	--	--	--	--	--	NPDES sampling
6/26/07	18:40	446.7	288	1454	11.5	160	2.76	0.063	0.060	0.0023	0.018	2410	25.0	35	4.6	28.7	
6/29/07	18:30	518.5	294	1479	14	160	--	--	--	--	--	--	--	--	--	--	
7/3/07	11:30	536.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	knockout tank pump down
7/11/07	15:00	536.9	227	1449	17	160	--	--	--	--	--	--	--	--	--	--	changed knockout tank pump
7/16/07	8:15	630	304	1435	13	160	--	--	--	--	--	--	--	--	--	--	DPE down, insulation worn
7/19/07	10:00	630	--	--	--	--	--	--	--	--	--	--	--	--	--	--	DPE unit to factory for repair
7/23/07	11:00	630	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
7/27/07	9:30	630	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
7/31/07	13:00	633.3	289	1460	14	160	--	--	--	--	--	--	--	--	--	--	re-installed DPE, on at 11am
8/7/07	19:30	669.5	307	1506	13.5	160	--	--	--	--	--	--	--	--	--	--	removed 5 gal oily sludge
8/17/07	10:00	719.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	DPE down, cleaned vac unit
8/28/07	10:00	895.5	297	1518	14	160	1.00	0.046	0.011	0.0008	0.005	3820	27.0	24	3.1	25.4	NPDES & vapor monitoring
8/31/07	10:30	968	298	1465	13.5	160	--	--	--	--	--	--	--	--	--	--	
9/7/07	9:30	1135	302	1520	13.5	160	--	--	--	--	--	--	--	--	--	--	
9/14/07	11:30	1305	289	1467	13	160	--	--	--	--	--	--	--	--	--	--	
9/19/07	10:00	1423.5	Note (3)	1485	10	160	1.40	0.021	0.015	0.0012	0.010	2460	6.6	8.6	1.0	7.5	NPDES & vapor monitoring
9/26/07	10:20	1591.3	--	1446	15	160	--	--	--	--	--	--	--	--	--	--	DPE down, T sensor pblm
9/28/07	12:00	1591.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	only pneumatic pumps on
10/2/07	12:00	1591.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	fixed T sensor
10/8/07	17:30	1592.9	--	1490	15	160	--	--	--	--	--	--	--	--	--	--	fixed data recorder
10/17/07	11:00	1757.3	--	1486	15	160	--	--	--	--	--	--	--	--	--	--	
10/24/07	14:00	1928	--	1479	15	160	2.40	0.038	0.023	ND (0.00005)	0.011	3700	4.4	ND (0.0005)	ND (0.0005)	1.8	NPDES & vapor monitoring
10/31/07	10:30	2092.1	--	1460	15	160	--	--	--	--	--	--	--	--	--	--	
11/7/07	11:00	2261.5	--	1458	15	160	--	--	--	--	--	--	--	--	--	--	
11/16/07	10:30	2476.9	--	1482	15	160	--	--	--	--	--	--	--	--	--	--	
11/21/07	10:09	2596.4	--	1492	15	160	1.40	0.038	0.040	0.0032	0.020	2500	13.0	35	3.2	24.1	NPDES & vapor monitoring
11/30/07	9:30	2811.8	--	1459	15	160	--	--	--	--	--	--	--	--	--	--	
12/7/07	10:30	2980.8	--	1512	15	160	--	--	--	--	--	--	--	--	--	--	
12/13/07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	System shut down for carbon change
12/14/07	13:00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	DPE on line 1:00 pm
12/17/07	11:15	3105.8	--	1466	15	160	--	--	--	--	--	--	--	--	--	--	
12/20/07	11:00	3184.9	--	1503	15	160	3.11	0.110	0.086	0.0087	0.063	6018	33.0	69	8.6	83.0	NPDES & vapor monitoring
12/31/07	9:00	3439.3	--	1450	15	160	--	--	--	--	--	--	--	--	--	--	
1/4/08	14:30	3540.8	--	1452	15	160	--	--	--	--	--	--	--	--	--	--	
1/15/08	13:00	3753.5	--	1452	15	160	--	--	--	--	--	--	--	--	--	--	down on 1/11, restarted
1/21/08	9:30	3894	--	1458	15	160	6.86	0.091	0.190	0.0230	0.282	317	11.0	52	8.5	126.0	NPDES & vapor monitoring
1/30/08	11:30	4112	--	1459	15	160	--	--	--	--	--	--	--	--	--	--	D9 & D11 open only
2/1/08	15:30	4164	--	1460	16	160	--	--	--	--	--	--	--	--	--	--	
2/11/08	11:00	4399.5	--	1460	15	160	--	--	--	--	--	--	--	--	--	--	D10 & D11 open only
2/20/08	11:30	4616	--	1455	15	160	0.73	0.022	0.011	ND (0.00005)	0.007	273	0.5	ND (0.0005)	ND (0.0005)	0.5	NPDES & vapor monitoring
2/29/08	10:30	4831	--	1460	15	160	--	--	--	--	--	--	--	--	--	--	
3/3/08	11:30	4904	--	1462	15	160	--	--	--	--	--	--	--	--	--	--	
3/14/08	11:00	5166.5	--	1455	15	160	--	--	--	--	--	--	--	--	--	--	D2 & D4 open only
3/18/08	10:00	5261.5	--	1460	15	160	2.00	0.062	0.064	0.0059	0.093	450	5.8	12	1.7	31.9	NPDES & vapor monitoring
3/20/08	11:00	5310.5	--	1462	15	160	--	--	--	--	--	--	--	--	--	--	D2, D4 & D7 open
3/31/08	9:00	5572.5	--	1460	15	160	--	--	--	--	--	--	--	--	--	--	
4/7/08	9:00	5740.5	--	1455	15	160	--	--	--	--	--	--	--	--	--	--	

Table 6
Dual-Phase Extraction Vapor Monitoring Data
City of Oakland Municipal Services Center Groundwater Remediation Project

Date	Time	DPE Run-time Meter Reading (cumulative hr)	Vapor Flow Rate (1) (acfm)	Thermo Oxidizer Temp. (ºF)	Vacuum Pump		A-2 Exhaust (Effluent)					A-2 Inlet (Influent)					Notes
					Vacuum (inch Hg)	Discharge Temp (ºF)	POC (2) (ppmv)	Benzene (ppmv)	Toluene (ppmv)	Ethylbenzene (ppmv)	Total Xylenes (ppmv)	POC (2) (ppmv)	Benzene (ppmv)	Toluene (ppmv)	Ethylbenzene (ppmv)	Total Xylenes (ppmv)	
4/14/08	10:00	5909.5	--	1452	15	160	--	--	--	--	--	--	--	--	--	--	
4/18/08	11:00	6006.5	--	1445	15	160	--	--	--	--	--	--	--	--	--	--	
4/24/08	10:30	6126	--	1455	15	160	2.12	0.057	0.055	0.0040	0.109	1280	2.4	10	1.0	42.0	
4/30/08	10:00	6174	--	--	--	--	--	--	--	--	--	--	--	--	--	--	down for maintenance
5/15/08	11:00	6175	--	1460	15	200	--	--	--	--	--	--	--	--	--	--	
5/20/08	10:31	6294.5	--	1460	15.5	180	2.10	0.045	0.043	0.0031	0.091	1200	3.0	9.3	ND (0.0005)	40.0	
5/29/08	10:30	6350.5	--	1461	15	180	--	--	--	--	--	--	--	--	--	--	
6/2/08	10:30	6446.5	--	1452	15	180	--	--	--	--	--	--	--	--	--	--	
6/9/08	10:30	6552.2	--	1470	15	160	--	--	--	--	--	--	--	--	--	--	
6/16/08	10:45	6720.2	--	1463	15	180	2.30	0.026	0.030	0.0023	0.071	790	1.1	3.5	ND (0.0005)	16.4	
6/30/08	10:30	6768.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	down for repair
7/8/08	10:00	6791.3		1450	16	170											frequent overheating
7/16/08	11:00	6805.8		1471	16	160											
7/22/08	15:30	6828.8		1467	17	180	0.61	0.0083	0.011	ND (0.002)	0.031	490	0.65	1.3	0.61	9.1	
7/31/08	19:00	6879.4		1462	17	180											
8/11/08	10:00	6939.3		1471	16	170											
8/21/08	12:45	6972.8		1463	15	170	0.74	0.014	0.0073	ND (0.001)	0.023	430	0.95	1.6	ND (0.1)	9.1	
8/29/08	11:00	6977.4															down for repair
9/11/08	11:00	6978.5		1474	16.5	180											radiator clogged by viscous tar
9/26/08	12:20	7007.6		1460	17	160											
9/30/08	19:30	7035.1															down for repair
10/6/08	11:00	7035.2		1463	16	160											
10/13/08	17:45	7063.3		1475	17	160											
10/24/08	13:00	7112.9		1464	16	160	1.4	0.021	0.01	ND (0.005)	0.03	370	1.2	0.88	ND (0.25)	4.7	
10/31/08	18:00	7130.8															down, oil leak from radiator
11/10/08	16:30	7137.1		1460	17.5	170											
11/14/08	15:00	7147.2		1465	17	180											shutdown aft sampling for overhaul
11/28/08	10:00	7147.2															
12/31/08	10:00	7147.2															
1/2/09	15:00	7147.2															changed 2nd & 3rd gw carbon
1/20/09	12:00	7147.2															
2/2/09	11:30	7150.8		1467	20	170											
2/9/09	15:30	7289.9		1467	18.5	165	0.85	0.016	0.011	0.0008	0.017	540	1.6	1.8	ND (0.25)	9.0	
2/19/09	6:15	7318.65															down due to fire
3/25/09	14:45	7334.5		1466	17.5	170	0.68	0.013	0.010	ND(0.001)	0.015	250	1.1	0.9	0.13	4.5	testing after repair
4/6/09	14:00	7353.5		1462	18	180											

Notes:
Note (1) - Measured at the discharge side of the vacuum pump, the pressure is approximately 1.05 atm.
Note (2) - POC = precursor organic compound measured as TPH volatiles in vapor.
Note (3) - The flow sensor was coated with highly viscous material and resulted in inaccurate readings; vaccuum readings were much more stable and accurate.

Abbreviations:
"--" indicates no value obtained for given field
acfm = actual cubic foot per minute
atm = standard atmosphere
DPE = dual-phase extraction
°F = degree Fahrenheit
Hg = mercury
ND ( ) = non-detected lab value
ppmv = parts per million volume

Table 7
Petroleum Hydrocarbons Removed through Soil Vapor Extraction
City of Oakland Municipal Services Center Groundwater Remediation Project

Month	DPE Run Time (hr)	Ave Flow (acfm)	Flow Pressure (atm)	Flow Temp. (^oF)	Ave Flow (scfm)	Total Volume (std m^3)	TPHg (ppmv)	TPHg (mg/m^3)	TPHg Removed (lb)	Influent Benzene Conc. (ppmv)	Influent Benzene Conc. (mg/m^3)	Benzene Removed (lb)
May-07	191.2	278	1.05	160	249	80,756	2,000	7,033	1,252	18	58	10
Jun-07	314.8	276	1.05	165	245	130,948	2,410	8,475	2,447	25	81	23
Jul-07	114.8	273	1.05	160	244	47,616	--	10,738	1,127	--	85	9
Aug-07	334.7	301	1.05	160	269	153,062	3,820	13,000	4,387	27	88	30
Sep-07	623.7	530	0.46	75	241	255,000	2,460	8,700	4,891	6.6	21	12
Oct-07	500.4	535	0.5	75	264	224,477	3,700	13,000	6,433	4.4	14	7
Nov-07	719.7	535	0.5	75	264	322,853	2,500	8,750	6,228	13	41	29
Dec-07	627.5	535	0.5	75	264	281,493	6,018	21,200	13,156	33	110	68
Jan-08	672.7	535	0.5	75	264	301,769	3,170	11,140	7,411	11	34	23
Feb-08	719	535	0.5	75	264	322,539	273	960	683	0.46	1.5	1
Mar-08	741.5	535	0.5	75	264	332,633	450	1,600	1,173	5.8	18	13
Apr-08	601.5	535	0.5	75	264	269,830	1,280	4,500	2,677	2.4	7.7	5
May-08	176.5	535	0.5	75	264	79,177	1,200	4,200	733	3	9.5	1.7
Jun-08	417.8	535	0.5	75	264	187,423	790	2,800	1,157	1.1	3.6	1.5
Jul-08	111.1	540	0.45	75	240	45,274	490	1,700	170	0.7	2.1	0.2
Aug-08	98	540	0.45	75	240	39,936	430	1,500	132	1.0	3.1	0.3
Sep-08	57.7	540	0.45	75	240	23,513	430	1,500	78	1.0	3.1	0.2
Oct-08	95.7	550	0.45	75	244	39,721	370	1,300	114	1.2	3.7	0.3
Nov-08	16.4	550	0.43	75	233	6,504	370	1,300	19	1.2	3.7	0.1
Dec-08	0	0	0	75	0	0	0	0	0	0.0	0.0	0.0
Jan-09	0	0	0	75	0	0	0	0	0	0.0	0.0	0.0
Feb-09	171.45	550	0.37	75	201	58,510	540	1,900	245	1.6	5.0	0.6
Mar-09	15.85	550	0.42	75	228	6,140	250	880	12	1.1	3.4	0.0

Notes:

Flow rates from May through August 2007 were recorded by the flow meter at the vacuum discharge side.

Flow rates after August 2007 were based on pump vacuum reading and pump performance chart for acfm.

Abbreviations

"--" indicates not analyzed for constituent indicated

acfm = actual cubic foot per minute

atm = standard atmosphere

DPE = dual-phase extraction

^oF = degree Fahrenheit

hr = hours(s)

lb = pound(s)

m^3 = cubic meter

mg/m^3 = milligram(s) per cubic meter

ppmv = parts per million volume

scfm = standard cubic foot per minute

TPHg = total petroleum hydrocarbons quantified as gasoline

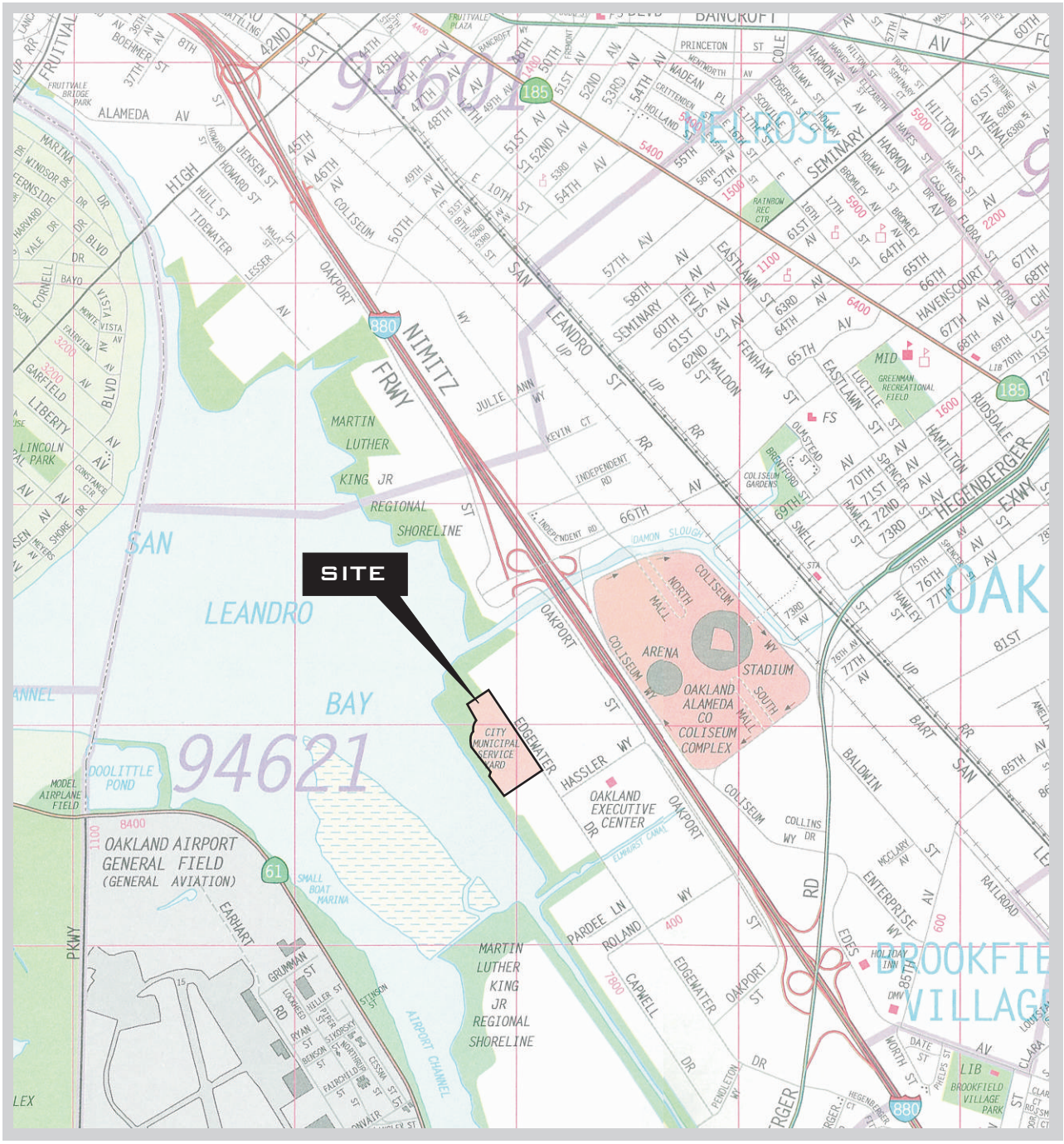
Table 8
TPH Removed through Groundwater Extraction, Floating Product Recovery, and Soil Vapor Extraction
City of Oakland Municipal Services Center Groundwater Remediation Project

Month	Groundwater	TPHg	TPHd	Mass Removed through Groundwater Extraction			Floating Product	TPH Removed	Total Monthly	Total Monthly	Cumulative Product Removed	
	Removed	Influent	Influent	As TPHg	As TPHd	Combined	Recovered	By Vapor	Removal	Removal	(floating + dissolved + vapor)	
	(gallons)	(mg/L)	(mg/L)	(lb)	(lb)	(lb)	(gallons)	(lb)	(gallons)	(lb)	(gallons)	(lb)
May-06	17,591	54.5	17.1	7.98	2.50	10.49	20	0	21.48	152	21.48	152
Jun-06	103,880	50	10	43.25	8.65	51.90	80	0	87.33	618	108.81	770
Jul-06	89,150	60	4	44.54	2.97	47.51	65	0	71.71	508	180.53	1,278
Aug-06	82,900	59	4.1	40.73	2.83	43.56	55	0	61.15	433	241.68	1,711
Sep-06	85,450	44	4.8	31.31	3.42	34.72	25	0	29.91	212	271.59	1,922
Oct-06	72,980	42	9.1	25.52	5.53	31.05	30	0	34.39	243	305.97	2,166
Nov-06	46,200	32	7.8	12.31	3.00	15.31	20	0	22.16	157	328.14	2,323
Dec-06	49,280	55	7.6	22.57	3.12	25.69	20	0	23.63	167	351.77	2,490
Jan-07	59,100	49	3.6	24.11	1.77	25.89	15	0	18.66	132	370.42	2,622
Feb-07	85,510	38	7.9	27.06	5.63	32.68	13	0	17.62	125	388.04	2,747
Mar-07	116,260	32	7.8	30.98	7.55	38.53	12	0	17.44	123	405.49	2,870
Apr-07	65,725	11	6.2	6.02	3.39	9.41	5	0	6.33	45	411.82	2,915
May-07	78,705	84	180	55.05	117.97	173.02	4	1,252	205.35	1,453	617.16	4,368
Jun-07	93,720	8.9	7.7	6.95	6.01	12.95	4	2,447	351.50	2,488	968.66	6,856
Jul-07	49,470	16	9.1	6.59	3.75	10.34	6	1,127	166.71	1,180	1,135.37	8,036
Aug-07	119,490	5.1	8.1	5.07	8.06	13.13	5	4,387	626.62	4,435	1,761.99	12,471
Sep-07	135,890	3	12	3.39	13.58	16.97	0	4,891	693.42	4,908	2,455.41	17,379
Oct-07	65,570	1.9	12	1.04	6.55	7.59	0	6,433	909.95	6,441	3,365.36	23,820
Nov-07	165,810	3.6	9	4.97	12.43	17.40	0	6,228	882.37	6,245	4,247.73	30,065
Dec-07	101,270	5.1	25	4.30	21.08	25.38	0	13,156	1862.32	13,181	6,110.05	43,247
Jan-08	106,500	14	14	12.42	12.42	24.83	0	7,411	1050.56	7,436	7,160.61	50,682
Feb-08	71,000	ND (50)	6.1	0.00	3.61	3.61	0	683	97.01	687	7,257.62	51,369
Mar-08	127,310	2.3	9	2.44	9.54	11.98	0	1,173	167.42	1,185	7,425.04	52,554
Apr-08	92,240	2.3	14	1.77	10.75	12.52	0	2,677	379.97	2,689	7,805.01	55,243
May-08	53,100	2.9	20	1.28	8.84	10.13	0	733	105.01	743	7,910.02	55,987
Jun-08	62,092	1.4	6.7	0.72	3.46	4.19	0	1,157	164.05	1,161	8,074.06	57,148
Jul-08	53,580	2.3	9.4	1.03	4.19	5.22	0	170	24.71	175	8,098.77	57,323
Aug-08	35,760	1.3	12	0.39	3.57	3.96	0	132	19.22	136	8,117.99	57,459
Sep-08	38,360	1.4	14	0.45	4.47	4.92	0	78	11.68	83	8,129.67	57,541
Oct-08	50,300	1	10	0.42	4.19	4.61	0	114	16.73	118	8,146.41	57,660
Nov-08	11,710	1	8.1	0.10	0.79	0.89	0	19	2.76	20	8,149.17	57,679
Dec-08	0	0	0	0.00	0.00	0.00	0	0	0.00	0	8,149.17	57,679
Jan-09	0	0	0	0.00	0.00	0.00	0	0	0.00	0	8,149.17	57,679
Feb-09	77,990	1.4	11	0.91	7.14	8.05	0	245	35.76	253	8,184.93	57,933
Mar-09	0	0	0	0.00	0.00	0.00	0	12	1.68	12	8,186.61	57,944

Table 8
TPH Removed through Groundwater Extraction, Floating Product Recovery, and Soil Vapor Extraction
City of Oakland Municipal Services Center Groundwater Remediation Project

Note: Morgan Environmental disposed of three 55-gallon drums of recovered product on 8/9/06 and four 55-gallon dums of product on 8/17/07.
Non-detected lab values were reported as half the reporting limit in equations.

