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February 28, 2014

Jerry Wickham PG, CHG
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502-6540

Subject: Groundwater Monitoring Report for the Former Pacific Electric Motors Site 1009 66th Avenue, Oakland, California (Fuel Leak Case Number RO0000411)

Dear Mr. Wickham:

Enclosed is the Groundwater Monitoring Report for the Former Pacific Electric Motors Site 1009 66th Avenue, Oakland, California; Alameda County Environmental Health (ACEH) Fuel Leak Case Number RO0000411 ("the Site"). This report describes the groundwater monitoring activities conducted at the Site on January 7, 2014 in response to the letter from the ACEH to Aspire Public Schools dated, December 9, 2013.

I certify under penalty of law that this document and all attachments are prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions or comments, please call Mr. Ron Goloubow of ARCADIS at (510) 501-1789 or me at (510) 434-5071.

Sincerely,

A handwritten signature in black ink, appearing to read "Tim Simon".

Tim Simon
Aspire Public Schools

Enclosure

College for Certain, LLC

Groundwater Monitoring Report

Former Pacific Electric Motors Site
1009 66th Avenue, Oakland, California
(Fuel Leak Case Number RO0000411)

February 28, 2014



Ron Goloubow, P.G.
Principal Geologist

**Groundwater Monitoring
Report**

Former Pacific Electric Motors
Site, 1009 66th Avenue,
Oakland, California

Prepared for:

Aspire Public Schools;
College for Certain, LLC
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EM009155.0016

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February 28, 2014

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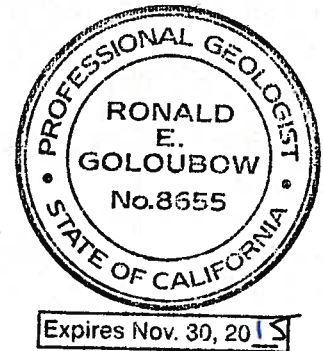
Certification

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



Ron Goloubow, P.G.
Principal Geologist
California Professional Geologist (8655)

February 28, 2014
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.

1. Introduction

ARCADIS has prepared this groundwater monitoring report on behalf of Aspire Public Schools (Aspire) and College for Certain, LLC, (CFC). This report provides the analytical results for the groundwater samples collected at the former Pacific Electric Motors (PEM) site located at 1009 66th Avenue, Oakland, California (“the Site”; Alameda County Environmental Health [ACEH] Fuel Leak Case Number RO0000411; Figures 1 and 2). Groundwater samples were collected at the Site on January 7, 2014 in response to a request from the ACEH to conduct one additional sampling event to confirm that groundwater concentrations have not increased or rebounded since the groundwater remediation system was shut down in September 2010. The request to collect the groundwater samples at the Site was provided in a letter from the ACEH to Aspire dated, December 9, 2013 (ACEH Letter).

As provided in this report, the analytical results for groundwater samples collected at the Site have indicated that concentrations for total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and total xylenes (BTEX), and methyl tertiary-butyl ether (MTBE) have decreased over time and remain low. This decreasing trend in concentrations is likely the direct result of the excavation and off-site disposal of fuel-affected soil that took place at the Site in 1995 and 2002 (see Section 1.2 and 1.4 of this report) and the operation of the operation of the soil-vapor extraction/air sparging (SVE/AS) system. Based on the removal action that took place at the Site, the operation of the SVE/AS, and the analytical data for groundwater samples conducted at the Site, it appears that no further investigation, remediation, or monitoring are needed for the Site. Therefore, we request approval to cease the groundwater monitoring and reporting that has been taking place at the Site, abandon the groundwater monitoring wells, and recommend that this case be closed based on the San Francisco Regional Water Quality Control Board’s (RWQCB’s) “low-risk case closure criteria” (RWQCB 1995, 2009, and 2010).

1.1 Purpose of the Report

The purpose of this groundwater monitoring report is to provide data that will be used to assess the groundwater quality over time and the effectiveness of the groundwater remediation that was previously conducted at the Site. This report presents the most recent results of the groundwater monitoring that took place in January 2014, approximately three years and three months at the Site after system shutdown. Accordingly, this report will also discuss site closure.

ARCADIS conducted quarterly groundwater sampling with slight modifications relative to the site-specific “Groundwater Monitoring Plan for the former Pacific Electric Motors Site located at 1009 66th Avenue, Oakland, California, Fuel Leak Case Number RO0000411,” dated March 4, 2009 (“Groundwater Sampling Plan”; LFR 2009a). As presented in the “Revised Corrective Action Plan, Proposed Aspire School Site, 1009 66th Avenue, Oakland, California,” dated July 17, 2009 (“the Revised CAP”; LFR 2009c), chemicals of concern (COCs) at the Site in groundwater include TPHg, BTEX, MTBE, and tertiary-butyl alcohol (TBA).

The purpose of the groundwater monitoring that was conducted at the Site was to assess the effectiveness of the remedial activities conducted at the Site. Remedial activities conducted at the Site included completion of the excavation activities as presented in the Revised CAP (LFR 2009c), and the SVE/AS system.

1.2 Background

The Site is located on the northwestern side of 66th Avenue between East 14th Street and San Leandro Street (Figures 1 and 2). The area around the Site is developed with a mixture of commercial, industrial, government, and multi-family residential buildings. The Site is currently owned by CFC. Additional historical land use information for the Site was presented in the Revised CAP (LFR 2009c).

The first industrial development of the property was in about 1948 when the two buildings were constructed by PEM. PEM occupied the Site from 1948 to 2001. Activities conducted at the Site by PEM included manufacturing specialty magnets, power supplies, and components, and repairing motors, generators, transformers, and magnets. A 2,000-gallon gasoline underground storage tank (UST) was reportedly installed at the Site by PEM in 1975. In addition, the gasoline shed in the fueling area may have stored vehicle lubricants and oil for vehicle maintenance.

The structures that were on the property were demolished between November 2009 and February 2010. The Site has been redeveloped for use as a charter school. The Site is relatively flat and the ground surface is predominantly paved or covered with buildings.

The Site has been redeveloped into the Aspire Golden State College Preparatory Academy, which serves grades 6 through 12 and has capacity for 570 students; the school opened in August 2011 (see Figure 2). The school occupies approximately 1.4 acres and consists of:

- two-story buildings (approximately 41,430 square feet total including 24 full-sized classrooms, 4 labs, 3 girls and 3 boys restrooms, and 4 staff restrooms);
- An asphalt-paved parking area with access via two driveways on 66th Avenue (one for ingress and one for egress);
- An asphalt-paved area for basketball; and
- Several planter areas.

As part of the redevelopment of the Site, the ground surface comprised of roadways, sidewalks, parking areas, buildings, and planter areas is serving as a cap to mitigate potential exposure to remaining polychlorinated biphenyls (PCBs) containing soil at the Site.

1.2.1 UST Removal and Remediation Activities

PEM removed the 2,000-gallon gasoline UST and associated pump island, piping, storage shed, and appurtenances in 1995. The UST was reportedly in good condition with no holes evident; however, free-phase gasoline product was observed on the water surface in the tank excavation (W.A. Craig, Inc. 1997). Approximately 1,500 cubic yards of soil were removed in two excavation iterations completed during 1995 and stockpiled on the northern portion of the Site. Approximately 116,000 gallons of petroleum hydrocarbon-affected groundwater were pumped from the excavation. Site investigation work during this time also included the drilling of GeoProbe borings (between excavation iterations) in an attempt to define the lateral and vertical extent of gasoline constituents. A dewatering sump used during soil excavation was later converted to an 8-inch-diameter well (thought to be WAC-1) during backfilling operations. Backfill reportedly consisted of clean imported fill material. Reports indicate that the stockpiled excavated soils were disposed of in 1997 (W.A. Craig, Inc. 1995a, 1995b, 1995c, 1997).

A 30-foot-wide by 70-foot-long by 9-foot-deep excavation for the remediation of petroleum hydrocarbon-affected soils was completed in April 2002 to the south of the original UST remedial excavation (Decon 2002a, 2002b; Figure 2). Approximately 65,000 gallons of petroleum hydrocarbon-affected groundwater were removed from the excavation. Additional over-excavation was performed southeast of the 30-foot by 70-foot excavation. During backfill operations, an 8-inch-diameter extraction well was installed (EW-1). The excavation was backfilled with an unspecified depth of drain rock. Approximately 250 pounds of oxygen-releasing compound (ORC) slurry were mixed into the gravel fill. Clean, excavated native soil and imported Class II base rock

comprised the balance of the backfill. Approximately 219 tons of petroleum hydrocarbon-affected soil were disposed of at an off-site facility (Decon 2002a, 2002b).

In addition, in June 2002, a total of 25 soil borings were advanced to a depth of 13 feet below ground surface (bgs) in the area of the former gasoline UST. Each of these borings was backfilled with 8 pounds of ORC followed by neat cement. ORC socks were also installed in wells MW-1 and WAC-1 (Decon 2002a, 2002b).

1.3 Previous Investigations

Several phases of investigations have been completed at the Site. According to descriptions of soil samples collected during the drilling of soil borings for groundwater monitoring wells installed at the Site, three groundwater-bearing zones designated as the “shallow zone,” “intermediate zone,” and “deep zone” have been identified at the Site (LFR 2008a).

The sediments from the ground surface to approximately 8 feet bgs consist of an interval of fine-grained sediment (silt and clay) with relatively thin intervals of coarser grained sediments (sand, less than 1 foot thick). These coarser grained sediments represent the interval of “shallow zone.” This is the interval in which the soil-vapor system was operated.

Discontinuous intervals of relatively thin, more permeable fine- to coarse-grained sand and gravels have generally been encountered between approximately 12 and 17 feet bgs. This interval of sediments contains the first groundwater at the Site, and represents the interval of “intermediate-zone” groundwater at the Site. Some of the highest concentrations of TPHg and related compounds have been detected in groundwater samples collected from this interval of saturated sediments.

An interval of poorly graded, coarser grained sediments comprised of fine sand and gravel was consistently encountered from approximately 21 to 34 feet bgs. This interval of coarser grained sediments contains groundwater and represents the “deep zone.”

The investigations conducted at the Site have also included the following:

- Collection of approximately 280 soil samples throughout the Site. The majority of these samples were collected from 0.5 or 5 feet bgs and analyzed for petroleum hydrocarbons, semivolatile organic compounds, PCBs, and/or metals.

- Installation and monitoring of four groundwater monitoring wells (MW-1 through MW-4) and three shallow/intermediate/deep monitoring well clusters (nested wells NW-1 through NW-3), and collection of grab groundwater samples from 20 soil borings. Monitoring of wells MW-1 through MW-4 has been performed intermittently since 1997.
- Completion of two investigations to assess soil-gas quality at the Site in March and August 2008. The results of these investigations were presented in the Revised CAP (LFR 2009c).
- Completion of an SVE/AS pilot test at the Site in accordance with LFR's "Work Plan to Conduct an Air Injection and Soil-Vapor Extraction Pilot Test," dated September 23, 2008 (LFR 2008a).
- Installation of seven SVE wells (SVE-2 through SVE-8), seven intermediate-zone AS wells (AS-2I through AS-8I), seven deep-zone AS wells (AS-2D through AS-8D), three SVE monitoring wells (SVMW-3 through SVMW-5), three intermediate-zone AS monitoring wells (ASMW-3I through ASMW-5I), and three deep-zone AS monitoring wells (ASMW-3D through ASMW-5D), from December 29, 2008 to January 9, 2009.
- Initial start-up of the SVE/AS extended pilot test system occurred on August 17, 2009. The system operated until October 27, 2009, at which time operations were ceased to allow for implementation of the Revised CAP, which required remedial soil excavation. The SVE/AS system operated a total of 52 days, from August 17, 2009 to October 27, 2009, and removed approximately 480 pounds of mass quantified as TPHg. For additional information and system design and start-up of the SVE/AS system, please refer to the quarterly "Groundwater Monitoring Report and Soil-Vapor Extraction/Air Sparging System Construction and Initial Operation Report for the Period July 1 through September 30, 2009" prepared for this project (LFR 2009e).

1.4 Revised Corrective Action Plan

LFR prepared the Revised CAP for the implementation of site remedies (LFR 2009c). The Revised CAP summarized the results of previous investigations, presented the site conceptual model, quantified the baseline risk of COCs, developed site-specific risk-based cleanup goals, evaluated potential remedies, and presented an implementation plan for the selected remedies.

The Revised CAP recommended excavation and off-site disposal of affected shallow soils with SVE/AS to remediate affected soil, groundwater, and soil vapors (LFR 2009c). The Revised CAP also recommended conducting an extended SVE/AS pilot test including ozone injection, if appropriate.

1.4.1 Soil Excavation and Removal

As of June 30, 2010, a total of approximately 8,662 tons of affected soil has been removed from the Site and transported to either Waste Management's Kettleman Hills Class I Landfill located in Kettleman City, California, or Republic Waste's Vasco Road Class II Landfill located in Livermore, California. The implementation of the CAP was reported to ACEH in the report titled "Soil Removal Action Completion Report, College for Certain, LLC, Former Pacific Electric Motors, 1009 66th Avenue, Oakland, California (Fuel Leak Case No. RO0000411)," dated September 15, 2010 (ARCADIS 2010d). The removal of PCB-affected soil was reported to ACEH and the U.S. Environmental Protection Agency (U.S. EPA) in a letter report titled "Implementation of the Toxic Substances Control Act Self-Implementing Cleanup Notification at the Former Pacific Electric Motors Facility, 1009 66th Avenue, Oakland, California," dated August 13, 2010 (ARCADIS 2010c) and the Revised Draft PCB Cleanup Completion Report, (ARCADIS 2013a).

1.4.2 Air Injection and Soil-Vapor Extraction

This section provides a summary of the operation and demobilization of the two phases of SVE/AS extended pilot test system that operated at the Site. The overall objective of the extended pilot test was to evaluate the effectiveness of SVE/AS in reducing concentrations of TPHg, BTEX, TBA, and MTBE in groundwater, soil, and soil gas.

ARCADIS operated an SVE/AS pilot test system in two phases. The first phase of SVE/AS operation was from August 13 to October 27, 2009, before soil excavation and site demolition activities began. The second phase of SVE/AS operation, from June 16 to September 13, 2010, was after completion of excavation and site demolition activities. SVE/AS operation was off for 232 days between phases of operation. Groundwater sampling to evaluate SVE/AS system performance was conducted during both phases of SVE/AS system operation. In addition, groundwater samples were collected before restarting the SVE/AS system for the second phase of operation to evaluate potential rebound of contaminants in groundwater during the period of SVE/AS system shutdown.

Initial Phase SVE/AS System

The initial phase SVE/AS extended pilot test system operated from August 17, 2009 to October 27, 2009. The initial phase SVE/AS system was shut down on October 27, 2009 to be demobilized from the Site during building demolition and soil excavation activities in accordance with the Revised CAP (LFR 2009c). Details regarding the operation of the system before demobilization were provided in the “Groundwater Monitoring Report and Soil-Vapor Extraction/Air Sparging System Construction and Initial Operation Report” submitted on November 13, 2009 (LFR 2009e). Operation of the SVE/AS extended pilot test system was restarted on June 16, 2010.

Second Phase SVE/AS System

The second phase SVE/AS system extended pilot test system operated from June 16 to September 13, 2010. Shortly after September 13, 2010, the SVE/AS system was demobilized to allow for the redevelopment of the Site.

Based on photoionization detector (PID) monitoring of the total SVE system influent vapor stream concentrations, the SVE/AS system extracted approximately 159 pounds of fuel vapors during the second phase of SVE/AS system operations from June 16 to September 13, 2010. When added to the yield from the operation of the initial system from August 17 to October 27, 2009, approximately 639 pounds of fuel vapors were recovered from the Site in approximately 141 days of operation.

2 Groundwater Monitoring

Groundwater monitoring was performed at the Site with slight modifications relative to the Groundwater Monitoring Plan and the Revised CAP (LFR 2009c). In response to the ACEH Letter, groundwater samples were collected on January 7, 2014 approximately three years and three months after the SVE/AS system was shut down. The following sections describe the groundwater monitoring activities for this reporting quarter.

2.2 Groundwater Monitoring Scope of Work

The following groundwater monitoring activities were performed:

- Measured depth to groundwater in eight monitoring wells on January 7, 2014.
- Collected groundwater samples from seven wells on January 7, 2014.
- Submitted groundwater samples for laboratory analyses.

2.3 Groundwater Monitoring Wells

The groundwater monitoring well network at the Site included 21 groundwater monitoring wells prior to abandonment of 15 monitoring wells and 16 soil-vapor and air sparging wells on September 13, October 15, and November 15, 2010 (Figure 2). During the August 18, 2010 meeting between representatives of CFC, ARCADIS, and ACEH, the proposed multi-purpose building was shifted approximately 15 feet to the north-northwest to allow wells AS-1I and AS-3I to remain in place as future groundwater monitoring wells (Figure 2).

Based on observations made by ARCADIS personnel during the September 2011 sampling event, wells AS-1I and AS-3I were inadvertently destroyed during the redevelopment of the Site and thus samples have not been collected from these wells since December 2010. ARCADIS personnel tried to locate wells AS-1I and AS-3I using a metal detector and removing surficial soil at the surveyed locations of the wells during the redevelopment of the Site but the wells could not be located and thus have not been monitored.

- One groundwater monitoring well (MW-4) is screened from approximately 5 to 20 feet bgs.
- One shallow-zone groundwater monitoring well (NW-2S); part of the triple-nested groundwater monitoring well) is screened from approximately 3 to 5 feet bgs.
- One intermediate-zone groundwater monitoring well (ASMW-5I) is screened from approximately 10 to 17 feet bgs.

- One intermediate-zone groundwater monitoring well (NW-2I); part of the triple-nested groundwater monitoring well) is screened from approximately 15 to 18 feet bgs.
- One deep-zone groundwater monitoring well (ASMW-5D) is screened from approximately 19 to 27 feet bgs.
- One deep-zone groundwater monitoring well (NW-2D); part of the triple-nested groundwater monitoring well) is completed with a screen at approximately 25 to 30 feet bgs.
- Intermediate-zone AS wells (AS-4I and AS-6I) are completed with 4-foot-long screen intervals that are set at depths between 13 and 17 and 9 and 13 feet bgs, respectively.

2.4 Groundwater Elevations

Groundwater elevations were measured on January 7, 2014. The depth to groundwater was measured in eight monitoring wells using an electronic water-level indicator. The water-level indicator was lowered into each well until a tone signaled that the indicator had contacted water. The depth to groundwater was measured to the surveyed elevation mark on the top of the casing of the monitoring well.

During the redevelopment activities permanent well boxes were installed at wells (MW-4, AS-4I, AS-6I, NW-2S, NW-2I, NW-2D, ASMW-5I, and ASMW-5D). To ensure well boxes and vaults were constructed at ground surface to avoid slips, trips, and falls associated with the wells, well casings that protruded above ground surface were cut, altering top of the casing (TOC) for each well. These elevations of these modified TOCs have not been surveyed. Accordingly, groundwater elevation contours, data, and gradients were not calculated or included in this report. The depth-to-water results are summarized in Table 1.

2.5 Groundwater Sampling

Groundwater monitoring and analysis of groundwater samples for TPHg, BTEX, TBA, and MTBE were conducted to assess the quality of groundwater at the site after the SVE/AS system ceased operation.

The samples were collected using low-flow groundwater sampling techniques (Puls and Barcelona 1996). The intake of the low-flow pump was placed in the middle of the screened interval and purged continuously until groundwater parameters (pH, conductivity, temperature, oxidation-reduction potential, and dissolved oxygen) stabilized, or until the well had been purged for approximately 30 minutes or of two gallons. Wells that purged dry were allowed to recharge to approximately 80% of original depth to groundwater before samples were collected.