Abbreviations:
lb = pounds(s)
mg/L = milligram(s) per liter
TPH = total petroleum hydrocarbons
TPHg = total petroleum hydrocarbons quantified as gasoline
TPHd = total petroleum hydrocarbons quantified as diesel



SOURCE: 2002 THOMAS GUIDE FOR ALAMEDA AND CONTRA COSTA COUNTIES

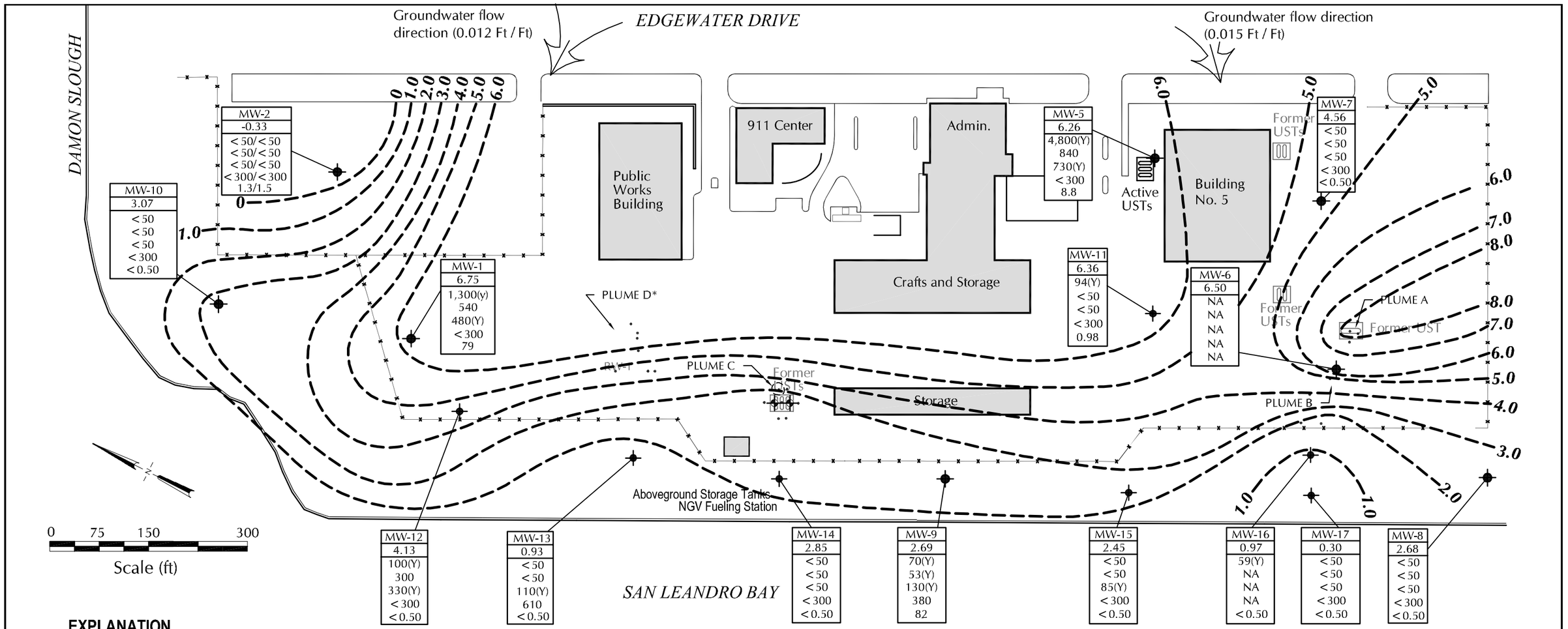
Site Vicinity Map

Municipal Service Center, 7101 Edgewater Drive, Oakland, California

LFR

Figure 1

DESIGN\09225\11\000\09225 SiteVicinity.CDR



EXPLANATION

MW-1 — Monitoring well location

• — Remediation well location

Y — Sample exhibits chromatographic pattern that does not resemble standard

NA — Not sampled in this event

FT / FT — Foot per foot

Fence

3.0 — Groundwater elevation contour; dashed where inferred

* Wells TBW-5, RW-D1 through RW-D11 and RW-1 (PLUMB D), were converted to extraction wells and could not be accessed for DEPTH-TO -WATER and DEPTH-TO-SPH measurements.

Well
ELEV
TPHg/TPHg
TPHk/TPHk
TPHd/TPHd
TPHmo/TPHmo
B/B

Well — Monitoring Well ID

ELEV — Groundwater elevation, feet above mean sea level (msl)

TPHg, TPHk TPHd, TPHmo, and benzene concentrations in Micrograms per Liter (ug/L)

Duplicate sample

Sample

TPHg	Total Petroleum Hydrocarbons as Gasoline
TPHk	Total Petroleum Hydrocarbons as Kerosene
TPHd	Total Petroleum Hydrocarbons as Diesel
TPHmo	Total Petroleum Hydrocarbons as Motor Oil
B	Benzene

SPH = Separate Phase Hydrocarbons

UST = Underground Storage Tank

Source: CAMBRIA

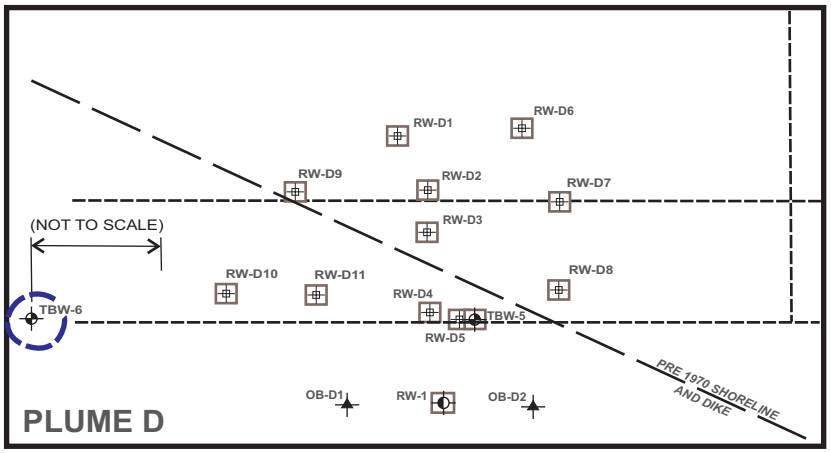
Groundwater Elevation Contour Map and Hydrocarbon Concentrations in Shallow Groundwater, April 2009

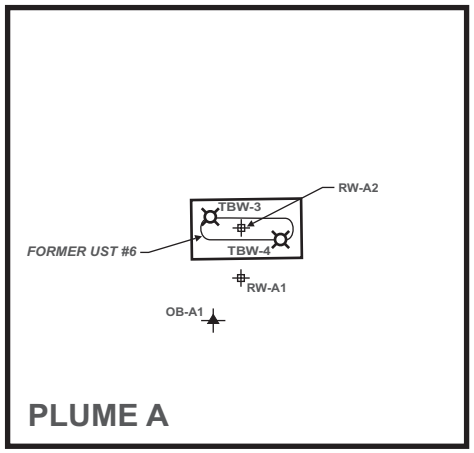
Municipal Service Center, Oakland, California

LFR

Figure 2

I:\Design\001\09225\11\000\dwg\GW Elev April 2009.dwg May 01,2009-9:47am

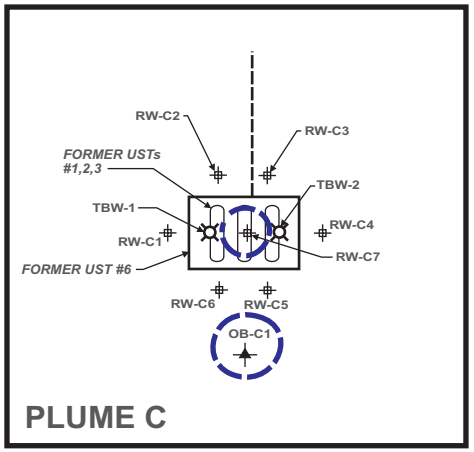


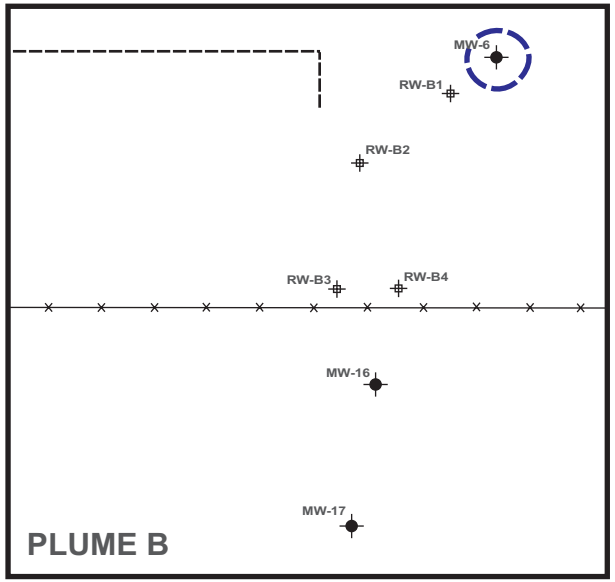


EXPLANATION

- RW-D1 — EXTRACTION WELL LOCATION
- RW-A1 — TEST/OBSERVATION WELL LOCATION
- OB-A1 — OBSERVATION WELL LOCATION
- MW-A6 — MONITORING WELL LOCATION
- RW-1 — REMEDIATION WELL LOCATION
- TBW-1 — TANK BACKFILL WELL
- ABANDONED WELL
- FENCE
- FORMER UNDERGROUND PIPING
- AREA OF SPH ON GROUNDWATER (DASHED WHERE INFERRED)

SPH = SEPARATE PHASE HYDROCARBONS

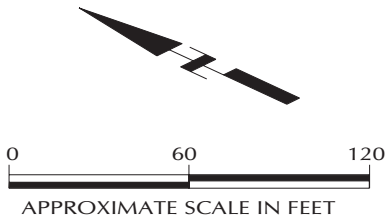




NOTES:

WELLS TBW-5 , RW-D1 THROUGH RW-D11 AND RW-1 (PLUME D), WERE CONVERTED TO EXTRACTION WELLS AND COULD NOT BE ACCESSED FOR DEPTH-TO-WATER AND DEPTH-TO-SPH MEASUREMENTS.

SPH WAS DETECTED IN RW-C7 WITH AN OIL/WATER INTERFACE METER BUT COULD NOT BE CONFIRMED WITH A BAILER DUE TO LIMITED ACCESS.



NOTE: ALL DIMENSIONS, DIRECTIONS, AND LOCATIONS ARE APPROXIMATE
SOURCE: NINYO & MOORE - JULY 2004

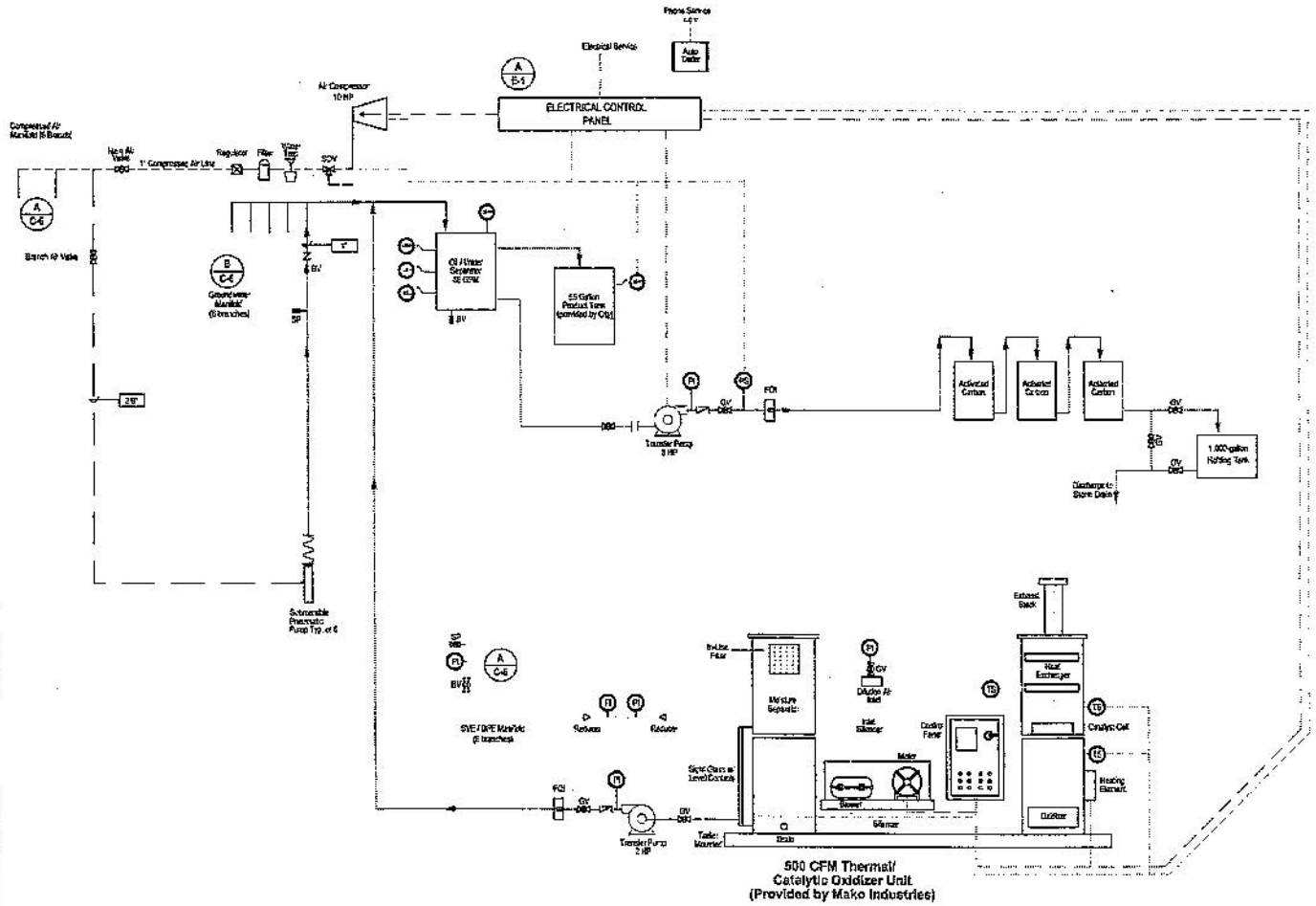
DESIGN\001\09225\11\000\09225 Plume Detail rev5.CDR

Detail Plume Map
April 2009

Municipal Service Center
7101 Edgewater Drive, Oakland, California

Figure 3

LFR an ARCADIS company



EXPLANATION

- Flowmeter/Indicator
- BV = Ball Valve
- GV = Gate Valve
- Sample Port
- Flexible Hose
- Pressure Transmitting Switch
- Flow Indicator
- Temperature Sensor
- Pressure Indicator
- Missing or Needs Replacement On Existing Equipment
- Vacuum Breaker
- Quick Disconnect
- Check Valve
- Solenoid Valve
- SVE Piping
- Electrical Control Wiring
- Electrical Power Wiring
- Compressed Air Line
- Groundwater Piping

FIGURE 4 Remediation System Process & Instrumentation Diagram

OTG EnviroEngineering Solutions, Inc.

City of Oakland Municipal Services Center
7101 Edgewater Drive, Oakland, CA

DRAFTED BY: CEB (CA)	PROCESS AND INSTRUMENTATION DIAGRAM
CHECKED BY: GMH	MUNICIPAL SERVICE CENTER 7101 EDGEWATER DRIVE OAKLAND, CALIFORNIA
REVIEWED BY:	
NORTH	Groundwater & Environmental Services, Inc. 333 VINCENT ROAD, SUITE 222, PLEASANT HILL, CA 94523
NOT TO SCALE	DATE 11-02-05 / FIGURE M-1

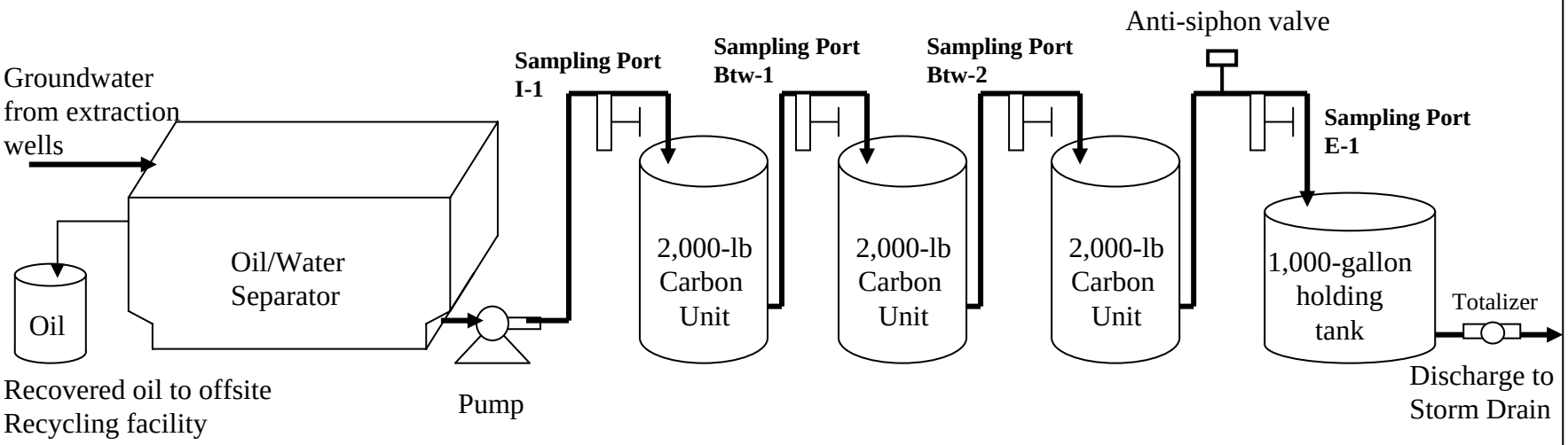


FIGURE 5 Schematic of Groundwater Treatment System and Sampling Locations

June 2006

EnviroEngineering *Solutions, Inc.*

City of Oakland Municipal Services Center
7101 Edgewater Drive, Oakland, CA

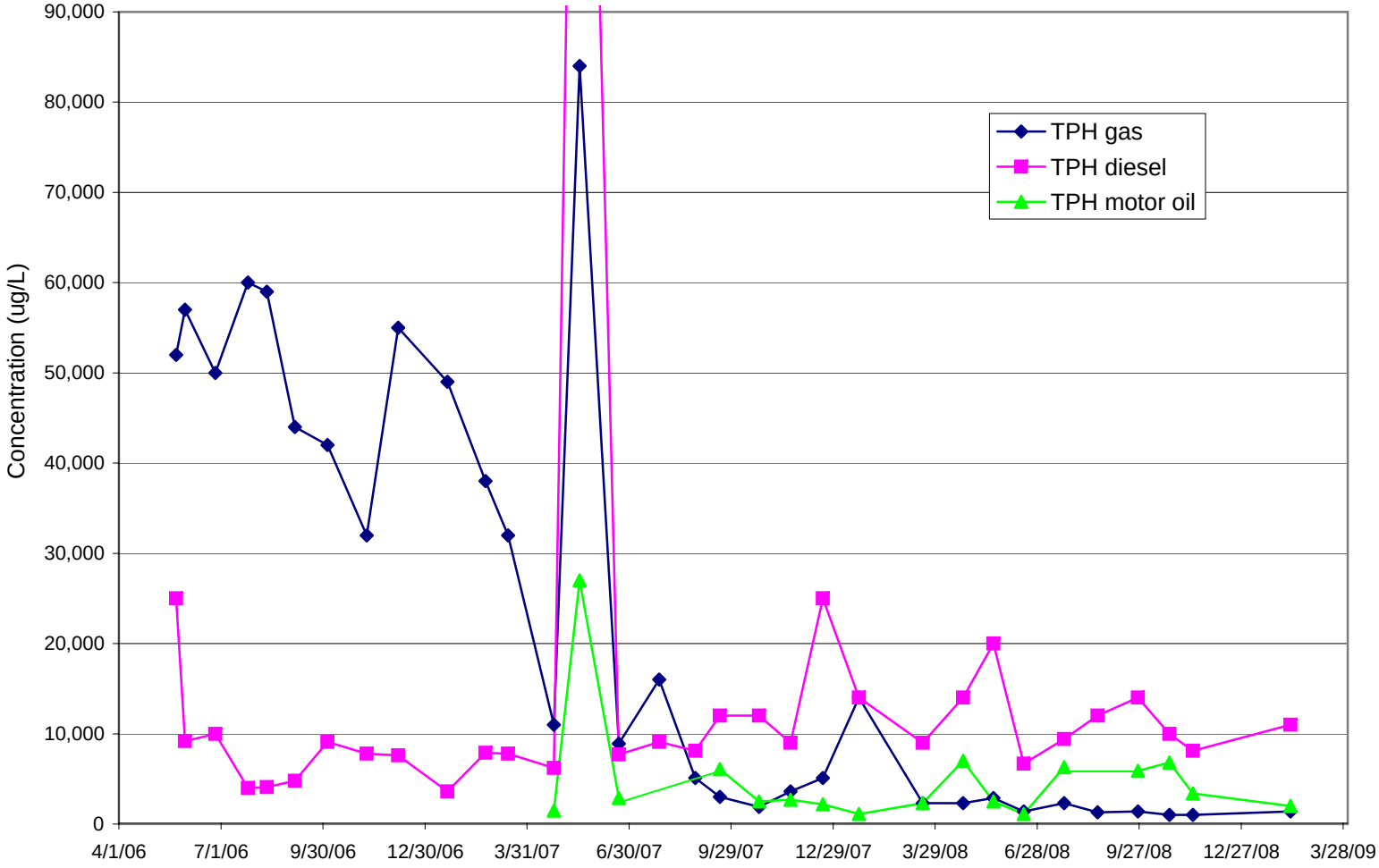


Figure 6. Trends of TPH Concentrations from Combined Extracted Groundwater Before Activated Carbon Treatment
City of Oakland Municipal Service Center Site, 7101 Edgewater Drive, Oakland, CA

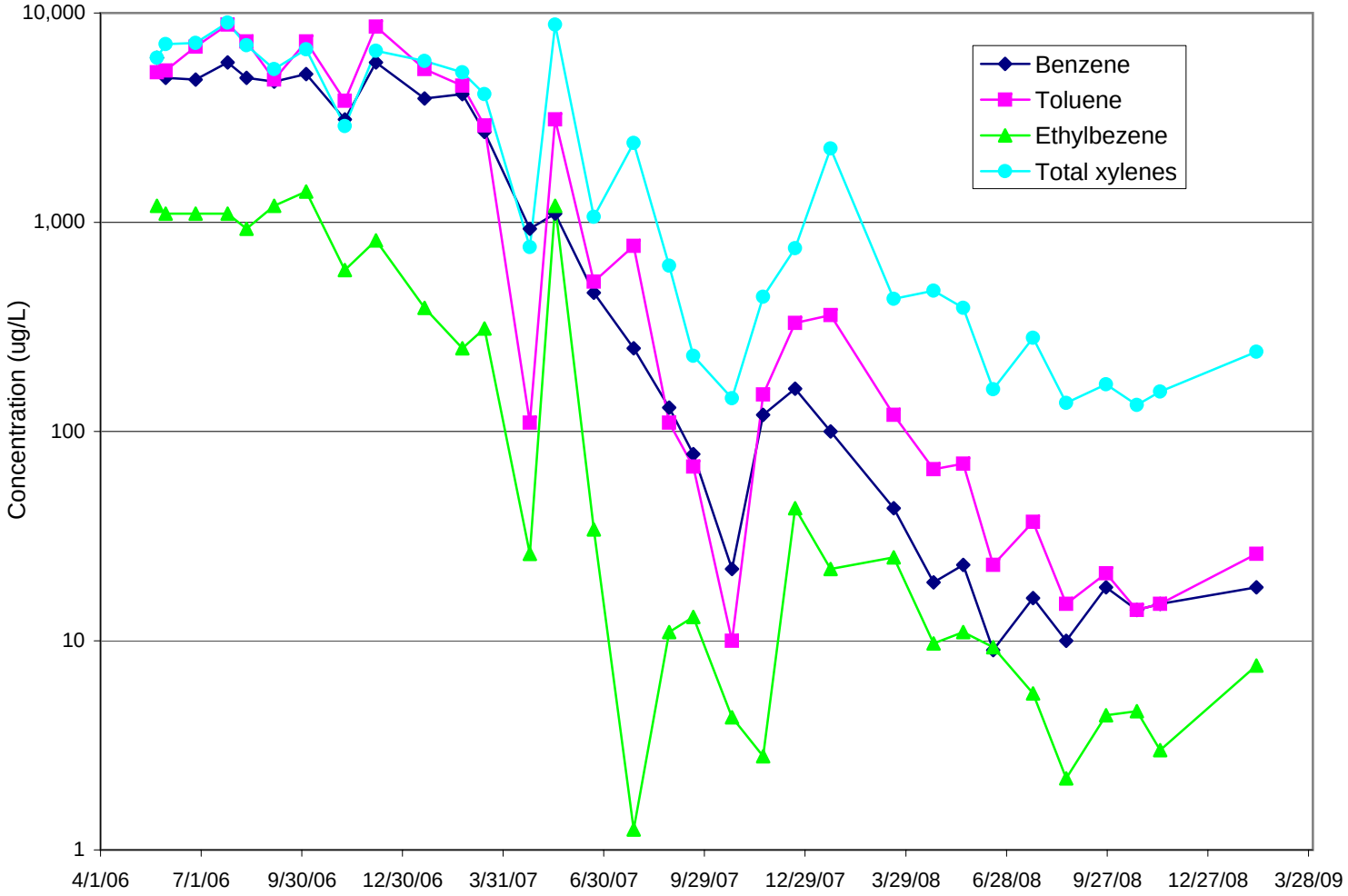


Figure 7. Trends of BTEX Concentrations from Combined Extracted Groundwater Before Activated Carbon Treatment
City of Oakland Municipal Service Center Site, 7101 Edgewater Drive, Oakland, CA

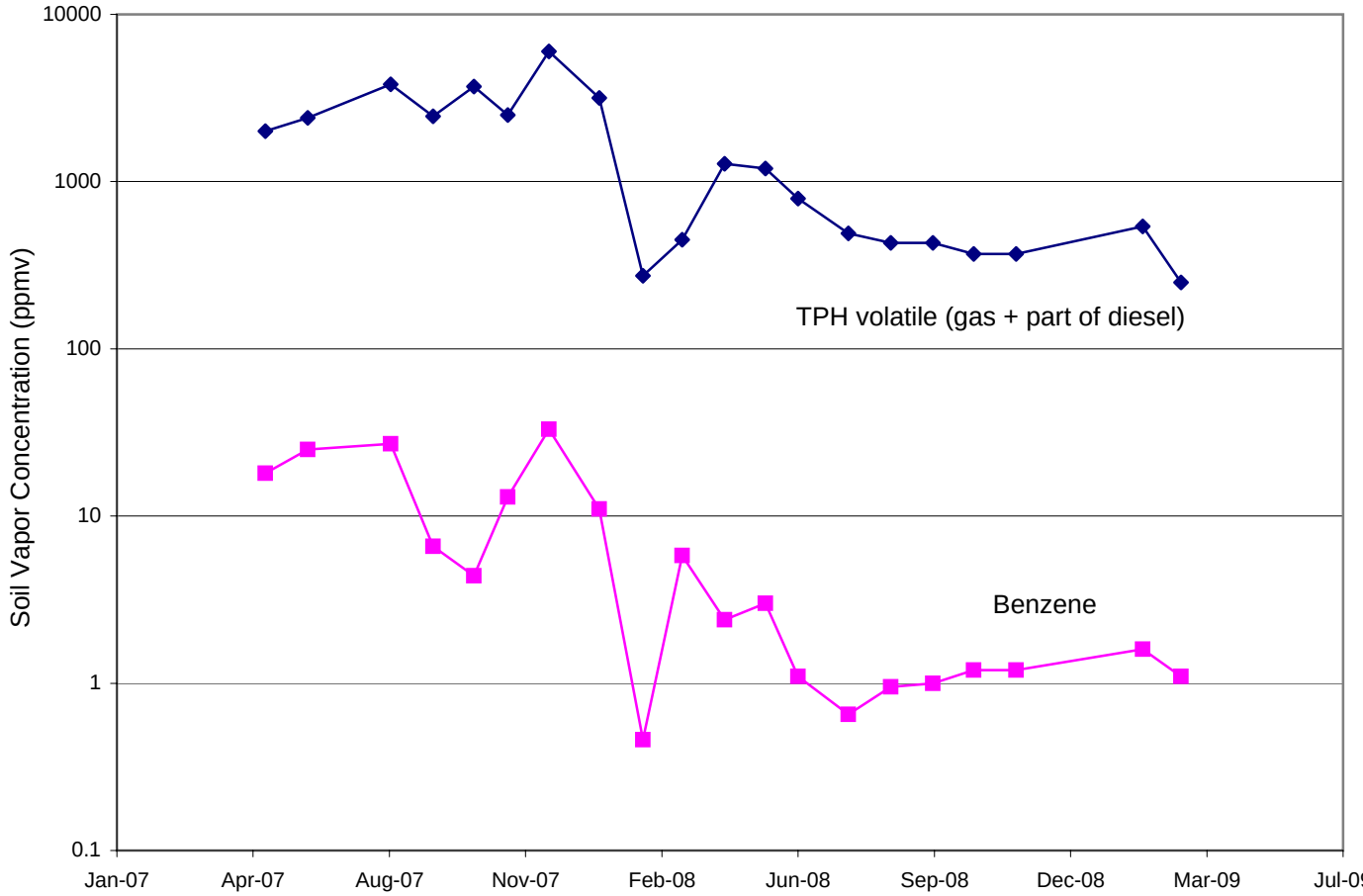


Figure 8. Trends of TPH volatile (gasoline + fraction of diesel) and benzene concentration in extracted soil gas
City of Oakland Municipal Service Center Site, 7101 Edgewater Drive, Oakland, CA

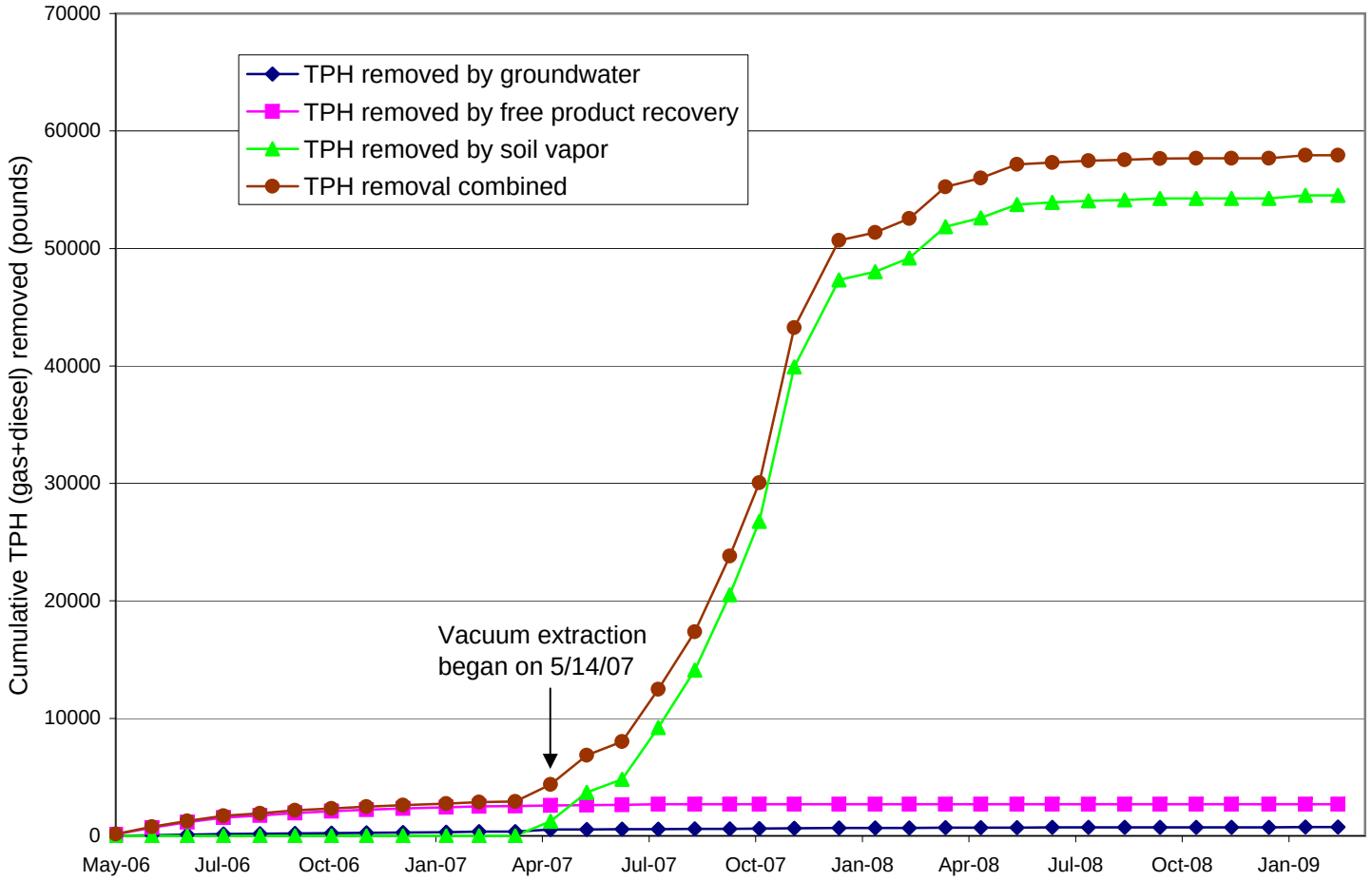


Figure 9. Cumulative TPH Removal (Gasoline + Diesel) Since Startup of the Remediation System on May 22, 2006
City of Oakland Municipal Service Center Site, 7101 Edgewater Drive, Oakland, CA

APPENDIX A

City of Oakland MSC Schedule and Protocol

Table A: Revised Well Sampling Schedule and Protocol

City of Oakland Municipal Service Center

Well ID	Monitoring Schedule		Parameters to Be Monitored							
	March	September	Elevation	Floating Product Thickness	PH	Dissolved Oxygen	Temperature	Specific Conductivity	TPH-gas BTEX & MTBE	TPH d/k/mo
MW-1	X	X	X	X	X	X	X	X	X	X
MW-2	X	gauge only	X	X	X	X	X	X	X	X
MW-3	Closed/ Destroyed									
MW-4	Closed/ Destroyed									
MW-5	X	X	X	X	X	X	X	X	X	X
MW-6	X	X	X	X	X	X	X	X	X	X
MW-7	X	gauge only	X	X	X	X	X	X	X	X
MW-8	X	X	X	X	X	X	X	X	X	X
MW-9	X	X	X	X	X	X	X	X	X	X
MW-10	X	X	X	X	X	X	X	X	X	X
MW-11	X	gauge only	X	X	X	X	X	X	X	X
MW-12	X	X	X	X	X	X	X	X	X	X
MW-13	X	X	X	X	X	X	X	X	X	X
MW-14	X	X	X	X	X	X	X	X	X	X
MW-15	X	X	X	X	X	X	X	X	X	X
MW-16	X	X	X	X	X	X	X	X	X	X
MW-17	X	X	X	X	X	X	X	X	X	X
MW-18	gauge only	gauge only	X	X						
TBW-1	gauge only	gauge only	X	X						
TBW-2	gauge only	gauge only	X	X						
TBW-3	gauge only	gauge only	X	X						
TBW-4	gauge only	gauge only	X	X						
TBW-5	gauge only	gauge only	X	X						
TBW-6	gauge only	gauge only	X	X						
RW-1	gauge only	gauge only	X	X						
RW-A1	gauge only	gauge only	X	X						
RW-A2	gauge only	gauge only	X	X						
OB-A1	gauge only	gauge only	X	X						
RW-B1	gauge only	gauge only	X	X						
RW-B2	gauge only	gauge only	X	X						
RW-B3	gauge only	gauge only	X	X						
RW-B4	gauge only	gauge only	X	X						
RW-C1	gauge only	gauge only	X	X						
RW-C2	gauge only	gauge only	X	X						
RW-C3	gauge only	gauge only	X	X						
RW-C4	gauge only	gauge only	X	X						
RW-C5	gauge only	gauge only	X	X						
RW-C6	gauge only	gauge only	X	X						
RW-C7	gauge only	gauge only	X	X						
OB-C1	gauge only	gauge only	X	X						
RW-D1	gauge only	gauge only	X	X						
RW-D2	gauge only	gauge only	X	X						
RW-D3	gauge only	gauge only	X	X						
RW-D4	gauge only	gauge only	X	X						
RW-D5	gauge only	gauge only	X	X						
OB-D1	gauge only	gauge only	X	X						
OB-D2	gauge only	gauge only	X	X						

Notes:

gauge only = measure groundwater elevation and floating product thickness only

TPH d/k/mo = total petroleum hydrocarbons as diesel, kerosene, and motor oil after silica gel cleanup

APPENDIX B

Groundwater Sampling Field Data Sheets

LFR LEVINE•FRICKE

WATER-LEVEL MEASUREMENTS LOG

Project No. 028-10060-04-*** Date April 1, 2009 Page 1 of ___

Project Name Oakland MSC Day: ☐ Sun ☐ Mon ☐ Tues ☒ Weds ☐ Thurs ☐ Fri ☐ Sat

Field Personnel Sharon Terwilliger and Morgan Jones

General Observations

WELL NO.	~~WELL ELEVATION~~ Time Measure	DEPTH TO WATER 1	DEPTH TO WATER 2	~~WATER ELEVATION~~ Depth to Prod	WELL SECURE? Y	WELL SECURE? N	Time Open	REMARKS (UNITS = FEET)
MW-10	1046	7.52	7.52	—	✓		834	
MW-13	1052	10.41	10.41	—	✓	No bolts	847	-3 9/16 Bolts
MW-14	1054	7.20	7.20	—	✓	No bolts	848	-1 9/16 bolt
MW-9	1057	8.08	8.08	—	✓		855	
MW-15	1105	9.91	9.91	—	✓		853	-1 9/16" BOLT
MW-17	1110	9.56	9.56	—	✓ No bolts		854	-3 9/16
MW-16	1108	11.25	11.25	—	✓ No bolts		856	-3 9/16 bolts
MW-4	1113	9.54	9.54	—	✓		858	
MW-2	1133	10.80	10.80	—	✓		915	
MW-1	1137	3.30	3.30	—	✓		922	
TBW-6	1143	2.87	2.87	2.86	✓		923	Sheen in bailer
MW-12	1146	6.30	6.30	—	✓		~~925~~	
OB-D1	1156	8.50	8.50	8.51	✓		929	Sheen on probe. SHEEN OBSERVED IN BAILER
OB-D2	1155	7.00	7.00	—	✓		931	
OB-C1	1205	7.96	7.96	7.32	✓		0944	PARTIALLY OBSTRUCTED AT 5.85 ft. Confirmed presence of product w/ bailer [illegible]
RW-C6	1221	7.36	7.36	—	✓		0947	
RW-C5	1220	7.88	7.88	—	✓		0948	
RW-C7	1231	7.89	7.89	~7.88 ~~[illegible]~~			0949	Could not confirm w/ bailer under dumpster
RW-C4	1233	8.52	8.52	—		X	0950	NO CAP. INSTALLED TEMPORARY SEAL. 4" CAP NEEDED. RWC4 CAP INSTALLED 4/2.
RW-C3	1236	6.98	6.98	—	✓		951	
RW-C2	1237	7.64	7.64	—	✓		0955	
RW-C1	1217	8.16	8.16	—	✓		0959	
RW-B4	1240	9.87	9.87	—	✓		1010	
RW-B3	1241	9.80	9.80	—	✓		1014	
RW-B2	1244	7.16	7.16	—	✓		1015	
RW-B1	1246	7.15	7.15	—	✓		1016	
MW-6	1251	4.48	4.48	4.45	✓		~~1017~~ 1017	0.01 ft PRODUCT OBSERVED IN BAILER; DK BROWN COLOR
OB-A1	1249	2.61	2.61	—	✓		1017	
RW-A1	1255	2.48	2.48	—	✓		1020	
RW-A2	1257	1.58	1.58	~~1.58 [illegible]~~	✓		1021	No product or sheen visible in bailer
MW-7	1306	6.95	6.95	—	✓		1024	-2x 9/16" BOLTS
MW-5	1310	4.89	4.89	—	✓		1027	-2x 9/16" BOLTS. ORGANIC SUBSTANCE ON PROBE TIP.
MW-11	1314	5.24	5.24	—	✓		1028	

LFR LEVINE•FRICKE

WATER-QUALITY SAMPLING LOG

Project No. 028-10060-04-*** Date: 4/1/09 Page 1 of 1

Project Name: MSC Oakland Edgewater Sampling Location: 7101 Edgewater Drive, Oakland, Ca

Sampler's Name: S Terwilliger Sample No.: MW-1 ☐ FB

Sampling Plan By: DCR Dated: 3/30/09 C.O.C. No.: ☐ DUP

Purge Method: ☐ Centrifugal Pump ☒ Disposable Bailer ☐ Hand Bail ☐ Submersible Pump ☐ Teflon Bailer ☐ Other

Purge Water Storage Container Type: 55 gallon drum Storage Location: On-site

Date Purge Water Disposed: 4/1/09 Where Disposed: On-site

Analyses Requested	No. and Type of Bottles Used
TPHg / BTEX / MTBE by 8260	3 VOAs with HCl preservative
TPHd / TPHmo / TPHk by 8010 with silica gel clean-up	1 Liter Amber

Lab Name: Curtis and Tompkins

Delivery By ☐ Courier ☒ Hand

Well No. MW-1 Depth of Water 3.30

Well Diameter: 2" Well Depth 15.70

☒ 2" (0.16 gal/feet) ☐ 5" (1.02 gal/feet) Water Column Height 12.40 ft

☐ 4" (0.65 gal/feet) ☐ 6" (1.47 gal/feet) Well Volume 1.98 GAL

12.40
x .2
2.48
3.30
5.78

80% DTW 5.78

Time	Inlet Depth	Depth to Water	Volume Purged (gal)	DO (mg/L)	Temperature (C°)	PH (SU)	Cond (uS/cm C)	ORP (mV)	Remarks
1424	-	START PURGE							
1432	-	-	2.0	1.10	17.79	7.04	8202	-154.3	
1435	-	-	4.0	1.41	17.80	6.92	12756	-154.0	
1439	-	-	6.0	4.02	18.28	6.91	19109	-126.5	
1444	-	-	6.5						WELL DEWATERED
1752	-	4.35							
1610			~ Sample ~						

Continue remarks on reverse, if needed.

LFR LEVINE • FRICKE

WATER-QUALITY SAMPLING LOG

Project No. 028-10060-04-*** Date: 4/1/09 Page 1 of _____

Project Name: MSC Oakland Edgewater Sampling Location: 7101 Edgewater Drive, Oakland, Ca

Sampler's Name: Mr. Jones Sample No.: MW-2 ☐ FB

Sampling Plan By: DCR Dated: 3/30/09 C.O.C. No.: _____ ☒ DUP MW-2D

Purge Method: ☐ Centrifugal Pump ☒ Disposable Bailer ☐ Hand Bail ☐ Submersible Pump ☐ Teflon Bailer ☐ Other _____

Purge Water Storage Container Type: 55 gallon drum Storage Location: On-site

Date Purge Water Disposed: 4/1/09 Where Disposed: On-site

Analyses Requested	No. and Type of Bottles Used
TPHg / BTEX / MTBE by 8260	3 VOAs with HCl preservative
TPHd / TPHmo / TPHk by 8010 with silica gel clean-up	1 Liter Amber

Lab Name: Curtis and Tompkins

Delivery By ☐ Courier _____ ☒ Hand _____

Well No. MW-2 Depth of Water 10.80

Well Diameter: 2" Well Depth 15.63

☒ 2" (0.16 gal/feet) ☐ 5" (1.02 gal/feet) Water Column Height 4.83

☐ 4" (0.65 gal/feet) ☐ 6" (1.47 gal/feet) Well Volume 0.7728

0.9660
+ 10.80
11.766

80% DTW 11.76

Time	Inlet Depth	Depth to Water	Volume Purged (gal)	DO (mg/L)	Temperature (C°)	PH (SU)	Cond (uS/cm C)	ORP (mV)	Remarks
1704			0.75	1.75	19.44	6.28	31638	-40.7	Cloudy Greenish Slight odor
1708			1.5	1.51	19.25	6.41	31232	-49.7	" "
1710			2.25	1.58	19.21	6.47	31168	-53.9	" "
1713			3	1.42	19.31	6.36	31584	-46.9	" "
1716		10.70	3.75	1.60	19.13	6.61	32083	-65.0	" "
1720			~ Sample ~						
1725			~ Dup Sample ~						

Continue remarks on reverse, if needed.

LFR LEVINE • FRICKE

WATER-QUALITY SAMPLING LOG

Project No. 028-10060-04-*** Date: 4/2/09 Page 1 of _____

Project Name: MSC Oakland Edgewater Sampling Location: 7101 Edgewater Drive, Oakland, Ca

Sampler's Name: S. Centrillage Sample No.: MW-5 ☐ FB

Sampling Plan By: DCR Dated: 3/30/09 C.O.C. No.: _____ ☐ DUP

Purge Method: ☐ Centrifugal Pump ☒ Disposable Bailer ☐ Hand Bail ☐ Submersible Pump ☐ Teflon Bailer ☐ Other _____

Purge Water Storage Container Type: 55 gallon drum Storage Location: On-site

Date Purge Water Disposed: 4/2/09 Where Disposed: On-site

Analyses Requested	No. and Type of Bottles Used
TPHg / BTEX / MTBE by 8260	3 VOAs with HCl preservative
TPHd / TPHmo / TPHk by 8010 with silica gel clean-up	1 Liter Amber

Lab Name: Curtis and Tompkins

Delivery By ☐ Courier ☒ Hand

Well No. MW-5 Depth of Water 4.89

Well Diameter: 2inch Well Depth 14.28

☒ 2" (0.16 gal/feet) ☐ 5" (1.02 gal/feet) Water Column Height 9.39

☐ 4" (0.65 gal/feet) ☐ 6" (1.47 gal/feet) Well Volume 1.502 (1.5)

9.39
x .2
1,878
4,689
6.768

80% DTW 6.76

Time	Inlet Depth	Depth to Water	Volume Purged (gal)	DO (mg/L)	Temperature (C°)	PH (SU)	Cond (uS/cm C)	ORP (mV)	Remarks
900		~Start							
908			1.5	1.76	15.47 15.38	7.23 7.22	788	-51.6	Cloudy
914			3	1.54	15.76	7.12	937	-49.0	" "
917			4.5	2.15	15.84	7.10	1164	-48.2 -48.3	" "
921			6	1.43	15.62	7.06	1231	-43.5	" "
924		4.92	7.5	1.57	15.15	6.98	2697	-32.8	" "
930				~Sample~					

Continue remarks on reverse, if needed.