Groundwater samples were collected directly from the hose of the pump and conveyed into laboratory-supplied sample containers. The containers were labeled with the well identification number, the time and date of collection, the analysis requested, and the initials of the sampler. The samples were stored in an ice-chilled cooler and maintained under strict chain-of-custody protocols as they were submitted to the laboratory for analysis.

The groundwater samples were submitted to Curtis and Tomkins. Ltd., a state-certified laboratory located in Berkeley, California, for the following analyses:

- TPHg BTEX, TBA, and MTBE by U.S. EPA Method 8260B

Results for TPHg, BTEX, and MTBE analyses are summarized in Table 2. Table 3 summarizes the groundwater monitoring parameters measured during the collection of the groundwater samples. Figures 3, 4, and 5 present the analytical results of TPHg, BTEX, and MTBE in the shallow, intermediate, and deep groundwater zones, respectively. Copies of the laboratory data sheets and chain-of-custody documents are presented in Appendix A. Copies of the monitoring well purge and sampling forms are presented in Appendix B.

2.6 Analytical Results of Groundwater Samples and Discussion

Groundwater samples were collected in January 2014 to provide data to evaluate the effectiveness of the SVE/AS system and to monitor for potential contaminant rebound. The results of the January sampling event were compared to results of baseline groundwater samples previously collected in March, May, and August 2009, before the SVE/AS system was operated. The following sections summarize the analytical results of the groundwater samples collected during the current monitoring event, and compare current results to baseline results.

2.6.1 Analytical Results for TPHg, BTEX, TBA, and MTBE

The wells selected include wells being sampled in accordance with the Groundwater Monitoring Plan, as well as wells installed to monitor the SVE/AS system. The wells selected include wells screened in the shallow, intermediate, and deep groundwater zones (Table 2).

The analytical results of the baseline groundwater samples and samples collected before and after demobilization of the SVE/AS system are summarized in Table 2. The analytical results of groundwater samples collected for TPHg, BTEX, and fuel oxygenates during this monitoring period are summarized in the following sections.

2.6.1.1 *Shallow Zone*

Groundwater samples were collected from shallow-zone well NW-2S during the current reporting quarter. Well NW-2S was purged dry on January 7 and was sampled after approximately 2 hours after groundwater recharged into the well.

Historical analytical results for TPHg, BTEX, TBA, and MTBE are summarized in Table 2 and posted on Figure 3. Prior to operation of the SVE/AS system, elevated concentrations of TPHg, BTEX, MTBE, and/or TBA had been detected in NW-2S. The analytical results of the groundwater samples collected in January 2014 from NW-2S indicate that TPHg and benzene concentrations remain significantly reduced by relative to the concentrations of TPHg and benzene detected in samples collected prior to the operation of the SVE/AS system.

2.6.1.2 *Intermediate Zone*

Groundwater samples were collected from four intermediate-zone wells. The analytical results for TPHg, BTEX, TBA, and MTBE are summarized in Table 2, and analytical results for intermediate-zone wells are posted on Figure 4. Prior to operation of the SVE/AS system, elevated concentrations of TPHg, BTEX, MTBE, and/or TBA had been detected in groundwater samples previously collected from intermediate-zone wells at the Site. The baseline concentrations of fuel-related compounds detected in the samples collected from wells NW-2I, ASMW-2I, and ASMW 5I, located hydraulically downgradient from the former UST had contained some of the highest concentrations of fuel-related compounds detected in groundwater samples collected at the Site. The analytical results of the groundwater samples collected in September 2011 from NW-2I and ASMW-5I after 232 days of total SVE/AS system operation and

374 days after demobilization indicate that TPHg concentrations were significantly reduced by approximately 98.9% and 99.9%, respectively (Table 2 and Figure 4).

The data indicate that TPHg and BTEX concentrations are significantly reduced in each of the samples collected from the intermediate-zone wells relative to concentrations detected prior to the operation of the SVE/AS system (Table 2 and Figure 4). TPHg, toluene, ethyl benzene, and total xylenes were not detected above laboratory reporting limits in the samples collected from the four intermediate-zone wells (see Figure 4 and Table 2).

Benzene was only detected in above laboratory reporting limits in one of the four intermediate-zone wells (0.74 micrograms per liter (µg/l) well AS-4I; see Figure 4 and Table 2).

MTBE were detected in above laboratory reporting limits in two of the four samples collected from intermediate-zone wells (AS-4I and AS-5I) and TBA was detected in one of the one of the four samples (AS-5I; see Figure 4 and Table 2).

The following table summarizes the percentage decreases in benzene and TPHg concentrations detected in samples collected in September 2011 relative to concentrations of benzene and TPHg detected prior to start-up of the SVE/AS system:

Percentage Decrease in Benzene and TPHg Concentrations Intermediate-Zone Groundwater Monitoring Wells <i>concentrations in micrograms per liter</i>			
Well ID	Data	Benzene	TPHg
ASMW-5I	11-Mar-09	11,000	72,000
	07-Jan-14	<0.50	<50
	Percent Decrease:	>99%	>99%
NW-2I	13-Mar-09	18,000	49,000
	07-Jan-14	<0.50	<50
	Percent Decrease:	>99%	>99%
AS-6I	26-May-09	11,000	42,000
	07-Jan-14	<0.50	<50
	Percent Decrease:	>99%	>99%

The analytical results for these samples indicated that the concentrations of fuel and fuel-related compounds significantly decreased relative to the concentrations detected before the SVE/AS system began operation and remain decreased three years after the SVE/AS was shut down.

2.6.1.3 Deep Zone

Groundwater samples were collected from three deep-zone wells (NW-2D, ASMW-5D and MW-4). The analytical results for TPHg, BTEX, TBA, and MTBE are summarized in Table 2 and posted for deep-zone wells on Figure 5. Analytical results for samples collected from wells ASMW-5D and MW-4 were similar to the results of the samples collected from intermediate-zone wells in September 2011. Analytical results for the sample collected from well NW-2D were comparable to the results for the samples collected from this well in March and June 2011 (after the treatment system was shut down; see Figure 4 and Table 2). The analytical results for these samples indicated that the concentrations of fuel and fuel-related compounds significantly decreased (and remain decreased) relative to the concentrations detected before the SVE/AS system began operation and remain decreased three years after the SVE/AS was shut down.

2.7 Site-Specific Screening Levels for Benzene in Groundwater

A site-specific screening level for benzene in groundwater has been calculated with respect to the potential volatilization of benzene from groundwater to indoor air. Site conditions including shallow groundwater (less than 5 feet bgs) and disturbed vadose soils as a result of excavation and backfilling are not conducive to collecting representative soil-gas samples. Therefore, ARCADIS developed a site-specific screening level that is protective of benzene volatilizing to indoor air from groundwater to further evaluate the success of the SVE/AS system in reducing fuel and fuel constituents in groundwater. The following sections describe how the site-specific screening level was calculated and compares current groundwater concentrations to the screening level.

2.7.1 Calculation of Groundwater Benzene Concentration Protective of the Indoor Air Pathway

ARCADIS used the California Department of Toxic Substances Control (DTSC) version of the Johnson & Ettinger model (DTSC 2009) to estimate a benzene concentration in groundwater that would not pose a vapor intrusion concern under a commercial exposure scenario. The model first estimates an indoor air concentration based on a

target health risk of 1×10^{-6} . Then it subsequently back-calculates a groundwater concentration associated with this vapor intrusion potential. The model itself generates a groundwater concentration that is not associated with a vapor intrusion health risk above the DTSC target level.

Default commercial exposure input parameters were used to calculate the benzene in groundwater concentration. These include a 25-year exposure duration, 250 days per years and eight hours per day. Building-specific defaults such as slab thickness and ventilation exchange rates were incorporated into the modeling effort.

Based on the evaluation, a benzene concentration of 66 $\mu\text{g/l}$ in groundwater would not be associated with a vapor intrusion health concern under the commercial exposure scenario. The exposure assumptions used under a commercial scenario are conservative for a school setting (especially a gymnasium), where exposures are expected to be significantly lower. Details concerning the vapor transport modeling are provided in Appendix C of the groundwater monitoring report for the period July 1 through September 30, 2010 (ARCADIS 2010e).

2.7.2 Comparison of September 2011 Groundwater Sampling Results to Site-Specific Screening Level for Benzene

Concentrations of benzene in the groundwater samples from eight wells during the September 2011 sampling event ranged from below the laboratory detection limit $<0.50 \mu\text{g/l}$ (in four wells) to $1.5 \mu\text{g/l}$ (in well NW-2D). The analytical results of the groundwater samples collected during the September sampling event indicate that current concentrations of benzene in groundwater are well below the 66 $\mu\text{g/l}$ screening level concentration protective of the benzene volatilization from groundwater to indoor air exposure pathway and have significantly decreased since last quarter (Table 2).

3 Conclusions

Based on the baseline analytical results of the groundwater samples collected at the Site, the highest concentrations of COCs were initially detected in samples collected from wells constructed in the intermediate zone located closest to the former UST (Figures 3 through 5).

Analytical results of groundwater samples collected on January 7, 2014, approximately 3 years and 3 months after system shutdown, indicate that the remediation of the affected groundwater at the Site was highly effective in removing the affected

groundwater at the Site. Concentrations of TPHg, BTEX, MTBE, and TBA are all significantly below the pre-remedial concentrations and remain decreased three years after the SVE/AS was shut down.

Benzene remains significantly below its screening level 66 µg/l, with the highest concentration at 1.5 µg/l detected in the sample collected from well NW-2D. Comparison of analytical results of groundwater samples collected after SVE/AS system shutdown to the calculated 66 µg/l groundwater concentration of benzene protective of the volatilization to indoor air exposure pathway shows that current groundwater conditions do not pose a risk of volatilization to indoor air. These trends indicate that site remedial activities have produced successful results.

4 Recommendations

In accordance with the Revised CAP, ARCADIS collected groundwater samples for one full year after the shutdown of the SVE/AS system (September 2010 through September 2011) and more recently in January 2014 (in response to the request from the ACEH). Historical data presented in Table 2 and Figures 3 through 5 demonstrate a significant reduction in site COCs with benzene being reduced by greater than 99% in all monitoring wells with respect to baseline data.

Based on the success of the SVE/AS system operation in the long-term reduction of fuel and fuel-related constituent concentrations in groundwater, ARCADIS is requesting case closure for this project from ACEH indicating that no further action is required at this Site with respect to groundwater monitoring or remediation.

5 Request for Case Closure

The following are the facts most relevant to this case being recommended for case closure:

- Approximately 1,500 cubic yards of fuel-affected soil were removed in two excavation iterations completed at the Site during 1995.
- Approximately 116,000 gallons of petroleum hydrocarbon-affected groundwater were pumped from the excavation in 1995.
- Approximately 65,000 gallons of petroleum hydrocarbon-affected groundwater were removed from the excavation in 2002.

- Approximately 219 tons of petroleum hydrocarbon-affected soil was disposed of at an off-site facility in 2002.
- Approximately 639 pounds of fuel vapors were recovered from the Site in approximately 141 days of operation of the SVE/AS system in 2009 and 2010.
- Concentration trends for benzene present in groundwater at the Site have decreased significantly over time, and concentrations of benzene detected during the most recent monitoring event (three years and three months after the operation of the SVE/AS) remain below its respective cleanup goal.
- As draft land use covenant (LUC) and soil management plan has been prepared for the Site and is currently being reviewed by representatives of the United States Environmental Protection Agency (ARCADIS 2013b). The LUC includes the following language to restrict the use of groundwater at the Site:

“No Owners or Occupants of the Burdened Property (i.e. the Site) or any portion thereof shall drill, bore, otherwise construct, or use a well for the purpose of extracting water for any use, including but not limited to domestic, potable, irrigation, or industrial uses, unless expressly permitted in writing by ACEH.”

- Based on the findings included in this report, the findings from previous investigations and remedial activities, and the facts presented above, ARCADIS recommends that this case be approved for regulatory closure, and requests that the ACEH provide Aspire-CFC a letter stating that no further investigation or remediation is necessary and that the groundwater monitoring wells be abandoned at the Site.

6 Limitations

The opinions and recommendations presented in this report are based upon the scope of services, information obtained through the performance of the services, and the schedule as agreed upon by ARCADIS and the party for whom this report was originally prepared. This report is an instrument of professional service and was prepared in accordance with the generally accepted standards and level of skill and care under similar conditions and circumstances established by the environmental consulting industry. No representation, warranty, or guarantee, expressed or implied, is intended or given. To the extent that ARCADIS relied upon any information prepared by other parties not under contract to ARCADIS, ARCADIS makes no representation

as to the accuracy or completeness of such information. This report is expressly for the sole and exclusive use of the party for whom this report was originally prepared for a particular purpose. Only the party for whom this report was originally prepared and/or other specifically named parties have the right to make use of and rely upon this report. Reuse of this report or any portion thereof for other than its intended purpose, or if modified, or if used by third parties, shall be at the user's sole risk.

Results of any investigations or testing and any findings presented in this report apply solely to conditions existing at the time when ARCADIS' investigative work was performed. It must be recognized that any such investigative or testing activities are inherently limited and do not represent a conclusive or complete characterization. Conditions in other parts of the Site may vary from those at the locations where data were collected. ARCADIS' ability to interpret investigation results is related to the availability of the data and the extent of the investigation activities. As such, 100% confidence in environmental investigation conclusions cannot reasonably be achieved.

ARCADIS, therefore, does not provide any guarantees, certifications, or warranties regarding any conclusions regarding environmental contamination of any such property. Furthermore, nothing contained in this document shall relieve any other party of its responsibility to abide by contract documents and applicable laws, codes, regulations, or standards.

7 References

ARCADIS. 2010a. Groundwater Monitoring Report and Soil-Vapor Extraction/Air Sparging System Construction for the Period October 1 through December 31, 2009, Former Pacific Electric Motors Site, 1009 66th Avenue, Oakland, California (Fuel Leak Case Number RO0000411). February 12.

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ARCADIS. 2010d. Soil Removal Action Completion Report, College for Certain, LLC, Former Pacific Electric Motors, 1009 66th Avenue, Oakland, California (Fuel Leak Case No. RO0000411). September 15.

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- Puls, Robert W., and Michael J. Barcelona. 1996. Ground Water Issue Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures. EPA/540/S-95/504.
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Table 1
Groundwater Elevations
Former Pacific Electric Motors Facility
1009 66th Avenue, Oakland, California

Sample Location	Date Collected	Top-of-Casing Elevation ⁽¹⁾	Depth to Groundwater ⁽²⁾	Groundwater Elevation ⁽¹⁾
Shallow-Zone Groundwater Monitoring Wells				
NW-2S	11-Mar-09	13.77	3.77	10.00
	26-May-09		3.63	10.14
	21-Sep-09		3.98	9.79
	27-Jul-10		5.09	8.68
	14-Sep-10		3.92	9.85
	14-Dec-10		3.23	10.54
	15-Mar-11		2.25	11.52
	15-Jun-11		2.58	11.19
	** 23-Sep-11		3.57	10.20
	** 7-Jan-14		4.34	9.43
Intermediate-Zone Groundwater Monitoring Wells¹				
NW-2I ¹	11-Mar-09	13.80	5.86	7.94
	26-May-09		4.08	9.72
	10-Aug-09		5.96	7.84
	21-Sep-09		5.21	8.59
	21-Oct-09		8.54	5.26
	24-May-10		4.18	9.62
	27-Jul-10		2.77	11.03
	14-Sep-10		6.25	7.55
	14-Dec-10		4.31	9.49
	15-Mar-11		4.85	8.95
	15-Jun-11		4.92	8.88
	** 23-Sep-11		4.76	9.04
	** 7-Jan-14		5.05	8.75
ASMW-4I	11-Mar-09	13.09	2.06	11.03
	26-May-09		3.22	9.87
	10-Aug-09		3.96	9.13
	21-Sep-09		4.44	8.65
	21-Oct-09		3.58	9.51
	24-May-10		NM	NM
	27-Jul-10		4.32	8.77
	14-Sep-10		4.68	8.41
	15-Dec-10		2.71	10.38
ASMW-5I	11-Mar-09	13.16	2.14	11.02
	26-May-09		3.26	9.90
	10-Aug-09		3.95	9.21
	21-Sep-09		4.43	8.73
	21-Oct-09		6.86	6.30
	24-May-10		4.54	8.62
	27-Jul-10	13.83	5.03	8.80
	14-Sep-10		5.93	7.90
	14-Dec-10		2.95	10.88
	15-Mar-11		3.94	9.89
	15-Jun-11		3.85	9.98
	** 23-Sep-11		4.28	9.55
	** 7-Jan-14		4.50	9.33

Table 1
Groundwater Elevations
Former Pacific Electric Motors Facility
1009 66th Avenue, Oakland, California

Sample Location	Date Collected	Top-of-Casing Elevation ⁽¹⁾	Depth to Groundwater ⁽²⁾	Groundwater Elevation ⁽¹⁾
AS-1I	26-May-09	NS	3.87	--
	24-May-10		4.91	--
	27-Jul-10	14.02	5.61	8.41
	14-Dec-10		3.20	10.82
AS-3I	26-May-09	14.10	4.07	10.03
	24-May-10		4.10	10.00
	27-Jul-10	13.91	7.35	6.56
	14-Sep-10		6.12	7.79
AS-4I	26-May-09	13.52	3.68	9.84
	24-May-10		2.05	11.47
	27-Jul-10	14.04	6.92	7.12
	14-Sep-10		7.12	6.92
	14-Dec-10		3.23	10.81
	16-Jun-11		3.16	10.88
	** 23-Sep-11		4.91	9.13
** 7-Jan-14		5.10	8.94	
AS-6I	26-May-09	13.10	3.14	9.96
	21-Sep-09	(*)	3.96	9.14
	24-May-10	(**)	NM	NM
	27-Jul-10	14.01	4.82	9.19
	14-Sep-10		5.59	8.42
	14-Dec-10		2.16	11.85
	15-Mar-11		4.50	9.51
	15-Jun-11		4.28	9.73
	** 23-Sep-11		4.47	9.54
	** 7-Jan-14		4.75	9.26
Deep-Zone Groundwater Monitoring Wells				
MW-4	11-Mar-09	13.78	2.63	11.15
	26-May-09		3.91	9.87
	10-Aug-09		4.71	9.07
	21-Sep-09		5.18	8.60
	21-Oct-09		6.28	7.50
	27-Jul-10	13.94	4.89	9.05
	14-Sep-10		5.14	8.80
	14-Dec-10		3.11	10.83
	15-Mar-11		3.85	10.09
	15-Jun-11		3.90	10.04
	** 23-Sep-11		4.80	9.14
** 7-Jan-14		5.01	8.93	
NW-2D	11-Mar-09	13.79	2.68	11.11
	26-May-09		3.97	9.82
	10-Aug-09		4.73	9.06
	21-Sep-09		5.13	8.66
	21-Oct-09		4.13	9.66
	24-May-10		4.05	9.74
	27-Jul-10		4.75	9.04

Table 1
Groundwater Elevations
Former Pacific Electric Motors Facility
1009 66th Avenue, Oakland, California

Sample Location	Date Collected	Top-of-Casing Elevation ⁽¹⁾	Depth to Groundwater ⁽²⁾	Groundwater Elevation ⁽¹⁾
	14-Sep-10		6.11	7.68
	14-Dec-10		4.32	9.47
	15-Mar-11		4.90	8.89
	15-Jun-11		4.98	8.81
	** 23-Sep-11		4.75	9.04
	** 7-Jan-14		5.00	8.79
ASMW-5D	11-Mar-09	13.01	1.88	11.13
	26-May-09		3.16	9.85
	10-Aug-09		3.93	9.08
	21-Sep-09		4.30	8.71
	21-Oct-09		3.56	9.45
	24-May-10		3.24	9.77
	27-Jul-10	13.63	4.50	9.13
	14-Sep-10		4.81	8.82
	14-Dec-10		2.95	10.68
	15-Mar-11		3.57	10.06
	15-Jun-11		2.87	10.76
	** 23-Sep-11		4.21	9.42
	** 7-Jan-14		4.48	9.15

Notes:

NM = water level not measured

NS = not surveyed

(*) Top of casing obscured by sparge/extraction fitting; top-of-casing value estimated.