LFR LEVINE • FRICKE

WATER-QUALITY SAMPLING LOG

Project No. 028-10060-04-*** Date: 4/2/09 Page 1 of 1

Project Name: MSC Oakland Edgewater Sampling Location: 7101 Edgewater Drive, Oakland, Ca

Sampler's Name: M. Jones Sample No.: ☐ FB

Sampling Plan By: DCR Dated: 3/30/09 C.O.C. No.: ☐ DUP

Purge Method: ☐ Centrifugal Pump ☒ Disposable Bailer ☐ Hand Bail ☐ Submersible Pump ☐ Teflon Bailer ☐ Other

Purge Water Storage Container Type: 55 gallon drum Storage Location: On-site

Date Purge Water Disposed: 4/2/09 Where Disposed: On-site

Analyses Requested	No. and Type of Bottles Used
TPHg / BTEX / MTBE by 8260	3 VOAs with HCl preservative
TPHd / TPHmo / TPHk by 8010 with silica gel clean-up	1 Liter Amber

Lab Name: Curtis and Tompkins

Delivery By ☐ Courier ☒ Hand

Well No. MW-7 Depth of Water 6.95

Well Diameter: 2 inch Well Depth 14.14

☒ 2" (0.16 gal/feet) ☐ 5" (1.02 gal/feet) Water Column Height 7.19

☐ 4" (0.65 gal/feet) ☐ 6" (1.47 gal/feet) Well Volume 1.150 (1.25)

7.19
X .2
1.438
6.95
8.38

80% DTW 8.38

Time	Inlet Depth	Depth to Water	Volume Purged (gal)	DO (mg/L)	Temperature (C°)	PH (SU)	Cond (uS/cm C)	ORP (mV)	Remarks
0850									START PURGE
0855	–	–	1.25	1.53	17.09	6.39	8452	-32.4	LIGHT BROWN
0900	–	–	2.5	1.51	16.91	6.61	3051	99.5	"
0905	–	–	3.75	1.86	17.11	6.60	2879	150.4	"
0908	–	–	5.0	1.83	17.22	6.59	2893	174.7	"
0912	–	–	6.25	1.37	17.22	6.55	3307	58.7	"
0915	–	6.43							
0920									SAMPLE

Continue remarks on reverse, if needed.

LFR LEVINE • FRICKE

WATER-QUALITY SAMPLING LOG

Project No. 028-10060-04-*** Date: Purge 4/1/09 Sample 4/2/09 Page 1 of _____

Project Name: MSC Oakland Edgewater Sampling Location: 7101 Edgewater Drive, Oakland, Ca

Sampler's Name: M. Jones Sample No.: _____ ☐ FB

Sampling Plan By: DCR Dated: 3/30/09 C.O.C. No.: _____ ☐ DUP

Purge Method: ☐ Centrifugal Pump ☒ Disposable Bailer ☐ Hand Bail ☐ Submersible Pump ☐ Teflon Bailer ☐ Other _____

Purge Water Storage Container Type: 55 gallon drum Storage Location: On-site

Date Purge Water Disposed: 4/1/09 Where Disposed: On-site

Analyses Requested	No. and Type of Bottles Used
TPHg / BTEX / MTBE by 8260	3 VOAs with HCl preservative
TPHd / TPHmo / TPHk by 8010 with silica gel clean-up	1 Liter Amber

Lab Name: Curtis and Tompkins

Delivery By ☐ Courier ☒ Hand

Well No. MW-8 Depth of Water 9.54

Well Diameter: 2" Well Depth 15.14

☒ 2" (0.16 gal/feet) ☐ 5" (1.02 gal/feet) Water Column Height 5.60 ft

☐ 4" (0.65 gal/feet) ☐ 6" (1.47 gal/feet) Well Volume 0.90 (3) Gal

5.60
× 0.2
1.12
+ 9.54
10.66

80% DTW 10.66

Time	Inlet Depth	Depth to Water	Volume Purged (gal)	DO (mg/L)	Temperature (C°)	PH (SU)	Cond (uS/cm C)	ORP (mV)	Remarks
1518									START PURGE
1522	—	—	1.0	1.15	16.95	6.88	22441	110.5	
1526	—	—	2.0	1.25	16.46	6.97	20252	44.9	
1531	—	—	3.0	1.15	16.51	6.96	24706	30.2	
1536	—	—	4.0	1.62	16.54	6.98	25888	2.5	
1543	—	—	5.0	2.70	16.56	7.02	24573	6.7	
1547		13.83	"	wait for	80%				
4/2/09	1112	9.58							
	1116	~Sample~							

Continue remarks on reverse, if needed.

LFR LEVINE • FRICKE

WATER-QUALITY SAMPLING LOG

Project No. 028-10060-04-*** Date: 4/2/09 Page 1 of ____

Project Name: MSC Oakland Edgewater Sampling Location: 7101 Edgewater Drive, Oakland, Ca

Sampler's Name: S. Trevillyan Sample No.: ____ ☐ FB

Sampling Plan By: DCR Dated: 3/30/09 C.O.C. No.: ____ ☐ DUP ____

Purge Method: ☐ Centrifugal Pump ☒ Disposable Bailer ☐ Hand Bail ☐ Submersible Pump ☐ Teflon Bailer ☐ Other ____

Purge Water Storage Container Type: 55 gallon drum Storage Location: On-site

Date Purge Water Disposed: 4/2/09 Where Disposed: On-site

Analyses Requested	No. and Type of Bottles Used
TPHg / BTEX / MTBE by 8260	3 VOAs with HCl preservative
TPHd / TPHmo / TPHk by 8010 with silica gel clean-up	1 Liter Amber

Lab Name: Curtis and Tompkins

Delivery By ☐ Courier ____ ☒ Hand ____

Well No. MW-9 Depth of Water 8.08

Well Diameter: 2" Well Depth 14.43

☒ 2" (0.16 gal/feet) ☐ 5" (1.02 gal/feet) Water Column Height 6.35

☐ 4" (0.65 gal/feet) ☐ 6" (1.47 gal/feet) Well Volume 1.016 (1)

6.35
X.2
1.270
8.08
9.35

80% DTW ____

Time	Inlet Depth	Depth to Water	Volume Purged (gal)	DO (mg/L)	Temperature (C°)	PH (SU)	Cond (uS/cm C)	ORP (mV)	Remarks
1420			1.25	0.72	17.08	6.90	19025	-187.9	Cloudy
1425			2.25	0.99	17.20	6.91	21663	-197.4	" "
1428			3.25	1.05	17.00	6.91	19374	-190.9	" "
1431		~~7.80~~	4.25	1.23	17.17	6.94	18727	-196.3	" "
1434		9.86	5.25	1.44	16.99	6.96		-156.4	" "
					16.99	6.95			
							17716	-1[illegible]	
1440		9.91	~Sample~						

Continue remarks on reverse, if needed.

LFR LEVINE • FRICKE

WATER-QUALITY SAMPLING LOG

Project No. 028-10060-04-*** Date: 4/1/09 Page 1 of 1

Project Name: MSC Oakland Edgewater Sampling Location: 7101 Edgewater Drive, Oakland, Ca

Sampler's Name: M. JONES Sample No.: MW-10 ☐ FB

Sampling Plan By: DCR Dated: 3/30/09 C.O.C. No.: ☐ DUP

Purge Method: ☐ Centrifugal Pump ☒ Disposable Bailer ☐ Hand Bail ☐ Submersible Pump ☐ Teflon Bailer ☐ Other

Purge Water Storage Container Type: 55 gallon drum Storage Location: On-site

Date Purge Water Disposed: 4/1/09 Where Disposed: On-site

Analyses Requested	No. and Type of Bottles Used
TPHg / BTEX / MTBE by 8260	3 VOAs with HCl preservative
TPHd / TPHmo / TPHk by 8010 with silica gel clean-up	1 Liter Amber

Lab Name: Curtis and Tompkins

Delivery By ☐ Courier ☒ Hand

Well No. MW-10 Depth of Water 7.52

Well Diameter: 2" Well Depth 15.00

☒ 2" (0.16 gal/feet) ☐ 5" (1.02 gal/feet) Water Column Height 7.48 ft

☐ 4" (0.65 gal/feet) ☐ 6" (1.47 gal/feet) Well Volume 1.20 GAL

15.00 − 7.52 = 7.48 × 0.2 = 1.496 + 3.0 + 0.52 = 1.496 + 7.52 = 9.016

80% DTW 9.01

Time	Inlet Depth	Depth to Water	Volume Purged (gal)	DO (mg/L)	Temperature (C°)	PH (SU)	Cond (uS/cm C)	ORP (mV)	Remarks
1609	-	-	1.25	2.75 2.04 (DUP)	16.24	6.99	2450	-91.6	DARK GRAY
1617	-	-	2.5	1.30	16.13	6.78	2442	-106.3	"
1622	-	-	3.75	1.57	16.03	6.80	2642	-97.4	"
1627	-	-	5	1.60	16.05	6.82	2617	-100.5	"
1629	-	8.14	6.25	1.58	15.92	6.80	2684	-100.3	GRAY
1635	SAMPLE								

Continue remarks on reverse, if needed.

LFR LEVINE • FRICKE

WATER-QUALITY SAMPLING LOG

Project No. 028-10060-04-*** Date: 4/2/09 Page 1 of 1

Project Name: MSC Oakland Edgewater Sampling Location: 7101 Edgewater Drive, Oakland, Ca

Sampler's Name: S. TERWILLIGER Sample No.: MW-11 ☐ FB

Sampling Plan By: DCR Dated: 3/30/09 C.O.C. No.: ☐ DUP

Purge Method: ☐ Centrifugal Pump ☒ Disposable Bailer ☐ Hand Bail ☐ Submersible Pump ☐ Teflon Bailer ☐ Other

Purge Water Storage Container Type: 55 gallon drum Storage Location: On-site

Date Purge Water Disposed: 4/2/09 Where Disposed: On-site

Analyses Requested	No. and Type of Bottles Used
TPHg / BTEX / MTBE by 8260	3 VOAs with HCl preservative
TPHd / TPHmo / TPHk by 8010 with silica gel clean-up	1 Liter Amber

Lab Name: Curtis and Tompkins

Delivery By ☐ Courier ☒ Hand

Well No. MW-11 Depth of Water 5.24

Well Diameter: 2" Well Depth 19.24

☒ 2" (0.16 gal/feet) ☐ 5" (1.02 gal/feet) Water Column Height 14.00

☐ 4" (0.65 gal/feet) ☐ 6" (1.47 gal/feet) Well Volume 2.24

14.00
x 2
28.0
5.24
8.04

80% DTW 8.04

Time	Inlet Depth	Depth to Water	Volume Purged (gal)	DO (mg/L)	Temperature (C°)	PH (SU)	Cond (uS/cm C)	ORP (mV)	Remarks
1013	~								START PURGE
1018	-	7.65 (M)	2.25	1.69	17.11	6.38	5494	-23.0	CLOUDY GRAY
1022	-	-	4.5	1.19	17.73	6.34	7144	-32.2	"
1026	-	-	6.75	1.70	17.42	6.42	6966	-32.4	
1030	-	-	9.0	1.74	17.69	6.40	7726	-33.5	
1033	-	7.65	11.25	1.91	18.11	6.39	8034	-40.8	
1035	~								SAMPLE

Continue remarks on reverse, if needed.

LFR LEVINE • FRICKE

WATER-QUALITY SAMPLING LOG

Project No. 028-10060-04-*** Date: 4/1/09 Page 1 of 1

Project Name: MSC Oakland Edgewater Sampling Location: 7101 Edgewater Drive, Oakland, Ca

Sampler's Name: M. Jones Sample No.: ☒ FB MW-12-FB

Sampling Plan By: DCR Dated: 3/30/09 C.O.C. No.: ☐ DUP

Purge Method: ☐ Centrifugal Pump ☒ Disposable Bailer ☐ Hand Bail ☐ Submersible Pump ☐ Teflon Bailer ☐ Other

Purge Water Storage Container Type: 55 gallon drum Storage Location: On-site

Date Purge Water Disposed: 4/1/09 Where Disposed: On-site

Analyses Requested	No. and Type of Bottles Used
TPHg / BTEX / MTBE by 8260	3 VOAs with HCl preservative
TPHd / TPHmo / TPHk by 8010 with silica gel clean-up	1 Liter Amber

Lab Name: Curtis and Tompkins

Delivery By ☐ Courier ☒ Hand

Well No. MW-12 Depth of Water 6.30

Well Diameter: ☒ 2" (0.16 gal/feet) ☐ 5" (1.02 gal/feet) ☐ 4" (0.65 gal/feet) ☐ 6" (1.47 gal/feet)

Well Depth 14.45

Water Column Height 8.15 Ft

Well Volume 1.30 Gal

8.15
1.30
6.30
7.93

80% DTW

Time	Inlet Depth	Depth to Water	Volume Purged (gal)	DO (mg/L)	Temperature (C°)	PH (SU)	Cond (uS/cm C)	ORP (mV)	Remarks
1813	-	Start							
1819	-	-	1.5	1.54	16.47	7.34	4010	-192.4	Cloudy Gray
1823	-	-	3	1.29	16.45	7.39	4843	-195.9	Cloudy Gray Sl
1827	-	-	4.5	1.29	16.45	7.34	4702	-189.2	Cloudy Gray Sl
1828	-	-	6.0	1.21	16.40	7.34	4753	-186.3	"
1835	-	-	7.5	1.08	16.50	7.41	5300	-191.1	"
1836	-	6.63							
1840	-	Sample							

Continue remarks on reverse, if needed.

LFR LEVINE • FRICKE

WATER-QUALITY SAMPLING LOG

Project No. 028-10060-04-*** Date: 4/2/09 Page 1 of 1

Project Name: MSC Oakland Edgewater Sampling Location: 7101 Edgewater Drive, Oakland, Ca

Sampler's Name: M. Jones Sample No.: MW-13 ☐ FB

Sampling Plan By: DCR Dated: 3/30/09 C.O.C. No.: ☐ DUP

Purge Method: ☐ Centrifugal Pump ☒ Disposable Bailer ☐ Hand Bail ☐ Submersible Pump ☐ Teflon Bailer ☐ Other

Purge Water Storage Container Type: 55 gallon drum Storage Location: On-site

Date Purge Water Disposed: 4/2/09 Where Disposed: On-site

Analyses Requested	No. and Type of Bottles Used
TPHg / BTEX / MTBE by 8260	3 VOAs with HCl preservative
TPHd / TPHmo / TPHk by 8010 with silica gel clean-up	1 Liter Amber

Lab Name: Curtis and Tompkins

Delivery By ☐ Courier ☒ Hand

Well No. MW-13 Depth of Water 10.41

Well Diameter: 2" Well Depth 19.58

☒ 2" (0.16 gal/feet) ☐ 5" (1.02 gal/feet) Water Column Height 9.17

☐ 4" (0.65 gal/feet) ☐ 6" (1.47 gal/feet) Well Volume 1.4672 (4.5)

1.834
10.41
12.244

80% DTW 12.244

Time	Inlet Depth	Depth to Water	Volume Purged (gal)	DO (mg/L)	Temperature (C°)	PH (SU)	Cond (uS/cm C)	ORP (mV)	Remarks
1522	~								START PURGE
1526	—	—	1.5	1.40	18.15	6.97	8527	-104.5	DARK GRAY
1531	—	—	3.0	1.30	17.96	6.83	9558	-97.0	"
1536	—	—	4.5	1.72	17.92	6.81	9984	-86.9	"
1542	—	—	6.0	1.60	17.98	6.80	10373	-86.2	"
1548	—	12.45	7.5	1.29	17.68	6.75	10552	-99.3	"
1550	—	14.80	~						
1555	SAMPLE								

Continue remarks on reverse, if needed.

LFR LEVINE•FRICKE

WATER-QUALITY SAMPLING LOG

Project No. 028-10060-04-*** Date: 4/2/09 Page 1 of 1

Project Name: MSC Oakland Edgewater Sampling Location: 7101 Edgewater Drive, Oakland, Ca

Sampler's Name: S. Cermeño Sample No.: ☐ FB

Sampling Plan By: DCR Dated: 3/30/09 C.O.C. No.: ☐ DUP

Purge Method: ☐ Centrifugal Pump ☒ Disposable Bailer ☐ Hand Bail ☐ Submersible Pump ☐ Teflon Bailer ☐ Other

Purge Water Storage Container Type: 55 gallon drum Storage Location: On-site

Date Purge Water Disposed: 4/2/09 Where Disposed: On-site

Analyses Requested	No. and Type of Bottles Used
TPHg / BTEX / MTBE by 8260	3 VOAs with HCl preservative
TPHd / TPHmo / TPHk by 8010 with silica gel clean-up	1 Liter Amber

Lab Name: Curtis and Tompkins

Delivery By ☐ Courier ☒ Hand

Well No. MW-14 Depth of Water 7.20

Well Diameter: 2" Well Depth 14.62

☒ 2" (0.16 gal/feet) ☐ 5" (1.02 gal/feet) Water Column Height 7.42

☐ 4" (0.65 gal/feet) ☐ 6" (1.47 gal/feet) Well Volume 1.1872 (1.75)

1.484
7.2
8.684

80% DTW 8.68

Time	Inlet Depth	Depth to Water	Volume Purged (gal)	DO (mg/L)	Temperature (C°)	PH (SU)	Cond (uS/cm C)	ORP (mV)	Remarks
1525			1.25	1.80	17.23	7.24	10796	-116.6	
1529			2.5	1.28	17.26	7.26	11007	-104.5	
15,32			3.75	1.89	17.00	7.22	10560	-91.1	
1535			5	1.40	17.17	7.28	11320	-118.9	
1540		7.80	6.25	1.02	17.22	7.31	11109	-129.6	
1545		n Sample							

Continue remarks on reverse, if needed.

LFR LEVINE • FRICKE

WATER-QUALITY SAMPLING LOG

Project No. 028-10060-04-*** Date: 4/2/09 Page 1 of 1

Project Name: MSC Oakland Edgewater Sampling Location: 7101 Edgewater Drive, Oakland, Ca

Sampler's Name: M Jones Sample No.: MW-15 ☒ FB

Sampling Plan By: DCR Dated: 3/30/09 C.O.C. No.: ☐ DUP

Purge Method: ☐ Centrifugal Pump ☒ Disposable Bailer ☐ Hand Bail ☐ Submersible Pump ☐ Teflon Bailer ☐ Other

Purge Water Storage Container Type: 55 gallon drum Storage Location: On-site

Date Purge Water Disposed: 4/2/09 Where Disposed: On-site

Analyses Requested	No. and Type of Bottles Used
TPHg / BTEX / MTBE by 8260	3 VOAs with HCl preservative
TPHd / TPHmo / TPHk by 8010 with silica gel clean-up	1 Liter Amber

Lab Name: Curtis and Tompkins

Delivery By ☐ Courier ☒ Hand

Well No. MW-15 Depth of Water 9.91

Well Diameter: Well Depth 20.32

☐ 2" (0.16 gal/feet) ☐ 5" (1.02 gal/feet) Water Column Height 10.41

☐ 4" (0.65 gal/feet) ☐ 6" (1.47 gal/feet) Well Volume 1.665

2.082
9.91

80% DTW 11.992

Time	Inlet Depth	Depth to Water	Volume Purged (gal)	DO (mg/L)	Temperature (C°)	PH (SU)	Cond (uS/cm C)	ORP (mV)	Remarks
1350	—	Field	Blank	—	—	—	—	—	
1358	—	—	—	—	—	—	—	—	START PURGE
1404	—	—	1.75	0.67	17.85	7.20	11283	-160.6	DARK GRAY
1410	—	—	3.5	0.82	17.70	7.14	10992	-156.0	"
1414	—	—	5.25	0.76	17.61	7.14	10637	-154.9	
1420	—	10.00	7.0	0.86	17.55	7.13	10448	-153.8	
1425	SAMPLE	—	—	—	—	—	—	—	

Continue remarks on reverse, if needed.

LFR LEVINE • FRICKE

WATER-QUALITY SAMPLING LOG

Project No. 028-10060-04-*** Date: purge 4/1/09 Sample 4/2/09 Page 1 of 1

Project Name: MSC Oakland Edgewater Sampling Location: 7101 Edgewater Drive, Oakland, Ca

Sampler's Name: ~~M. Jones~~ S. Camillo Sample No.: ☐ FB

Sampling Plan By: DCR Dated: 3/30/09 C.O.C. No.: ☐ DUP

Purge Method: ☐ Centrifugal Pump ☒ Disposable Bailer ☐ Hand Bail ☐ Submersible Pump ☐ Teflon Bailer ☐ Other

Purge Water Storage Container Type: 55 gallon drum Storage Location: On-site

Date Purge Water Disposed: 4/1/09 Where Disposed: On-site

Analyses Requested	No. and Type of Bottles Used
TPHg / BTEX / MTBE by 8260	3 VOAs with HCl preservative
TPHd / TPHmo / TPHk by 8010 with silica gel clean-up	1 Liter Amber

Lab Name: Curtis and Tompkins

Delivery By ☐ Courier ☒ Hand

Well No. MW-16 Depth of Water 11.25

Well Diameter: 2 in Well Depth ~~15.90~~ 13.15

☒ 2" (0.16 gal/feet) ☐ 5" (1.02 gal/feet) Water Column Height 1.90 ft

☐ 4" (0.65 gal/feet) ☐ 6" (1.47 gal/feet) Well Volume 0.30 CAL

~~3.80~~ 0.38
11.25 11.25
15.05

80% DTW ~~15.65~~

4/Time/09	Inlet Depth	Depth to Water	Volume Purged (gal)	DO (mg/L)	Temperature (C°)	PH (SU)	Cond (uS/cm C)	ORP (mV)	Remarks
1530			~0.30	4.30 (1.92 @ 1532)	17.72	7.27	1539	-121.7	Dry @ end
1530			0.30	Dewatered					
4/2/09									
~~N/A~~		9.58							
~~Hib~~		~ Sample							
R4/2/09	1144	12.02							
	1150	~ Sample ~							
			3 VOAs	then dewatered				(1205)	

Continue remarks on reverse, if needed.

LFR LEVINE • FRICKE

WATER-QUALITY SAMPLING LOG

Project No. 028-10060-04-*** Date: 4/2/09 Page 1 of 1

Project Name: MSC Oakland Edgewater Sampling Location: 7101 Edgewater Drive, Oakland, Ca

Sampler's Name: M. Jones Sample No.: ☐ FB

Sampling Plan By: DCR Dated: 3/30/09 C.O.C. No.: ☐ DUP

Purge Method: ☐ Centrifugal Pump ☒ Disposable Bailer ☐ Hand Bail ☐ Submersible Pump ☐ Teflon Bailer ☐ Other

Purge Water Storage Container Type: 55 gallon drum Storage Location: On-site

Date Purge Water Disposed: 4/2/09 Where Disposed: On-site

Analyses Requested	No. and Type of Bottles Used
TPHg / BTEX / MTBE by 8260	3 VOAs with HCl preservative
TPHd / TPHmo / TPHk by 8010 with silica gel clean-up	1 Liter Amber

Lab Name: Curtis and Tompkins

Delivery By ☐ Courier ☒ Hand

Well No. MW-17 Depth of Water ~~MW-17~~ 9.56

Well Diameter: 2 in Well Depth 17.36

☒ 2" (0.16 gal/feet) ☐ 5" (1.02 gal/feet) Water Column Height 7.80

☐ 4" (0.65 gal/feet) ☐ 6" (1.47 gal/feet) Well Volume 1.248 (1.25)

7.80
x 0.20
1.56
+9.56
11.12

80% DTW 11.12

Time	Inlet Depth	Depth to Water	Volume Purged (gal)	DO (mg/L)	Temperature (C°)	PH (SU)	Cond (uS/cm C)	ORP (mV)	Remarks
1144	~								START PURGE
1146	—	—	1.25	1.33	16.64	7.06	27661	-72.5	LT. GRAY, MILD SULFUR-LIKE ODOR.
1151	—	—	2.5	0.92	16.44	7.16	27606	-161.3	"
1154	—	—	3.75	0.90	16.60	7.20	27265	-260.1	CLEAR, SLIGHT ODOR
1200	—	—	5.0	0.79	16.61	7.28	27609	-294.0	"
1208	—	9.56	6.25	0.79	16.73	7.31	29754	-268.7	"
1215	~								SAMPLE

Continue remarks on reverse, if needed.