(**) Top of the casing was damaged or altered during excavation and or redevelopment activities; top-of-casing elevation is inaccurate.

(1) Top-of-casing elevation surveyed by Tronoff & Associates licensed land surveyor number 6415; top-of-casing and groundwater elevations are in North American Vertical Datum 1988 (feet)

(2) feet below the top of well casing

Table 2
Analytical Results for Volatile Organic Compounds
Former Pacific Electric Motors Facility
1009 66th Avenue, Oakland, California
(concentrations in micrograms per liter [µg/L])

Sample Location	Date Collected	Notes	TPHg	TBA	MTBE	Benzene	Toluene	Ethylbenzene	m,p-Xylenes	o-Xylenes	Total Xylenes
Shallow-Zone Groundwater Monitoring Wells											
NW-1S	27-Dec-05		<50	NA	0.55	<0.50	<0.50	<0.50	NA	NA	<0.50
	13-Mar-09		<50	<10	0.55	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	23-Sep-09		<50	<10	<0.50	<0.50	0.69	<0.50	0.59	<0.50	0.59
NW-2S	27-Dec-05		7,100	NA	1,600	570	570	62	NA	NA	1,530
	13-Mar-09		1,800	1,900	130	520	<4.2	120	20	<4.2	20
	23-Sep-09		15,000	5,100	11,000	610	800	41	1,500	2,300	3,800
	28-Jul-10		1,000	100	34	34	30	24	NA	NA	170
	14-Sep-10		69	<4	<0.50	<0.50	<0.50	<0.50	NA	NA	2.1
	17-Dec-10		<50	21	4.7	<0.50	<0.50	<0.50	NA	NA	<1.0
	15-Mar-11		66	400	30.0	5	<0.50	5.7	NA	NA	<1.0
	15-Jun-11		83	720	16	2.3	<0.50	<0.50	NA	NA	<1.0
7-Jan-14		63	760	2.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
NW-3S	26-May-09		<50	<10	2.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	21-Sep-09		<50	<10	4.1	<0.50	0.58	<0.50	<0.50	<0.50	<0.50
	15-Sep-10		<50	<4	2.4	<0.50	<0.50	<0.50	NA	NA	<1.0
Intermediate-Zone Groundwater Monitoring Wells											
ASMW-2I	13-Mar-09		49,000	3,200	1,100	18,000	17,000	1,600	5,100	3,100	8,200
	23-Sep-09		<1,000	13,000	290	<10	13	<10	39	31	70
	22-Oct-09		<50	370	290	<0.50	4.6	<0.50	9	11	20
	25-May-10		2,000	330	98	280	50	170	NA	NA	350
	14-Sep-10		<50	<4	0.51	<0.50	<0.50	<0.50	NA	NA	<1.0
	27-Jul-10		<50	<4.0	20	<0.50	0.80	<0.50	NA	NA	4.5
ASMW-3I	11-Mar-09		<50	<10	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	22-Sep-09		<50	<10	3.4	<0.50	1.4	<0.50	<0.50	<0.50	<0.50
	22-Oct-09		<50	<10	6.9	<0.50	1.4	<0.50	<0.50	<0.50	<0.50

Table 2
Analytical Results for Volatile Organic Compounds
Former Pacific Electric Motors Facility
1009 66th Avenue, Oakland, California
(concentrations in micrograms per liter [µg/L])

Sample Location	Date Collected	Notes	TPHg	TBA	MTBE	Benzene	Toluene	Ethyl-benzene	m,p-Xylenes	o-Xylenes	Total Xylenes
ASMW-4I	11-Mar-09		9,200	<130	<6.3	38	<6.3	570	1,800	230	2,030
	23-Sep-09		1,900	<130	<6.3	8.1	<6.3	130	120	26	146
	22-Oct-09		1,900	<10	<0.50	4.0	1	75	110	23	133
	26-May-10		1,800	<4	<0.50	4.6	<0.50	86	NA	NA	90
	27-Jul-10		940	<4.0	<0.50	2.9	<0.50	68	NA	NA	35
	14-Sep-10		460	<4	<0.50	1.3	<0.50	14	NA	NA	5
	17-Dec-10		1,000	<4	<0.50	2.2	<0.50	43	NA	NA	110
ASMW-5I	11-Mar-09		72,000	<1,400	76	11,000	3,600	3,800	13,000	5,400	18,400
	10-Aug-09		59,000	<1400	91	9,100	1,800	2,400	8,300	3,900	12,200
	22-Sep-09		15,000	210	78	1,100	250	280	2,000	1,200	3,200
	22-Oct-09		22,000	330	110	560	330	240	3,000	1,600	4,600
	24-May-10		48,000	310	120	2,300	150	2,000	NA	NA	12,000
	duplicate 24-May-10		46,000	290	120	2,200	170	2,000	NA	NA	12,000
	27-Jul-10		110	28	1.6	<0.50	<0.50	0.80	NA	NA	20
	14-Sep-10		<50	<4	<0.50	<0.50	<0.50	<0.50	NA	NA	<1.0
	17-Dec-10		110	680	65	0.62	<0.50	1.6	NA	NA	<1.0
	15-Mar-11		150	750	47	<0.50	<0.50	<0.50	NA	NA	<1.0
	15-Jun-11		320	610	43	4.0	<0.50	<0.50	NA	NA	5.2
23-Sep-11		58	130	7.5	1.3	<0.50	<0.50	NA	NA	1.1	
7-Jan-14		<50	65	0.51	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
NW-1I	14-Sep-10		<50	250	1.9	<0.50	<0.50	<0.50	NA	NA	<1.0
NW-2I	27-Dec-05		120,000	NA	120,000	22,000	24,000	2,100	NA	NA	12,800
	13-Mar-09		49,000	NA	1,100	18,000	17,000	1,600	NA	NA	8,200
	23-Sep-09		12,000	5,500	3,000	980	820	220	1,200	660	1,860
	22-Oct-09		4,200	3,300	330	110	110	5.8	400	250	650
	25-May-10		8,600	17,000	770	360	35	400	NA	NA	8,600
	28-Jul-10		130	300	71	0.67	<0.50	<0.50	NA	NA	8.2
	14-Sep-10		<50	6	<0.50	<0.50	<0.50	0.6	NA	NA	4.8
	17-Dec-10		920	580	15	14	<0.50	89	NA	NA	11
	15-Mar-11		<50	<4.0	0.55	<0.50	<0.50	<0.50	NA	NA	<1.0
	duplicate 15-Mar-11		<50	<4.0	0.57	<0.50	<0.50	<0.50	NA	NA	<1.0
	15-Jun-11		<50	<4.0	<0.50	<0.50	<0.50	<0.50	NA	NA	<1.0
	23-Sep-11		510	460	9.5	3.2	<0.50	9.2	NA	NA	15
	7-Jan-14		<50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

Table 2
Analytical Results for Volatile Organic Compounds
Former Pacific Electric Motors Facility
1009 66th Avenue, Oakland, California
(concentrations in micrograms per liter [$\mu\text{g/L}$])

Sample Location	Date Collected	Notes	TPHg	TBA	MTBE	Benzene	Toluene	Ethylbenzene	m,p-Xylenes	o-Xylenes	Total Xylenes
NW-3I	27-Dec-05		<50	NA	<2.0	<0.50	<0.50	<0.50	NA	NA	<0.50
	15-Feb-06		<50	NA	<2.0	<0.50	<0.50	<0.50	NA	NA	<0.50
	15-Feb-06		<50	NA	<2.0	<0.50	<0.50	<0.50	NA	NA	<0.50
	16-Feb-06		<50	NA	<2.0	<0.50	<0.50	<0.50	NA	NA	<0.50
	21-Sep-09		<50	<10	1.3	<0.50	0.54	<0.50	<0.50	<0.50	<0.50
	25-May-10		<50	<4	1.2	<0.50	<0.50	<0.50	NA	NA	1.7
	15-Sep-10		<50	<4	0.85	<0.50	<0.50	<0.50	NA	NA	<1.0
AS-1I	17-Dec-10		<50	<4	8.8	<0.50	<0.50	<0.50	NA	NA	<1.0
AS-2I	22-Sep-09		<8,300	2,900	11,000	460	120	<83	130	<83	130
	25-May-10		6,800	5,600	8,000	76	<25	220	NA	NA	<50
	28-Jul-10		<5,000	8,700	1,200	<50	<50	<50	NA	NA	<100
	15-Sep-10		<1000	<80	380	<10	<10	<10	NA	NA	<20
AS-3I	14-Sep-10		<500	6.5	530	<0.50	<0.50	<0.50	NA	NA	14
	17-Dec-10		<50	52	200	<0.50	<0.50	<0.50	NA	NA	<1.0
AS-4I	25-May-10		310	1,500	110	2.7	<0.50	<0.50	NA	NA	<1.0
	14-Sep-10		<50	<4	<0.50	<0.50	<0.50	<0.50	NA	NA	<1.0
	17-Dec-10		<50	260	36	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
Duplicate	17-Dec-10		<50	250	37	<0.50	<0.50	<0.50	NA	NA	<1.0
	16-Jun-11		100	600	110	0.68	<0.50	<0.50	NA	NA	<1.0
	23-Sep-11		700	310	79	1.30	<0.50	<0.50	NA	NA	<1.0
	7-Jan-14		<50	<10	13	0.74	<0.50	<0.50	<0.50	<0.50	<0.50
AS-5I	25-May-10		<50	130	10	<0.50	<0.50	<0.50	NA	NA	<1.0
AS-6I	26-May-09		42,000	<1,000	170	11,000	780	2,400	7,300	2,900	10,200
	23-Sep-09		26,000	330	1,600	1,000	400	230	4,000	1,300	5,300
	25-May-10		840	210	25	23	<0.50	14	NA	NA	1.5
	28-Jul-10		58	450	45	<0.50	1.9	2.7	NA	NA	8.1
	14-Sep-10		<50	57	8.6	<0.50	<0.50	1.1	NA	NA	<1.0
	duplicate 14-Sep-10		<50	63	10	<0.50	<0.50	1.2	NA	NA	<1.0
	17-Dec-10		700	2,000	80	3.6	1.5	21.0	NA	NA	15.0
	15-Mar-11		<50	480	5.2	<0.50	<0.50	<0.50	NA	NA	<1.0
	15-Jun-11		<50	190	1.6	<0.50	<0.50	<0.50	NA	NA	<1.0
	duplicate 15-Jun-11		<50	190	1.6	<0.50	<0.50	<0.50	NA	NA	<1.0
	23-Sep-11		500	690	9.4	<0.50	<0.50	3.3	NA	NA	4.2
	7-Jan-14		<50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

Table 2
Analytical Results for Volatile Organic Compounds
Former Pacific Electric Motors Facility
1009 66th Avenue, Oakland, California
(concentrations in micrograms per liter [$\mu\text{g/L}$])

Sample Location	Date Collected	Notes	TPHg	TBA	MTBE	Benzene	Toluene	Ethyl-benzene	m,p-Xylenes	o-Xylenes	Total Xylenes
AS-7I	26-May-09		<50	35	2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	23-Sep-09		<50	<10	0.8	<0.50	0.95	<0.50	<0.50	<0.50	<0.50
	26-May-10		<50	<4	<0.50	<0.50	<0.50	<0.50	NA	NA	<1.0
	15-Sep-10		790	<4	1.1	<0.50	<0.50	<0.50	NA	NA	<1.0
AS-8I	23-Sep-09		<50	<10	1.0	<0.50	1.6	<0.50	<0.50	<0.50	<0.50
Deep-Zone Groundwater Monitoring Wells											
ASMW-2D	11-Mar-09		1,300	1,900	1,300	13	<13	<13	<13	<13	<13
	23-Sep-09		<360	<71	460	<3.6	<3.6	<3.6	5.7	4.7	10.4
	22-Oct-09		<50	<10	1.9	<0.50	1.4	<0.50	1.9	2.1	4
	25-May-10		<50	<4	8.3	<0.50	<0.50	<0.50	NA	NA	<1.0
ASMW-3D	11-Mar-09		<50	34	91	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	22-Sep-09	(4)	<50	28	280	<0.50	1.1	<0.50	0.68	0.87	1.55
	22-Oct-09		<50	<10	310	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
ASMW-4D	11-Mar-09		<50	<10	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	21-Sep-09	(1)	<50	<10	5.4	<0.50	1.5	<0.50	<0.50	<0.50	<0.50
	22-Oct-09		<50	<10	6.1	<0.50	0.5	<0.50	<0.50	<0.50	<0.50
ASMW-5D	11-Mar-09	(2)	87	1,700	<0.50	84	<0.50	5.2	5.9	1.5	7.4
	21-Sep-09		<50	<10	72	<0.50	2.8	<0.50	<0.50	<0.50	<0.50
	22-Oct-09		<50	<10	76	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	duplicate	22-Oct-09		<50	<10	5.1	<0.50	0.8	<0.50	<0.50	<0.50
	24-May-10		<250	3,900	14	<2.5	<2.5	<2.5	NA	NA	6.3
	27-Jul-10		<50	<4.0	2.6	<0.50	<0.50	<0.50	NA	NA	<1.0
	14-Sep-10		<50	<4	<0.50	<0.50	<0.50	<0.50	NA	NA	<1.0
	17-Dec-10		<50	<4.0	0.52	<0.50	<0.50	<0.50	NA	NA	<1.0
	15-Mar-11		<50	<4.0	0.68	<0.50	<0.50	<0.50	NA	NA	<1.0
	15-Jun-11		<50	<4.0	<0.50	<0.50	<0.50	<0.50	NA	NA	<1.0
	23-Sep-11		<50	<4.0	<0.50	<0.50	<0.50	<0.50	NA	NA	<1.0
	7-Jan-14		<50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	AS-2D	22-Sep-09		<50	<10	13	<0.50	0.8	<0.50	<0.50	<0.50
15-Sep-10			<50	<4	<0.50	<0.50	<0.50	<0.50	NA	NA	<1.0
duplicate		15-Sep-10		<50	<4	<0.50	<0.50	<0.50	NA	NA	<1.0
AS-3D	14-Sep-10		<50	<4	0.71	<0.50	<0.50	<0.50	NA	NA	<1.0
AS-4D	14-Sep-10		<50	<4	0.92	<0.50	<0.50	<0.50	NA	NA	<1.0

Table 2
Analytical Results for Volatile Organic Compounds
Former Pacific Electric Motors Facility
1009 66th Avenue, Oakland, California
(concentrations in micrograms per liter [µg/L])

Sample Location	Date Collected	Notes	TPHg	TBA	MTBE	Benzene	Toluene	Ethyl-benzene	m,p-Xylenes	o-Xylenes	Total Xylenes
NW-1D	27-Dec-05		<50	NA	37	<0.50	<0.50	<0.50	NA	NA	<0.50
	13-Mar-09		<50	<10	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
NW-2D duplicate	27-Dec-05		1,400	NA	1,600	300	13	<2.5	NA	NA	178
	13-Mar-09		<250	17,000	310	120	<2.5	<2.5	<2.5	<2.5	<2.5
	22-Sep-09	(3)	<50	<10	9.8	0.5	2.5	<0.50	2.0	2.1	4.1
	22-Sep-09		<50	<10	12	<0.50	1.4	<0.50	1.9	1.3	3.2
	22-Oct-09		<50	<10	<0.50	<0.50	0.8	<0.50	<0.50	<0.50	<0.50
	28-Jul-10		<50	<4.0	<0.50	<0.50	<0.50	<0.50	NA	NA	<1.0
	14-Sep-10		<50	<4	0.52	<0.50	<0.50	<0.50	NA	NA	<1.0
	17-Dec-10		<50	<4.0	<0.50	<0.50	<0.50	<0.50	NA	NA	<1.0
	15-Mar-11		510	320	11	7.5	<0.50	47	NA	NA	18
	15-Jun-11		350	380	10	5.6	<0.50	7.9	NA	NA	16
	23-Sep-11		<50	<4.0	1.4	<0.50	<0.50	<0.50	NA	NA	<1.0
	7-Jan-14		670	440	10	1.5	<0.50	17	1.8	0.82	2.62
NW-3D	27-Dec-05		<50	NA	<2.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	15-Feb-06		<50	NA	<2.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	15-Feb-06		<50	NA	2.1	<0.5	<0.5	<0.5	NA	NA	<0.5
	16-Feb-06		<50	NA	<2.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	21-Sep-09		<50	<10	1.0	<0.50	0.67	<0.50	<0.50	<0.50	<0.50
	15-Sep-10		<50	<4	1.2	<0.50	<0.50	<0.50	NA	NA	<1.0
MW-1	19-Jun-97		18,000	NA	4,900	3,300	200.0	1,100	NA	NA	<250
	29-Sep-97		29,000	NA	3,500	4,800	<25	2,000	NA	NA	<250
	16-Dec-97		<0.050	NA	0.7	1.3	<0.5	0.6	NA	NA	<5.0
	10-Mar-98		190	NA	1.7	2	<0.5	5.7	NA	NA	<5.0
	19-Jan-99		100	NA	68.0	40	<0.5	18.0	NA	NA	8.3
	15-Apr-99		<0.050	NA	0.87	0.92	0.9	0.7	NA	NA	<5.0
	30-Jul-99		1,400	NA	120	60	<0.5	63	NA	NA	13.0
	15-Nov-99		3,600	NA	620	120	<0.5	150	NA	NA	<5.0
	24-Mar-00		<0.050	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	<5.0
	18-May-00		1,300	NA	130.0	10	1.2	38.0	NA	NA	8.6
	26-Jul-00		6,400	NA	680	100	7.4	260	NA	NA	<5.0
	30-Oct-00		600	NA	950	130	14	330	NA	NA	<100
	24-Jul-01		1,200	NA	39	13	<0.5	70	NA	NA	13
	28-Nov-01		1,800	NA	160	27	0.93	72	NA	NA	<5.0
18-Feb-02		2,400	NA	200	18	<2.5	89	NA	NA	<25	

Table 2
Analytical Results for Volatile Organic Compounds
Former Pacific Electric Motors Facility
1009 66th Avenue, Oakland, California
(concentrations in micrograms per liter [µg/L])

Sample Location	Date Collected	Notes	TPHg	TBA	MTBE	Benzene	Toluene	Ethyl-benzene	m,p-Xylenes	o-Xylenes	Total Xylenes
	11-Dec-02		8,400	NA	640	83	9.2	320	NA	NA	<0.5
	26-Feb-03		8,300	NA	720	12	<10	240	NA	NA	<10
	16-May-03		5,600	NA	490	22	<5.0	240	NA	NA	<5.0
	8-Mar-05		230	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	<5.0
	13-Mar-09		<50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	26-May-09		<50	<10	<0.50	<0.50	0.67	<0.50	<0.50	<0.50	<0.50
duplicate	26-May-09		<50	<10	<0.50	<0.50	0.62	<0.50	<0.50	<0.50	<0.50
	14-Sep-10		<50	<4	3.4	<0.50	<0.50	<0.50	NA	NA	<1.0
MW-2	19-Jun-97		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	29-Sep-97		--	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	16-Dec-97		--	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	10-Mar-98		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	19-Jan-99		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	15-Apr-99		<50	NA	<5.0	0.75	0.64	<0.5	NA	NA	0.74
	30-Jul-99		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	15-Nov-99		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	24-Mar-00		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	18-May-00		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	26-Jul-00		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	30-Oct-00		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	24-Jul-01		<50	NA	7.6	<0.5	<0.5	<0.5	NA	NA	<0.5
	28-Nov-01		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	18-Feb-02		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	11-Dec-02		<50	NA	5.8	<0.5	<0.5	<0.5	NA	NA	<1.0
	26-Feb-03		<50	NA	10	<0.5	<0.5	<0.5	NA	NA	<1.0
	16-May-03		<50	NA	16	<0.5	<0.5	<0.5	NA	NA	<1.0
	9-Mar-05		<50	NA	15	<0.5	<0.5	<0.5	NA	NA	<0.5
	15-Feb-06		<50	NA	19	<0.5	<0.5	<0.5	NA	NA	<0.5
	15-Feb-06		<50	NA	6.8	<0.5	<0.5	<0.5	NA	NA	<0.5
	16-Feb-06		<50	NA	5.6	<0.5	<0.5	<0.5	NA	NA	<0.5
	13-Mar-09		<50	<10	2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	26-May-09		<50	<10	3.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	21-Sep-09		<50	<10	3.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

Table 2
Analytical Results for Volatile Organic Compounds
Former Pacific Electric Motors Facility
1009 66th Avenue, Oakland, California
(concentrations in micrograms per liter [µg/L])

Sample Location	Date Collected	Notes	TPHg	TBA	MTBE	Benzene	Toluene	Ethyl-benzene	m,p-Xylenes	o-Xylenes	Total Xylenes
MW-3	19-Jun-97		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	29-Sep-97		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	16-Dec-97		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	10-Mar-98		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	19-Jan-99		<50	NA	8.7	0.78	<0.5	<0.5	NA	NA	<0.5
	15-Apr-99		<50	NA	23	5.4	3.9	1.7	NA	NA	5.6
	30-Jul-99		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	15-Nov-99		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	24-Mar-00		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	18-May-00		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	26-Jul-00		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	30-Oct-00		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	24-Jul-01		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	28-Nov-01		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	18-Feb-02		<50	NA	<5.0	<0.5	<0.5	<0.5	NA	NA	<0.5
	11-Dec-02		<50	NA	0.78	<0.5	<0.5	<0.5	NA	NA	<1.0
	26-Feb-03		<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	<1.0
	16-May-03		<50	NA	2.6	<0.5	<0.5	<0.5	NA	NA	<1.0
	8-Mar-05		<50	NA	<2	<0.5	<0.5	<0.5	NA	NA	<0.5
	13-Mar-09		<50	<10	<0.50	<0.50	<0.50	<0.50	0.97	<0.50	0.97
22-Sep-09		<50	<10	0.89	<0.50	1.1	<0.5	<0.5	<0.50	<0.50	
MW-4	15-Sep-98		170,000	NA	26,000	26,000	32,000	2,900	NA	NA	18,000
	19-Jan-99		2,600	NA	13,000	1,700	3.8	25	NA	NA	29
	15-Apr-99		210,000	NA	52,000	28,000	15,000	3,700	NA	NA	19,000
	30-Jul-99		91,000	NA	68,000	16,000	7,500	2,300	NA	NA	8,500
	15-Nov-99		63,000	NA	57,000	8,500	2,400	1,400	NA	NA	4,000
	24-Mar-00		95,000	NA	44,000	16,000	13,000	2,500	NA	NA	12,000
	18-May-00		91,000	NA	64,000	15,000	10,000	2,200	NA	NA	9,600
	26-Jul-00		130,000	NA	80,000	11,000	6,400	1,700	NA	NA	6,500
	30-Oct-00		59,000	NA	68,000	6,700	2,200	750	NA	NA	3,100
	24-Jul-01		180,000	NA	44,000	25,000	23,000	3,500	NA	NA	20,000
	28-Nov-01		67,000	NA	57,000	8,100	3,300	1,400	NA	NA	5,600
	18-Feb-02		98,000	NA	47,000	20,000	12,000	2,300	NA	NA	15,000
	11-Dec-02		200,000	NA	17,000	340	<5.00	590	NA	NA	1,000
26-Feb-03		63,000	NA	30,000	8,100	4,400	1,900	NA	NA	8,200	

Table 2
Analytical Results for Volatile Organic Compounds
Former Pacific Electric Motors Facility
1009 66th Avenue, Oakland, California
(concentrations in micrograms per liter [µg/L])

Sample Location	Date Collected	Notes	TPHg	TBA	MTBE	Benzene	Toluene	Ethyl-benzene	m,p-Xylenes	o-Xylenes	Total Xylenes
	16-May-03		530,000	NA	42,000	24,000	20,000	12,000	NA	NA	63,000
	9-Mar-05		152,237	NA	5,841	22,053	17,310	3,981	NA	NA	13,969
	9-Mar-05		162,863	NA	6,026	21,536	16,547	3,900	NA	NA	13,786
	13-Mar-09		55,000	<1,400	950	19,000	7,200	2,300	8,500	3,500	12,000
	23-Sep-09		250	730	49	51	3.7	8.6	37	16	53
	22-Oct-09		<50	<10	3.7	<.50	1.3	<0.50	<0.50	<0.50	<0.50
	24-May-10		250	180	21	11	<0.50	3.6	NA	NA	7.1
	28-Jul-10		<50	<4.0	<0.50	<0.50	<0.50	<0.50	NA	NA	<1.0
duplicate	28-Jul-10		<50	<4.0	<0.50	<0.50	<0.50	<0.50	NA	NA	<1.0
	14-Sep-10		<50	<4	<0.50	<0.50	<0.50	<0.50	NA	NA	<1.0
	17-Dec-10		<50	<4.0	<0.50	<0.50	<0.50	<0.50	NA	NA	<1.0
	15-Mar-11		<50	<4.0	0.61	<0.50	<0.50	<0.50	NA	NA	<1.0
	15-Jun-11		<50	<4.0	<0.50	<0.50	<0.50	<0.50	NA	NA	<1.0
	23-Sep-11		<50	<4.0	<0.50	<0.50	<0.50	<0.50	NA	NA	<1.0
duplicate	23-Sep-11		<50	<4.0	0.59	<0.50	<0.50	<0.50	NA	NA	<1.0
	7-Jan-14		<50	36	nw-2d	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
duplicate	7-Jan-14		<50	31	2.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

Notes:

NA = not analyzed

TPHg = total petroleum hydrocarbons as gasoline

TBA = tertiary-butyl alcohol

MTBE = methyl tertiary-butyl ether

1,2-DCA = 1,2-dichloroethane

"<" = not detected above the laboratory reporting limit given

Samples collected in March 2009 and January 2014 were analyzed by Curtis & Tompkins, Ltd.

(1) 1,2-DCA results = 0.79 µg/L

(2) 1,2-DCA results = 0.88 µg/L

(3) 1,2-DCA results = 0.58 µg/L

(4) 1,2-DCA results = 0.77 µg/L

Table 3
Field Parameters
Former Pacific Electric Motors Facility
1009 66th Avenue, Oakland, California

Sample Location	Date Collected	Temperature (degrees Celsius)	Conductivity (mmhos/cm)	pH (units)	ORP (mV)	Dissolved Oxygen (mg/L)
Shallow-Zone Groundwater Monitoring Wells						
NW-2S	23-Sep-09	25.55	1,696	6.67	-30.1	0.20
	28-Jul-10	20.88	1,206	7.57	110.8	1.78
	14-Sep-10	22.95	959	7.53	66.7	4.62
	14-Dec-10	15.51	716	7.20	-53.0	0.95
	15-Mar-11	14.11	809	6.62	103.0	0.87
	15-Jun-11	19.67	898	6.07	-96.0	0.12
	7-Jan-14	17.20	1,410	7.10	-68.5	0.46
Intermediate-Zone Groundwater Monitoring Wells						
ASMW-4I	11-Aug-09	21.11	939	6.79	-95.2	0.19
	23-Sep-98	21.82	969	6.76	-127.1	0.19
	22-Oct-09	21.74	910	6.74	-59.3	0.14
	26-May-10	16.89	1,556	6.85	-358.0	0.20
	27-Jul-10	19.30	1,022	6.84	-47.6	0.11
	14-Sep-10	19.46	889	6.88	-118.5	0.63
	15-Dec-10	15.10	931	6.86	-132.0	0.24
ASMW-5I	10-Aug-09	24.39	1,296	6.59	-74.7	0.38
	21-Sep-09	23.46	1,183	6.71	-3.1	0.11
	22-Oct-09	23.33	951	6.85	-6.6	0.46
	24-May-10	17.96	1,941	6.75	-369.1	0.05
	27-Jul-10	20.37	790	7.24	-13.1	4.95
	14-Sep-10	20.42	899	6.97	163.4	6.33
	15-Dec-10	18.03	864	6.54	-77.0	0.64
	15-Mar-11	15.59	729	6.69	-97.9	0.24
	15-Jun-11	18.67	950	6.37	-177.7	0.08
	23-Sep-11	20.48	201	7.52	-54.2	0.20
7-Jan-14	15.40	1,085	8.00	-15.8	5.24	

Table 3
Field Parameters
Former Pacific Electric Motors Facility
1009 66th Avenue, Oakland, California

Sample Location	Date Collected	Temperature (degrees Celsius)	Conductivity (mmhos/cm)	pH (units)	ORP (mV)	Dissolved Oxygen (mg/L)
AS-1I	15-Dec-10	18.92	2,720	7.03	-11.0	0.61
AS-3I	14-Sep-10	23.00	12,692	6.97	174.0	5.20
	15-Dec-10	18.54	12,370	6.64	40.0	0.26
AS-4I	25-May-10	17.63	1,518	7.18	-266.8	0.32
	14-Sep-10	21.09	947	7.59	110.6	8.17
	14-Jan-10	18.69	1,024	7.37	49.0	6.11
	16-Jun-11	17.86	889	8.66	51.9	0.48
	23-Sep-11	22.33	838	8.06	-80.1	0.19
AS-6I	7-Jan-14	18.40	954	8.45	-45.0	0.42
	23-Sep-09	23.21	872	7.09	16.7	0.16
	25-May-10	17.06	834	7.53	-469.0	0.15
	28-Jul-10	20.29	908	7.93	83.5	5.36
	14-Sep-10	20.26	690	8.17	62.5	8.10
	14-Dec-10	19.01	1,184	6.99	-58.0	0.22
	15-Mar-11	16.33	733	7.07	-61.6	0.35
	15-Jun-11	18.63	874	6.66	-19.6	0.22
	23-Sep-11	21.30	1,002	7.17	-65.4	0.18
	7-Jan-14	18.10	74.8	6.81	-28.0	3.65
NW-2I	11-Aug-09	23.63	2,800	6.43	-73.0	0.38
	23-Sep-09	23.92	1,511	7.44	-34.7	0.38
	22-Oct-09	23.54	1,336	7.65	193.9	3.45
	25-May-10	17.89	2,773	6.88	-179.0	0.15
	28-Jul-10	21.81	1,380	6.77	78.3	0.39
	14-Sep-10	21.06	920	7.94	78.0	4.34
	14-Dec-10	18.97	1,530	7.13	-120.0	0.23
	15-Mar-11	16.68	615	6.81	109.1	5.64
	15-Jun-11	19.13	869	6.33	99.1	1.24
	23-Sep-11	21.66	1,567	6.99	-90.3	0.18
7-Jan-14	20.00	820	6.75	7.2	1.67	

Table 3
Field Parameters
Former Pacific Electric Motors Facility
1009 66th Avenue, Oakland, California

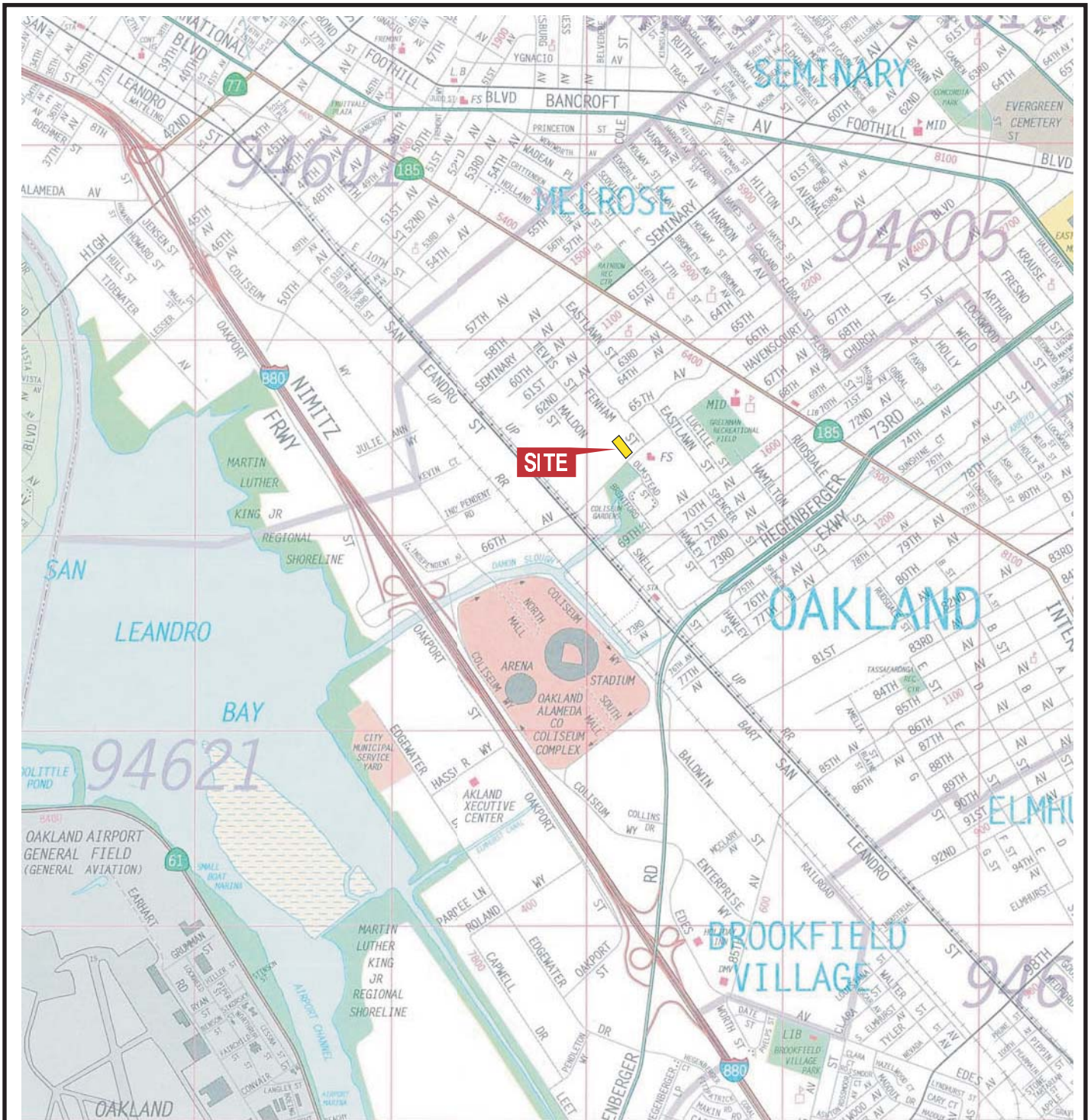
Sample Location	Date Collected	Temperature (degrees Celsius)	Conductivity (mmhos/cm)	pH (units)	ORP (mV)	Dissolved Oxygen (mg/L)
Deep-Zone Groundwater Monitoring Wells						
ASMW-5D	11-Aug-09	20.18	1,876	6.58	47.8	0.11
	21-Sep-09	21.74	1,751	6.70	133.4	2.85
	22-Oct-09	20.87	1,766	6.82	2,330.0	4.44
	24-May-10	17.75	2,664	6.88	84.6	0.42
	27-Jul-10	20.22	1,860	7.05	41.3	9.81
	14-Sep-10	19.25	1,563	6.93	170.0	8.64
	14-Dec-10	18.48	1,900	6.92	214.0	6.96
	15-Mar-11	17.71	1,514	6.86	133.4	6.56
	15-Jun-11	20.91	255	7.49	-21.3	1.34
	23-Sep-11	19.93	238	10.38	-31.2	0.19
	7-Jan-14	14.90	145	7.10	-0.5	2.79
NW-2D	10-Aug-09	22.06	1,179	6.37	93.2	0.22
	22-Sep-09	22.19	759	6.63	174.1	4.55
	22-Oct-09	21.48	199	6.70	175.0	6.40
	28-Jul-10	19.67	769	6.69	127.6	4.48
	14-Sep-10	19.90	624	6.56	94.2	5.08
	14-Dec-10	19.09	683	6.64	40.0	0.77
	15-Mar-11	15.78	1,199	7.02	-107.8	0.19
	15-Jun-11	19.38	1,569	6.61	-129.5	0.15
	23-Sep-11	20.22	779	6.64	122.2	0.32
		7-Jan-14	19.40	2,590	6.90	-85.0
MW-4	10-Aug-09	23.99	1,309	6.50	-82.4	0.28
	23-Sep-09	21.94	1,394	6.79	-36.7	0.41
	22-Oct-09	22.12	1,289	7.19	229.1	4.35
	24-May-10	19.50	1,995	7.03	-536.4	0.03
	28-Jul-10	20.17	1,176	7.05	100.2	3.02
	14-Sep-10	20.30	1,249	7.02	80.3	5.35
	14-Dec-10	19.50	1,467	6.99	-42.0	0.67
	15-Mar-11	17.10	934	7.01	40.4	0.45
	15-Jun-11	18.96	1,103	6.64	1.4	0.16
	23-Sep-11	20.28	1,098	7.25	-81.9	0.24
	7-Jan-14	19.40	1,176	7.02	-90.0	0.44

Table 3
Field Parameters
Former Pacific Electric Motors Facility
1009 66th Avenue, Oakland, California

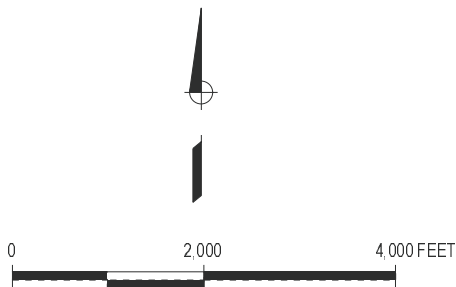
Sample Location	Date Collected	Temperature (degrees Celsius)	Conductivity (mmhos/cm)	pH (units)	ORP (mV)	Dissolved Oxygen (mg/L)
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Notes:

ORP = oxidation-reduction potential
mmhos/cm = millimhos per centimeter
mg/L = milligrams per liter
mV = millivolts