APPENDIX C

Laboratory Results and Chain-of-Custody Documentation


Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 211122
ANALYTICAL REPORT

LFR Levine Fricke	Project : 028-10060-00
1900 Powell Street	Location : Oakland MSC
Emeryville, CA 94608	Level : II

Sample ID	Lab ID
MW-1	211122-001
MW-2	211122-002
MW-2D	211122-003
MW-5	211122-004
MW-7	211122-005
MW-8	211122-006
MW-9	211122-007
MW-10	211122-008
MW-11	211122-009
MW-12	211122-010
MW-12-FB	211122-011
MW-13	211122-012
MW-14	211122-013
MW-15	211122-014
MW-15-FB	211122-015
MW-16	211122-016
MW-17	211122-017
TB-01	211122-018
TB-02	211122-019

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 04/20/2009
Project Manager

Signature: _____ Date: 04/20/2009
Senior Program Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**211122**
Client:	**LFR Levine Fricke**
Project:	**028-10060-00**
Location:	**Oakland MSC**
Request Date:	**04/02/09**
Samples Received:	**04/02/09**

This data package contains sample and QC results for sixteen water samples, requested for the above referenced project on 04/02/09. The samples were received cold and intact. All data were e-mailed to Daren Roth on 04/16/09.

TPH-Extractables by GC (EPA 8015B):

High recovery was observed for diesel C10-C24 in the MSD for batch 149698; the parent sample was not a project sample, the LCS was within limits, and the associated RPD was within limits. No other analytical problems were encountered.

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

No analytical problems were encountered.

Curtis & Tompkins, Ltd.
Analytical Laboratory Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510) 486-0900 Phone
(510) 486-0532 Fax

CHAIN OF CUSTODY

C & T LOGIN #: 21122

Project No.: 028-10060-00
Project Name: Oakland MSC
Project P.O.: 028-10060-00
Turnaround Time: 6-7 day RUSH

Sampler: ST/MS
Report To: DARREN ROTH
Company: LFR Inc
Telephone: 510 652 4500
Fax: 510 652 2246

Lab No.	Sample ID.	Sampling Date Time	Matrix: Soil	Water	Waste	# of Containers	Preservative: HCL	H_2SO_4	HNO_3	ICE	Unpres	Analysis: TPHd/BTEX/MTBE (8260) SIM	TPHd/mo/k
1	MW-1	4/1/09 1610		X		3 4	3				1	X	X
2	MW-2	4/1/09 1720		X		3 4	3				1	X	X
3	MW-2D	4/1/09 1725		X		3 4	3				1	X	X
4	MW-5	4/2/09 0930		X		3 4	3				1	X	X
5	MW-7	4/2/09 0920		X		3 4	3				1	X	X
6	MW-8	4/2/09 1116		X		3 4	3				1	X	X
7	MW-9	4/2/09 1440		X		3 4	3				1	X	X
8	MW-10	4/1/09 1635		X		3 4	3				1	X	X
9	MW-11	4/2/09 1035		X		3 4	3				1	X	X
10	MW-12	4/11/09 1840		X		3 4	3				1	X	X
11	MW-12-FB	4/11/09 1900		X		3 4	3				1	X	X
12	MW-13	4/2/09 1555		X		5	4				1	X	X
13	MW-14	4/2/09 1545		X		5	4				1	X	X

Notes:
* USE SILICA GEL CLEANUP ON THE TPHd/TPHmo/TPHK Samples

SAMPLE RECEIPT
☐ Intact ☐ Cold
☑ On Ice ☐ Ambient
Preservative Correct?
☐ Yes ☐ No ☐ N/A

RELINQUISHED BY:
SIGNATURE — 4/2/09 548 DATE / TIME
DATE / TIME
DATE / TIME

RECEIVED BY:
Pat Langley 4/2/09 548 DATE / TIME
DATE / TIME
DATE / TIME

Curtis & Tompkins, Ltd.
Analytical Laboratory Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510) 486-0900 Phone
(510) 486-0532 Fax

CHAIN OF CUSTODY

C & T LOGIN #: 211122

Project No.: 028-1006000
Project Name: Oakland MSC
Project P.O.: 028-10060-00
Turnaround Time: 6-7 day Rush

Sampler: ST/MS
Report To: DAREN ROTH
Company: LFR INC
Telephone: 510 652 4500
Fax: 510 652 2246

Lab No.	Sample ID.	Sampling Date Time	Matrix: Soil	Water	Waste	# of Containers	Preservative: HCL	H_2SO_4	HNO_3	ICE	Unpres	Analysis: TPHg, BTEX/MTBE (8260)	TPHd/mo/k (8015) Cleanup	HOLD
14	MW-15	4/2/09 1425		X		4	3				1	X	X	
15	MW-15-FB	4/2/09 1350		X		4	3				1			X
16	MW-16	4/2/09 1150		X		3	3					X		
17	MW-17	4/2/09 1115		X		4	3				1	X	X	
18	TB-01	4/1/09		X		1	1							X
19	TB-02	4/2/09		X		1	1							X

Notes:
* USE SILICA GEL CLEANUP ON THE TPHd/TPHmo/TPHk SAMPLES

SAMPLE RECEIPT
☐ Intact ☐ Cold
☑ On Ice ☐ Ambient
Preservative Correct?
☐ Yes ☐ No ☐ N/A

RELINQUISHED BY:
SIGNATURE — 4/2/09 5:48 DATE / TIME
DATE / TIME
DATE / TIME

RECEIVED BY:
SIGNATURE — 4/2/09 5:48 DATE / TIME
DATE / TIME
DATE / TIME

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 211122 Date Received 4/2/09 Number of coolers 2
Client LFR Project OAKLAND MISC

Date Opened 4/2/09 By (print) M. WILLIAMS (sign)
Date Logged in ↓ By (print) ↓ (sign) ↓

1. Did cooler come with a shipping slip (airbill, etc) YES (NO)
Shipping info

2A. Were custody seals present? ☐ YES (circle) on cooler on samples ☐ (NO)
How many Name Date
2B. Were custody seals intact upon arrival? YES NO N/A
3. Were custody papers dry and intact when received? YES NO
4. Were custody papers filled out properly (ink, signed, etc)? YES NO
5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO
6. Indicate the packing in cooler: (if other, describe)

☐ Bubble Wrap ☐ Foam blocks ☑ Bags ☐ None
☐ Cloth material ☐ Cardboard ☐ Styrofoam ☐ Paper towels

7. Temperature documentation:

Type of ice used: ☑ Wet ☐ Blue/Gel ☐ None Temp(°C) 9.8, 1.8

☐ Samples Received on ice & cold without a temperature blank

☐ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES (NO)
If YES, what time were they transferred to freezer?
9. Did all bottles arrive unbroken/unopened? YES NO
10. Are samples in the appropriate containers for indicated tests? YES NO
11. Are sample labels present, in good condition and complete? YES NO
12. Do the sample labels agree with custody papers? YES NO
13. Was sufficient amount of sample sent for tests requested? YES NO
14. Are the samples appropriately preserved? YES NO N/A
15. Are bubbles > 6mm absent in VOA samples? YES NO N/A
16. Was the client contacted concerning this sample delivery? YES NO
If YES, Who was called? By Date:

COMMENTS

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	028-10060-00	Analysis:	EPA 8015B
Matrix:	Water	Diln Fac:	1.000
Units:	ug/L	Received:	04/02/09

Field ID:	MW-1	Sampled:	04/01/09
Type:	SAMPLE	Prepared:	04/06/09
Lab ID:	211122-001	Analyzed:	04/13/09
Batch#:	149666	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	540	50
Diesel C10-C24	480 Y	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	101	61-127

Field ID:	MW-2	Sampled:	04/01/09
Type:	SAMPLE	Prepared:	04/06/09
Lab ID:	211122-002	Analyzed:	04/13/09
Batch#:	149666	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	74	61-127

Field ID:	MW-2D	Sampled:	04/01/09
Type:	SAMPLE	Prepared:	04/06/09
Lab ID:	211122-003	Analyzed:	04/13/09
Batch#:	149666	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	82	61-127

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

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	028-10060-00	Analysis:	EPA 8015B
Matrix:	Water	Diln Fac:	1.000
Units:	ug/L	Received:	04/02/09

Field ID:	MW-5	Sampled:	04/02/09
Type:	SAMPLE	Prepared:	04/06/09
Lab ID:	211122-004	Analyzed:	04/13/09
Batch#:	149666	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	840	50
Diesel C10-C24	730 Y	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	91	61-127

Field ID:	MW-7	Sampled:	04/02/09
Type:	SAMPLE	Prepared:	04/06/09
Lab ID:	211122-005	Analyzed:	04/13/09
Batch#:	149666	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	96	61-127

Field ID:	MW-8	Sampled:	04/02/09
Type:	SAMPLE	Prepared:	04/06/09
Lab ID:	211122-006	Analyzed:	04/13/09
Batch#:	149666	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	92	61-127

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

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	028-10060-00	Analysis:	EPA 8015B
Matrix:	Water	Diln Fac:	1.000
Units:	ug/L	Received:	04/02/09

Field ID:	MW-9	Sampled:	04/02/09
Type:	SAMPLE	Prepared:	04/07/09
Lab ID:	211122-007	Analyzed:	04/15/09
Batch#:	149698	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	53 Y	50
Diesel C10-C24	130 Y	50
Motor Oil C24-C36	380	300

Surrogate	%REC	Limits
o-Terphenyl	95	61-127

Field ID:	MW-10	Sampled:	04/01/09
Type:	SAMPLE	Prepared:	04/07/09
Lab ID:	211122-008	Analyzed:	04/14/09
Batch#:	149698	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	117	61-127

Field ID:	MW-11	Sampled:	04/02/09
Type:	SAMPLE	Prepared:	04/07/09
Lab ID:	211122-009	Analyzed:	04/14/09
Batch#:	149698	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	86	61-127

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

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	028-10060-00	Analysis:	EPA 8015B
Matrix:	Water	Diln Fac:	1.000
Units:	ug/L	Received:	04/02/09

Field ID:	MW-12	Sampled:	04/01/09
Type:	SAMPLE	Prepared:	04/07/09
Lab ID:	211122-010	Analyzed:	04/15/09
Batch#:	149698	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	300	50
Diesel C10-C24	330 Y	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	82	61-127

Field ID:	MW-12-FB	Sampled:	04/01/09
Type:	SAMPLE	Prepared:	04/07/09
Lab ID:	211122-011	Analyzed:	04/15/09
Batch#:	149698	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	82	61-127

Field ID:	MW-13	Sampled:	04/02/09
Type:	SAMPLE	Prepared:	04/07/09
Lab ID:	211122-012	Analyzed:	04/15/09
Batch#:	149698	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	110 Y	50
Motor Oil C24-C36	610	300

Surrogate	%REC	Limits
o-Terphenyl	69	61-127

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

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	028-10060-00	Analysis:	EPA 8015B
Matrix:	Water	Diln Fac:	1.000
Units:	ug/L	Received:	04/02/09

Field ID:	MW-14	Sampled:	04/02/09
Type:	SAMPLE	Prepared:	04/07/09
Lab ID:	211122-013	Analyzed:	04/15/09
Batch#:	149698	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	90	61-127

Field ID:	MW-15	Sampled:	04/02/09
Type:	SAMPLE	Prepared:	04/07/09
Lab ID:	211122-014	Analyzed:	04/15/09
Batch#:	149698	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	85 Y	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	77	61-127

Field ID:	MW-17	Sampled:	04/02/09
Type:	SAMPLE	Prepared:	04/07/09
Lab ID:	211122-017	Analyzed:	04/15/09
Batch#:	149698	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	82	61-127

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

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	028-10060-00	Analysis:	EPA 8015B
Matrix:	Water	Diln Fac:	1.000
Units:	ug/L	Received:	04/02/09

Type:	BLANK	Prepared:	04/06/09
Lab ID:	QC490590	Analyzed:	04/08/09
Batch#:	149666	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	70	61-127

Type:	BLANK	Prepared:	04/07/09
Lab ID:	QC490738	Analyzed:	04/15/09
Batch#:	149698	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	86	61-127

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

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	028-10060-00	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC490591	Batch#:	149666
Matrix:	Water	Prepared:	04/06/09
Units:	ug/L	Analyzed:	04/08/09

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	1,761	70	50-120

Surrogate	%REC	Limits
o-Terphenyl	67	61-127

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	028-10060-00	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC490739	Batch#:	149698
Matrix:	Water	Prepared:	04/07/09
Units:	ug/L	Analyzed:	04/15/09

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	1,996	80	50-120

Surrogate	%REC	Limits
o-Terphenyl	97	61-127

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	028-10060-00	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	149666
MSS Lab ID:	211051-003	Sampled:	03/31/09
Matrix:	Water	Received:	03/31/09
Units:	ug/L	Prepared:	04/06/09
Diln Fac:	1.000	Analyzed:	04/11/09

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC490592

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	21,120	2,500	42,850 >LR	869 NM	38-127

Surrogate	%REC	Limits
o-Terphenyl	81	61-127

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC490593

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	10,630	-181 NM	38-127	NC	37

Surrogate	%REC	Limits
o-Terphenyl	86	61-127

NC= Not Calculated
NM= Not Meaningful: Sample concentration > 4X spike concentration
>LR= Response exceeds instrument's linear range
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	028-10060-00	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	149698
MSS Lab ID:	211124-006	Sampled:	04/02/09
Matrix:	Water	Received:	04/02/09
Units:	ug/L	Prepared:	04/07/09
Diln Fac:	1.000	Analyzed:	04/16/09

Type: MS Lab ID: QC490740

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	1,849	2,500	4,666	113	38-127

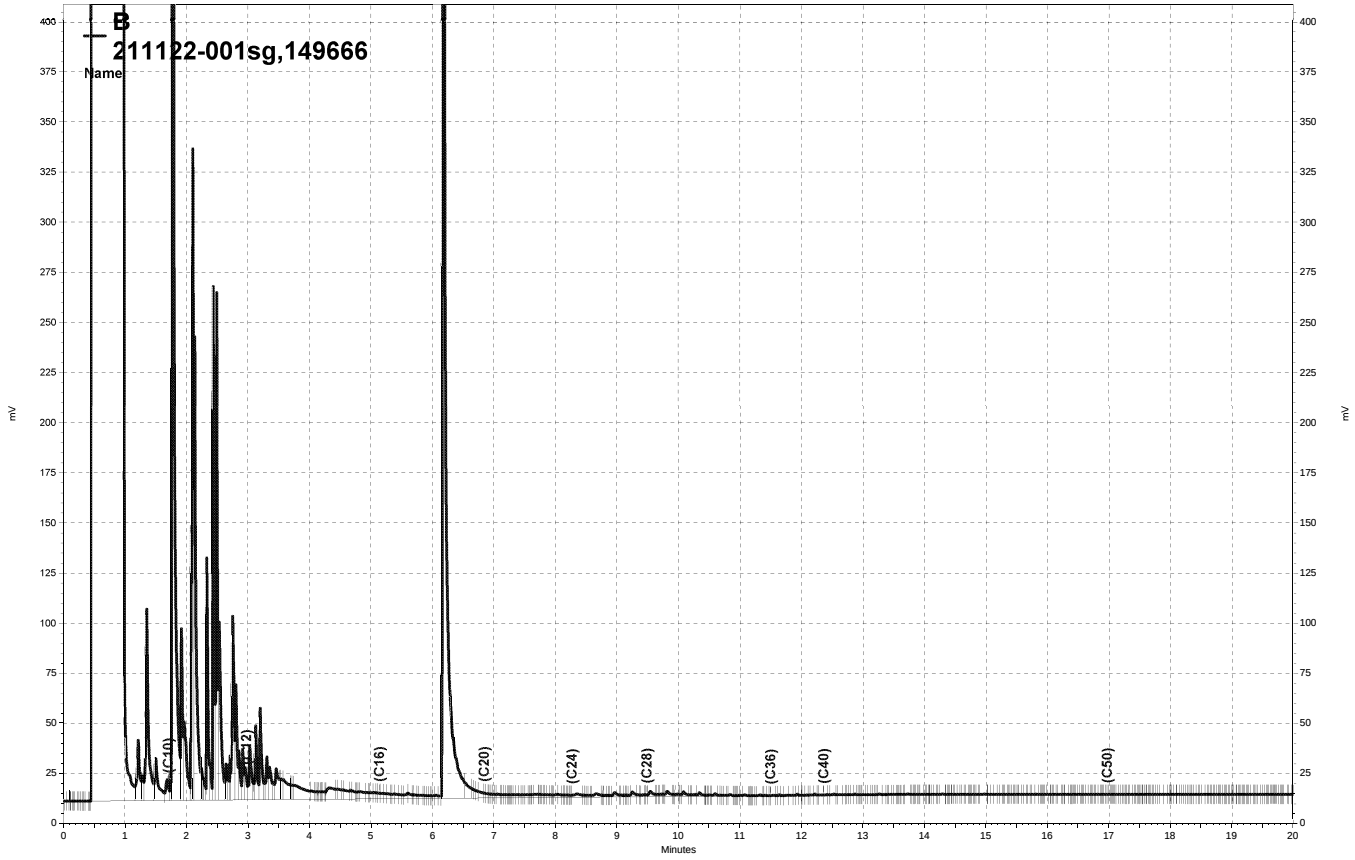
Surrogate	%REC	Limits
o-Terphenyl	112	61-127

Type: MSD Lab ID: QC490741

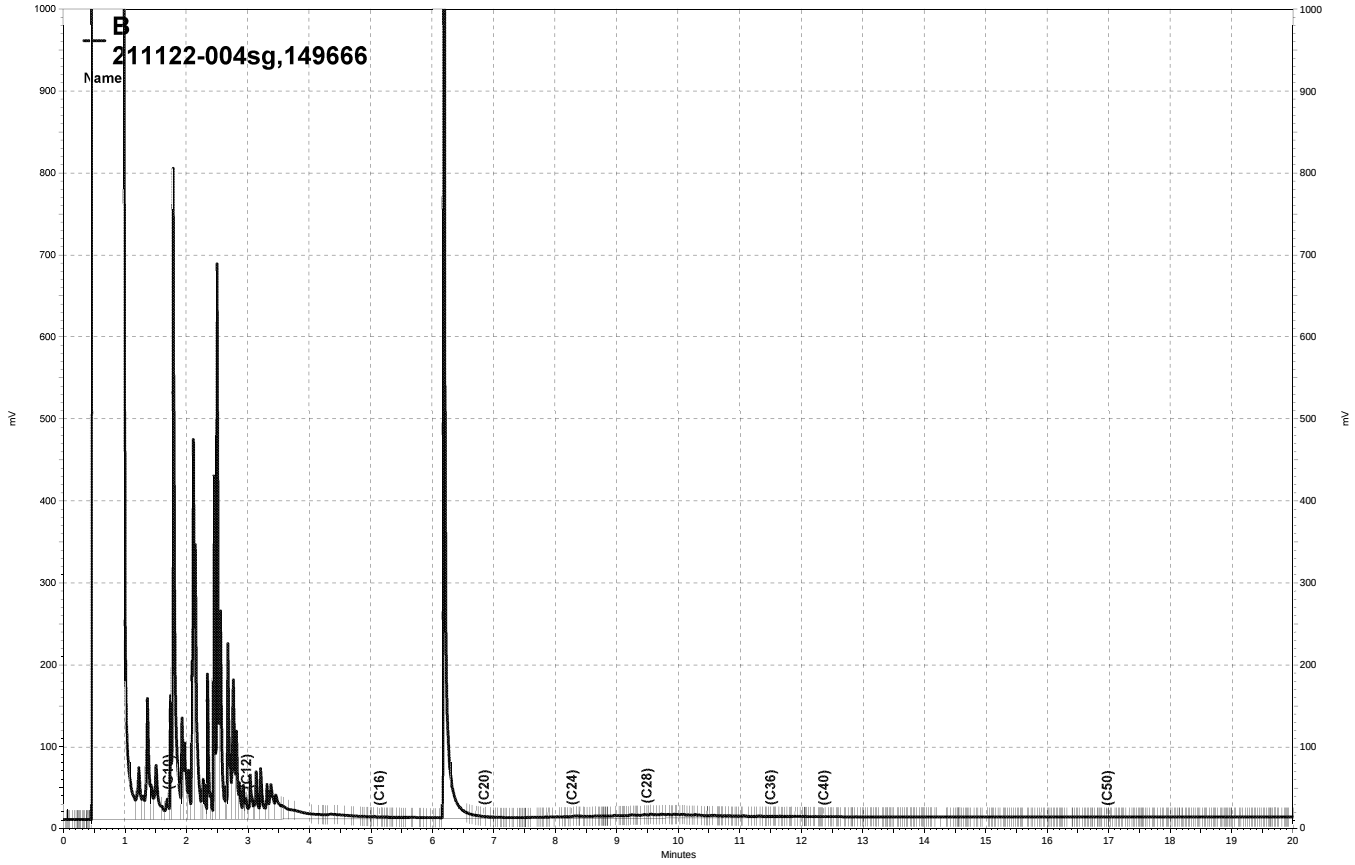
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	5,098	130 *	38-127	9	37

Surrogate	%REC	Limits
o-Terphenyl	117	61-127

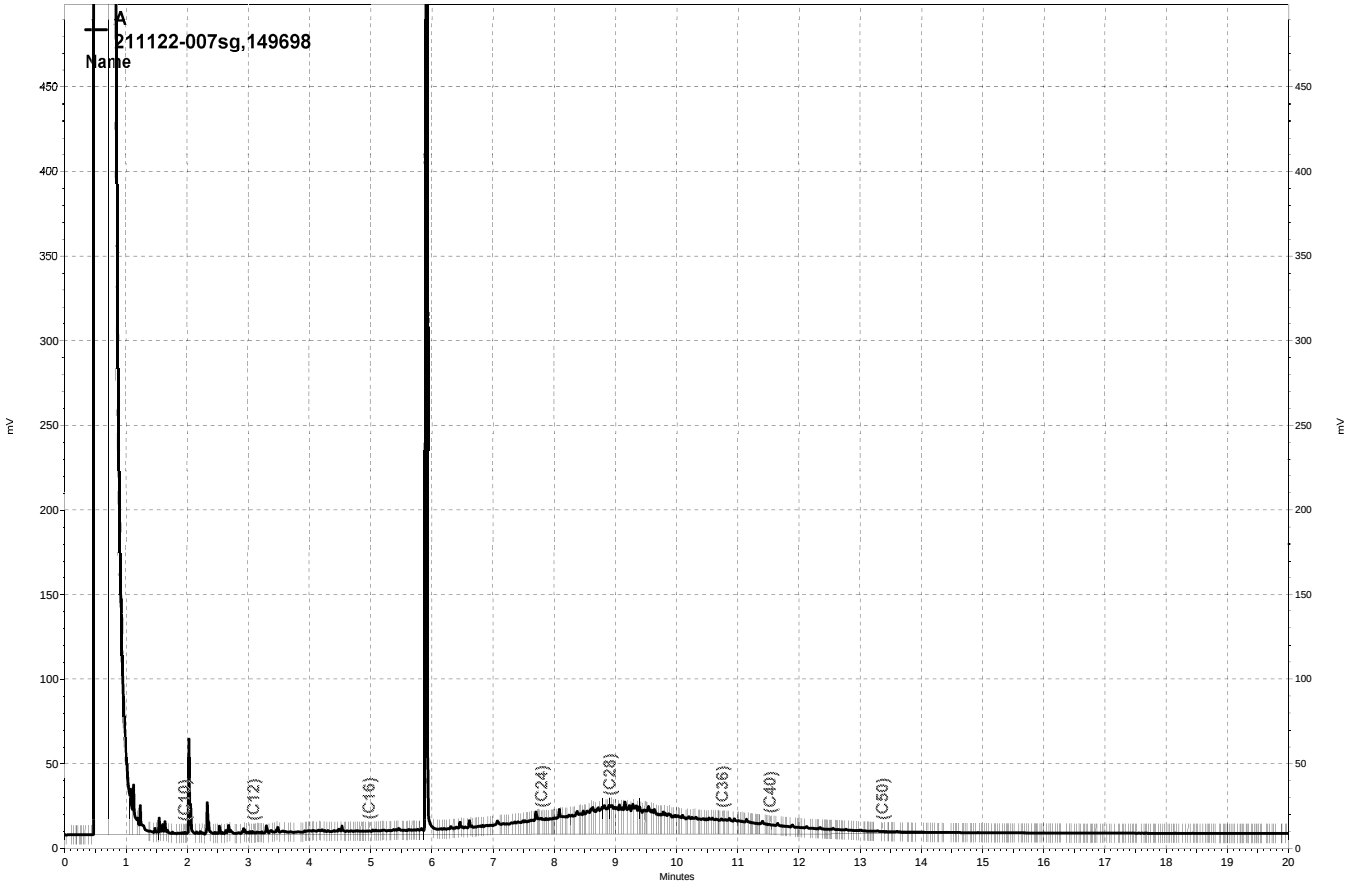
*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference



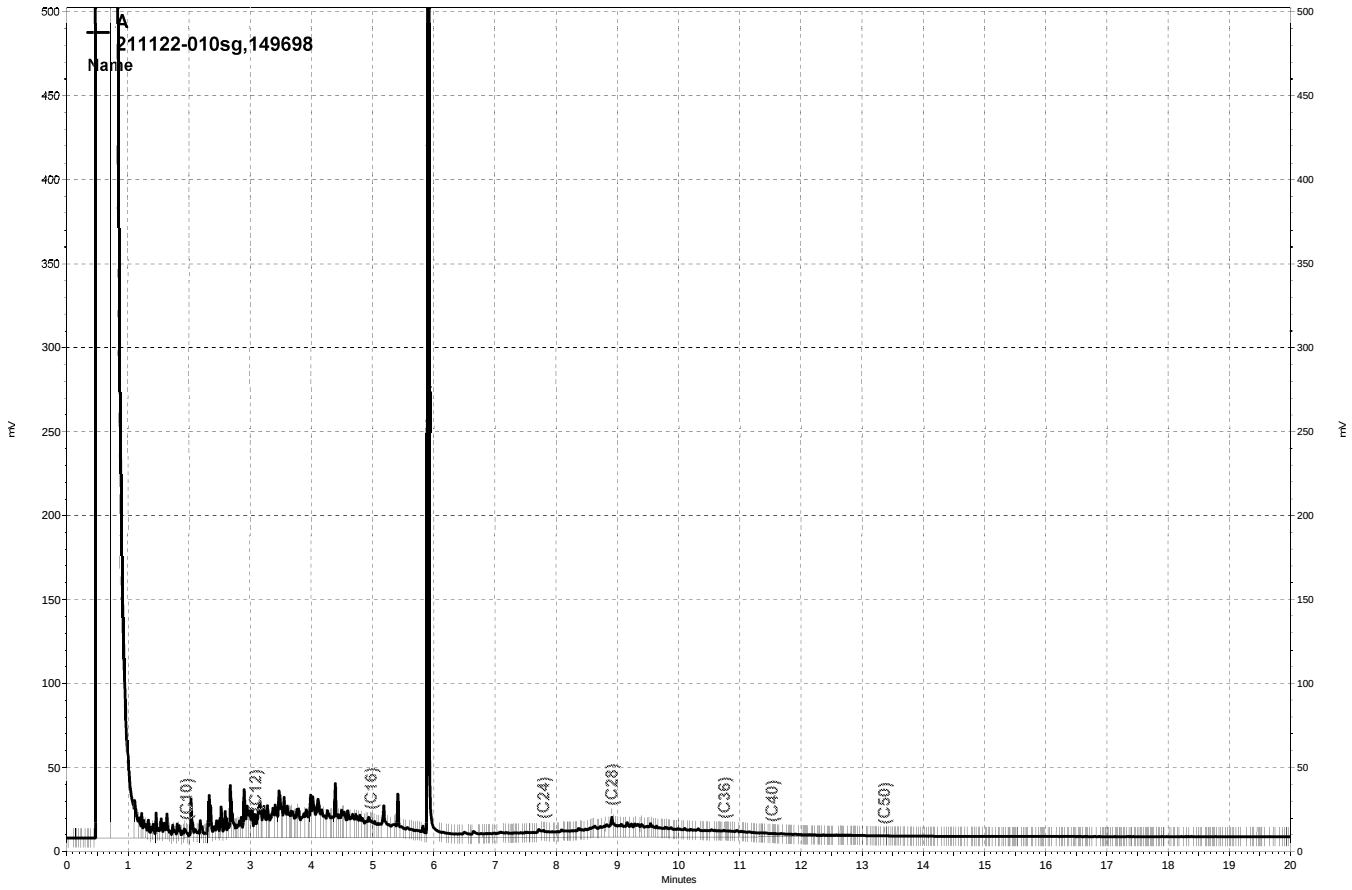
\\Lims\gdrive\ezchrom\Projects\GC14B\Data\010b093, B



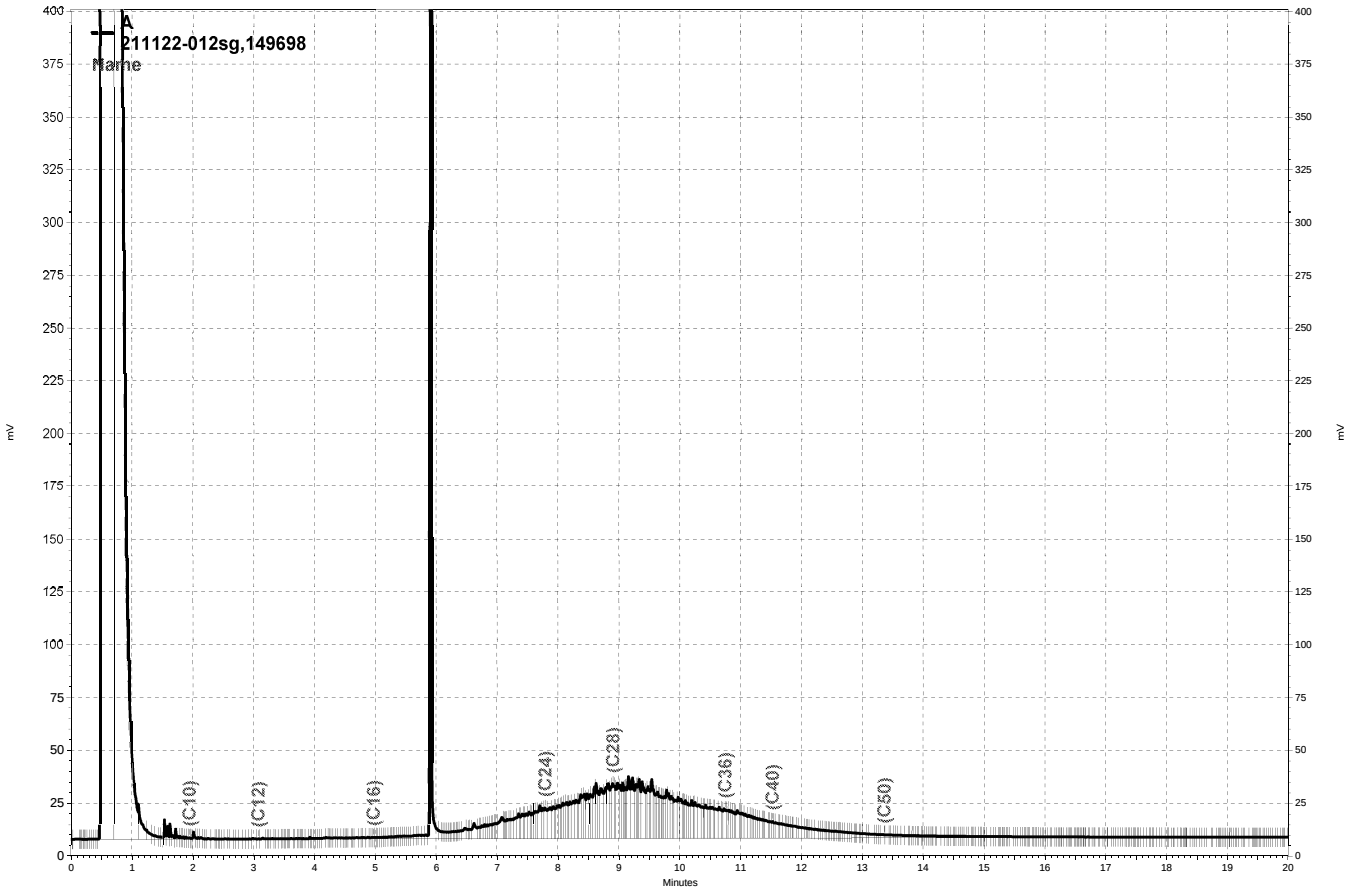
\\Lims\gdrive\ezchrom\Projects\GC14B\Data\010b096, B



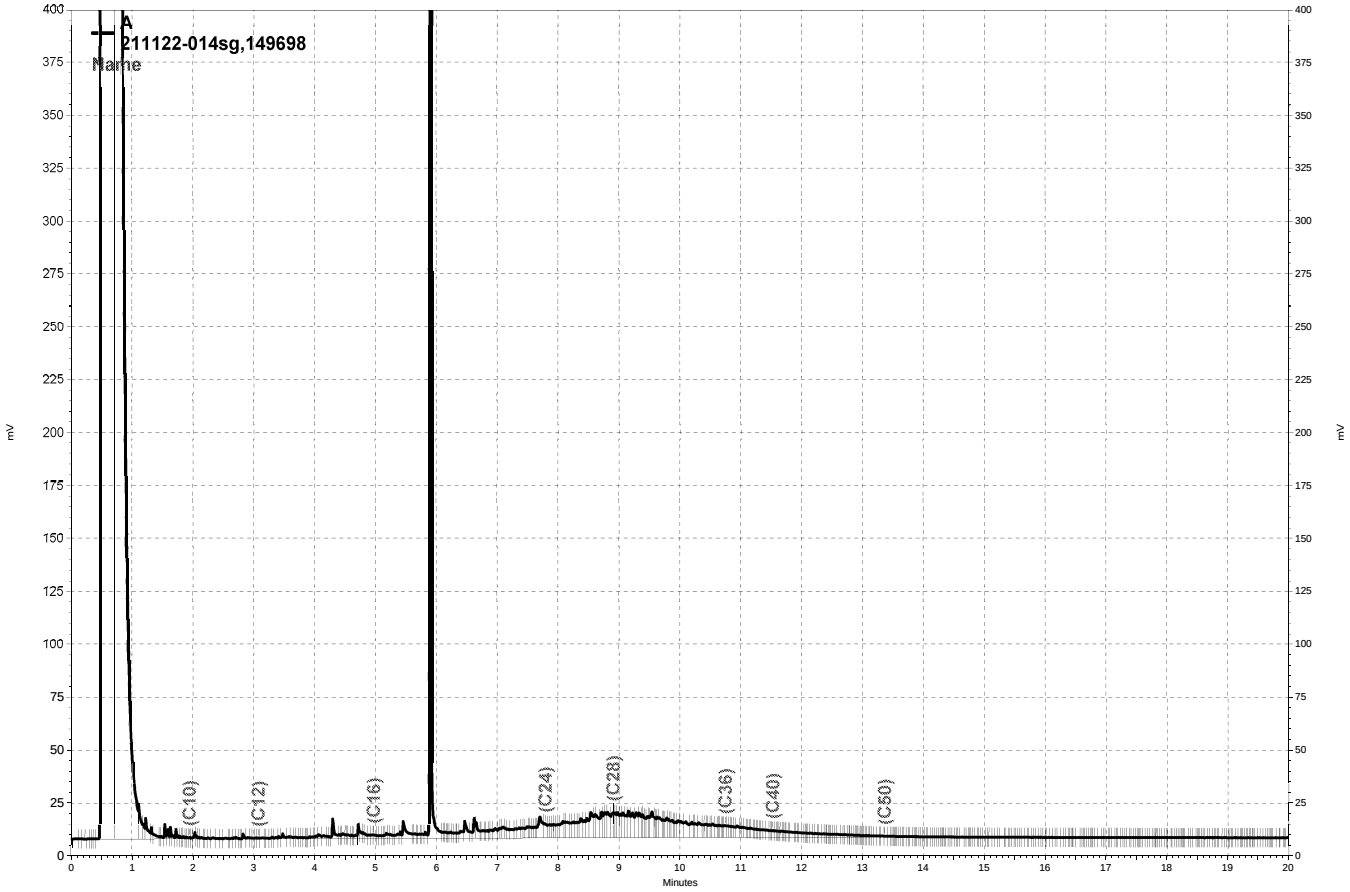
\\Lims\gdrive\ezchrom\Projects\GC26\Data\105a011, A



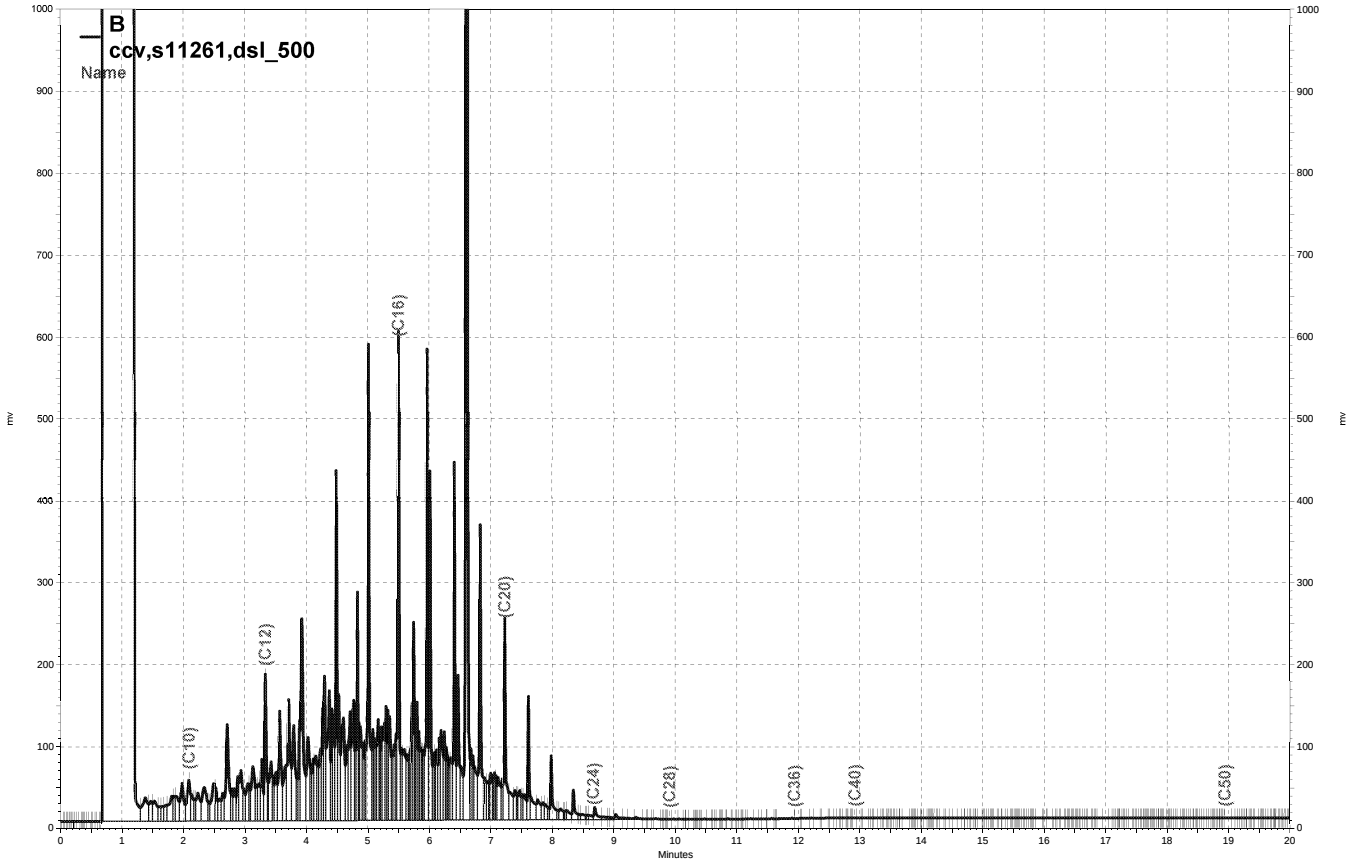
\\Lims\gdrive\ezchrom\Projects\GC26\Data\105a012, A



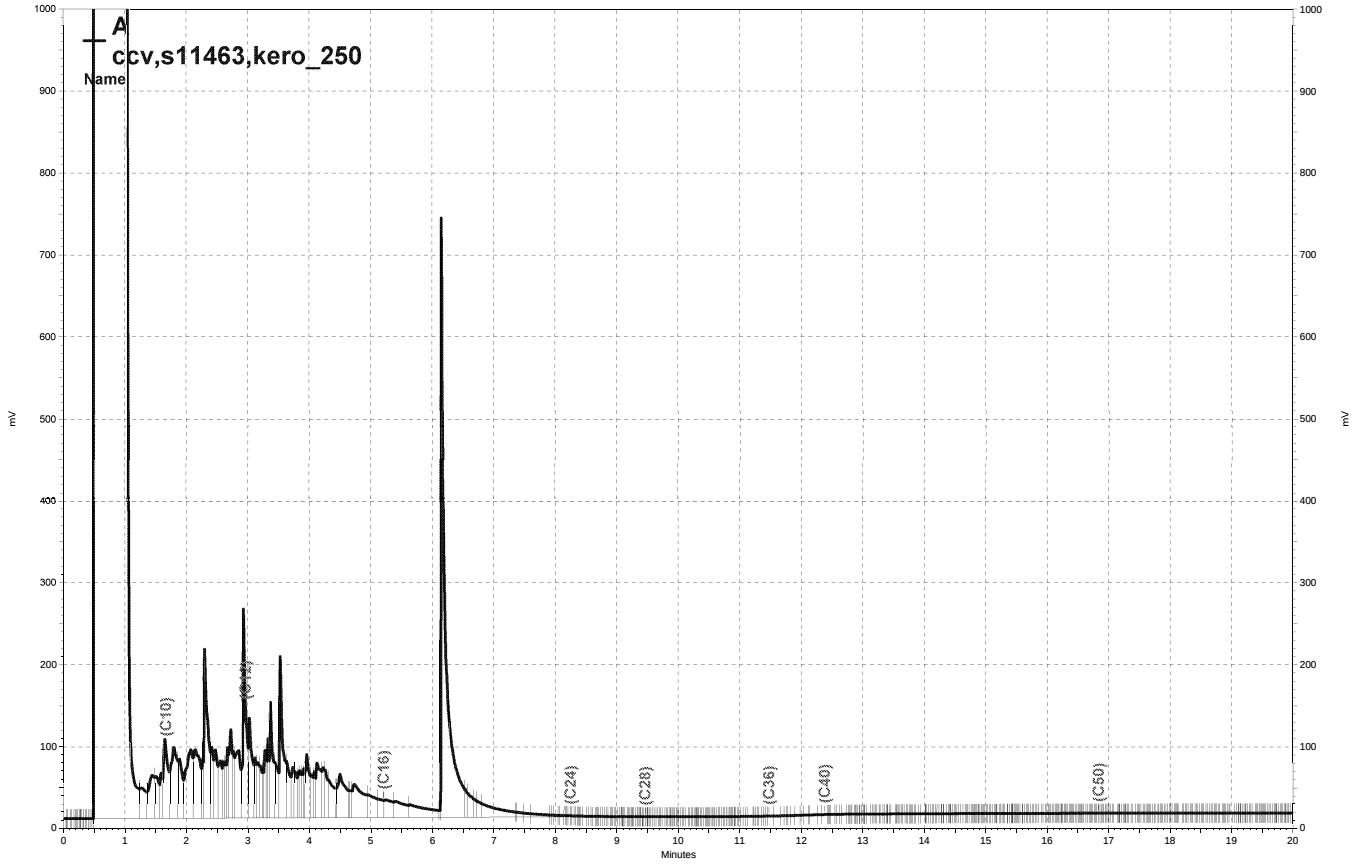
\\Lims\gdrive\ezchrom\Projects\GC26\Data\105a014, A



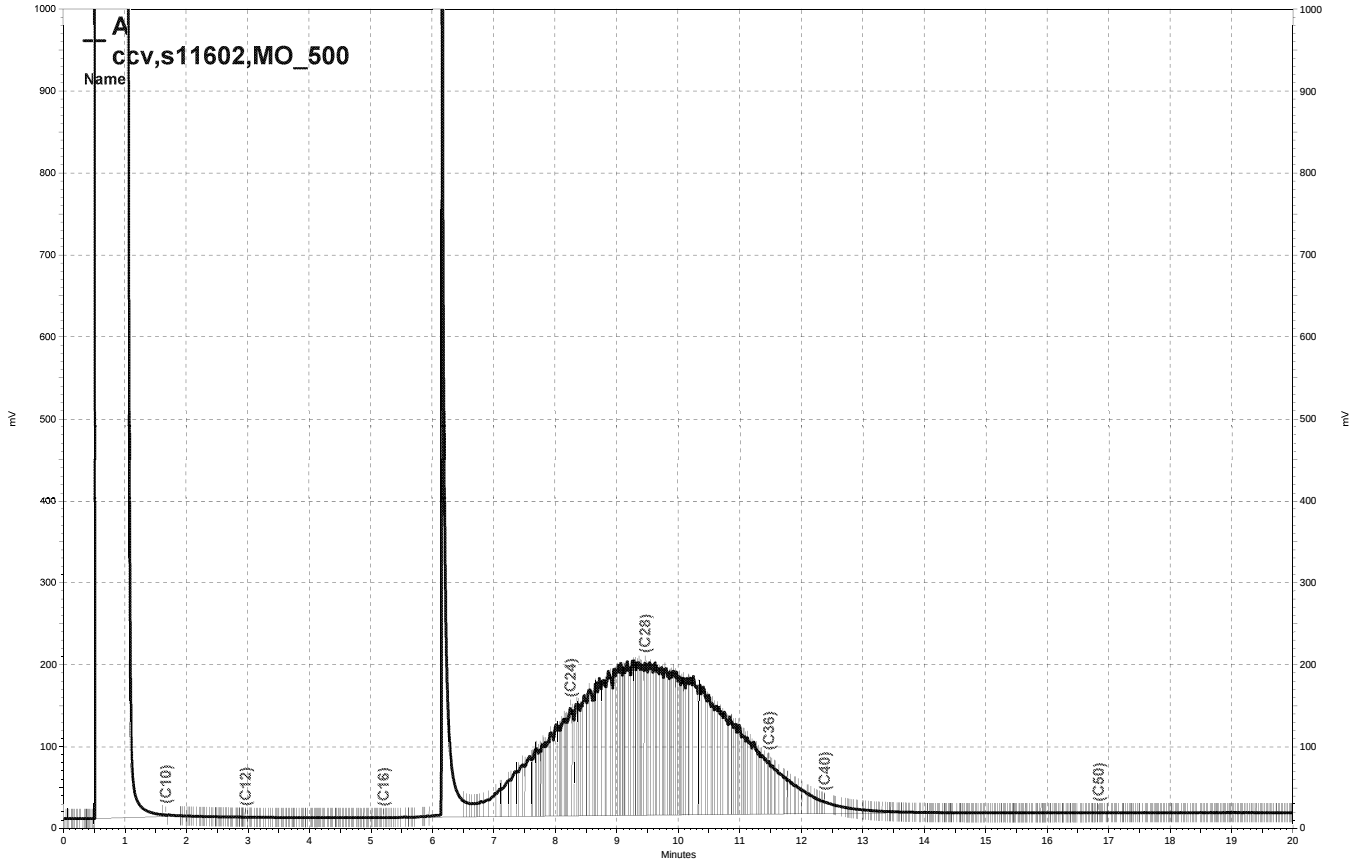
\\Lims\gdrive\ezchrom\Projects\GC26\Data\105a016, A