MAP SOURCE: Copyright 1995, Thomas Bros. Map ALAMEDA COUNTY 2002 Edition



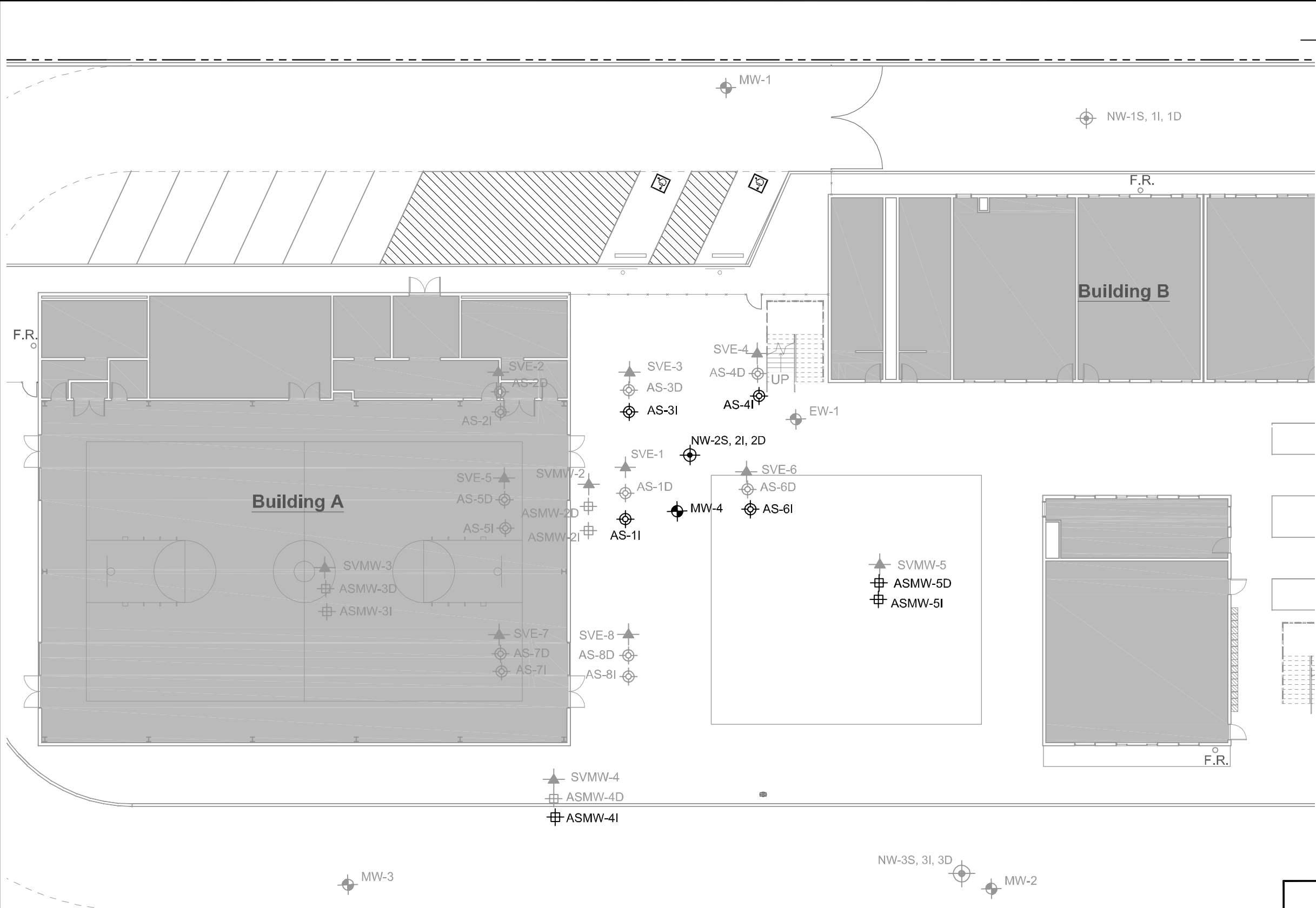
1009 66TH AVENUE, OAKLAND, CALIFORNIA

SITE VICINITY MAP



FIGURE
1

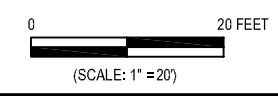
CITY:\Read\ DIV\GROUP\Read\ DB\Read\ LD\Op\ PIC\Op\ PMS\Read\ TMS\Op\ LAYOUT: 2. SAVED: 7/22/2011 1:37 PM ACADVER: 8.0.0 (LMS TECH) PLOTSETUP: - PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/22/2011 1:42 PM BY: REYES, ALEC
 GAEN\CAD\emery\hila\ACT\EM00915500\1\00001\QTR2-2011-CMS\EM009155\W01.DWG



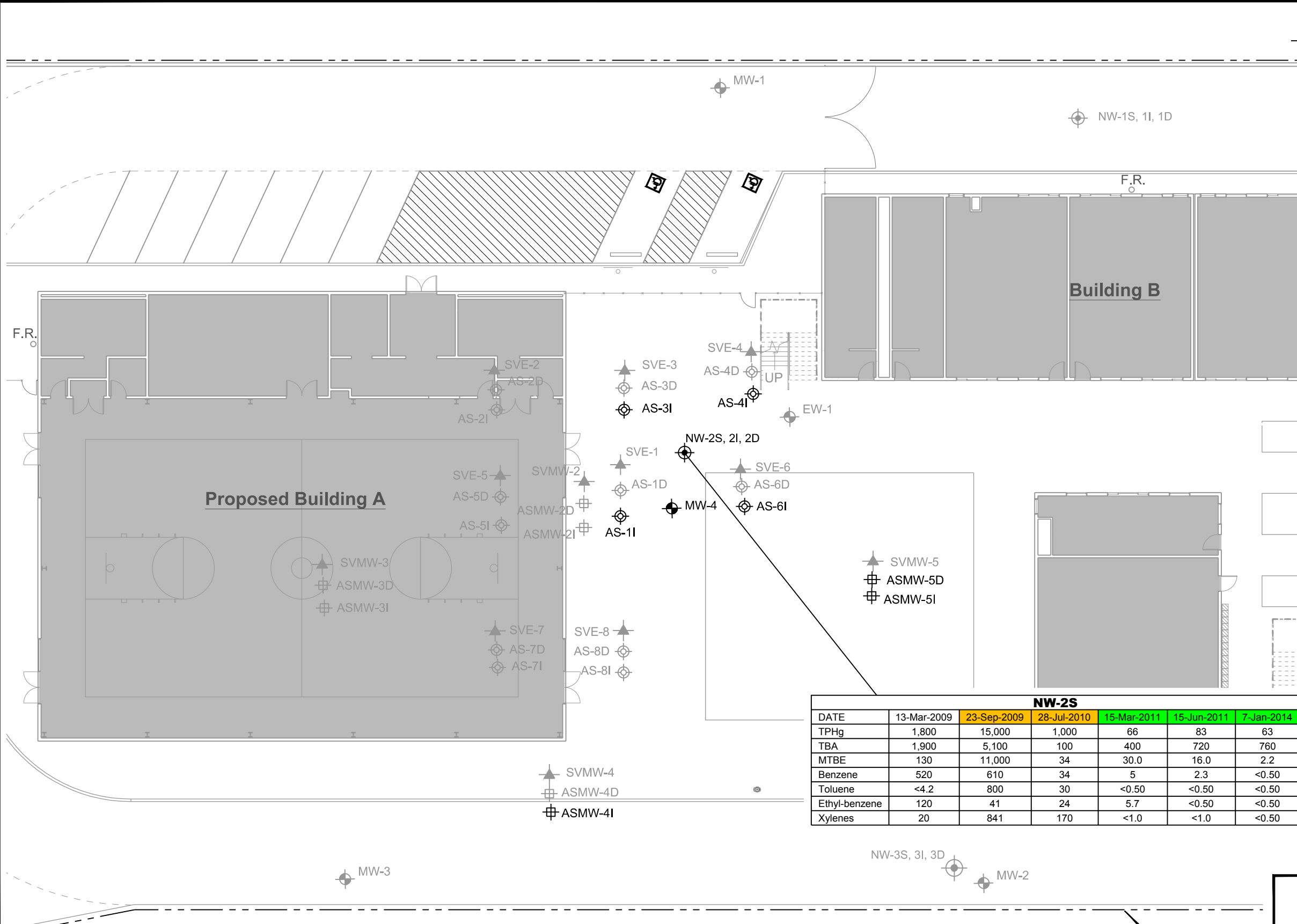
- LEGEND:**
- Property Line
 - MW-4 Monitoring Well
 - ⊕ NW-2S Nested Monitoring Well
 - ⊕ AS-6I Air Injection Well
 - ⊕ ASMW-5D Air Injection Monitoring Well
 - ▲ SVE-4 SVE or SVE Monitoring Well

NOTES:
 SVE = Soil Vapor Extraction
 GREY symbols represent abandoned well locations

1009 66TH AVENUE, OAKLAND, CALIFORNIA	
SITE PLAN	
	FIGURE 2



CITY:(Read) DIV:(GROUP:(Read) DB:(Read) LD:(Opt) PIC:(Opt) PM:(Read) T:(M:(Opt) L:(Opt) ON:"-OFF"-REF*
 G:\ENVCAD\Emeryville\ACT\EM0091550016\00001\QTR4-2013-GWS\DWG\EM009155 W01.DWG LAYOUT: 3 SAVED: 2/12/2014 1:54 PM ACADVER: 18.1S (LMS TECH) PAGES: 18 PAGES SETUP: --- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 2/12/2014 3:08 PM BY: REYES, ALEC



- LEGEND:**
- Property Line
 - MW-4 Monitoring Well
 - NW-2S Nested Monitoring Well
 - AS-6I Air Injection Well
 - ASMW-5D Air Injection Monitoring Well
 - SVE-4 SVE or SVE Monitoring Well

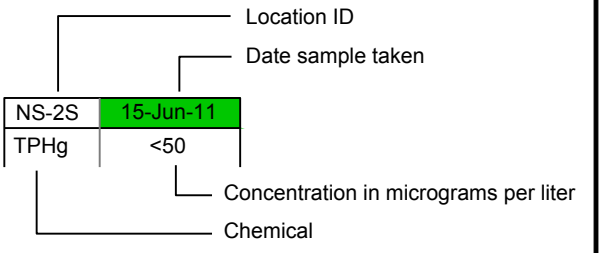
NOTES:

TPHg = total petroleum hydrocarbons as gasoline
 TBA = tertiary butyl alcohol
 MTBE = methyl tertiary-butyl ether
 "<" = not detected above the laboratory reporting limit given
 VOCs = volatile organic compounds

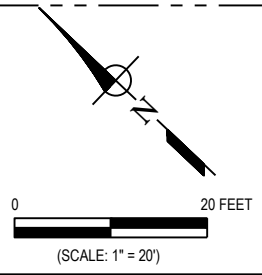
SVE = Soil Vapor Extraction
 GREY symbols represent abandoned well locations

22-Sept-09 Denotes sample collected during operation of the soil-vapor extraction air sparging groundwater treatment system from August 13, 2009 to October 27, 2009 and June 16, 2010 to September 13, 2010

15-Mar-11 Denotes sample collected after the soil-vapor extraction air sparging groundwater treatment system temporary shutdown from October 27, 2009 to June 16, 2010 or after September 13, 2010 shutdown



NW-2S						
DATE	13-Mar-2009	23-Sep-2009	28-Jul-2010	15-Mar-2011	15-Jun-2011	7-Jan-2014
TPHg	1,800	15,000	1,000	66	83	63
TBA	1,900	5,100	100	400	720	760
MTBE	130	11,000	34	30.0	16.0	2.2
Benzene	520	610	34	5	2.3	<0.50
Toluene	<4.2	800	30	<0.50	<0.50	<0.50
Ethyl-benzene	120	41	24	5.7	<0.50	<0.50
Xylenes	20	841	170	<1.0	<1.0	<0.50

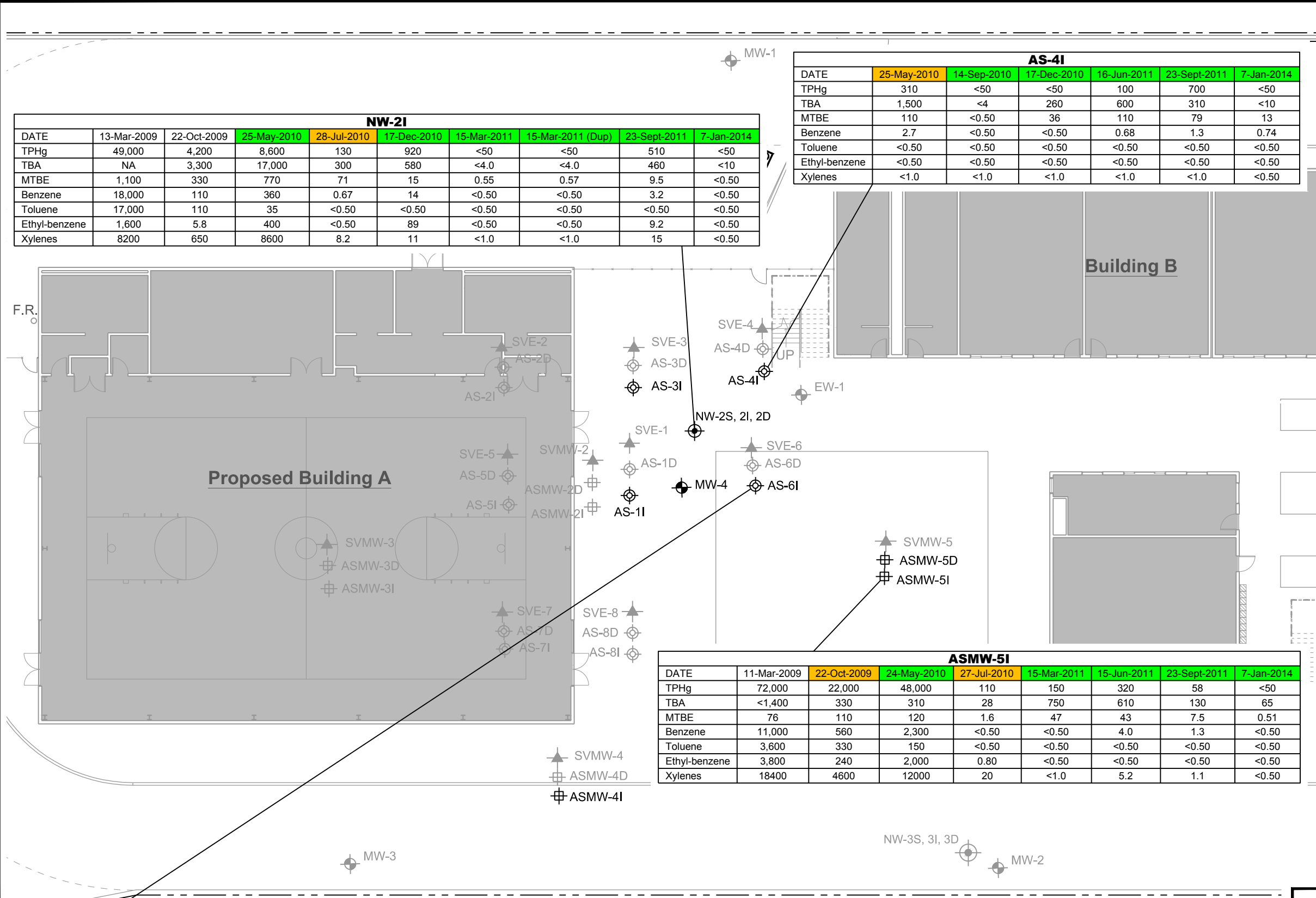


1009 66TH AVENUE, OAKLAND, CALIFORNIA

ANALYTICAL RESULTS FOR TPHg AND VOCs IN SHALLOW-ZONE GROUNDWATER SAMPLES

FIGURE **3**

CITY: (Read) DIV: (Read) DB: (Read) LD: (Opt) PIC: (Opt) PM: (Read) TM: (Opt) LVR: (Opt) ON: "OFF" REF: G:\ENVCAD\Emeryville\ACT\EM0091550016\00001\QTR4-2013-GWS\DWG\EM009155 W01.DWG LAYOUT: 4 SAVED: 2/12/2014 3:12 PM ACADVER: 18.1S (LMS TECH) PAGES: 4 PLOTSETUP: --- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 2/17/2014 11:28 AM BY: REYES, ALEC



- LEGEND:**
- Property Line
 - ⊕ MW-4 Monitoring Well
 - ⊕ NW-2S Nested Monitoring Well
 - ⊕ AS-6I Air Injection Well
 - ⊕ ASMW-5D Air Injection Monitoring Well
 - ▲ SVE-4 SVE or SVE Monitoring Well

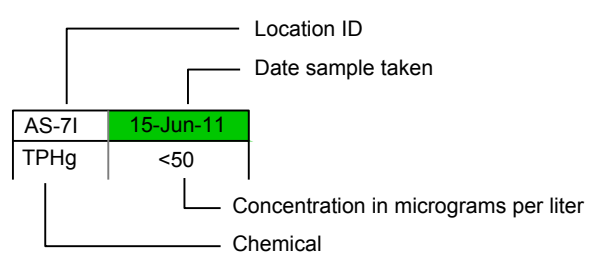
NOTES:

TPHg = total petroleum hydrocarbons as gasoline
 TBA = tertiary butyl alcohol
 MTBE = methyl tertiary-butyl ether
 "<" = not detected above the laboratory reporting limit given
 VOCs = volatile organic compounds

SVE = Soil Vapor Extraction
 GREY symbols represent abandoned well locations

22-Sept-09 Denotes sample collected during operation of the soil-vapor extraction air sparging groundwater treatment system from August 13, 2009 to October 27, 2009 and June 16, 2010 to September 13, 2010

15-Mar-11 Denotes sample collected after the soil-vapor extraction air sparging groundwater treatment system temporary shutdown from October 27, 2009 to June 16, 2010 or after September 13, 2010 shutdown

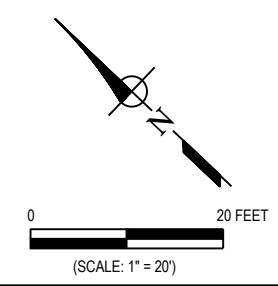


AS-4I						
DATE	25-May-2010	14-Sep-2010	17-Dec-2010	16-Jun-2011	23-Sept-2011	7-Jan-2014
TPHg	310	<50	<50	100	700	<50
TBA	1,500	<4	260	600	310	<10
MTBE	110	<0.50	36	110	79	13
Benzene	2.7	<0.50	<0.50	0.68	1.3	0.74
Toluene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Ethyl-benzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Xylenes	<1.0	<1.0	<1.0	<1.0	<1.0	<0.50

NW-2I									
DATE	13-Mar-2009	22-Oct-2009	25-May-2010	28-Jul-2010	17-Dec-2010	15-Mar-2011	15-Mar-2011 (Dup)	23-Sept-2011	7-Jan-2014
TPHg	49,000	4,200	8,600	130	920	<50	<50	510	<50
TBA	NA	3,300	17,000	300	580	<4.0	<4.0	460	<10
MTBE	1,100	330	770	71	15	0.55	0.57	9.5	<0.50
Benzene	18,000	110	360	0.67	14	<0.50	<0.50	3.2	<0.50
Toluene	17,000	110	35	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Ethyl-benzene	1,600	5.8	400	<0.50	89	<0.50	<0.50	9.2	<0.50
Xylenes	8200	650	8600	8.2	11	<1.0	<1.0	15	<0.50

ASMW-5I								
DATE	11-Mar-2009	22-Oct-2009	24-May-2010	27-Jul-2010	15-Mar-2011	15-Jun-2011	23-Sept-2011	7-Jan-2014
TPHg	72,000	22,000	48,000	110	150	320	58	<50
TBA	<1,400	330	310	28	750	610	130	65
MTBE	76	110	120	1.6	47	43	7.5	0.51
Benzene	11,000	560	2,300	<0.50	<0.50	4.0	1.3	<0.50
Toluene	3,600	330	150	<0.50	<0.50	<0.50	<0.50	<0.50
Ethyl-benzene	3,800	240	2,000	0.80	<0.50	<0.50	<0.50	<0.50
Xylenes	18400	4600	12000	20	<1.0	5.2	1.1	<0.50

AS-6I									
DATE	26-May-2009	23-Sep-2009	25-May-2010	28-Jul-2010	15-Mar-2011	15-Jun-2011	15-Jun-2011 (Dup)	23-Sept-2011	7-Jan-2014
TPHg	42,000	26,000	840	58	<50	<50	<50	500	<50
TBA	<1,000	330	210	450	480	190	190	690	<10
MTBE	170	1,600	25	45	5.2	1.6	1.6	9.4	<0.50
Benzene	11,000	1,000	23	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Toluene	780	400	<0.50	1.9	<0.50	<0.50	<0.50	<0.50	<0.50
Ethyl-benzene	2,400	230	14	2.7	<0.50	<0.50	<0.50	3.3	<0.50
Xylenes	3,180	630	1.5	8.1	<1.0	<1.0	<1.0	4.2	<0.50

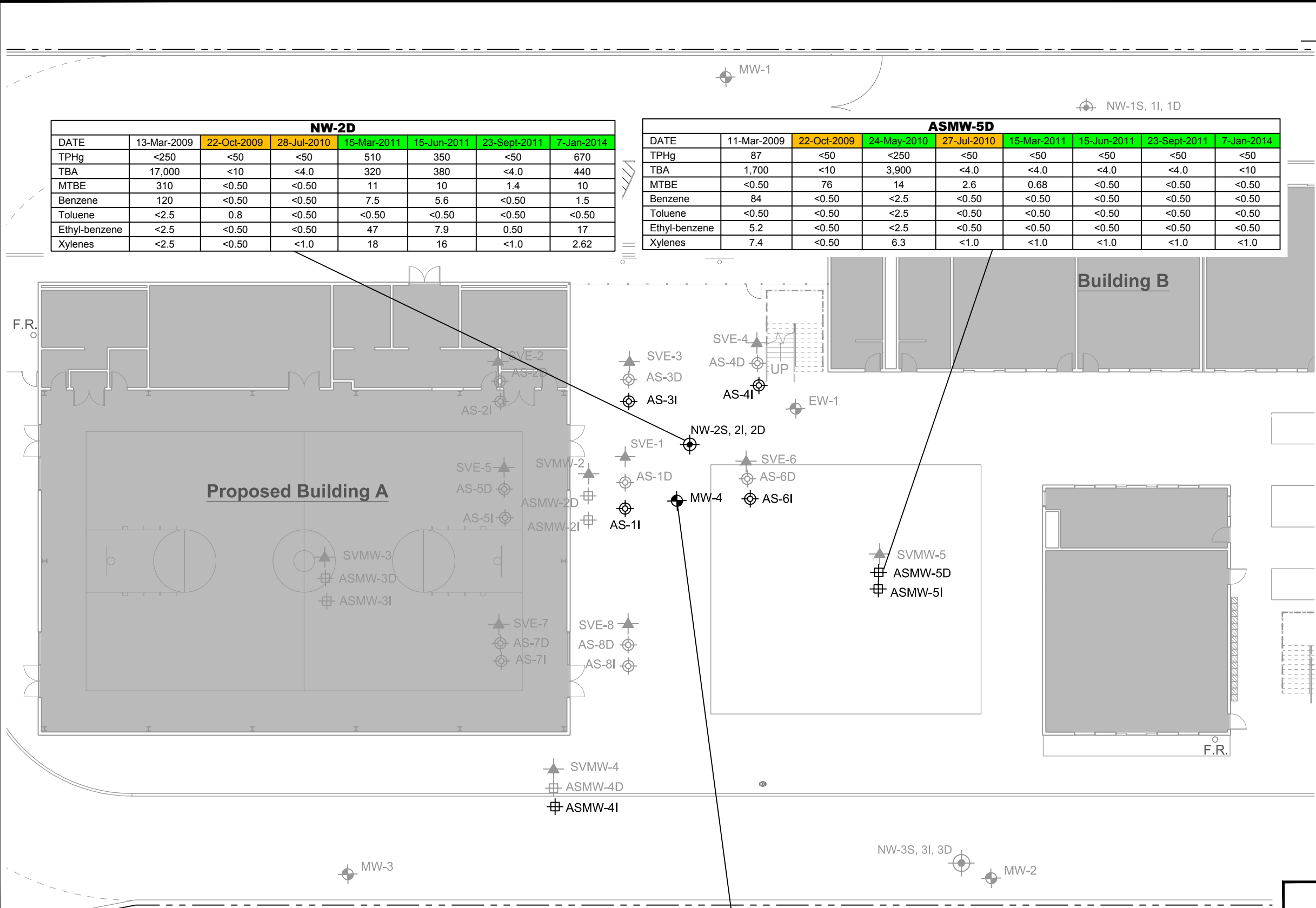


1009 66TH AVENUE, OAKLAND, CALIFORNIA

ANALYTICAL RESULTS FOR TPHg AND VOCs IN INTERMEDIATE-ZONE GROUNDWATER SAMPLES

FIGURE 4

CITY:(Read) DIV:(GROUP:(Read) DB:(Read) LD:(Opt) PIC:(Opt) PM:(Read) TM:(Opt) LVR:(Opt)ON*:"OFF"=REF*
 G:\ENVCAD\emeryville\ACT\EM009 15500 16\00001\QTR4-2013-GWS\DWG\EM009155 W01.DWG LAYOUT: 5 SAVED: 2/12/2014 1:54 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: - PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 2/12/2014 3:11 PM BY: REYES, ALEC



NW-2D							
DATE	13-Mar-2009	22-Oct-2009	28-Jul-2010	15-Mar-2011	15-Jun-2011	23-Sept-2011	7-Jan-2014
TPHg	<250	<50	<50	510	350	<50	670
TBA	17,000	<10	<4.0	320	380	<4.0	440
MTBE	310	<0.50	<0.50	11	10	1.4	10
Benzene	120	<0.50	<0.50	7.5	5.6	<0.50	1.5
Toluene	<2.5	0.8	<0.50	<0.50	<0.50	<0.50	<0.50
Ethyl-benzene	<2.5	<0.50	<0.50	47	7.9	0.50	17
Xylenes	<2.5	<0.50	<1.0	18	16	<1.0	2.62

ASMW-5D								
DATE	11-Mar-2009	22-Oct-2009	24-May-2010	27-Jul-2010	15-Mar-2011	15-Jun-2011	23-Sept-2011	7-Jan-2014
TPHg	87	<50	<250	<50	<50	<50	<50	<50
TBA	1,700	<10	3,900	<4.0	<4.0	<4.0	<4.0	<10
MTBE	<0.50	76	14	2.6	0.68	<0.50	<0.50	<0.50
Benzene	84	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50
Toluene	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50
Ethyl-benzene	5.2	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50
Xylenes	7.4	<0.50	6.3	<1.0	<1.0	<1.0	<1.0	<1.0

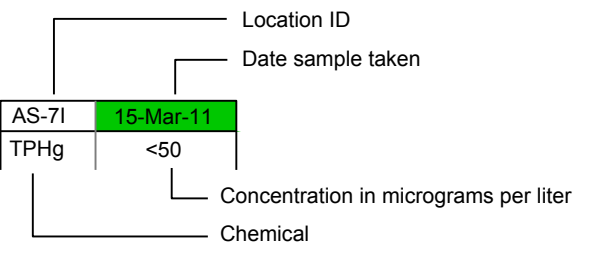
MW-4								
DATE	13-Mar-2009	22-Oct-2009	24-May-2010	28-Jul-2010	15-Mar-2011	15-Jun-2011	23-Sept-2011	7-Jan-2014
TPHg	55,000	<50	250	<50	<50	<50	<50 / <50 (Dup)	<50 / <50 (Dup)
TBA	<1,400	<10	180	<4.0	<4.0	<4.0	<4.0 / <4.0 (Dup)	36 / 31 (Dup)
MTBE	950	3.7	21	<0.50	0.61	<0.50	<0.50 / 0.59 (Dup)	3.1 / 2.7 (Dup)
Benzene	19,000	<.50	11	<0.50	<0.50	<0.50	<0.50 / <0.50 (Dup)	<0.50 / <0.50 (Dup)
Toluene	7,200	1.3	<0.50	<0.50	<0.50	<0.50	<0.50 / <0.50 (Dup)	<0.50 / <0.50 (Dup)
Ethyl-benzene	2,300	<0.50	3.6	<0.50	<0.50	<0.50	<0.50 / <0.50 (Dup)	<0.50 / <0.50 (Dup)
Xylenes	12000	<0.50	7.1	<1.0	<1.0	<1.0	<1.0 / <1.0 (Dup)	<0.50 / <0.50 (Dup)

- LEGEND:
- - - - - Property Line
 - MW-4 Monitoring Well
 - NW-2S Nested Monitoring Well
 - AS-6I Air Injection Well
 - ASMW-5D Air Injection Monitoring Well
 - SVE-4 SVE or SVE Monitoring Well

- NOTES:
- TPHg = total petroleum hydrocarbons as gasoline
 - TBA = tertiary butyl alcohol
 - MTBE = methyl tertiary-butyl ether
 - "<" = not detected above the laboratory reporting limit given
 - VOCs = volatile organic compounds
 - dup = duplicate sample
 - SVE = Soil Vapor Extraction
 - GREY symbols represent abandoned well locations

22-Sept-09 Denotes sample collected during operation of the soil-vapor extraction air sparging groundwater treatment system from August 13, 2009 to October 27, 2009 and June 16, 2010 to September 13, 2010

25-Mar-11 Denotes sample collected after the soil-vapor extraction air sparging groundwater treatment system temporary shutdown from October 27, 2009 to June 16, 2010 or after September 13, 2010 shutdown



(dup) = Duplicate sample

20 FEET

1009 66TH AVENUE, OAKLAND, CALIFORNIA

ANALYTICAL RESULTS FOR TPHg AND VOCs IN DEEP-ZONE GROUNDWATER SAMPLES

FIGURE 5

ARCADIS

Appendix A

Laboratory Analytical Reports



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 252102
ANALYTICAL REPORT

Arcadis
2000 Powell St.
Emeryville, CA 94608

Project : EM009155-0016
Location : Aspire Oakland
Level : II

Table with 2 columns: Sample ID and Lab ID. Rows include MW-4, NW-2S, NW-2I, NW-2D, AS-4I, AS-6I, ASMW-5D, ASMW-5I, MW-4D, and TB.

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 signature. 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: [Handwritten Signature]
Tracy Babjar
Project Manager
tracy.babjar@ctberk.com
(510) 204-2226

Date: 01/10/2014

CASE NARRATIVE

Laboratory number: 252102
Client: Arcadis
Project: EM009155-0016
Location: Aspire Oakland
Request Date: 01/07/14
Samples Received: 01/07/14

This data package contains sample and QC results for nine water samples, requested for the above referenced project on 01/07/14. The samples were received cold and intact. All data were e-mailed to Ron Goloubow on 01/10/14.

Volatile Organics by GC/MS (EPA 8260B):
No analytical problems were encountered.

Subject: RE: EM0091550009 - C&T Login Summary (252102)
From: "Goloubow, Ron" <Ron.Goloubow@arcadis-us.com>
Date: 1/7/2014 3:19 PM
To: Tracy Babjar <tracy.babjar@ctberk.com>

Please put the blank on hold
Use project number EM009155-0016

Ron Goloubow, P.G. | Principal Geologist | ron.goloubow@arcadis-us.com

New Contact Information

ARCADIS U.S., Inc. | 100 Montgomery Street, Suite 300 | San Francisco, CA 94104
T: 415 432 6942 | M: 510 501 1789
Connect with us! www.arcadis-us.com | [LinkedIn](#) | [Twitter](#) | [Facebook](#)

ARCADIS, Imagine the result

Please consider the environment before printing this email.

From: Tracy Babjar [mailto:tracy.babjar@ctberk.com]
Sent: Tuesday, January 07, 2014 3:19 PM
To: Goloubow, Ron; Goloubow, Ron
Subject: EM0091550009 - C&T Login Summary (252102)

C&T Login Summary for 252102

Project: EM0091550009	Report To: Arcadis	Bill To: Arcadis
Site: Aspire Oakland	2000 Powell St.	630 Plaza Drive
Lab Login #: 252102	7th Floor	Suite 600
Report Level: II	Emeryville, CA 94608	Highlands Ranch, CO 80129
Report Due: 01/14/14	ATTN: Ron Goloubow	ATTN: Accounts Payable
PO#:	(510) 652-4500	(720) 344-3500
C&T Proj Mgr: Tracy Babjar		

Client ID	Lab ID	Sampled	Received	Matrix	Analyses	COC #	Comments
MW-4	001	01/07	01/07	Water	MSTVH		TVH, BTXE, Oxygenates
NW-2S	002	01/07	01/07	Water	MSTVH		TVH, BTXE, Oxygenates
NW-2I	003	01/07	01/07	Water	MSTVH		TVH, BTXE, Oxygenates
NW-2D	004	01/07	01/07	Water	MSTVH		TVH, BTXE, Oxygenates
AS-4I	005	01/07	01/07	Water	MSTVH		TVH, BTXE, Oxygenates
AS-6I	006	01/07	01/07	Water	MSTVH		TVH, BTXE, Oxygenates
ASMW-5D	007	01/07	01/07	Water	MSTVH		TVH, BTXE, Oxygenates
ASMW-5I	008	01/07	01/07	Water	MSTVH		TVH, BTXE, Oxygenates



Confluence Environmental, Inc.
 3308 El Camino Ave, Suite 300 # 148
 Sacramento, CA 95821
 916-760-7641 - main
 916-473-8617 - fax
 www.confluence-env.com

Chain of Custody

252102

Project Name: Aspire Oakland

Job Number: 12-140107

TAT: STANDARD 5 DAY 2 DAY 24 HOUR OTHER:

Lab: Curtis & Tompkins	Site Address: 1009 66th Ave, Oakland	Confluence PM: Jason Brown
Address: 2323 Fifth St, Berkeley, CA	California Global ID No.: T0600101950	Phone / Fax: 916-760-7641 / 916-473-8617
Contact:	Include EDF w/ Report: <input checked="" type="radio"/> Yes <input type="radio"/> No	Confluence Log Code: CESC
Phone/ Fax: 510-486-0900	Consultant / PM: Arcadis / Ron Golobouw	Report to: Ron Golobouw
	Phone / Fax: 510-596-9550	Invoice to: Arcadis

Sample ID	Time	Date	Matrix			Laboratory No.	No. of Containers	Preservative					Requested Analysis						Notes and Comments				
			Soil/Solid	Water/Liquid	Air			Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	TPH-G, BTEX, Oxygenates (8260)										
1	MW-4	620	1/7/14	X			3									X							
2	NW-2S	1135														X							
3	NW-2I	0945														X							
4	NW-2D	1005														X							
5	AS-4I	1130														X							
6	AS-6I	1040														X							
7	ASMW-5D	1120														X							
8	ASMW-5I	1100														X							
9	AS-4I	1025														X							
10	T B						2									X							

Sampler's Name: <u>A. Feeney</u>	Relinquished By / Affiliation <u>Arcadis / Confluence</u>	Date <u>1/7/14</u>	Time <u>1240</u>	Accepted By / Affiliation <u>Pat Ramsey</u>	Date <u>1/7/14</u>	Time <u>1240</u>
Sampler's Company: Confluence Environmental						
Shipment Date:						
Shipment Method:						

Special Instructions:

COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 252102 Date Received 01/07/14 Number of coolers 1
 Client Acadus Project Aspire Oakland

Date Opened 01/7 By (print) JMK (sign) [Signature]
 Date Logged in ↓ By (print) b (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: * Notify PM if temperature exceeds 6°C

Type of ice used: Wet Blue/Gel None Temp(°C) _____

Samples Received on ice & cold without a temperature blank; temp. taken with IR gun

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 there any missing / extra samples? _____ YES NO

11. Are samples in the appropriate containers for indicated tests? _____ YES NO

12. Are sample labels present, in good condition and complete? _____ YES NO

13. Do the sample labels agree with custody papers? _____ YES NO

14. Was sufficient amount of sample sent for tests requested? _____ YES NO

15. Are the samples appropriately preserved? _____ YES NO N/A

16. Did you check preservatives for all bottles for each sample? _____ YES NO N/A

17. Did you document your preservative check? _____ YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? _____ YES NO N/A

21. Was the client contacted concerning this sample delivery? _____ YES NO
 If YES, Who was called? _____ By _____ Date: _____

COMMENTS

20) -10 2 of 2 VOAs rec'd w/ bubble

Purgeable Organics by GC/MS

Lab #:	252102	Location:	Aspire Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM009155-0016	Analysis:	EPA 8260B
Field ID:	MW-4	Batch#:	206886
Lab ID:	252102-001	Sampled:	01/07/14
Matrix:	Water	Received:	01/07/14
Units:	ug/L	Analyzed:	01/08/14
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
tert-Butyl Alcohol (TBA)	31	10
Isopropyl Ether (DIPE)	ND	0.50
Ethyl tert-Butyl Ether (ETBE)	ND	0.50
Methyl tert-Amyl Ether (TAME)	ND	0.50
MTBE	2.7	0.50
1,2-Dichloroethane	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
1,2-Dibromoethane	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	98	77-136
1,2-Dichloroethane-d4	89	75-139
Toluene-d8	95	80-120
Bromofluorobenzene	96	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	252102	Location:	Aspire Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM009155-0016	Analysis:	EPA 8260B
Field ID:	NW-2S	Batch#:	206886
Lab ID:	252102-002	Sampled:	01/07/14
Matrix:	Water	Received:	01/07/14
Units:	ug/L	Analyzed:	01/08/14
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	63	50
tert-Butyl Alcohol (TBA)	760	10
Isopropyl Ether (DIPE)	ND	0.50
Ethyl tert-Butyl Ether (ETBE)	ND	0.50
Methyl tert-Amyl Ether (TAME)	ND	0.50
MTBE	2.2	0.50
1,2-Dichloroethane	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
1,2-Dibromoethane	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	97	77-136
1,2-Dichloroethane-d4	88	75-139
Toluene-d8	96	80-120
Bromofluorobenzene	96	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	252102	Location:	Aspire Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM009155-0016	Analysis:	EPA 8260B
Field ID:	NW-2I	Batch#:	206886
Lab ID:	252102-003	Sampled:	01/07/14
Matrix:	Water	Received:	01/07/14
Units:	ug/L	Analyzed:	01/08/14
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
tert-Butyl Alcohol (TBA)	ND	10
Isopropyl Ether (DIPE)	ND	0.50
Ethyl tert-Butyl Ether (ETBE)	ND	0.50
Methyl tert-Amyl Ether (TAME)	ND	0.50
MTBE	ND	0.50
1,2-Dichloroethane	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
1,2-Dibromoethane	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	99	77-136
1,2-Dichloroethane-d4	90	75-139
Toluene-d8	97	80-120
Bromofluorobenzene	97	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	252102	Location:	Aspire Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM009155-0016	Analysis:	EPA 8260B
Field ID:	NW-2D	Batch#:	206836
Lab ID:	252102-004	Sampled:	01/07/14
Matrix:	Water	Received:	01/07/14
Units:	ug/L	Analyzed:	01/07/14
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	670	50
tert-Butyl Alcohol (TBA)	440	10
Isopropyl Ether (DIPE)	ND	0.50
Ethyl tert-Butyl Ether (ETBE)	ND	0.50
Methyl tert-Amyl Ether (TAME)	ND	0.50
MTBE	10	0.50
1,2-Dichloroethane	ND	0.50
Benzene	1.5	0.50
Toluene	ND	0.50
1,2-Dibromoethane	ND	0.50
Ethylbenzene	17	0.50
m,p-Xylenes	1.8	0.50
o-Xylene	0.82	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	98	77-136
1,2-Dichloroethane-d4	85	75-139
Toluene-d8	96	80-120
Bromofluorobenzene	96	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS			
Lab #:	252102	Location:	Aspire Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM009155-0016	Analysis:	EPA 8260B
Field ID:	AS-4I	Batch#:	206886
Lab ID:	252102-005	Sampled:	01/07/14
Matrix:	Water	Received:	01/07/14
Units:	ug/L	Analyzed:	01/08/14
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
tert-Butyl Alcohol (TBA)	ND	10
Isopropyl Ether (DIPE)	ND	0.50
Ethyl tert-Butyl Ether (ETBE)	ND	0.50
Methyl tert-Amyl Ether (TAME)	ND	0.50
MTBE	13	0.50
1,2-Dichloroethane	ND	0.50
Benzene	0.74	0.50
Toluene	ND	0.50
1,2-Dibromoethane	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	98	77-136
1,2-Dichloroethane-d4	89	75-139
Toluene-d8	91	80-120
Bromofluorobenzene	96	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	252102	Location:	Aspire Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM009155-0016	Analysis:	EPA 8260B
Field ID:	AS-6I	Batch#:	206886
Lab ID:	252102-006	Sampled:	01/07/14
Matrix:	Water	Received:	01/07/14
Units:	ug/L	Analyzed:	01/08/14
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
tert-Butyl Alcohol (TBA)	ND	10
Isopropyl Ether (DIPE)	ND	0.50
Ethyl tert-Butyl Ether (ETBE)	ND	0.50
Methyl tert-Amyl Ether (TAME)	ND	0.50
MTBE	ND	0.50
1,2-Dichloroethane	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
1,2-Dibromoethane	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	98	77-136
1,2-Dichloroethane-d4	89	75-139
Toluene-d8	95	80-120
Bromofluorobenzene	97	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	252102	Location:	Aspire Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM009155-0016	Analysis:	EPA 8260B
Field ID:	ASMW-5D	Batch#:	206836
Lab ID:	252102-007	Sampled:	01/07/14
Matrix:	Water	Received:	01/07/14
Units:	ug/L	Analyzed:	01/07/14
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
tert-Butyl Alcohol (TBA)	ND	10
Isopropyl Ether (DIPE)	ND	0.50
Ethyl tert-Butyl Ether (ETBE)	ND	0.50
Methyl tert-Amyl Ether (TAME)	ND	0.50
MTBE	ND	0.50
1,2-Dichloroethane	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
1,2-Dibromoethane	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	95	77-136
1,2-Dichloroethane-d4	90	75-139
Toluene-d8	94	80-120
Bromofluorobenzene	96	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	252102	Location:	Aspire Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM009155-0016	Analysis:	EPA 8260B
Field ID:	ASMW-5I	Batch#:	206886
Lab ID:	252102-008	Sampled:	01/07/14
Matrix:	Water	Received:	01/07/14
Units:	ug/L	Analyzed:	01/08/14
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
tert-Butyl Alcohol (TBA)	65	10
Isopropyl Ether (DIPE)	ND	0.50
Ethyl tert-Butyl Ether (ETBE)	ND	0.50
Methyl tert-Amyl Ether (TAME)	ND	0.50
MTBE	0.51	0.50
1,2-Dichloroethane	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
1,2-Dibromoethane	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	99	77-136
1,2-Dichloroethane-d4	89	75-139
Toluene-d8	94	80-120
Bromofluorobenzene	97	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	252102	Location:	Aspire Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM009155-0016	Analysis:	EPA 8260B
Field ID:	MW-4D	Batch#:	206836
Lab ID:	252102-009	Sampled:	01/07/14
Matrix:	Water	Received:	01/07/14
Units:	ug/L	Analyzed:	01/07/14
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
tert-Butyl Alcohol (TBA)	36	10
Isopropyl Ether (DIPE)	ND	0.50
Ethyl tert-Butyl Ether (ETBE)	ND	0.50
Methyl tert-Amyl Ether (TAME)	ND	0.50
MTBE	3.1	0.50
1,2-Dichloroethane	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
1,2-Dibromoethane	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	96	77-136
1,2-Dichloroethane-d4	90	75-139
Toluene-d8	95	80-120
Bromofluorobenzene	97	80-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	252102	Location:	Aspire Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM009155-0016	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	206836
Units:	ug/L	Analyzed:	01/07/14
Diln Fac:	1.000		