\\Lims\gdrive\ezchrom\Projects\GC15B\Data\100b025, B



\\Lims\gdrive\ezchrom\Projects\GC17A\Data\097a031, A



\\Lims\gdrive\ezchrom\Projects\GC17A\Data\097a029, A

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	028-10060-00	Analysis:	EPA 8260B
Matrix:	Water	Received:	04/02/09
Units:	ug/L		

Field ID:	MW-1	Batch#:	149739
Type:	SAMPLE	Sampled:	04/01/09
Lab ID:	211122-001	Analyzed:	04/09/09
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	1,300 Y	50
MTBE	ND	0.50
Benzene	79	0.50
Toluene	6.4	0.50
Ethylbenzene	2.9	0.50
m,p-Xylenes	4.1	0.50
o-Xylene	0.99	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-122
1,2-Dichloroethane-d4	105	77-137
Toluene-d8	102	80-120
Bromofluorobenzene	97	80-125

Field ID:	MW-2	Batch#:	149784
Type:	SAMPLE	Sampled:	04/01/09
Lab ID:	211122-002	Analyzed:	04/09/09
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	1.3	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-122
1,2-Dichloroethane-d4	112	77-137
Toluene-d8	102	80-120
Bromofluorobenzene	103	80-125

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

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	028-10060-00	Analysis:	EPA 8260B
Matrix:	Water	Received:	04/02/09
Units:	ug/L		

Field ID:	MW-2D	Batch#:	149784
Type:	SAMPLE	Sampled:	04/01/09
Lab ID:	211122-003	Analyzed:	04/09/09
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	1.5	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-122
1,2-Dichloroethane-d4	113	77-137
Toluene-d8	104	80-120
Bromofluorobenzene	101	80-125

Field ID:	MW-5	Lab ID:	211122-004
Type:	SAMPLE	Sampled:	04/02/09

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
Gasoline C7-C12	4,800 Y	200	4.000	149784	04/10/09
MTBE	15	0.50	1.000	149739	04/09/09
Benzene	8.8	0.50	1.000	149739	04/09/09
Toluene	2.5	0.50	1.000	149739	04/09/09
Ethylbenzene	380	2.0	4.000	149784	04/10/09
m,p-Xylenes	12	0.50	1.000	149739	04/09/09
o-Xylene	1.3	0.50	1.000	149739	04/09/09

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	99	80-122	1.000	149739	04/09/09
1,2-Dichloroethane-d4	102	77-137	1.000	149739	04/09/09
Toluene-d8	101	80-120	1.000	149739	04/09/09
Bromofluorobenzene	92	80-125	1.000	149739	04/09/09

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

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	028-10060-00	Analysis:	EPA 8260B
Matrix:	Water	Received:	04/02/09
Units:	ug/L		

Field ID:	MW-7	Batch#:	149784
Type:	SAMPLE	Sampled:	04/02/09
Lab ID:	211122-005	Analyzed:	04/09/09
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	1.3	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-122
1,2-Dichloroethane-d4	114	77-137
Toluene-d8	102	80-120
Bromofluorobenzene	101	80-125

Field ID:	MW-8	Batch#:	149784
Type:	SAMPLE	Sampled:	04/02/09
Lab ID:	211122-006	Analyzed:	04/09/09
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-122
1,2-Dichloroethane-d4	113	77-137
Toluene-d8	104	80-120
Bromofluorobenzene	101	80-125

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

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	028-10060-00	Analysis:	EPA 8260B
Matrix:	Water	Received:	04/02/09
Units:	ug/L		

Field ID:	MW-9	Batch#:	149784
Type:	SAMPLE	Sampled:	04/02/09
Lab ID:	211122-007	Analyzed:	04/09/09
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	70 Y	50
MTBE	ND	0.50
Benzene	82	0.50
Toluene	1.4	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	1.0	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-122
1,2-Dichloroethane-d4	109	77-137
Toluene-d8	103	80-120
Bromofluorobenzene	98	80-125

Field ID:	MW-10	Batch#:	149784
Type:	SAMPLE	Sampled:	04/01/09
Lab ID:	211122-008	Analyzed:	04/09/09
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-122
1,2-Dichloroethane-d4	111	77-137
Toluene-d8	103	80-120
Bromofluorobenzene	102	80-125

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

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	028-10060-00	Analysis:	EPA 8260B
Matrix:	Water	Received:	04/02/09
Units:	ug/L		

Field ID:	MW-11	Batch#:	149784
Type:	SAMPLE	Sampled:	04/02/09
Lab ID:	211122-009	Analyzed:	04/09/09
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	94 Y	50
MTBE	13	0.50
Benzene	0.98	0.50
Toluene	ND	0.50
Ethylbenzene	2.9	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-122
1,2-Dichloroethane-d4	113	77-137
Toluene-d8	103	80-120
Bromofluorobenzene	103	80-125

Field ID:	MW-12	Batch#:	149784
Type:	SAMPLE	Sampled:	04/01/09
Lab ID:	211122-010	Analyzed:	04/09/09
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	100 Y	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-122
1,2-Dichloroethane-d4	114	77-137
Toluene-d8	104	80-120
Bromofluorobenzene	97	80-125

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

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	028-10060-00	Analysis:	EPA 8260B
Matrix:	Water	Received:	04/02/09
Units:	ug/L		

Field ID:	MW-12-FB	Batch#:	149784
Type:	SAMPLE	Sampled:	04/01/09
Lab ID:	211122-011	Analyzed:	04/10/09
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-122
1,2-Dichloroethane-d4	113	77-137
Toluene-d8	102	80-120
Bromofluorobenzene	102	80-125

Field ID:	MW-13	Batch#:	149784
Type:	SAMPLE	Sampled:	04/02/09
Lab ID:	211122-012	Analyzed:	04/10/09
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-122
1,2-Dichloroethane-d4	113	77-137
Toluene-d8	102	80-120
Bromofluorobenzene	99	80-125

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

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	028-10060-00	Analysis:	EPA 8260B
Matrix:	Water	Received:	04/02/09
Units:	ug/L		

Field ID:	MW-14	Batch#:	149784
Type:	SAMPLE	Sampled:	04/02/09
Lab ID:	211122-013	Analyzed:	04/10/09
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-122
1,2-Dichloroethane-d4	112	77-137
Toluene-d8	101	80-120
Bromofluorobenzene	102	80-125

Field ID:	MW-15	Batch#:	149784
Type:	SAMPLE	Sampled:	04/02/09
Lab ID:	211122-014	Analyzed:	04/10/09
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	0.82	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-122
1,2-Dichloroethane-d4	113	77-137
Toluene-d8	103	80-120
Bromofluorobenzene	100	80-125

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

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	028-10060-00	Analysis:	EPA 8260B
Matrix:	Water	Received:	04/02/09
Units:	ug/L		

Field ID:	MW-16	Batch#:	149784
Type:	SAMPLE	Sampled:	04/02/09
Lab ID:	211122-016	Analyzed:	04/10/09
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	59 Y	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-122
1,2-Dichloroethane-d4	113	77-137
Toluene-d8	104	80-120
Bromofluorobenzene	101	80-125

Field ID:	MW-17	Batch#:	149784
Type:	SAMPLE	Sampled:	04/02/09
Lab ID:	211122-017	Analyzed:	04/10/09
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-122
1,2-Dichloroethane-d4	114	77-137
Toluene-d8	103	80-120
Bromofluorobenzene	109	80-125

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

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	028-10060-00	Analysis:	EPA 8260B
Matrix:	Water	Received:	04/02/09
Units:	ug/L		

Type:	BLANK	Batch#:	149739
Lab ID:	QC490895	Analyzed:	04/08/09
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	104	80-122
1,2-Dichloroethane-d4	110	77-137
Toluene-d8	103	80-120
Bromofluorobenzene	102	80-125

Type:	BLANK	Batch#:	149739
Lab ID:	QC490896	Analyzed:	04/08/09
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	108	80-122
1,2-Dichloroethane-d4	110	77-137
Toluene-d8	102	80-120
Bromofluorobenzene	102	80-125

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

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	028-10060-00	Analysis:	EPA 8260B
Matrix:	Water	Received:	04/02/09
Units:	ug/L		

Type:	BLANK	Batch#:	149784
Lab ID:	QC491061	Analyzed:	04/09/09
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-122
1,2-Dichloroethane-d4	109	77-137
Toluene-d8	102	80-120
Bromofluorobenzene	100	80-125

Type:	BLANK	Batch#:	149784
Lab ID:	QC491062	Analyzed:	04/09/09
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-122
1,2-Dichloroethane-d4	110	77-137
Toluene-d8	102	80-120
Bromofluorobenzene	102	80-125

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

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	028-10060-00	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	149739
Units:	ug/L	Analyzed:	04/08/09
Diln Fac:	1.000		

Type: BS Lab ID: QC490897

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	18.65	93	73-122
Benzene	20.00	21.06	105	80-120
Toluene	20.00	20.20	101	80-120
Ethylbenzene	20.00	21.01	105	80-121
m,p-Xylenes	40.00	43.00	107	80-122
o-Xylene	20.00	20.04	100	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-122
1,2-Dichloroethane-d4	107	77-137
Toluene-d8	103	80-120
Bromofluorobenzene	96	80-125

Type: BSD Lab ID: QC490898

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	18.79	94	73-122	1	20
Benzene	20.00	20.69	103	80-120	2	20
Toluene	20.00	19.72	99	80-120	2	20
Ethylbenzene	20.00	20.14	101	80-121	4	20
m,p-Xylenes	40.00	41.59	104	80-122	3	20
o-Xylene	20.00	19.60	98	80-120	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	108	80-122
1,2-Dichloroethane-d4	108	77-137
Toluene-d8	102	80-120
Bromofluorobenzene	97	80-125

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	028-10060-00	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	149739
Units:	ug/L	Analyzed:	04/08/09
Diln Fac:	1.000		

Type: BS Lab ID: QC490899

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	850.0	810.4	95	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	104	80-122
1,2-Dichloroethane-d4	107	77-137
Toluene-d8	102	80-120
Bromofluorobenzene	97	80-125

Type: BSD Lab ID: QC490900

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	850.0	741.6	87	80-120	9	20

Surrogate	%REC	Limits
Dibromofluoromethane	102	80-122
1,2-Dichloroethane-d4	108	77-137
Toluene-d8	103	80-120
Bromofluorobenzene	99	80-125

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	028-10060-00	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	149784
Units:	ug/L	Analyzed:	04/09/09
Diln Fac:	1.000		

Type: BS Lab ID: QC491063

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	17.46	87	73-122
Benzene	20.00	19.54	98	80-120
Toluene	20.00	18.84	94	80-120
Ethylbenzene	20.00	19.12	96	80-121
m,p-Xylenes	40.00	39.26	98	80-122
o-Xylene	20.00	18.67	93	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-122
1,2-Dichloroethane-d4	106	77-137
Toluene-d8	102	80-120
Bromofluorobenzene	94	80-125

Type: BSD Lab ID: QC491064

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	17.64	88	73-122	1	20
Benzene	20.00	20.10	101	80-120	3	20
Toluene	20.00	19.52	98	80-120	4	20
Ethylbenzene	20.00	20.01	100	80-121	5	20
m,p-Xylenes	40.00	40.94	102	80-122	4	20
o-Xylene	20.00	19.58	98	80-120	5	20

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-122
1,2-Dichloroethane-d4	108	77-137
Toluene-d8	102	80-120
Bromofluorobenzene	94	80-125

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	211122	Location:	Oakland MSC
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	028-10060-00	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	149784
Units:	ug/L	Analyzed:	04/09/09
Diln Fac:	1.000		

Type: BS Lab ID: QC491065

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	900.0	851.4	95	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-122
1,2-Dichloroethane-d4	108	77-137
Toluene-d8	102	80-120
Bromofluorobenzene	95	80-125

Type: BSD Lab ID: QC491066

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	900.0	806.4	90	80-120	5	20

Surrogate	%REC	Limits
Dibromofluoromethane	104	80-122
1,2-Dichloroethane-d4	109	77-137
Toluene-d8	103	80-120
Bromofluorobenzene	94	80-125

RPD= Relative Percent Difference

Data File: \\Gcmsserver\DD\chem\MSVOA08.i\040809.b\HD826TVH.D

Date : 09-APR-2009 02:16

Client ID: DYNA P&T

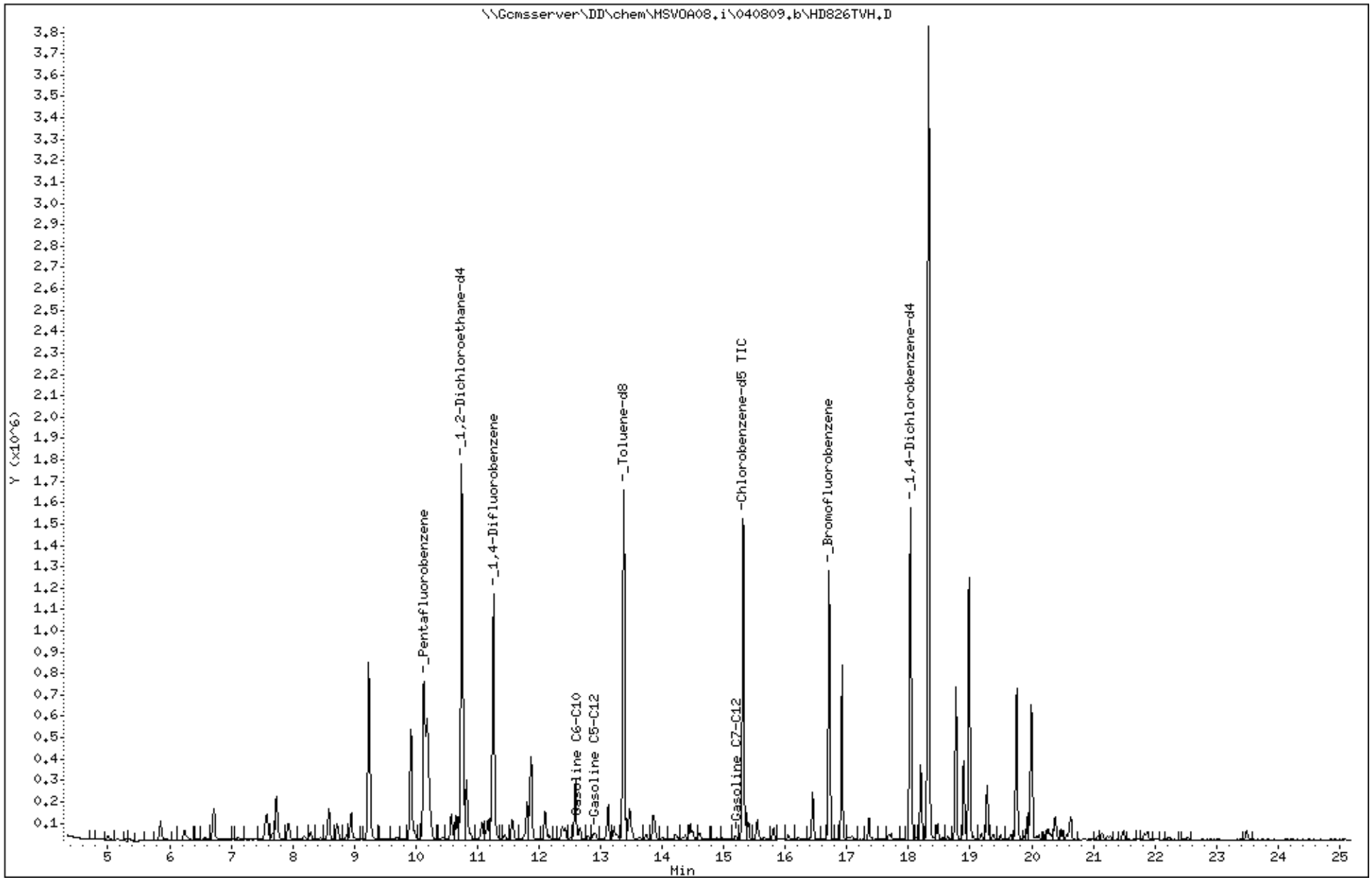
Instrument: MSVOA08.i

Sample Info: S,211122-001

Operator: voc

Column phase:

Column diameter: 2.00



Data File: \\Gcmsserver\DD\chem\MSVOA08.i\040909.b\HD933TVH.D

Date : 10-APR-2009 05:03

Client ID: DYNA P&T

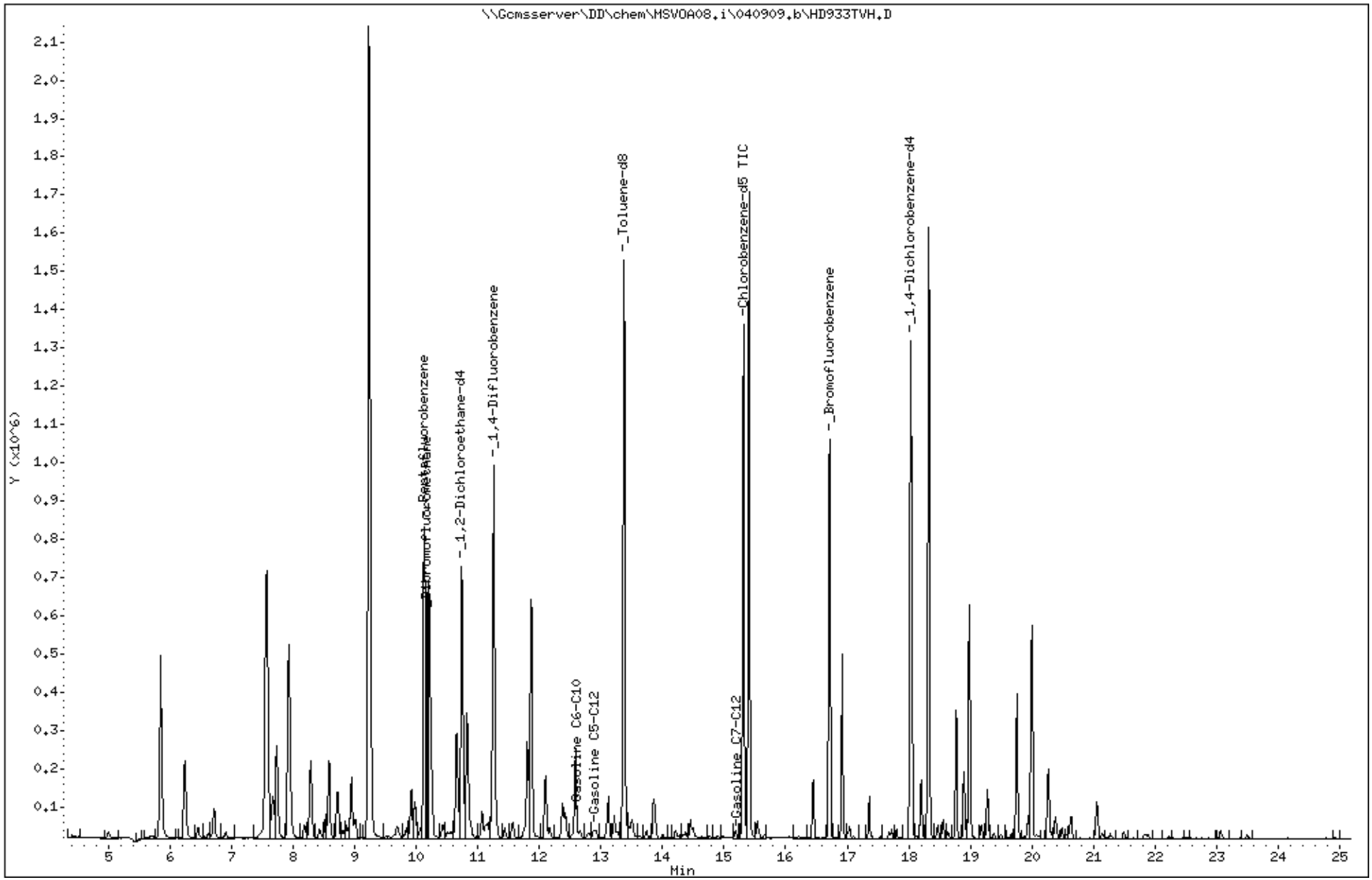
Instrument: MSVOA08.i

Sample Info: S,211122-004

Operator: voc

Column phase:

Column diameter: 2.00



Data File: \\Gcmsserver\DD\chem\MSVOA08.i\040909.b\HD921TVH.D

Date : 09-APR-2009 21:47

Client ID: DYNA P&T

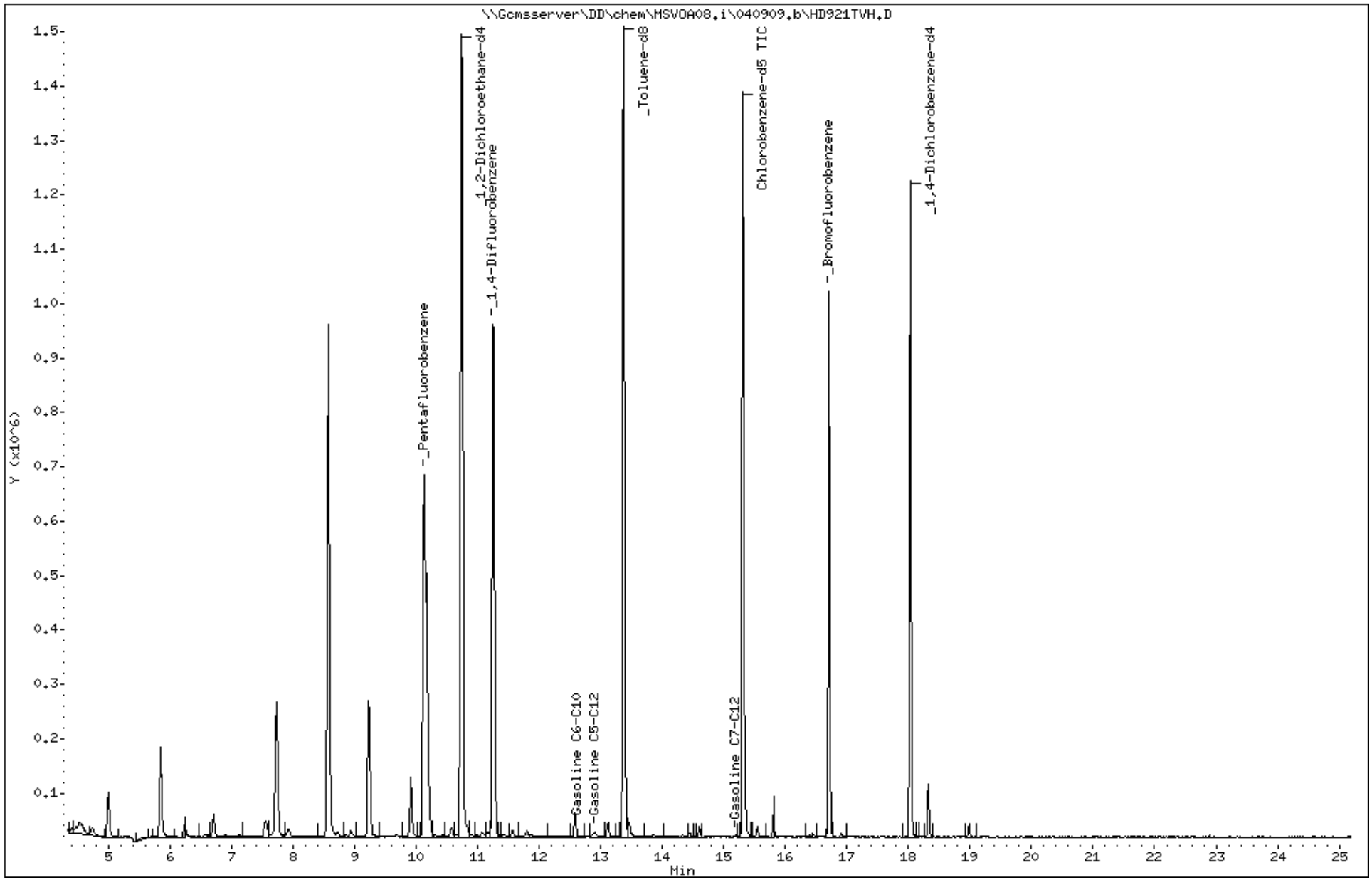
Instrument: MSVOA08.i

Sample Info: S,211122-007

Operator: voc

Column phase:

Column diameter: 2.00



Data File: \\Gcmsserver\DD\chem\MSVOA08.i\040909.b\HD923TVH.D

Date : 09-APR-2009 22:59

Client ID: DYNA P&T

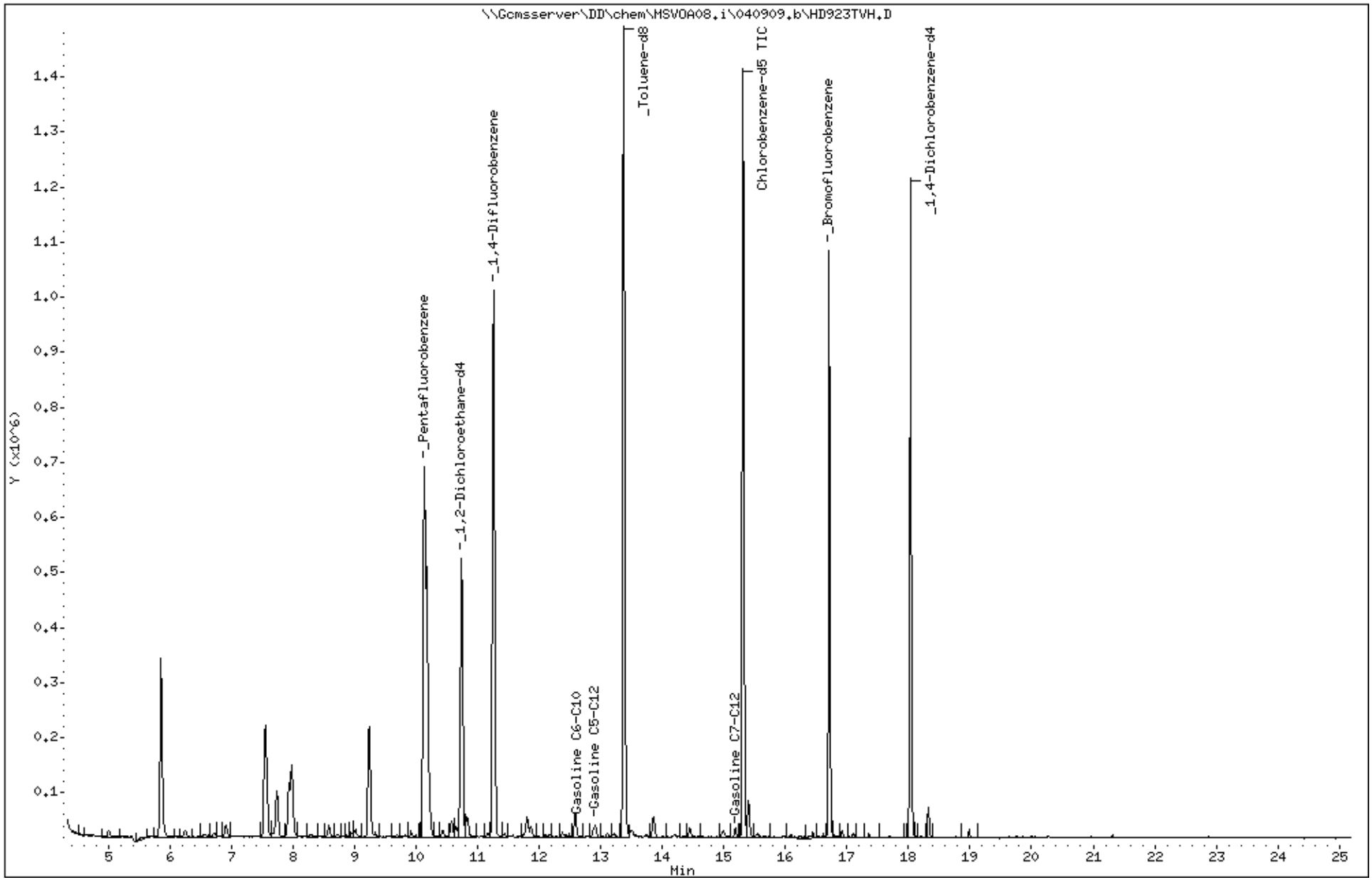
Instrument: MSVOA08.i

Sample Info: S,211122-007

Operator: voc

Column phase:

Column diameter: 2.00



Data File: \\Gcmsserver\DD\chem\MSVOA08.i\040909.b\HD924TVH.D

Date : 09-APR-2009 23:36

Client ID: DYNA P&T

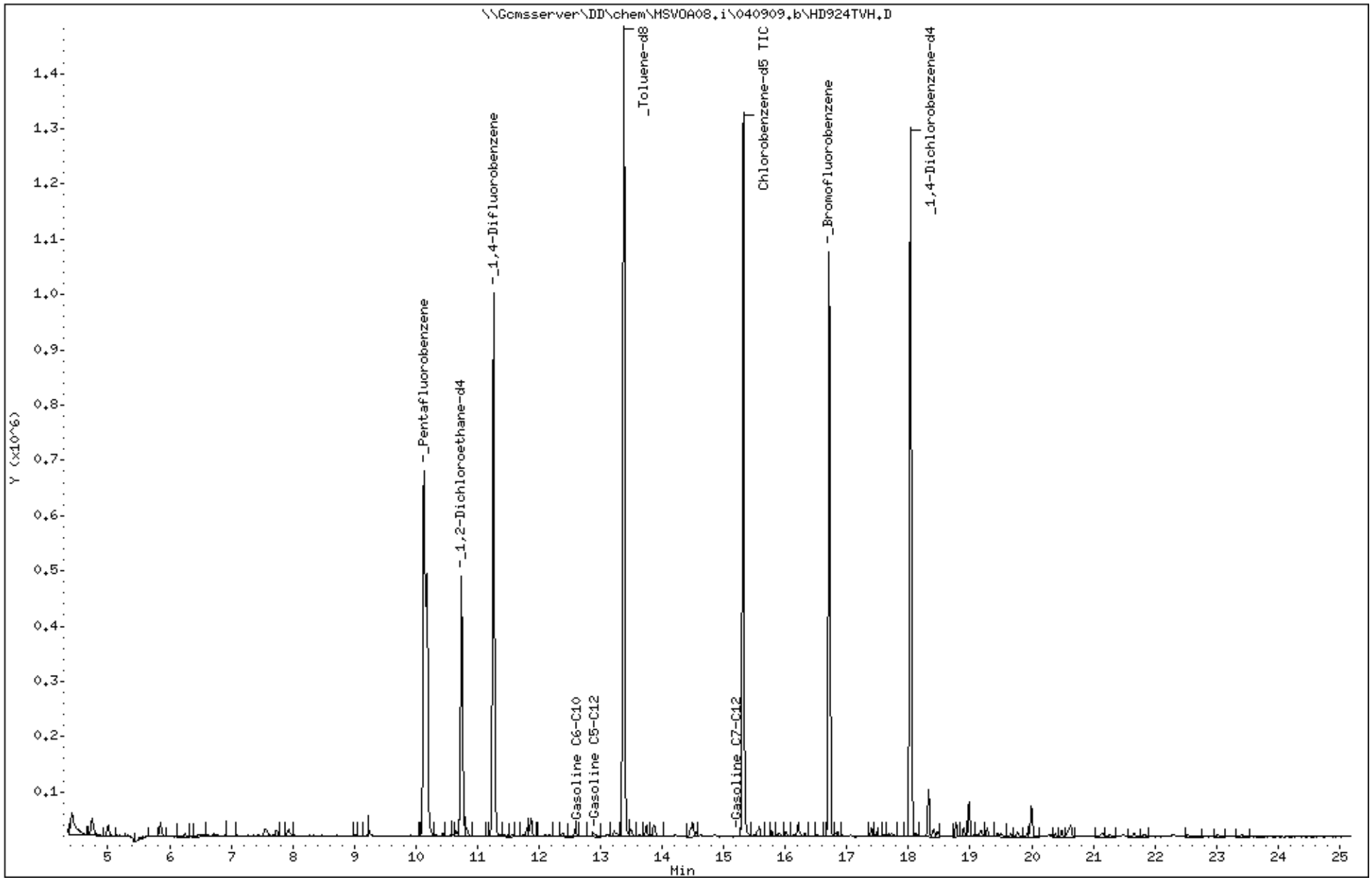
Instrument: MSVOA08.i

Sample Info: S,211122-010

Operator: voc

Column phase:

Column diameter: 2.00



Data File: \\Gcmsserver\DD\chem\MSVOA08.i\040909.b\HD930TVH.D

Date : 10-APR-2009 03:14

Client ID: DYNA P&T

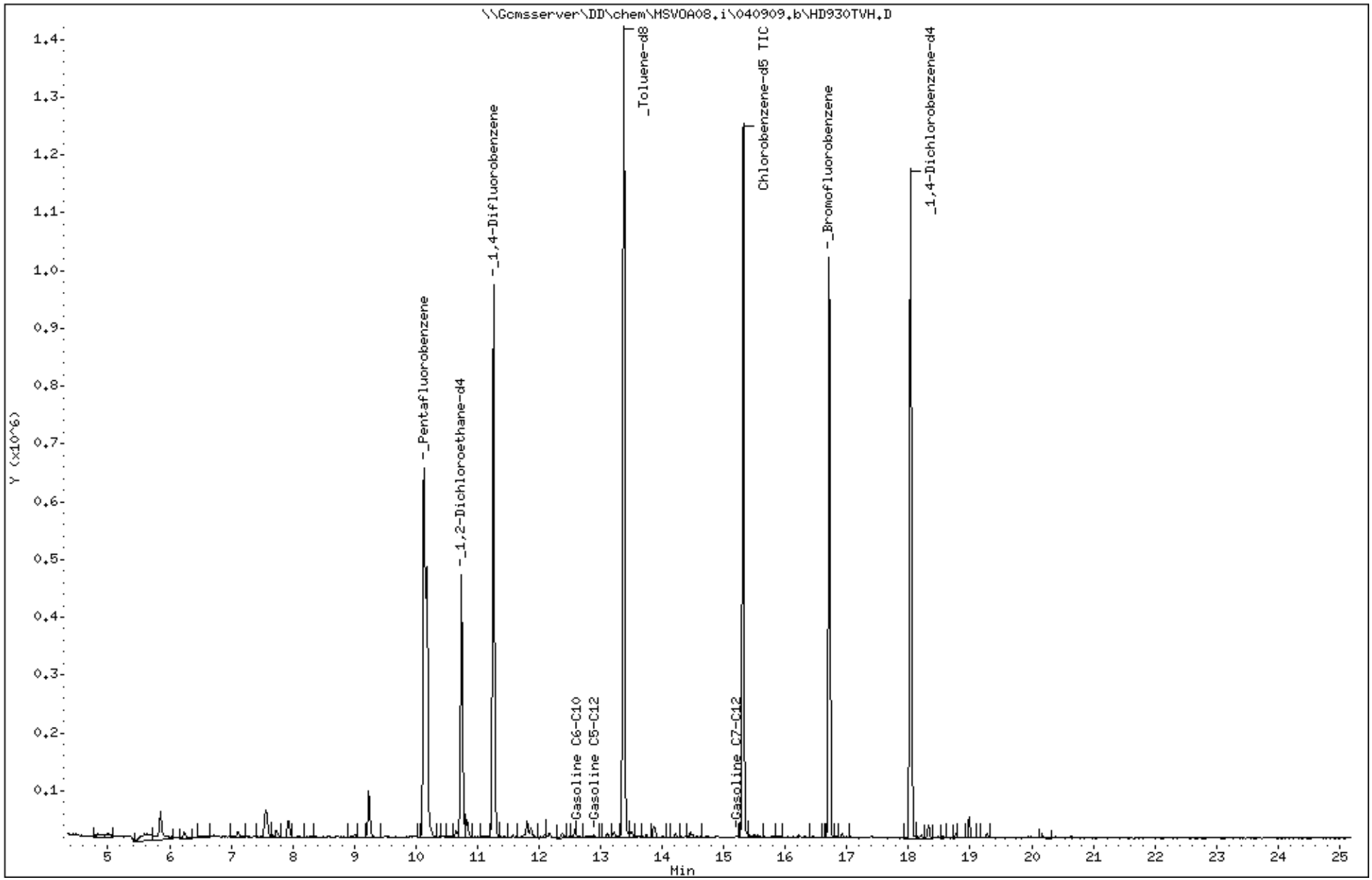
Instrument: MSVOA08.i

Sample Info: S,211122-016

Operator: voc

Column phase:

Column diameter: 2.00



Data File: \\Gcmsserver\DD\chem\MSVOA08.i\040809.b\HD807TVH.D

Date : 08-APR-2009 13:50

Client ID: DYNA P&T

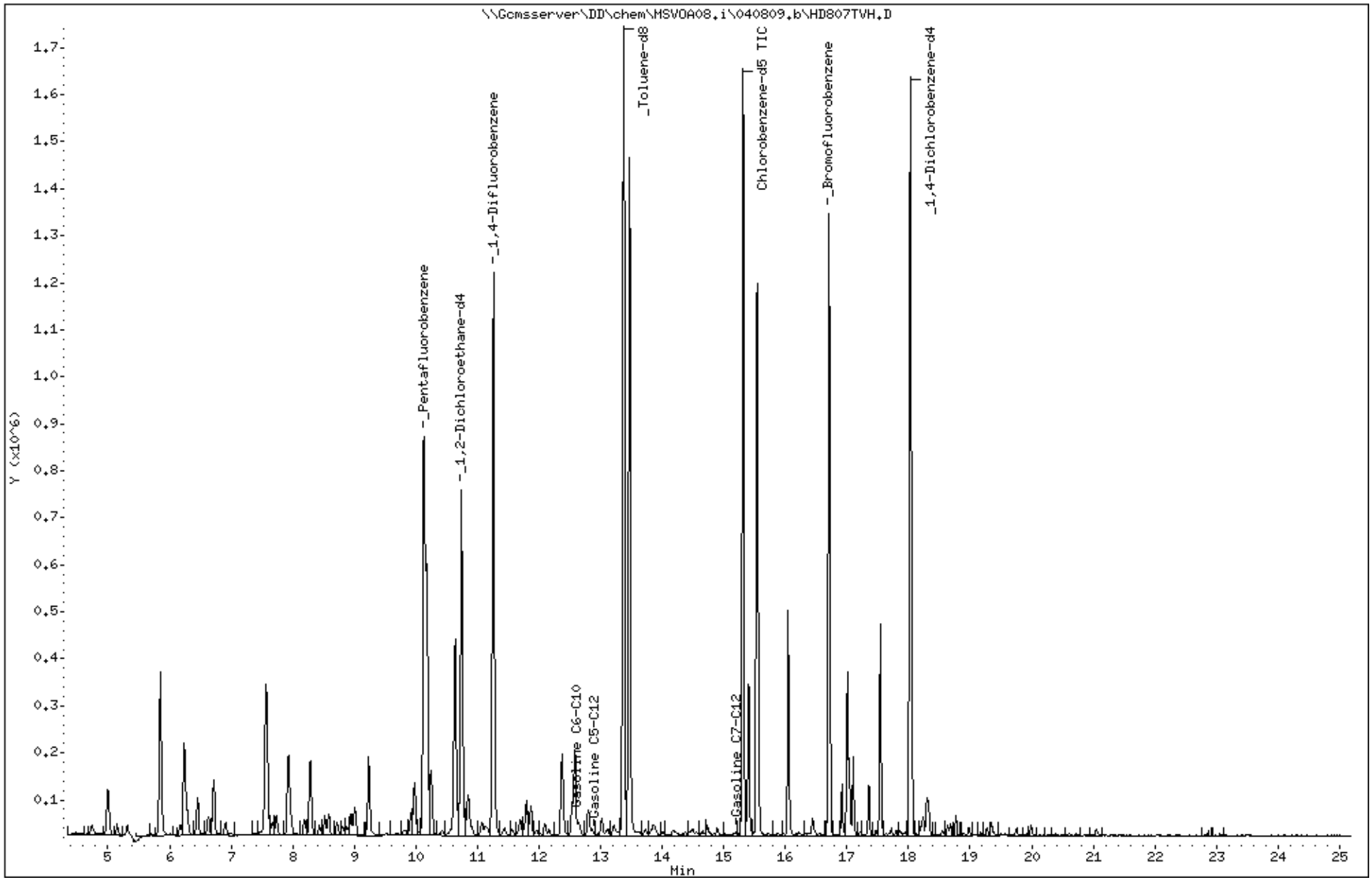
Instrument: MSVOA08.i

Sample Info: CCV/BS,QC490899,149739,S10867,0.0085/100

Operator: voc

Column phase:

Column diameter: 2.00



APPENDIX D

Historical Tables

Table D-1
Summary of Groundwater Analytical Data, VOCs
Municipal Service Center, 7101 Edgewater Drive, Oakland, California

Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	Benzene (µg/l)	n-Butyl-benzene (µg/l)	sec-Butyl-benzene (µg/l)	tert-Butyl-benzene (µg/l)	Chloro-ethane (µg/l)	Chloro-form (µg/l)	Methyl Chloride (µg/l)	1,2-DCA (µg/l)	cis-1,2-DCE (µg/l)	1,2-DCP (µg/l)	Ethyl-benzene (µg/l)	Isopropyl-benzene (µg/l)	p-Isopropyl-toluene (µg/l)	MTBE (µg/l)	Napthalene (µg/l)	n-Propyl-benzene (µg/l)	Toluene (µg/l)	1,2,4-TMB (µg/l)	1,3,5-TMB (µg/l)	Xylenes (µg/l)
MW-5																				
2/27/01	180	9	4	ND	3	ND	ND	7	ND	3	260	23	6	1,100	43	68	7	1	11	53
MW-6																				
2/27/01	270	11	3	ND	< 1	ND	ND	7	ND	< 1	9	6.0	1.0	19.0	62	21	3	1	< 1	3
8/20/01	E280	14	< 1	< 1	< 1	3	2	< 1	< 1	< 1	11	4.0	< 1	14.0	E82	14	4	< 1	< 1	9
TBW-1																				
8/20/01	E530	30	< 1	54	< 1	4	10	< 1	2	< 1	E540	36	54	< 1	E300	E120	79	E430	< 1	E790
TBW-3																				
8/20/01	10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	6	< 1	< 1	< 1	5	< 1	< 1	< 1	< 1	3
TBW-5																				
8/20/01	E620	< 1	< 1	E160	< 1	3	< 1	< 1	< 1	< 1	E730	40	E160	< 1	E450	E140	E110	< 1	< 1	E3100

Notes:

cis-1,2-DCE = cis-1,2-dichloroethene
E = Estimated concentration.
MTBE = methyl tertiary-butyl ether
ND = Not detected.
VOCs = Volatile organic compounds by EPA Method 8260. Sample not subject to silica gel cleanup or filtration prior to analysis.
1,2-DCA = 1,2-dichloroethane
1,2-DCP = 1,2-dichloropropane
1,2,4-TMB = 1,2,4-trimethylbenzene
1,3,5-TMB = 1,3,5-trimethylbenzene

Table D-2
Summary of Groundwater Analytical Data, SVOCs
Municipal Service Center, 7101 Edgewater Drive, Oakland, California

Concentrations expressed in micrograms per liter (µg/l)

Well ID/ Date	Napthalene (µg/l)	Pyrene (µg/l)	Other SVOCs (µg/l)
MW-6			
2/27/01	19	ND	ND
8/20/01	52	< 5	39
MW-9			
11/28/00	ND	ND	ND
MW-13			
11/28/00	ND	10	ND
MW-17			
11/28/00	ND	ND	ND
TBW-1			
8/20/01	140	8	387
TBW-3			
8/20/01	< 5	< 5	5
TBW-5			
8/20/01	220	< 5	73

Notes:

SVOCs = Semivolatile organic compounds by EPA Method 8270.
ND = Not detected

Samples not subject to silica gel cleanup or filtration before analysis.

Table D-3
Summary of Groundwater Analytical Data, LUFT Metals
Municipal Service Center, 7101 Edgewater Drive, Oakland, California

Concentrations expressed in milligrams per liter (mg/l)

Well ID/ Date	Cadmium (mg/l)	Chromium (mg/l)	Lead (mg/l)	Nickel (mg/l)	Zinc (mg/l)	Notes
MW-2						
8/19/98	---	---	< 100	---	---	a
MW-6						
2/28/01	< 0.001	0.035	0.23	0.046	0.19	non-filtered
8/16/01	< 0.001	0.020	0.12	0.032	0.11	
TBW-1						
8/16/01	< 0.001	0.017	0.042	0.034	0.10	0.1*
TBW-3						
8/16/01	< 0.001	0.008	0.01	0.019	< 0.02	
TBW-5						
8/16/01	< 0.001	< 0.005	0.01	0.008	0.03	

Notes:

--- = Not measured/analyzed.
* = Note was indicated but not defined in historical data tables.
a = Analyzed for organic lead.
LUFT = Leaking Underground Fuel Tank

LUFT metals by EPA Method 6010. Samples filtered in lab before analysis, unless noted otherwise.

Table D-4
Summary of Groundwater Analytical Data, Additional Metals
Municipal Service Center, 7101 Edgewater Drive, Oakland, California
Concentrations expressed in milligrams per liter (mg/l)

Sample ID/ Date	Antimony (mg/l)	Arsenic (mg/l)	Beryllium (mg/l)	Copper (mg/l)	Selenium (mg/l)	Silver (mg/l)	Thallium (mg/l)
MW-6							
8/16/01	<0.01	0.033	<0.001	0.025	<0.01	<0.003	<0.01
TBW-1							
8/16/01	<0.01	0.015	<0.001	0.017	<0.01	<0.003	<0.01
TBW-3							
8/16/01	<0.01	0.009	<0.001	0.008	<0.01	<0.003	<0.01
TBW-5							
8/16/01	<0.01	0.020	<0.001	<0.005	<0.01	<0.003	<0.01

Notes:

Metals by EPA Method 6010. Samples filtered in lab before analysis, unless noted otherwise.