Type: BS Lab ID: QC723151

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	125.0	90.80	73	37-151
Isopropyl Ether (DIPE)	25.00	21.67	87	56-124
Ethyl tert-Butyl Ether (ETBE)	25.00	21.32	85	61-122
Methyl tert-Amyl Ether (TAME)	25.00	21.47	86	65-120
MTBE	25.00	20.36	81	64-121
1,2-Dichloroethane	25.00	20.88	84	77-137
Benzene	25.00	25.04	100	80-124
Toluene	25.00	26.30	105	80-122
1,2-Dibromoethane	25.00	25.24	101	80-120
Ethylbenzene	25.00	27.02	108	80-124
m,p-Xylenes	50.00	55.60	111	80-122
o-Xylene	25.00	28.82	115	77-120

Surrogate	%REC	Limits
Dibromofluoromethane	93	77-136
1,2-Dichloroethane-d4	78	75-139
Toluene-d8	93	80-120
Bromofluorobenzene	93	80-120

Type: BSD Lab ID: QC723152

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	125.0	96.85	77	37-151	6	30
Isopropyl Ether (DIPE)	25.00	21.80	87	56-124	1	20
Ethyl tert-Butyl Ether (ETBE)	25.00	21.70	87	61-122	2	22
Methyl tert-Amyl Ether (TAME)	25.00	22.18	89	65-120	3	22
MTBE	25.00	20.62	82	64-121	1	20
1,2-Dichloroethane	25.00	21.14	85	77-137	1	20
Benzene	25.00	25.76	103	80-124	3	20
Toluene	25.00	26.78	107	80-122	2	20
1,2-Dibromoethane	25.00	26.45	106	80-120	5	20
Ethylbenzene	25.00	27.85	111	80-124	3	20
m,p-Xylenes	50.00	56.66	113	80-122	2	20
o-Xylene	25.00	29.57	118	77-120	3	20

Surrogate	%REC	Limits
Dibromofluoromethane	93	77-136
1,2-Dichloroethane-d4	79	75-139
Toluene-d8	93	80-120
Bromofluorobenzene	95	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	252102	Location:	Aspire Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM009155-0016	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC723153	Batch#:	206836
Matrix:	Water	Analyzed:	01/07/14
Units:	ug/L		

Analyte	Result	RL
Gasoline C7-C12	ND	50
tert-Butyl Alcohol (TBA)	ND	10
Isopropyl Ether (DIPE)	ND	0.50
Ethyl tert-Butyl Ether (ETBE)	ND	0.50
Methyl tert-Amyl Ether (TAME)	ND	0.50
MTBE	ND	0.50
1,2-Dichloroethane	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
1,2-Dibromoethane	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	94	77-136
1,2-Dichloroethane-d4	84	75-139
Toluene-d8	95	80-120
Bromofluorobenzene	95	80-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	252102	Location:	Aspire Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM009155-0016	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	206836
Units:	ug/L	Analyzed:	01/07/14
Diln Fac:	1.000		

Type: BS Lab ID: QC723180

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	898.6	90	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	95	77-136
1,2-Dichloroethane-d4	83	75-139
Toluene-d8	94	80-120
Bromofluorobenzene	94	80-120

Type: BSD Lab ID: QC723181

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	1,000	941.5	94	80-120	5	20

Surrogate	%REC	Limits
Dibromofluoromethane	94	77-136
1,2-Dichloroethane-d4	83	75-139
Toluene-d8	93	80-120
Bromofluorobenzene	94	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	252102	Location:	Aspire Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM009155-0016	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	206886
Units:	ug/L	Analyzed:	01/08/14
Diln Fac:	1.000		

Type: BS Lab ID: QC723362

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	62.50	58.58	94	37-151
Isopropyl Ether (DIPE)	12.50	12.42	99	56-124
Ethyl tert-Butyl Ether (ETBE)	12.50	12.14	97	61-122
Methyl tert-Amyl Ether (TAME)	12.50	11.74	94	65-120
MTBE	12.50	11.35	91	64-121
1,2-Dichloroethane	12.50	11.09	89	77-137
Benzene	12.50	13.65	109	80-124
Toluene	12.50	13.55	108	80-122
1,2-Dibromoethane	12.50	13.64	109	80-120
Ethylbenzene	12.50	14.25	114	80-124
m,p-Xylenes	25.00	29.13	117	80-122
o-Xylene	12.50	14.90	119	77-120

Surrogate	%REC	Limits
Dibromofluoromethane	98	77-136
1,2-Dichloroethane-d4	84	75-139
Toluene-d8	94	80-120
Bromofluorobenzene	94	80-120

Type: BSD Lab ID: QC723363

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	62.50	57.92	93	37-151	1	30
Isopropyl Ether (DIPE)	12.50	11.82	95	56-124	5	20
Ethyl tert-Butyl Ether (ETBE)	12.50	11.69	94	61-122	4	22
Methyl tert-Amyl Ether (TAME)	12.50	11.70	94	65-120	0	22
MTBE	12.50	11.26	90	64-121	1	20
1,2-Dichloroethane	12.50	10.80	86	77-137	3	20
Benzene	12.50	12.86	103	80-124	6	20
Toluene	12.50	12.93	103	80-122	5	20
1,2-Dibromoethane	12.50	13.43	107	80-120	2	20
Ethylbenzene	12.50	13.82	111	80-124	3	20
m,p-Xylenes	25.00	27.43	110	80-122	6	20
o-Xylene	12.50	14.46	116	77-120	3	20

Surrogate	%REC	Limits
Dibromofluoromethane	98	77-136
1,2-Dichloroethane-d4	86	75-139
Toluene-d8	94	80-120
Bromofluorobenzene	94	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	252102	Location:	Aspire Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM009155-0016	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC723364	Batch#:	206886
Matrix:	Water	Analyzed:	01/08/14
Units:	ug/L		

Analyte	Result	RL
Gasoline C7-C12	ND	50
tert-Butyl Alcohol (TBA)	ND	10
Isopropyl Ether (DIPE)	ND	0.50
Ethyl tert-Butyl Ether (ETBE)	ND	0.50
Methyl tert-Amyl Ether (TAME)	ND	0.50
MTBE	ND	0.50
1,2-Dichloroethane	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
1,2-Dibromoethane	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	97	77-136
1,2-Dichloroethane-d4	84	75-139
Toluene-d8	95	80-120
Bromofluorobenzene	95	80-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	252102	Location:	Aspire Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM009155-0016	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	206886
Units:	ug/L	Analyzed:	01/08/14
Diln Fac:	1.000		

Type: BS Lab ID: QC723373

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	973.8	97	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	96	77-136
1,2-Dichloroethane-d4	83	75-139
Toluene-d8	93	80-120
Bromofluorobenzene	97	80-120

Type: BSD Lab ID: QC723374

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	1,000	960.8	96	80-120	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	96	77-136
1,2-Dichloroethane-d4	82	75-139
Toluene-d8	95	80-120
Bromofluorobenzene	94	80-120

RPD= Relative Percent Difference

Date : 08-JAN-2014 20:33

Client ID: DYNA P&T

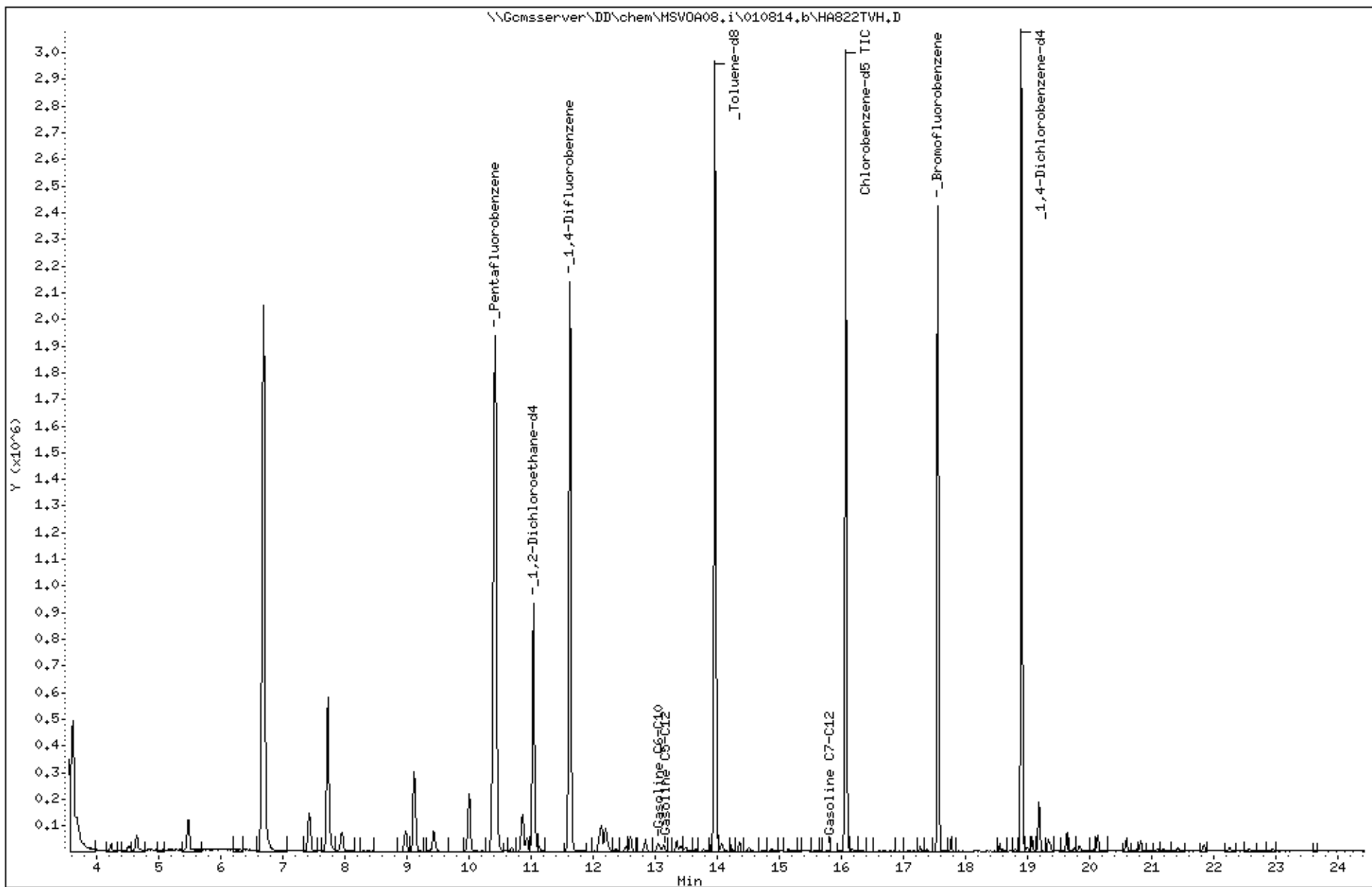
Sample Info: S,252102-002

Instrument: MSV0A08.i

Operator: VOC

Column diameter: 2.00

Column phase:



Date : 07-JAN-2014 18:46

Client ID: DYNA P&T

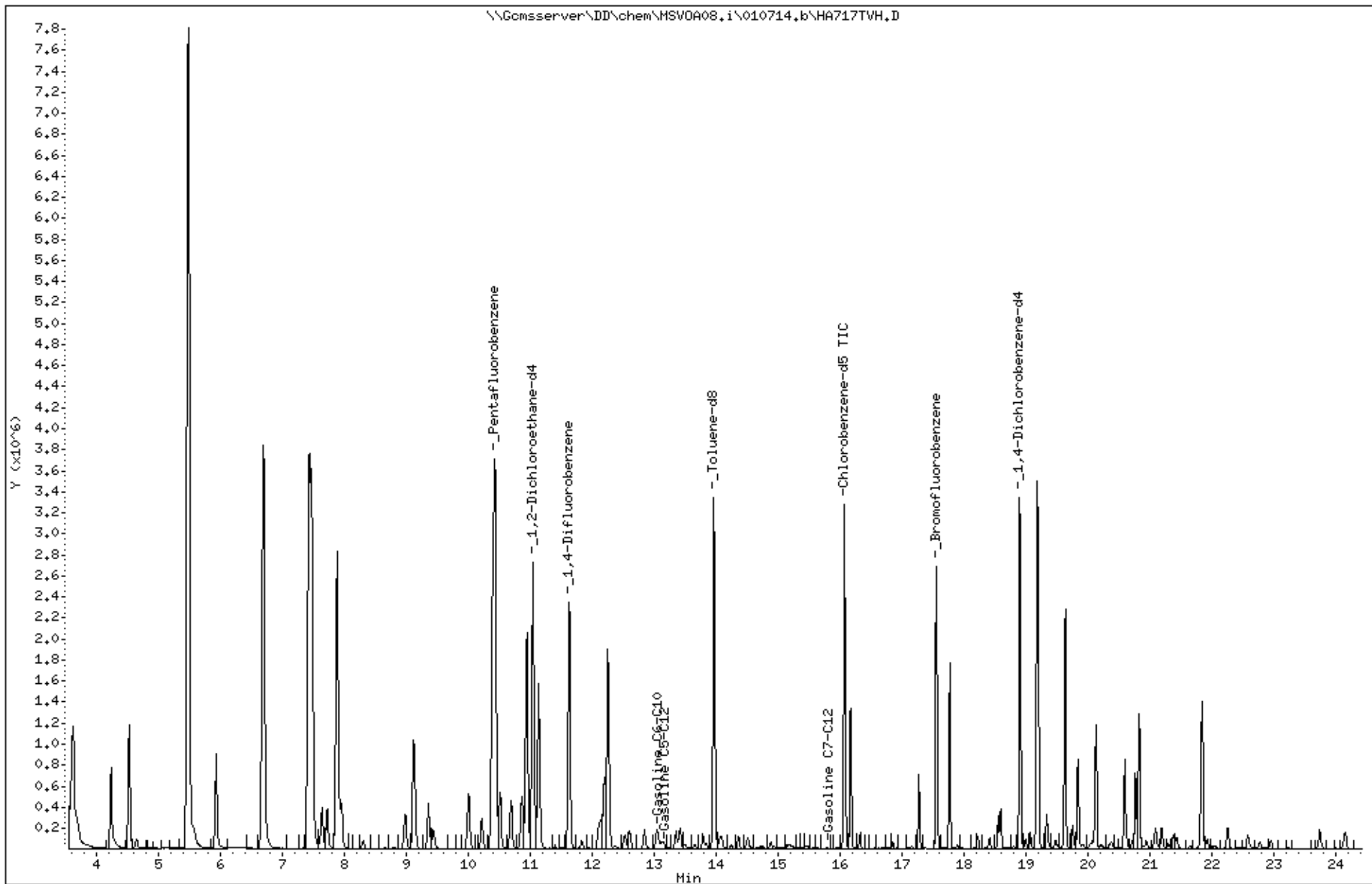
Sample Info: S,252102-004

Instrument: MSV0A08.i

Operator: VOC

Column diameter: 2.00

Column phase:



Date : 07-JAN-2014 12:02

Client ID: DYNA P&T

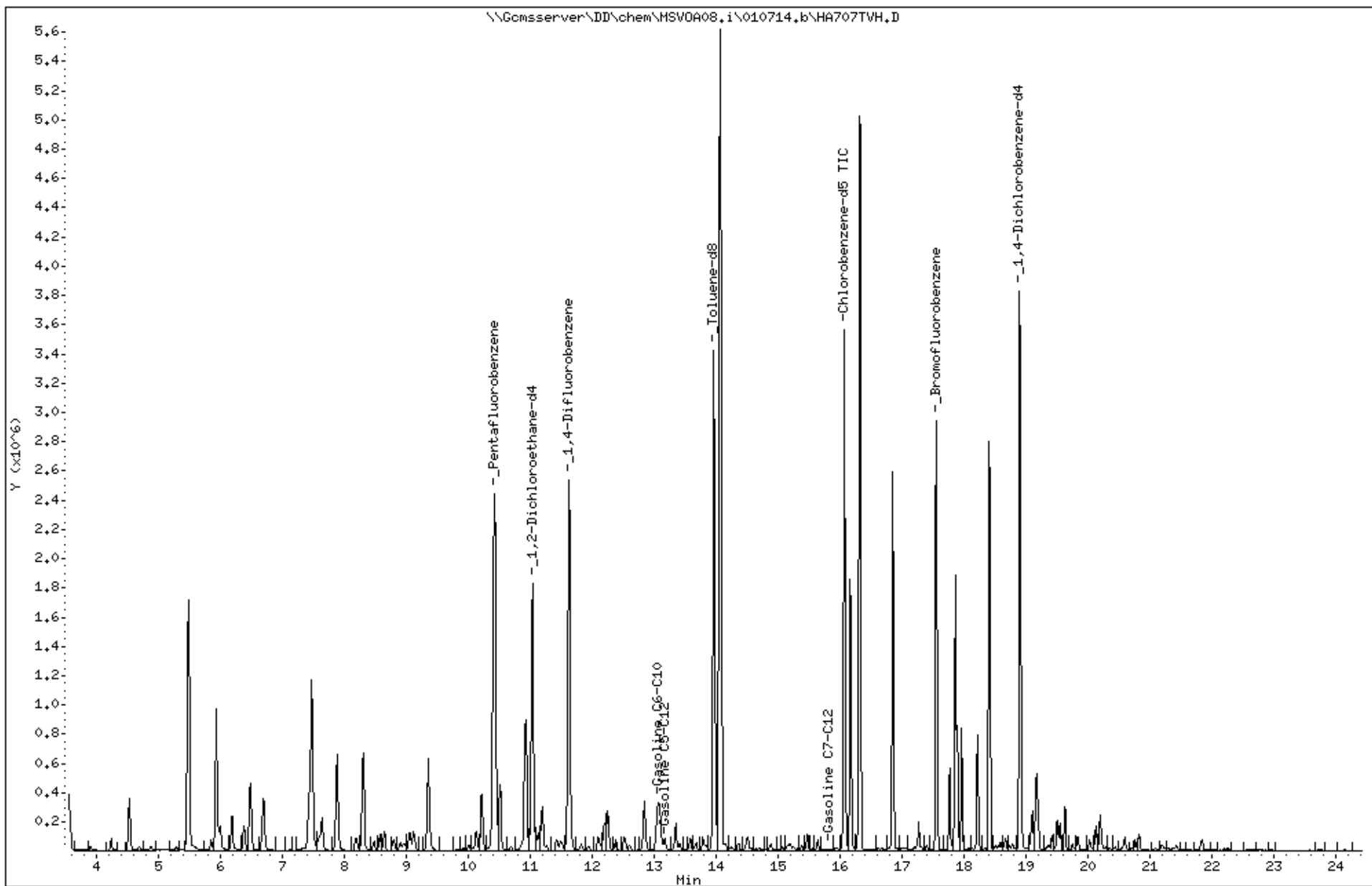
Sample Info: CCV/BS, QC723180, 206836, S23229, .01/100

Instrument: MSV0A08.i

Operator: VOC

Column diameter: 2.00

Column phase:



ARCADIS

Appendix B

Field Logs

Equipment Calibration Log

Equipment make/model	Equipment ID/serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C) (°F)	Tech init.	Comments
YS Flow cell	#1	1/7/14	0840	plk 47.0 cs-d 1413	4.0, 70, 10.0 1413	✓	9.2	Ans	
↓	↓	↓	↓	orp Ds 100%	247.5 100%	✓	9.5	Ans	
						✓	10.3	Ans	

Notes/comments:

Drum Log

Site: Aspire School

Drum(s) Location On Site: Inside black fenced compound on North side of yard.

Date		# of drums			total	contents (s=soil w=water m=mixed ?=unknown)	labeled (y or n)	label legible (y or n)	tech initial	Notes:
		full	partial	empty						
1/7/14	Arrival	0	0	0	0	-	-	-	AGC	
1/7/14	Departure	0	1	0	1	w	y	y	AGC	
	Arrival									
	Departure									
	Arrival									
	Departure									
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	Departure									
	Arrival									
	Departure									
	Arrival									
	Departure									

(By Dumpsters)

Well Maintenance Inspection Form

Client: Arcadis Site: Aspire School, Oakland Date: 1/7/14
 Job #: F2-140107 Technician: A. Feeney Page 1 of 1

Entry Indicates Deficiency

Inspection Point	Well Inspected - No Corrective Action Required	Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total tabs)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (Note any repairs made while on site)
MW-4				X	/	/	/								
NW-2S				X	/	/	/								
MW-2I				X	/	/	/								
NW-2D				X	/	/	/								
AS-4I		/		X	/	/	/								Cap missing
AS-6I				X	/	/	/								Cap missing
AS MW-5D		/		/	/	/	/								Cap replaced Cap missing
AS MW-5I		/		/	/	/	/								Cap missing
					/	/	/								
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Notes: _____

Repair codes: **rt**=retap/ bolts added or replaced **as**=annular seal repair,

Water Level Measurements

Job Number: F2-140107 Date: 1/7/14 Client: Arcadis

Site: Aspire School, Oakland

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point TOG/TOB		
MW-4	0815	2			5.01	24.60		TOB		
NW-2S	0824	2			4.34	5.82				
NW-2I	0826	2			5.05	11.40				
NW-2D	0828	2			5.00	29.90				
AS-4I	0830	2			5.10	10.93				
AS-6I	0817	2			4.75	13.48				
ASMW-5D	0809	2			4.48	7.82				
ASMW-5I	0807	2			4.50	8.21				

Purging And Sampling Data Sheet

Job#: <u>2</u> FX-140107	Sampler: <u>A Feeney</u>	Client: <u>Arcadis</u>
Well ID: <u>MW-4</u>	Date: <u>1/7/14</u>	Site: <u>Aspire School, Oakland</u>
Well diam: <u>1/4" 1" (2) 3" 4" 6" Other:</u>	DTW: <u>5.01</u>	Total Depth: <u>24.60</u>
Purge equip: ES - diam: Bladder <u>Peri</u> Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:		
Tubing: OD: <u>New</u> Dedicated NA		
Purge method: 3-5 Case Volume <u>Micro/Low-Flow</u> Extraction Other:		
Pump depth/ intake: Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius ² X 0.163		
(TD - DTW X Multiplier = 1 Volume) <u>80% Recovery (TD - DTW X 0.20 + DTW)</u>		

1 Volume = _____ X 3 = _____ (Total Purge) 80% = _____

Time	Temp (°C/°F)	pH	Cond (mS / μS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1003	19.8	7.10	1168	6	1.00	300 mL	0.49	-92	6.16	
1006	19.6	7.58	1151	5		600 mL	0.50	-90	6.25	
1009	19.4	7.05	1173	4		900 mL	0.45	-90	6.30	
1012	19.5	7.03	1175	4		1.2 L	0.44	-90	6.30	
1015	19.4	7.02	1176	4		1.5 L	0.44	-90	6.30	

Did well dewater? YES <u>(NO)</u>	Total volume removed: <u>1.5 L</u> (gal / L)
Sample method: Disp Bailer Ded. Tubing <u>New Tubing</u> Ext. Port Other:	
Sample date: <u>1/7/14</u>	Sample time: <u>1020</u> DTW at sample: <u>6.30</u>
Sample ID: <u>MW-4</u>	Lab: C&T Number of bottles: <u>3+3</u>
Analysis: <u>8260</u>	
Equipment blank ID @ _____	Field blank ID @ _____
Duplicate ID: <u>MW-4D@1025</u>	Pre-purge DO: _____ Post purge DO: _____
Fe ²⁺ : _____	Pre-purge ORP: _____ Post purge ORP: _____
NAPL depth: _____	Volume of NAPL: _____ Volume removed: _____ ml



Purging And Sampling Data Sheet

Job#: <u>FX-140107</u>	Sampler: <u>A Feeney</u>	Client: <u>Arcadis</u>
Well ID: <u>NW-2S</u>	Date: <u>1/7/14</u>	Site: <u>Aspire School, Oakland</u>
Well diam: 1/4" 1" <u>2</u> " 3" 4" 6" Other:	DTW: <u>4.34</u>	Total Depth: <u>5.52</u>
Purge equip: ES - diam: Bladder <u>Peri</u> Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: Tubing: OD: <u>New</u> Dedicated NA		
Purge method: 3-5 Case Volume <u>Micro/Low-Flow</u> Extraction Other:		
Pump depth/ intake:	Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"= 1.02 6"= 1.47 Radius ² X 0.163	
(TD - DTW X Multiplier = 1 Volume		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X 3 = _____ (Total Purge) 80% = _____

Time	Temp (°C/°F)	pH	Cond (mS/µS)	Turbidity (NTU)	Purge Rate (gal or mL/min)	Volume Removed (gal/L)	DO (mg/l)	ORP (mv)	DTW	Notes
0905	17.9	8.27	925		400	1.2L	8.56	176.2		
						2.4L				
0917	17.8	7.09	1465	>1000	400	1.2L	0.25	-5.6	4.67	
0920	17.4	7.05	1470	>1000		2.4L	0.17	-38.6	4.69	
0923	17.5	7.10	1474	>1000		3.6L	0.15	-45.0	5.15	
0924	well dewatered									
1135	17.2	7.10	1410	>1000	low	-	0.46	-68.5	4.54	

Did well dewater? <u>YES</u> NO	Total volume removed: <u>3.8</u> (gal/L)
Sample method: Disp Bailer Ded. Tubing <u>New Tubing</u> Ext. Port Other:	
Sample date: <u>1/7/13</u>	Sample time: <u>1135</u> DTW at sample: <u>4.54</u>
Sample ID: <u>NW-2S</u>	Lab: C&T Number of bottles: <u>3</u>
Analysis: <u>8260</u>	
Equipment blank ID @	Field blank ID @
Duplicate ID:	Pre-purge DO: Post purge DO:
Fe ²⁺ :	Pre-purge ORP: Post purge ORP:
NAPL depth:	Volume of NAPL: Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-140107	Sampler: A Feeney	Client: Arcadis
Well ID: NW-2I	Date: 1/7/14	Site: Aspire School, Oakland
Well diam: 1/4" 1" (2)" 3" 4" 6" Other:	DTW: 5.05 Total Depth: 11.40	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	Tubing: OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"= 1.02 6"= 1.47 Radius ² X 0.163	
(TD - DTW X Multiplier = 1 Volume		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X 3 = _____ (Total Purge) 80% = _____

Time	Temp (°F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal or L)	DO (mg/l)	ORP (mv)	DTW	Notes
0926	19.8	6.81	824	4	100	300ml	1.93	-19.6	5.05	
0929	19.8	6.79	822	3		600ml	1.94	-9.3	5.05	
0937	19.9	6.76	820	3		900ml	1.85	0.6	5.05	
0935	20.0	6.75	819	3		1.2 L	1.70	6.9	5.05	
0938	20.1	6.74	821	3		1.5 L	1.68	7.0	5.05	
0941	20.0	6.75	820	3		1.8 L	1.67	7.7	5.05	

Did well dewater? YES NO Total volume removed: 1.8 (gal / L)

Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:

Sample date: 1/7/13 Sample time: 0945 DTW at sample: 5.05

Sample ID: NW-2I Lab: C&T Number of bottles: 3

Analysis: 8260

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

Fe²⁺: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-140107		Sampler: A Feeney		Client: Arcadis	
Well ID: NW-2D		Date: 1/7/14		Site: Aspire School, Oakland	
Well diam: 1/4" 1" (2) 3" 4" 6" Other:			DTW: 5.00		Total Depth: 29.90
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: Tubing: OD: New Dedicated NA					
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:					
Pump depth/ intake:			Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"= 1.02 6"= 1.47 Radius ² X 0.163		
(TD - DTW X Multiplier = 1 Volume			80% Recovery (TD - DTW X 0.20 + DTW)		

1 Volume = _____ X 3 = _____ (Total Purge) 80% = _____

Time	Temp (°C/°F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0949	19.0	6.99	2535	705	200	600ml	0.38	-79	5.80	Flow rate decreased
0952	19.2	6.94	2530	485	1	1.2L	0.49	-82	7.01	
0955	19.3	6.90	2584	28	1	1.8L	0.54	-83.5	7.10	
0958	19.3	6.89	2589	26	1	2.4L	0.55	-84	7.11	
1001	19.4	6.90	2590	26	1	3.0L	0.55	-85	7.11	

Did well dewater? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>		Total volume removed: 3.0 (gal / L)	
Sample method: Disp Bailer Ded. Tubing <input checked="" type="checkbox"/> New Tubing Ext. Port Other:			
Sample date: 1/7/13		Sample time: 1005	DTW at sample: 7.11
Sample ID: NW-2D		Lab: C&T	Number of bottles: 3
Analysis: 8260			
Equipment blank ID @		Field blank ID @	
Duplicate ID:		Pre-purge DO:	Post purge DO:
Fe ²⁺ :		Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:		Volume removed: ml

Purging And Sampling Data Sheet

Job#: <u>F1-140107</u>	Sampler: <u>A Feeney</u>	Client: <u>Arcadis</u>
Well ID: <u>AS-4I</u>	Date: <u>1/7/14</u>	Site: <u>Aspire School, Oakland</u>
Well diam: 1/4" 1" <u>2"</u> 3" 4" 6" Other:	DTW: <u>5.10</u> Total Depth: <u>10.93</u>	
Purge equip: ES - diam: Bladder <u>Peri</u> Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	Tubing: OD: <u>New</u> Dedicated NA	
Purge method: 3-5 Case Volume <u>Micro/Low-Flow</u> Extraction Other:		
Pump depth/ intake:	Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"= 1.02 6"= 1.47 Radius ² X 0.163	
(TD - DTW X Multiplier = 1 Volume) 80% Recovery (TD - DTW X 0.20 + DTW)		

1 Volume = _____ X 3 = _____ (Total Purge) 80% = _____

Time	Temp (°/°F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or (ml/min))	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0905	17.9	8.27	925	>1,000	400	1.2L	8.06	176.5	7.72	
0908	17.8	8.40	924	>1,000	1	2.4L	8.03	177.7	9.20	
0910	well		dewatered			3.2L				
1130	18.4	8.45	954	>1,000	200	-	0.42	-45	7.07	

Did well dewater? <u>(YES)</u> NO		Total volume removed: <u>3.2</u> (gal / L)	
Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:			
Sample date: <u>1/7/13</u>	Sample time: <u>1130</u>	DTW at sample: <u>7.07</u>	
Sample ID: <u>AS-4I</u>	Lab: <u>C&T</u>	Number of bottles: <u>3</u>	
Analysis: <u>8260</u>			
Equipment blank ID @	Field blank ID @		
Duplicate ID:	Pre-purge DO:	Post purge DO:	
Fe ²⁺ :	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed:	ml

Purging And Sampling Data Sheet

Job#: <u>FX-140107</u>	Sampler: <u>A Feeney</u>	Client: <u>Arcadis</u>
Well ID: <u>AS-6I</u>	Date: <u>1/7/14</u>	Site: <u>Aspire School, Oakland</u>
Well diam: 1/4" 1" <u>2"</u> 3" 4" 6" Other:	DTW: <u>4.75</u> Total Depth: <u>13.48</u>	
Purge equip: ES - diam: Bladder <u>Peri</u> Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: Tubing: OD: <u>New</u> Dedicated NA		
Purge method: 3-5 Case Volume <u>Micro/Low-Flow</u> Extraction Other:		
Pump depth/ intake:	Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"= 1.02 6"= 1.47 Radius ² X 0.163	
(TD - DTW X Multiplier = 1 Volume		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X 3 = _____ (Total Purge) 80% = _____

Time	Temp (°C / °F)	pH	Cond (mS / /S)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / l)	DO (mg/l)	ORP (mv)	DTW	Notes
1027	17.9	7.20	113.0	7	1.0	3.0 ml	3.77	-74	4.97	
1030	17.9	7.0	95.7	6	1	6.0 ml	3.69	-53	4.97	
1033	18.1	6.84	75.8	6	1	9.0 ml	3.61	-30	4.97	
1036	18.1	6.82	74.9	6	1	1.2 l	3.64	-29	4.97	
1039	18.1	6.81	74.8	6	1	1.5 l	3.65	-28	4.97	

Did well dewater? YES <u>NO</u>	Total volume removed: <u>1.5</u> (gal / l)
Sample method: Disp Bailer Ded. Tubing <u>New Tubing</u> Ext. Port Other:	
Sample date: <u>1/7/13</u>	Sample time: <u>1040</u> DTW at sample: <u>4.97</u>
Sample ID: <u>AS-6I</u>	Lab: C&T Number of bottles: <u>3</u>
Analysis: <u>8260</u>	
Equipment blank ID @	Field blank ID @
Duplicate ID:	Pre-purge DO: Post purge DO:
Fe ²⁺ :	Pre-purge ORP: Post purge ORP:
NAPL depth:	Volume of NAPL: Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-140107	Sampler: A Feeney	Client: Arcadis
Well ID: ASMW-5D	Date: 1/7/14	Site: Aspire School, Oakland
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	DTW: 4.48 Total Depth: 7.82	
Purge equip: ES - diam: Bladder <u>Peri</u> Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: Tubing: OD: <u>New</u> Dedicated NA		
Purge method: 3-5 Case Volume <u>Micro/Low-Flow</u> Extraction Other:		
Pump depth/ intake:	Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius ² X 0.163	
(TD - DTW X Multiplier = 1 Volume		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X 3 = _____ (Total Purge) 80% = _____

Time	Temp (°/°F)	pH	Cond (mS /µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1103	15.0	7.6	178.6	30	1.0	3.0 ml	2.86	-2.2	5.56	
1106	14.8	7.17	151.0	23		6.0 ml	2.75	-4.0	5.75	
1109	14.9	7.13	147.0	20		9.0 ml	2.76	-0.8	5.85	
1112	14.9	7.1	145.5	19		1.2 L	2.78	-0.6	5.86	
1115	14.9	7.1	145.0	19		1.5 L	2.79	-0.5	5.86	

Did well dewater? YES NO Total volume removed: 1.5 (gal / L)

Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:

Sample date: 1/7/13 Sample time: 1120 DTW at sample: 5.86

Sample ID: ASMW-5D Lab: C&T Number of bottles: 3

Analysis: 8260

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

Fe²⁺: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Purging And Sampling Data Sheet

Job#: F1-140107	Sampler: A Feeney	Client: Arcadis
Well ID: <u>ASMW-5I</u>	Date: 1/7/14	Site: Aspire School, Oakland
Well diam: 1/4" 1" <u>2"</u> 3" 4" 6" Other:	DTW: <u>4.50</u> Total Depth: <u>8.21</u>	
Purge equip: ES - diam: Bladder <u>Peri</u> Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: Tubing: OD: <u>New</u> Dedicated NA		
Purge method: 3-5 Case Volume <u>Micro/Low-Flow</u> Extraction Other:		
Pump depth/ intake:	Multipliers: 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius ² X 0.163	
(TD - DTW X Multiplier = 1 Volume		80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X 3 = _____ (Total Purge) 80%= _____

Time	Temp (°F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / l)	DO (mg/l)	ORP (mv)	DTW	Notes
1050	15.0	8.1	1043	45	100	300 mL	8.00	-21.8	5.79	
1053	15.3	7.97	1081	15		600 mL	5.28	-16	6.05	
1056	15.4	8.0	1084	14		900 mL	5.25	-15.9	6.06	
1059	15.4	8.0	1085	14		1.2L	5.24	-15.8	6.06	

Did well dewater? YES NO Total volume removed: 1.2 (gal / L)

Sample method: Disp Bailer Ded. Tubing New Tubing Ext. Port Other:

Sample date: 1/7/13 Sample time: 1100 DTW at sample: 6.06

Sample ID: ASMW - 5I Lab: C&T Number of bottles: 3

Analysis: 8260

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

Fe²⁺: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml