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Groundwater Monitoring Report for the Period October 1 through December 31, 2010

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

February 15, 2011

ARCADIS

Ron Goloubow, P.G.
Senior Associate Geologist

Groundwater Monitoring Report for the Period October 1 through December 31, 2010

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

Prepared for:
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College for Certain, LLC
1001 22nd Avenue, Suite 100
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February 15, 2011

Mr. Paresh Khatri
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

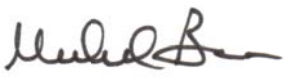
Subject: Groundwater Monitoring Report for the Period October 1 through December 31, 2010, Former Pacific Electric Motors Site, 1009 66th Avenue, Oakland, California (Fuel Leak Case Number RO0000411)

Dear Mr. Khatri:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure 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 Michael Rueda at 626-113-6489, Ron Goloubow of ARCADIS at 510-596-9550, or me at 510-434-5000.

Sincerely,



Michael Barr
College for Certain, LLC

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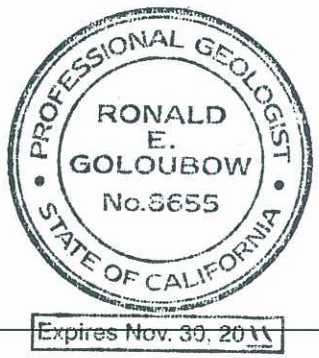
Certification

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 .*



2-15-11

Ron Goloubow, P.G. Date
Principal Geologist
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1. Introduction

ARCADIS has prepared this periodic groundwater monitoring report on behalf of College for Certain, LLC (CFC). This report provides a summary of activities conducted during the monitoring period from October 1 through December 31, 2010 ("the reporting quarter") 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). During the reporting quarter, the following activities were conducted at the Site:

- Groundwater monitoring
- Abandonment of five groundwater monitoring wells
- Redevelopment of the Site for construction of the CFC School

1.1 Purpose of the Report

The purpose of the periodic 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.

During this monitoring period, 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 total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, and total xylenes (BTEX compounds), methyl tertiary-butyl ether (MTBE), and tertiary-butyl alcohol (TBA).

The purpose of the groundwater monitoring being conducted at the Site is 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 operation of the soil-vapor extraction/air sparging (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 on-site buildings were occupied by Bay Area Powder Coatings in 2001. Bay Area Powder Coatings declared bankruptcy and ceased operations at the Site; however, some equipment belonging to this company was still present on the Site in 2005. No details are available as to the specific processes of Bay Area Powder Coatings.

Landeros Iron Works (“Landeros”), which subleased the property from Bay Area Powder Coatings, conducted its operations in and around the warehouse until December 2008. Landeros’ operation was primarily welding and metal structure fabrication. Landeros moved off site in June 2009.

The structures that were on the property were demolished between November 2009 and February 2010. The Site is currently relatively flat, unpaved, and vacant, and site redevelopment activities are commencing.

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, polychlorinated biphenyls (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).

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.

1.5 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.

1.6 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). During this reporting period, groundwater samples were collected on December 14 and 15, 2010, approximately three months after the SVE/AS system was shut down. The following sections describe the groundwater monitoring activities for this reporting quarter.

2.1 Groundwater Monitoring Scope of Work

The following groundwater monitoring activities were performed during the reporting quarter:

- Measured depth to groundwater in 11 monitoring wells during the December sampling event.
- Collected groundwater samples from 11 wells on December 14 and 15, 2010.
- Submitted groundwater samples for laboratory analyses.

2.2 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). As discussed 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).

- 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.

- Two intermediate-zone groundwater monitoring wells (ASMW-4I and ASMW-5I) are 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.

- Four intermediate-zone AS wells (AS-1I, AS-3I, AS-4I, and AS-6I) with 3-foot screens with bottoms set at depths ranging from approximately 13.5 to 19 feet bgs.

2.3 Groundwater Elevations

Groundwater elevations were gauged on December 14, 2010. The depth to groundwater was measured in 11 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. The groundwater elevation in each well was calculated by subtracting the depth to water from the surveyed top-of-casing elevation.

During the redevelopment activities, the top of the casing for AS-6I was damaged, altering the top-of-casing elevation. Therefore, this well was not used on the water-level elevation contour maps.

The groundwater elevation results are summarized in Table 1. Groundwater elevation data and contours for the intermediate and deep groundwater zones for the December event are presented on Figures 3 and 4, respectively.

December groundwater elevations in the intermediate zone ranged from 9.49 to 11.85 feet above mean sea level (msl). Intermediate-zone groundwater elevations contours for the December event are shown on Figure 3. The groundwater gradient in the intermediate zone, as calculated from AS4I to ASMW-4I, was 0.002 foot per foot (ft/ft) during the reporting quarter.

December groundwater elevations in the deep zone ranged from 9.47 to 10.83 feet above msl. Deep-zone groundwater elevations contours for the December event are shown on Figure 4. The groundwater elevation contours display a depression around NW-2D, which is likely due to the heterogeneity in subsurface porosity. The groundwater gradient in the deep zone, as calculated from ASMW5I to MW-4, was 0.002 ft/ft during the reporting quarter.

The December groundwater contours and elevations depicted on Figures 3 and 4 are generally consistent with trends observed prior to the operation of the AS/SVE system. The second quarter 2009 monitoring report as well as the current reporting quarter show a groundwater gradient in the intermediate zone flowing in an east to west direction.

2.4 Groundwater Sampling

Ongoing monitoring and analysis of groundwater samples for TPHg, BTEX, TBA, and MTBE were conducted to assess the quality of groundwater affected by these COCs and the effectiveness of the SVE/AS system. One groundwater sampling event was conducted during the reporting quarter. Groundwater samples were collected from 11 groundwater monitoring and AS wells during the December 14 and 15, 2010 event.

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 TestAmerica Laboratories, a state-certified laboratory located in Pleasanton, California, for the following analyses:

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

Results for TPHg, BTEX, and MTBE analyses are summarized in Table 2, and Table 3 summarizes the groundwater monitoring parameters measured during the collection of the groundwater samples. Figures 5, 6, and 7 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.

2.5 Analytical Results of Groundwater Samples and Discussion

Groundwater samples were collected in December 2010 to provide data to evaluate the effectiveness of the SVE/AS system and to monitor for potential contaminant rebound. The results of the December 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.

2.5.1 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 recently 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.

2.5.1.1 Shallow Zone

Groundwater samples were collected from one shallow-zone well during the current reporting quarter. The analytical results for TPHg, BTEX, TBA, and MTBE are summarized in Table 2 and posted on Figure 5. 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 December 2010 from NW-2S indicate TPHg and benzene concentrations were significantly reduced by approximately 97.2% and 99.9%, respectively.

2.5.1.2 Intermediate Zone

Groundwater samples were collected from seven 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 6. 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, have been 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 December 2010 from NW-2I and ASMW 5I after 232 days of total SVE/AS system operation and 91 days after demobilization indicate that TPHg concentrations were significantly reduced by approximately 98.1% and 99.8%, respectively (Table 2 and Figure 6).

The data indicate that 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 6).

The following table summarizes the decreases in the percentages of benzene and TPHg that were detected in the samples collected in December 2010 relative to concentrations of benzene and TPHg that were detected prior to start-up of the SVE/AS system:

Percentage Decrease in Benzene and TPHg Concentrations Intermediate-Zone Groundwater Monitoring Wells *concentrations in micrograms per liter*			
Well ID	**Data**	**Benzene**	**TPHg**
ASMW-4I	11-Mar-09	38	9,200
	15-Dec-10	2.2	1,000
	Percent Decrease:	94%	89%
ASMW-5I	11-Mar-09	11,000	72,000
	14-Dec-10	0.62	110
	Percent Decrease:	>99%	>99%
NW-2I	13-Mar-09	18,000	49,000
	14-Dec-10	14.0	920
	Percent Decrease:	99%	98%
AS-6I	26-May-09	11,000	42,000
	14-Dec-10	3.6	700
	Percent Decrease:	>99%	98%

Concentrations of MTBE and TBA detected in samples collected from intermediate-zone wells after the start-up of the SVE/AS system have also decreased relative to the concentrations of these compounds detected in the samples collected prior to the operation of the SVE/AS system (Table 2 and Figure 6).

2.5.1.3 Deep Zone

Groundwater samples were collected from three deep-zone wells. The analytical results for TPHg, BTEX, TBA, and MTBE are summarized in Table 2 and posted for deep-zone wells on Figure 7. Similar to the results of the samples collected from intermediate-zone wells, the analytical results indicated that the concentrations of fuel and fuel-related compounds decreased relative to the concentrations detected before the SVE/AS system began operation.

Concentrations of TPHg, BTEX compounds, and TBA in samples collected from three deep-zone wells during the December 2010 sampling event were below their respective laboratory method detection levels. MTBE was detected in one of three deep-zone wells at a concentration of 0.50 microgram per liter (µg/l).

2.6 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.

2.6.1 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 µg/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).

2.6.2 Comparison of December 2010 Groundwater Sampling Results to Site-Specific Screening Level for Benzene

Concentrations of benzene in the groundwater samples from 11 wells during the December 2010 sampling event ranged from below the laboratory detection limit (<0.50 µg/l in 10 wells) to 14.0 µg/l (in well NW-2I). The analytical results of the groundwater samples collected during the December sampling event indicate that current concentrations of benzene in groundwater are well below the 66 µg/l screening level concentration protective of the benzene volatilization from groundwater to indoor air exposure pathway (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 5 through 7).

Analytical results of groundwater samples collected on December 14 and 15, 2010, 90 days after system shutdown, indicate a slight increase of concentrations of TPHg and benzene. Concentrations of TPHg increased in four of the 11 groundwater samples collected, while concentrations of benzene increased in six of the 11 samples. However, the current concentrations of benzene detected in the samples collected at the SIte are significantly below the screening level of 66 µg/l with the highest concentration at 14 µg/l detected in the sample collected from well NW-2I. This concentration indicates an increase of approximately 1% when compared to baseline concentrations. The highest increase in TPHg detected at the Site was in the sample collected from well ASMW-4I (1,000 µg/l), which indicates a 6% increase when compared to the baseline concentration for samples collected from this well. All other increases in TPHg or benzene in samples collected during the current reporting quarter were less than 3% (see Table 2 and Figures 5, 6, and 7). Comparison of analytical results of groundwater samples collected 90 days after SVE/AS system shutdown to the calculated 66 µg/l groundwater concentration of benzene protective of volatilization to indoor air exposure pathway shows that current groundwater conditions do not pose a risk of volatilization to indoor air. These trends will be assessed during future groundwater monitoring events.

4. Recommendations

ARCADIS recommends the collection of additional groundwater samples scheduled to take place quarterly for one year after the shutdown of the SVE\AS system (until September 2011). These data will be used to further evaluate the effectiveness of the SVE/AS system pilot testing in the long-term reduction of fuel and fuel-related constituents in groundwater and soil gas.

The current development plan for the Site includes the construction of a multi-purpose gymnasium building near the area where the SVE/AS system operated. This building will be equipped with vapor mitigation measures that are compliant with the DTSC "Vapor Intrusion Mitigation Advisory" (DTSC 2009). In accordance with the Revised CAP and the DTSC document, it is anticipated that the vapor mitigation measures for the multi-purpose building will include a sub-slab depressurization system and a vapor barrier. These vapor mitigation measures are being designed and will be presented to ACEH under separate cover.

5. Confirmation Sampling Plan

Based on the success of the SVE/AS system operation in reducing fuel and fuel constituent concentrations in groundwater, ARCADIS proposes the following confirmation sampling plan to evaluate if there is any long-term rebound in groundwater concentrations from the SVE/AS system operations. The confirmation sampling plan addresses the different possible results and presents mitigation measures, if necessary.

The confirmation sampling plan includes collection of groundwater samples on a quarterly basis for one year:

- If concentrations of benzene in the confirmation groundwater samples remain below the site-specific screening level of 66 µg/l for that year, then ARCADIS will request a letter from ACEH indicating that no further action (NFA) is required at this Site with respect to groundwater monitoring or remediation.

- If the groundwater sample results indicate concentrations appear to be increasing, but are below volatile screening levels, then further periodic groundwater monitoring and reporting will be conducted until concentrations of TPHg and/or BTEX compounds stabilize.

- If the groundwater sample results indicate concentrations of benzene are increasing above the volatilization screening level, then a vapor sampling plan will be prepared and implemented for the gymnasium building.

If vapor sampling becomes necessary, one of the three following outcomes will likely occur:

- If the concentrations of benzene in the sub-slab vapor samples remain below Environmental Screening Levels (ESLs) as provided in Table E-2 for Evaluation of Potential Indoor Air Concerns published by the Regional Water Quality Control Board (RWQCB 2008), then groundwater and vapor sampling will continue until a change is observed.

- If the concentrations of benzene in the sub-slab vapor samples are slightly above acceptable limits, then the sub-slab depressurization vapor mitigation system will become "active" (i.e., a blower will be attached to the depressurization system) and sub-slab vapor monitoring will continue.

- If the concentrations of benzene in sub-slab vapor samples are considerably above ESLs, then the sub-slab depressurization vapor mitigation system will become active, and, in addition, an oxygen compound will be injected into the intermediate- and shallow-zone groundwater until concentrations of benzene in groundwater samples collected at the Site decrease over time.

6. Schedule

Collection of groundwater confirmation samples will occur quarterly from the fourth quarter of 2010 through the third quarter of 2011. The next periodic groundwater monitoring event is scheduled for March 2011.

7. 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.

8. References

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LFR. 2009d. Groundwater Monitoring Report for the Period from April 1 through June 30, 2009, Former Pacific Electric Motors Site, 1009 66th Avenue, Oakland, California (Fuel Leak Case Number RO0000411). August 14.

LFR. 2009e. Groundwater Monitoring Report and Soil-Vapor Extraction/Air Sparging System Construction and Initial Operation Report for the Period July 1 through September 30, 2009, Former Pacific Electric Motors Site, 1009 66th Avenue, Oakland, California (Fuel Leak Case Number RO0000411). November 13.

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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
Intermediate-Zone Groundwater Monitoring Wells[1]				
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
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
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
	14-Dec-10		3.22	10.69
AS-4I	26-May-09	13.52	3.68	9.84
	24-May-10		2.05	11.47

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]
	27-Jul-10	14.04	6.92	7.12
	14-Sep-10		7.12	6.92
	14-Dec-10		3.23	10.81
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
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
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
	14-Sep-10		6.11	7.68
	14-Dec-10		4.32	9.47
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

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 destroyed during excavation 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	Ethyl-benzene	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
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
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

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
	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
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
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

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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
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
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	<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
AS-2D	22-Sep-09		<50	<10	13	<0.50	0.8	<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
	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	<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
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	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
duplicate	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
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

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
	18-Feb-02		2,400	NA	200	18	<2.5	89	NA	NA	<25
	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

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 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
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
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
AS-6I	23-Sep-09	23.21	872	7.09	16.7	0.16
	25-May-10	17.06	834	7.53	-469.0	0.15

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)
	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
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
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
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
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

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)
	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

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

Table 4
Abandoned Wells during the Reporting Periods
from July 1 through December 31, 2010
Former Pacific Electric Motors Facility
1009 66th Avenue, Oakland, California

Groundwater Monitoring Well Name
Shallow Zone
NW-1S
NW-3S
SVE-1
SVE-2
SVE-3
SVE-4
SVE-5
SVE-6
SVE-7
SVE-8
SVMW-2
SVMW-3
SVMW-4
SVMW-5
Intermediate Zone
AS-2I
AS-5I
AS-7I
AS-8I
ASMW-2I
ASMW-3I
NW-1I
NW-3I
Deep Zone
AS-1D
AS-2D
AS-3D
AS-4D
AS-5D
AS-6D
AS-7D
AS-8D
ASMW-2D
ASMW-3D
ASMW-4D
MW-1
MW-2
MW-3
NW-1D
NW-3D

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

0 2,000 4,000 FEET

1009 66TH AVENUE, OAKLAND, CALIFORNIA

SITE VICINITY MAP

ARCADIS

FIGURE 1

DESIGN\003\09155\Figure 1 Site Vicinity - 003-09155.cdr

CITY:(Reqd) DIV/GROUP:(Reqd) DB:(Reqd) LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF* SAVED: 2/14/2011 2:48 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: -- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 2/14/2011 3:02 PM BY: REYES, ALEC
G:\ENVCAD\Emeryville\ACT\EM000915\0001\10000\1QT84-20110-GWS\1009 66th Ave Oakland - Feb2011.dwg LAYOUT: 2

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

MW-1

NW-1S, 1I, 1D

F.R.

Proposed Classroom Building

F.R.

SVE-2
AS-2D
AS-2I

SVE-3
AS-3D
AS-3I

SVE-4
AS-4D
AS-4I
UP

EW-1

NW-2S, 2I, 2D

SVE-1
AS-1D
AS-1I

SVE-6
AS-6D
MW-4
AS-6I

SVE-5
AS-5D
AS-5I
SVMW-2
ASMW-2D
ASMW-2I

Proposed Gymnasium Building

SVMW-3
ASMW-3D
ASMW-3I

SVE-7
AS-7D
AS-7I

SVE-8
AS-8D
AS-8I

SVMW-5
ASMW-5D
ASMW-5I

Proposed Classroom Building

F.R.

SVMW-4
ASMW-4D
ASMW-4I

NW-3S, 3I, 3D

MW-3

MW-2

N

0 20 FEET

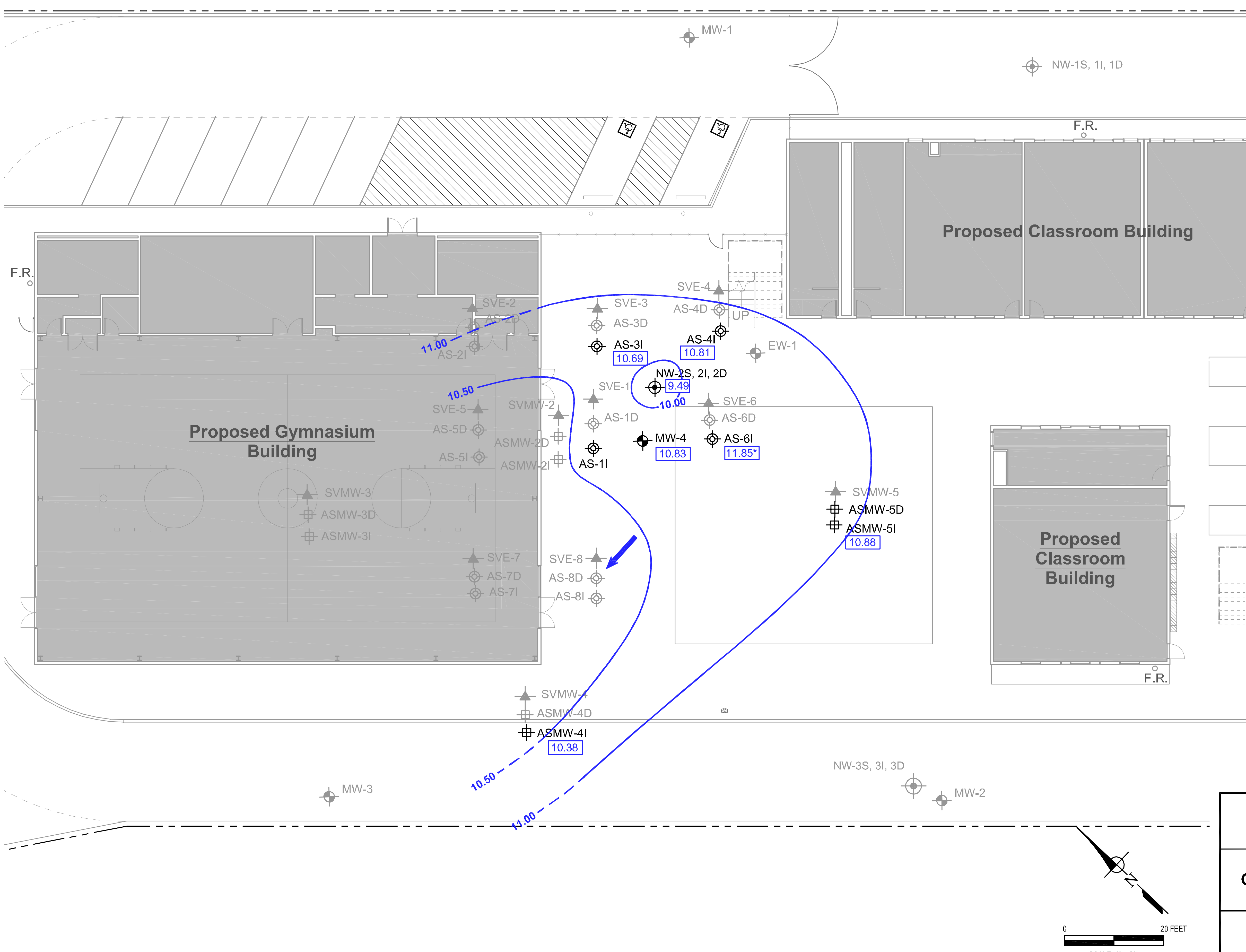
(SCALE: 1" = 20')

1009 66TH AVENUE, OAKLAND, CALIFORNIA

SITE PLAN

ARCADIS

FIGURE 2



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
10.81	Groundwater Elevation Data
10.00	Groundwater Elevation Contour (dashed where inferred)
	Direction of groundwater flow
*	Not used to develop contours

NOTES:

SVE = Soil Vapor Extraction

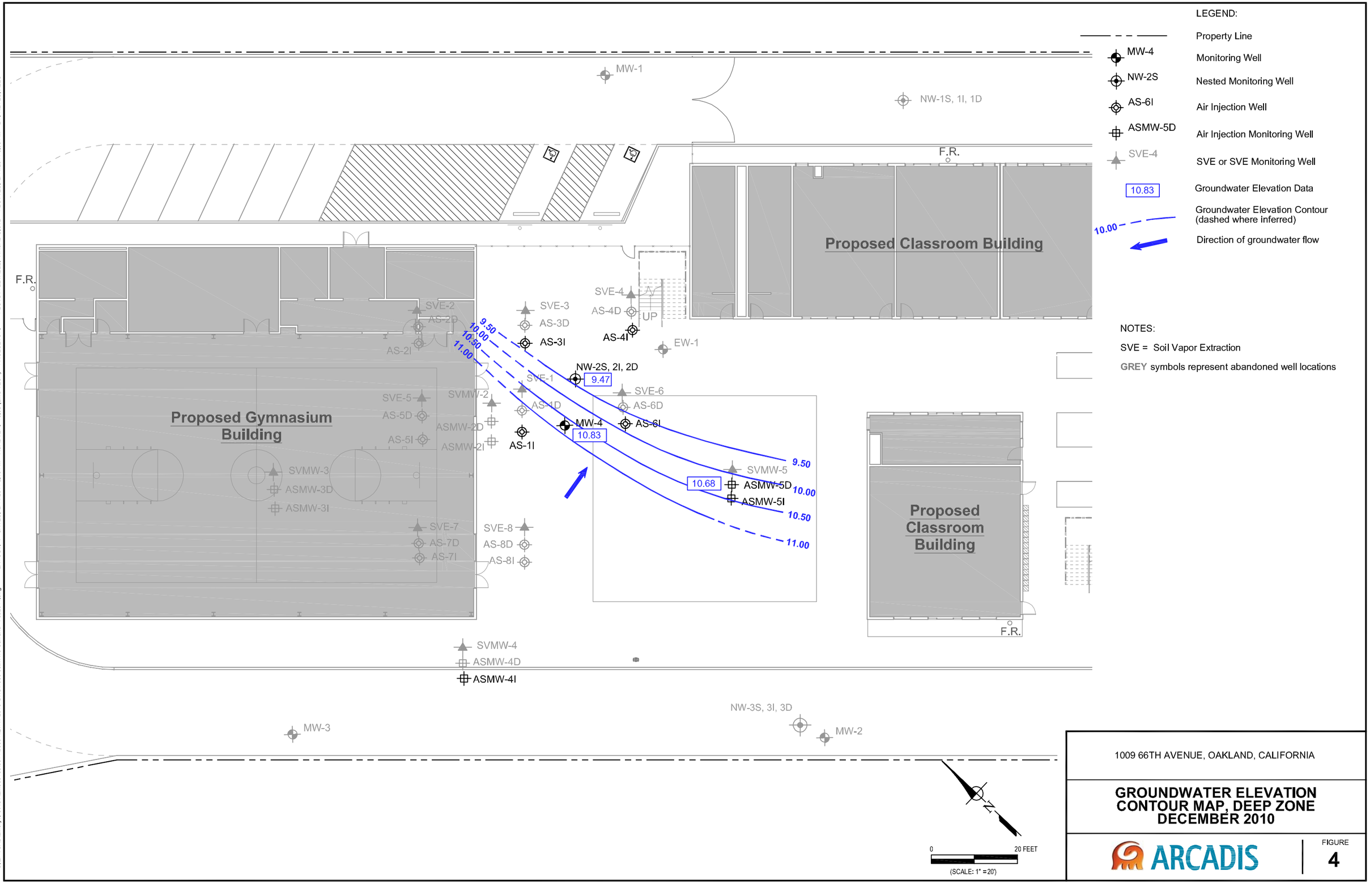
GREY symbols represent abandoned well locations

1009 66TH AVENUE, OAKLAND, CALIFORNIA

GROUNDWATER ELEVATION CONTOUR MAP, INTERMEDIATE ZONE DECEMBER 2010

ARCADIS

FIGURE 3



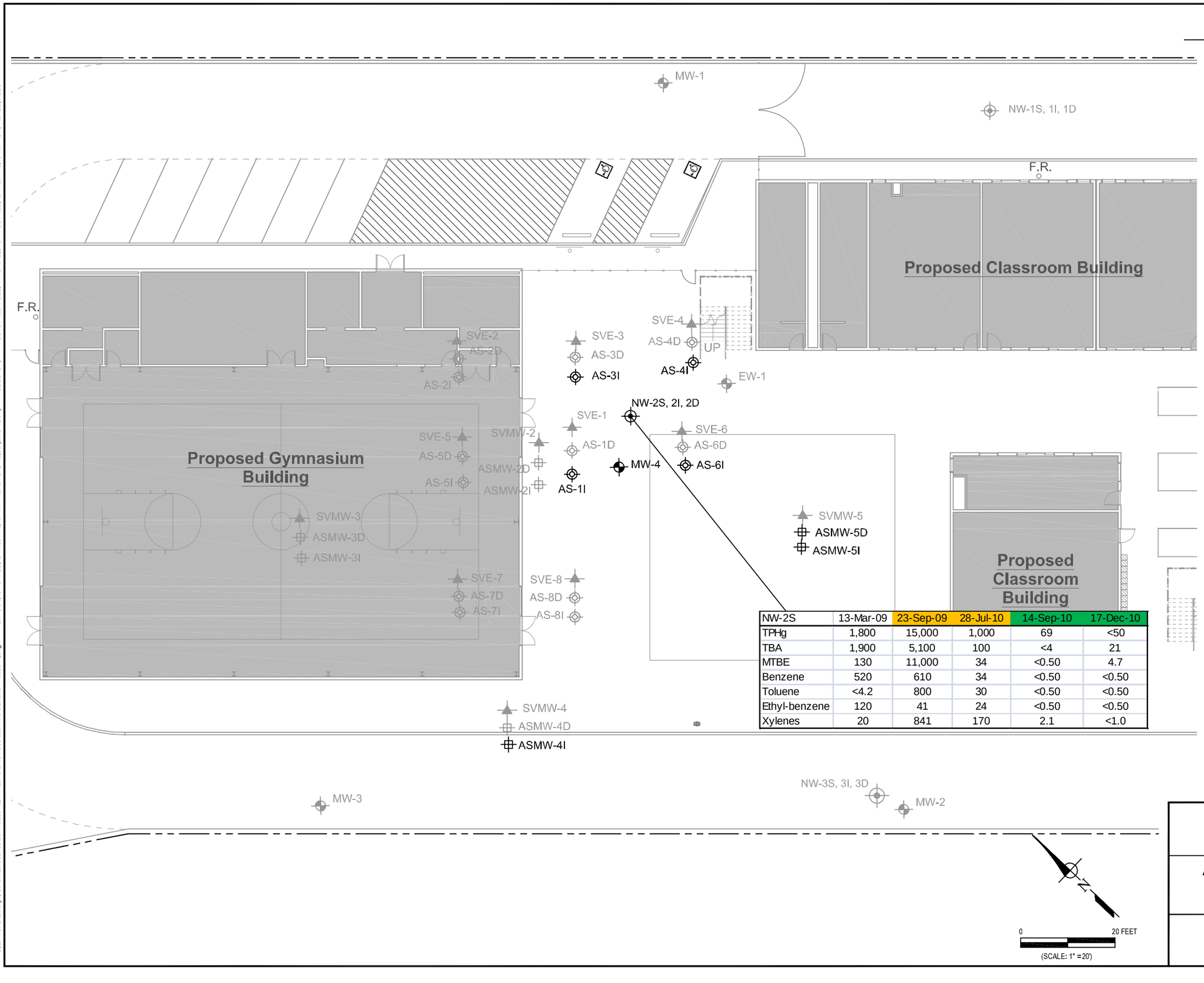
1009 66TH AVENUE, OAKLAND, CALIFORNIA

GROUNDWATER ELEVATION CONTOUR MAP, DEEP ZONE DECEMBER 2010

ARCADIS

FIGURE 4

CITY:(Req'd) DIV/GROUP:(Req'd) DB:(Req'd) LD:(Opt) PIC:(Opt) PM:(Req'd) TM:(Opt) LYR:(On)ON=*;OFF=*REF* SAVED: 2/14/2011 2:48 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: -- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 2/14/2011 3:03 PM BY: REYES, ALEC
G:\ENVCAD\Emeryville\ACTIVE\60091550\01\0000\QTR4-2010-GWS\1009 66th Ave Oakland - Feb2011.dwg LAYOUT: 4



NW-2S	13-Mar-09	23-Sep-09	28-Jul-10	14-Sep-10	17-Dec-10
TPHg	1,800	15,000	1,000	69	<50
TBA	1,900	5,100	100	<4	21
MTBE	130	11,000	34	<0.50	4.7
Benzene	520	610	34	<0.50	<0.50
Toluene	<4.2	800	30	<0.50	<0.50
Ethyl-benzene	120	41	24	<0.50	<0.50
Xylenes	20	841	170	2.1	<1.0

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

25-May-10 — 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 16, 2010 shutdown

Location ID	Date sample taken
AS-7I	25-May-10
TPHg	<50

Concentration in micrograms per liter

Chemical

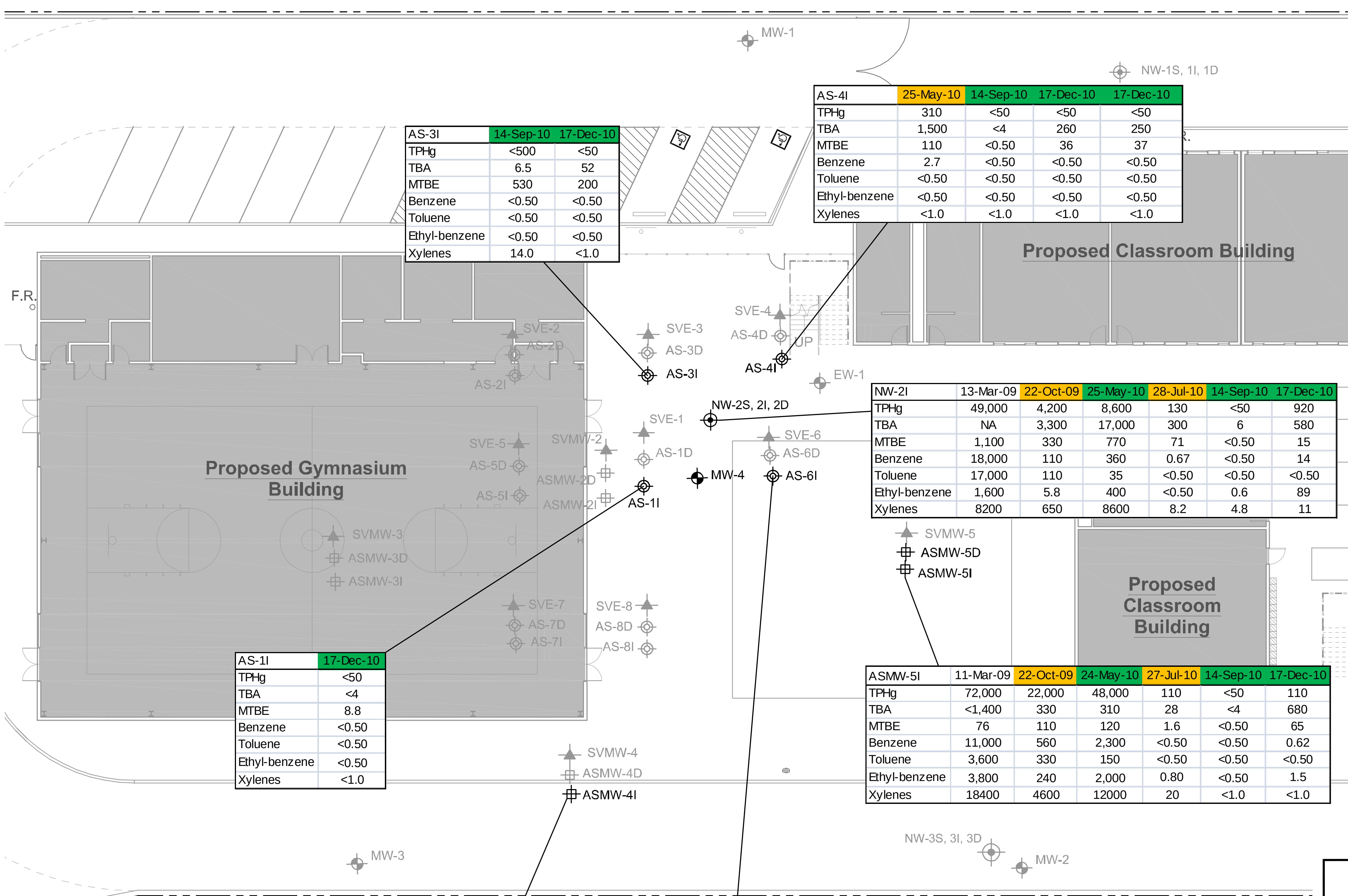
1009 66TH AVENUE, OAKLAND, CALIFORNIA

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

ARCADIS

FIGURE 5

CITY:(Reqd) DIV/GROUP:(Reqd) DB:(Reqd) LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF* G:\ENVCAD\Emeryville\ACTIVE\M009155\001\10000\10001\QTR4-2010-GWS\1009 66th Ave Oakland - Feb2011.dwg LAYOUT: 5 SAVED: 2/14/2011 2:48 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: -- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 2/14/2011 3:16 PM BY: REYES, ALEC



AS-3I	14-Sep-10	17-Dec-10
TPHg	<500	<50
TBA	6.5	52
MTBE	530	200
Benzene	<0.50	<0.50
Toluene	<0.50	<0.50
Ethyl-benzene	<0.50	<0.50
Xylenes	14.0	<1.0

AS-4I	25-May-10	14-Sep-10	17-Dec-10	17-Dec-10
TPHg	310	<50	<50	<50
TBA	1,500	<4	260	250
MTBE	110	<0.50	36	37
Benzene	2.7	<0.50	<0.50	<0.50
Toluene	<0.50	<0.50	<0.50	<0.50
Ethyl-benzene	<0.50	<0.50	<0.50	<0.50
Xylenes	<1.0	<1.0	<1.0	<1.0

NW-2I	13-Mar-09	22-Oct-09	25-May-10	28-Jul-10	14-Sep-10	17-Dec-10
TPHg	49,000	4,200	8,600	130	<50	920
TBA	NA	3,300	17,000	300	6	580
MTBE	1,100	330	770	71	<0.50	15
Benzene	18,000	110	360	0.67	<0.50	14
Toluene	17,000	110	35	<0.50	<0.50	<0.50
Ethyl-benzene	1,600	5.8	400	<0.50	0.6	89
Xylenes	8200	650	8600	8.2	4.8	11

AS-1I	17-Dec-10
TPHg	<50
TBA	<4
MTBE	8.8
Benzene	<0.50
Toluene	<0.50
Ethyl-benzene	<0.50
Xylenes	<1.0

ASMW-5I	11-Mar-09	22-Oct-09	24-May-10	27-Jul-10	14-Sep-10	17-Dec-10
TPHg	72,000	22,000	48,000	110	<50	110
TBA	<1,400	330	310	28	<4	680
MTBE	76	110	120	1.6	<0.50	65
Benzene	11,000	560	2,300	<0.50	<0.50	0.62
Toluene	3,600	330	150	<0.50	<0.50	<0.50
Ethyl-benzene	3,800	240	2,000	0.80	<0.50	1.5
Xylenes	18400	4600	12000	20	<1.0	<1.0

ASMW-4I	11-Mar-09	22-Oct-09	26-May-10	27-Jul-10	14-Sep-10	17-Dec-10
TPHg	9,200	1,900	1,800	940	460	1,000
TBA	<130	<10	<4	<4.0	<4	<4
MTBE	<6.3	<0.50	<0.50	<0.50	<0.50	<0.50
Benzene	38	4.0	4.6	2.9	1.3	2.2
Toluene	<6.3	1	<0.50	<0.50	<0.50	<0.50
Ethyl-benzene	570	75	86	68	14	43
Xylenes	2030	133	90	35	5	110

AS-6I	26-May-09	23-Sep-09	25-May-10	28-Jul-10	14-Sep-10	17-Dec-10
TPHg	42,000	26,000	840	58	<50	700
TBA	<1,000	330	210	450	57	2,000
MTBE	170	1,600	25	45	8.6	80
Benzene	11,000	1,000	23	<0.50	<0.50	3.6
Toluene	780	400	<0.50	1.9	<0.50	1.5
Ethyl-benzene	2,400	230	14	2.7	1.1	21
Xylenes	3,180	630	1.5	8.1	<1.0	15

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

25-May-10 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 16, 2010 shutdown

AS-7I	25-May-10
TPHg	<50

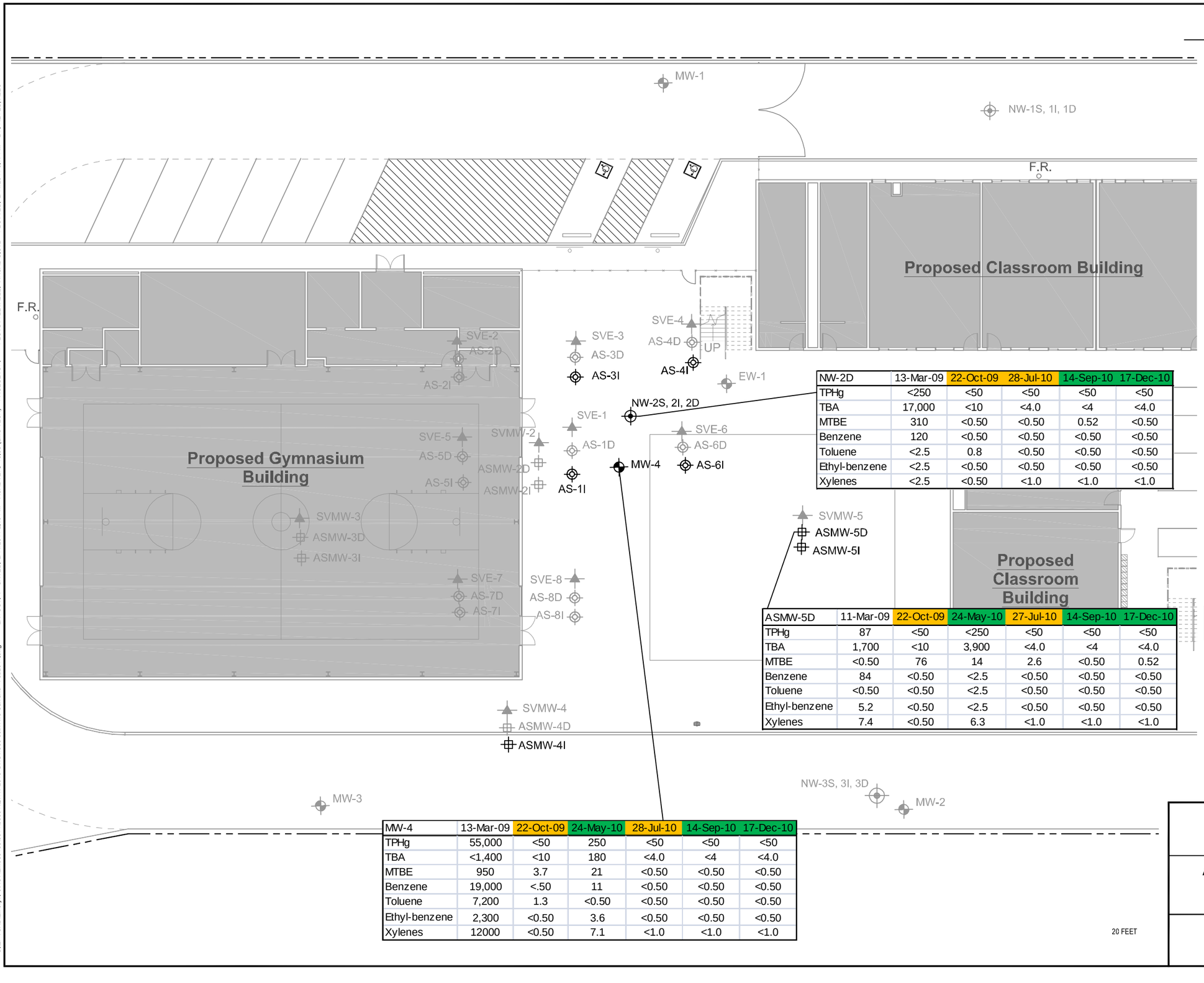
Location ID; Date sample taken; Concentration in micrograms per liter; Chemical

1009 66TH AVENUE, OAKLAND, CALIFORNIA

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

ARCADIS

FIGURE 6



NW-2D	13-Mar-09	22-Oct-09	28-Jul-10	14-Sep-10	17-Dec-10
TPHg	<250	<50	<50	<50	<50
TBA	17,000	<10	<4.0	<4	<4.0
MTBE	310	<0.50	<0.50	0.52	<0.50
Benzene	120	<0.50	<0.50	<0.50	<0.50
Toluene	<2.5	0.8	<0.50	<0.50	<0.50
Ethyl-benzene	<2.5	<0.50	<0.50	<0.50	<0.50
Xylenes	<2.5	<0.50	<1.0	<1.0	<1.0

ASMW-5D	11-Mar-09	22-Oct-09	24-May-10	27-Jul-10	14-Sep-10	17-Dec-10
TPHg	87	<50	<250	<50	<50	<50
TBA	1,700	<10	3,900	<4.0	<4	<4.0
MTBE	<0.50	76	14	2.6	<0.50	0.52
Benzene	84	<0.50	<2.5	<0.50	<0.50	<0.50
Toluene	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50
Ethyl-benzene	5.2	<0.50	<2.5	<0.50	<0.50	<0.50
Xylenes	7.4	<0.50	6.3	<1.0	<1.0	<1.0

MW-4	13-Mar-09	22-Oct-09	24-May-10	28-Jul-10	14-Sep-10	17-Dec-10
TPHg	55,000	<50	250	<50	<50	<50
TBA	<1,400	<10	180	<4.0	<4	<4.0
MTBE	950	3.7	21	<0.50	<0.50	<0.50
Benzene	19,000	<.50	11	<0.50	<0.50	<0.50
Toluene	7,200	1.3	<0.50	<0.50	<0.50	<0.50
Ethyl-benzene	2,300	<0.50	3.6	<0.50	<0.50	<0.50
Xylenes	12000	<0.50	7.1	<1.0	<1.0	<1.0

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

25-May-10 — 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 16, 2010 shutdown

AS-7I	25-May-10
TPHg	<50

Location ID

Date sample taken

Concentration in micrograms per liter

Chemical

1009 66TH AVENUE, OAKLAND, CALIFORNIA

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

ARCADIS

FIGURE 7

CITY:(Reqd) DIV/GROUP:(Reqd) DB:(Reqd) LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF* G:\ENV\CA\Emeryville\ACTIVITY\2010\1000011\QTR4-2010-GWS\1009 66th Ave Oakland - Feb2011.dwg LAYOUT: 7 SAVED: 2/14/2011 2:48 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: -- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 2/14/2011 3:17 PM BY: REYES, ALEC

ARCADIS

Appendix **A**

Laboratory Analytical Reports

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 720-32317-1

Job Description: Aspire Oakland

For:
ARCADIS U.S., Inc
1900 Powell St 12th Floor
Emeryville, CA 94608-1827

Attention: Mr. Ron Goloubow

Approved for release.
Dimple Sharma
Project Manager I
12/22/2010 9:08 AM

Designee for
Afsaneh Salimpour
Project Manager I
afsaneh.salimpour@testamericainc.com
12/22/2010

CA ELAP Certification # 2496
The Chain(s) of Custody are included and are an integral part of this report.
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A trip blank is required to be provided for volatile analyses. If trip blank results are not included in the report, either the trip blank was not submitted or requested to be analyzed.

TestAmerica Laboratories, Inc.
TestAmerica San Francisco 1220 Quarry Lane, Pleasanton, CA 94566
Tel (925) 484-1919 Fax (925) 600-3002 www.testamericainc.com

Comments
No additional comments.

Receipt
All samples were received in good condition within temperature requirements.

GC/MS VOA
No analytical or quality issues were noted.

EXECUTIVE SUMMARY - Detections

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Lab Sample ID / Analyte	Client Sample ID	Result / Qualifier	Reporting Limit	Units	Method
720-32317-1	**AS-4I**				
Methyl tert-butyl ether		36	0.50	ug/L	8260B/CA_LUFTMS
TBA		260	4.0	ug/L	8260B/CA_LUFTMS
720-32317-2	**AS-6I**				
Methyl tert-butyl ether		80	0.50	ug/L	8260B/CA_LUFTMS
Benzene		3.6	0.50	ug/L	8260B/CA_LUFTMS
Ethylbenzene		21	0.50	ug/L	8260B/CA_LUFTMS
Toluene		1.5	0.50	ug/L	8260B/CA_LUFTMS
Xylenes, Total		15	1.0	ug/L	8260B/CA_LUFTMS
Gasoline Range Organics (GRO)-C5-C12		700	50	ug/L	8260B/CA_LUFTMS
TBA		2000	4.0	ug/L	8260B/CA_LUFTMS
720-32317-3	**NW-2S**				
Methyl tert-butyl ether		4.7	0.50	ug/L	8260B/CA_LUFTMS
TBA		21	4.0	ug/L	8260B/CA_LUFTMS
720-32317-4	**NW-2I**				
Methyl tert-butyl ether		15	0.50	ug/L	8260B/CA_LUFTMS
Benzene		14	0.50	ug/L	8260B/CA_LUFTMS
Ethylbenzene		89	1.0	ug/L	8260B/CA_LUFTMS
Xylenes, Total		11	1.0	ug/L	8260B/CA_LUFTMS
Gasoline Range Organics (GRO)-C5-C12		920	100	ug/L	8260B/CA_LUFTMS
TBA		580	4.0	ug/L	8260B/CA_LUFTMS
720-32317-7	**ASMW-5D**				
Methyl tert-butyl ether		0.52	0.50	ug/L	8260B/CA_LUFTMS
720-32317-8	**ASMW-5I**				
Methyl tert-butyl ether		65	0.50	ug/L	8260B/CA_LUFTMS
Benzene		0.62	0.50	ug/L	8260B/CA_LUFTMS
Ethylbenzene		1.5	0.50	ug/L	8260B/CA_LUFTMS
Gasoline Range Organics (GRO)-C5-C12		110	50	ug/L	8260B/CA_LUFTMS
TBA		680	4.0	ug/L	8260B/CA_LUFTMS
720-32317-9	**AS-1I**				
Methyl tert-butyl ether		8.8	0.50	ug/L	8260B/CA_LUFTMS

EXECUTIVE SUMMARY - Detections

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Lab Sample ID / Analyte	Client Sample ID	Result / Qualifier	Reporting Limit	Units	Method
720-32317-10	**AS-3I**				
Methyl tert-butyl ether		200	5.0	ug/L	8260B/CA_LUFTMS
TBA		52	40	ug/L	8260B/CA_LUFTMS
720-32317-11	**ASMW-4I**				
Benzene		2.2	0.50	ug/L	8260B/CA_LUFTMS
Ethylbenzene		43	0.50	ug/L	8260B/CA_LUFTMS
Xylenes, Total		110	1.0	ug/L	8260B/CA_LUFTMS
Gasoline Range Organics (GRO)-C5-C12		1000	50	ug/L	8260B/CA_LUFTMS
720-32317-12	**AS-4I-D**				
Methyl tert-butyl ether		37	0.50	ug/L	8260B/CA_LUFTMS
TBA		250	4.0	ug/L	8260B/CA_LUFTMS

METHOD SUMMARY

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Description	Lab Location	Method	Preparation Method
Matrix Water			
8260B / CA LUFT MS	TAL SF	SW846 8260B/CA_LUFTMS	
Purge and Trap	TAL SF		SW846 5030B

Lab References:

TAL SF = TestAmerica San Francisco

Method References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

SAMPLE SUMMARY

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
720-32317-1	AS-4I	Water	12/14/2010 1045	12/15/2010 1300
720-32317-2	AS-6I	Water	12/14/2010 1125	12/15/2010 1300
720-32317-3	NW-2S	Water	12/14/2010 1200	12/15/2010 1300
720-32317-4	NW-2I	Water	12/14/2010 1230	12/15/2010 1300
720-32317-5	NW-2D	Water	12/14/2010 1300	12/15/2010 1300
720-32317-6	MW-4	Water	12/14/2010 1340	12/15/2010 1300
720-32317-7	ASMW-5D	Water	12/14/2010 1540	12/15/2010 1300
720-32317-8	ASMW-5I	Water	12/15/2010 0915	12/15/2010 1300
720-32317-9	AS-1I	Water	12/15/2010 0940	12/15/2010 1300
720-32317-10	AS-3I	Water	12/15/2010 1010	12/15/2010 1300
720-32317-11	ASMW-4I	Water	12/15/2010 1100	12/15/2010 1300
720-32317-12	AS-4I-D	Water	12/14/2010 1100	12/15/2010 1300
720-32317-13TB	TB121410	Water	12/14/2010 0000	12/15/2010 1300

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Client Sample ID: **AS-4I**

Lab Sample ID: 720-32317-1
Client Matrix: Water

Date Sampled: 12/14/2010 1045
Date Received: 12/15/2010 1300

8260B/CA_LUFTMS 8260B / CA LUFT MS

Method:	8260B/CA_LUFTMS	Analysis Batch: 720-83493	Instrument ID: HP5
Preparation:	5030B		Lab File ID: 121610035.D
Dilution:	1.0		Initial Weight/Volume: 10 mL
Date Analyzed:	12/17/2010 0101		Final Weight/Volume: 10 mL
Date Prepared:	12/17/2010 0101		

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	36		0.50
Benzene	ND		0.50
Ethylbenzene	ND		0.50
Toluene	ND		0.50
Xylenes, Total	ND		1.0
Gasoline Range Organics (GRO)-C5-C12	ND		50
TBA	260		4.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	92		67 - 130
1,2-Dichloroethane-d4 (Surr)	102		67 - 130
Toluene-d8 (Surr)	98		70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Client Sample ID: **AS-6I**

Lab Sample ID: 720-32317-2
Client Matrix: Water

Date Sampled: 12/14/2010 1125
Date Received: 12/15/2010 1300

8260B/CA_LUFTMS 8260B / CA LUFT MS

Method:	8260B/CA_LUFTMS	Analysis Batch: 720-83549	Instrument ID: HP5
Preparation:	5030B		Lab File ID: 121710009.D
Dilution:	1.0		Initial Weight/Volume: 10 mL
Date Analyzed:	12/17/2010 1317		Final Weight/Volume: 10 mL
Date Prepared:	12/17/2010 1317		

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	80		0.50
Benzene	3.6		0.50
Ethylbenzene	21		0.50
Toluene	1.5		0.50
Xylenes, Total	15		1.0
Gasoline Range Organics (GRO)-C5-C12	700		50
TBA	2000		4.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	103		67 - 130
1,2-Dichloroethane-d4 (Surr)	109		67 - 130
Toluene-d8 (Surr)	99		70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Client Sample ID: **NW-2S**

Lab Sample ID: 720-32317-3
Client Matrix: Water

Date Sampled: 12/14/2010 1200
Date Received: 12/15/2010 1300

8260B/CA_LUFTMS 8260B / CA LUFT MS

Method:	8260B/CA_LUFTMS	Analysis Batch: 720-83549	Instrument ID: HP5
Preparation:	5030B		Lab File ID: 121710012.D
Dilution:	1.0		Initial Weight/Volume: 10 mL
Date Analyzed:	12/17/2010 1449		Final Weight/Volume: 10 mL
Date Prepared:	12/17/2010 1449		

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	4.7		0.50
Benzene	ND		0.50
Ethylbenzene	ND		0.50
Toluene	ND		0.50
Xylenes, Total	ND		1.0
Gasoline Range Organics (GRO)-C5-C12	ND		50

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	97		67 - 130
1,2-Dichloroethane-d4 (Surr)	100		67 - 130
Toluene-d8 (Surr)	100		70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Client Sample ID: **NW-2S**

Lab Sample ID: 720-32317-3
Client Matrix: Water

Date Sampled: 12/14/2010 1200
Date Received: 12/15/2010 1300

8260B/CA_LUFTMS 8260B / CA LUFT MS

Method:	8260B/CA_LUFTMS	Analysis Batch: 720-83639	Instrument ID: HP5
Preparation:	5030B		Lab File ID: 122010011.D
Dilution:	1.0		Initial Weight/Volume: 10 mL
Date Analyzed:	12/20/2010 1503		Final Weight/Volume: 10 mL
Date Prepared:	12/20/2010 1503		

Analyte	Result (ug/L)	Qualifier	RL
TBA	21		4.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	94		67 - 130
1,2-Dichloroethane-d4 (Surr)	102		67 - 130
Toluene-d8 (Surr)	98		70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Client Sample ID: **NW-2I**

Lab Sample ID: 720-32317-4
Client Matrix: Water

Date Sampled: 12/14/2010 1230
Date Received: 12/15/2010 1300

8260B/CA_LUFTMS 8260B / CA LUFT MS

Method:	8260B/CA_LUFTMS	Analysis Batch: 720-83549	Instrument ID: HP5
Preparation:	5030B		Lab File ID: 121710022.D
Dilution:	1.0		Initial Weight/Volume: 10 mL
Date Analyzed:	12/17/2010 1955		Final Weight/Volume: 10 mL
Date Prepared:	12/17/2010 1955		

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	15		0.50
Benzene	14		0.50
Toluene	ND		0.50
Xylenes, Total	11		1.0
TBA	580		4.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	101		67 - 130
1,2-Dichloroethane-d4 (Surr)	104		67 - 130
Toluene-d8 (Surr)	99		70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Client Sample ID: **NW-2I**

Lab Sample ID: 720-32317-4
Client Matrix: Water

Date Sampled: 12/14/2010 1230
Date Received: 12/15/2010 1300

8260B/CA_LUFTMS 8260B / CA LUFT MS

Method:	8260B/CA_LUFTMS	Analysis Batch: 720-83606	Instrument ID: HP9
Preparation:	5030B		Lab File ID: 12181017.D
Dilution:	2.0		Initial Weight/Volume: 10 mL
Date Analyzed:	12/18/2010 1753		Final Weight/Volume: 10 mL
Date Prepared:	12/18/2010 1753		

Analyte	Result (ug/L)	Qualifier	RL
Ethylbenzene	89		1.0
Gasoline Range Organics (GRO)-C5-C12	920		100

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	102		67 - 130
1,2-Dichloroethane-d4 (Surr)	101		67 - 130
Toluene-d8 (Surr)	103		70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Client Sample ID: **NW-2D**

Lab Sample ID: 720-32317-5
Client Matrix: Water

Date Sampled: 12/14/2010 1300
Date Received: 12/15/2010 1300

8260B/CA_LUFTMS 8260B / CA LUFT MS

Method:	8260B/CA_LUFTMS	Analysis Batch: 720-83549	Instrument ID: HP5
Preparation:	5030B		Lab File ID: 121710014.D
Dilution:	1.0		Initial Weight/Volume: 10 mL
Date Analyzed:	12/17/2010 1550		Final Weight/Volume: 10 mL
Date Prepared:	12/17/2010 1550		

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		0.50
Benzene	ND		0.50
Ethylbenzene	ND		0.50
Toluene	ND		0.50
Xylenes, Total	ND		1.0
Gasoline Range Organics (GRO)-C5-C12	ND		50
TBA	ND		4.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	99		67 - 130
1,2-Dichloroethane-d4 (Surr)	100		67 - 130
Toluene-d8 (Surr)	99		70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Client Sample ID: **MW-4**

Lab Sample ID: 720-32317-6
Client Matrix: Water

Date Sampled: 12/14/2010 1340
Date Received: 12/15/2010 1300

8260B/CA_LUFTMS 8260B / CA LUFT MS

Method:	8260B/CA_LUFTMS	Analysis Batch: 720-83549	Instrument ID: HP5
Preparation:	5030B		Lab File ID: 121710015.D
Dilution:	1.0		Initial Weight/Volume: 10 mL
Date Analyzed:	12/17/2010 1621		Final Weight/Volume: 10 mL
Date Prepared:	12/17/2010 1621		

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		0.50
Benzene	ND		0.50
Ethylbenzene	ND		0.50
Toluene	ND		0.50
Xylenes, Total	ND		1.0
Gasoline Range Organics (GRO)-C5-C12	ND		50
TBA	ND		4.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	95		67 - 130
1,2-Dichloroethane-d4 (Surr)	102		67 - 130
Toluene-d8 (Surr)	98		70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Client Sample ID: **ASMW-5D**

Lab Sample ID: 720-32317-7
Client Matrix: Water

Date Sampled: 12/14/2010 1540
Date Received: 12/15/2010 1300

8260B/CA_LUFTMS 8260B / CA LUFT MS

Method: 8260B/CA_LUFTMS
Preparation: 5030B
Dilution: 1.0
Date Analyzed: 12/17/2010 1651
Date Prepared: 12/17/2010 1651

Analysis Batch: 720-83549

Instrument ID: HP5
Lab File ID: 121710016.D
Initial Weight/Volume: 10 mL
Final Weight/Volume: 10 mL

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	0.52		0.50
Benzene	ND		0.50
Ethylbenzene	ND		0.50
Toluene	ND		0.50
Xylenes, Total	ND		1.0
Gasoline Range Organics (GRO)-C5-C12	ND		50
TBA	ND		4.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	95		67 - 130
1,2-Dichloroethane-d4 (Surr)	104		67 - 130
Toluene-d8 (Surr)	98		70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Client Sample ID: **ASMW-5I**

Lab Sample ID: 720-32317-8
Client Matrix: Water

Date Sampled: 12/15/2010 0915
Date Received: 12/15/2010 1300

8260B/CA_LUFTMS 8260B / CA LUFT MS

Method:	8260B/CA_LUFTMS	Analysis Batch: 720-83549		Instrument ID:	HP5
Preparation:	5030B			Lab File ID:	121710017.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Date Analyzed:	12/17/2010 1722			Final Weight/Volume:	10 mL
Date Prepared:	12/17/2010 1722				

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	65		0.50
Benzene	0.62		0.50
Ethylbenzene	1.5		0.50
Toluene	ND		0.50
Xylenes, Total	ND		1.0
Gasoline Range Organics (GRO)-C5-C12	110		50
TBA	680		4.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	97		67 - 130
1,2-Dichloroethane-d4 (Surr)	104		67 - 130
Toluene-d8 (Surr)	98		70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Client Sample ID: **AS-1I**

Lab Sample ID: 720-32317-9
Client Matrix: Water

Date Sampled: 12/15/2010 0940
Date Received: 12/15/2010 1300

8260B/CA_LUFTMS 8260B / CA LUFT MS

Method:	8260B/CA_LUFTMS	Analysis Batch: 720-83549		Instrument ID:	HP5
Preparation:	5030B			Lab File ID:	121710018.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Date Analyzed:	12/17/2010 1753			Final Weight/Volume:	10 mL
Date Prepared:	12/17/2010 1753				

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	8.8		0.50
Benzene	ND		0.50
Ethylbenzene	ND		0.50
Toluene	ND		0.50
Xylenes, Total	ND		1.0
Gasoline Range Organics (GRO)-C5-C12	ND		50
TBA	ND		4.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	94		67 - 130
1,2-Dichloroethane-d4 (Surr)	107		67 - 130
Toluene-d8 (Surr)	98		70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Client Sample ID: **AS-3I**

Lab Sample ID: 720-32317-10
Client Matrix: Water

Date Sampled: 12/15/2010 1010
Date Received: 12/15/2010 1300

8260B/CA_LUFTMS 8260B / CA LUFT MS

Method:	8260B/CA_LUFTMS	Analysis Batch: 720-83549	Instrument ID: HP5
Preparation:	5030B		Lab File ID: 121710019.D
Dilution:	10		Initial Weight/Volume: 10 mL
Date Analyzed:	12/17/2010 1823		Final Weight/Volume: 10 mL
Date Prepared:	12/17/2010 1823		

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	200		5.0
Benzene	ND		5.0
Ethylbenzene	ND		5.0
Toluene	ND		5.0
Xylenes, Total	ND		10
Gasoline Range Organics (GRO)-C5-C12	ND		500
TBA	52		40

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	94		67 - 130
1,2-Dichloroethane-d4 (Surr)	104		67 - 130
Toluene-d8 (Surr)	99		70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Client Sample ID: **ASMW-4I**

Lab Sample ID: 720-32317-11
Client Matrix: Water

Date Sampled: 12/15/2010 1100
Date Received: 12/15/2010 1300

8260B/CA_LUFTMS 8260B / CA LUFT MS

Method:	8260B/CA_LUFTMS	Analysis Batch: 720-83549	Instrument ID: HP5
Preparation:	5030B		Lab File ID: 121710020.D
Dilution:	1.0		Initial Weight/Volume: 10 mL
Date Analyzed:	12/17/2010 1854		Final Weight/Volume: 10 mL
Date Prepared:	12/17/2010 1854		

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		0.50
Benzene	2.2		0.50
Ethylbenzene	43		0.50
Toluene	ND		0.50
Xylenes, Total	110		1.0
Gasoline Range Organics (GRO)-C5-C12	1000		50
TBA	ND		4.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	101		67 - 130
1,2-Dichloroethane-d4 (Surr)	104		67 - 130
Toluene-d8 (Surr)	99		70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Client Sample ID: **AS-4I-D**

Lab Sample ID: 720-32317-12
Client Matrix: Water

Date Sampled: 12/14/2010 1100
Date Received: 12/15/2010 1300

8260B/CA_LUFTMS 8260B / CA LUFT MS

Method:	8260B/CA_LUFTMS	Analysis Batch: 720-83549		Instrument ID:	HP5
Preparation:	5030B			Lab File ID:	121710021.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Date Analyzed:	12/17/2010 1925			Final Weight/Volume:	10 mL
Date Prepared:	12/17/2010 1925				

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	37		0.50
Benzene	ND		0.50
Ethylbenzene	ND		0.50
Toluene	ND		0.50
Xylenes, Total	ND		1.0
Gasoline Range Organics (GRO)-C5-C12	ND		50
TBA	250		4.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	94		67 - 130
1,2-Dichloroethane-d4 (Surr)	105		67 - 130
Toluene-d8 (Surr)	99		70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Client Sample ID: **TB121410**

Lab Sample ID: 720-32317-13TB
Client Matrix: Water

Date Sampled: 12/14/2010 0000
Date Received: 12/15/2010 1300

8260B/CA_LUFTMS 8260B / CA LUFT MS

Method: 8260B/CA_LUFTMS
Preparation: 5030B
Dilution: 1.0
Date Analyzed: 12/17/2010 1520
Date Prepared: 12/17/2010 1520

Analysis Batch: 720-83549

Instrument ID: HP5
Lab File ID: 121710013.D
Initial Weight/Volume: 10 mL
Final Weight/Volume: 10 mL

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		0.50
Benzene	ND		0.50
Ethylbenzene	ND		0.50
Toluene	ND		0.50
Xylenes, Total	ND		1.0
Gasoline Range Organics (GRO)-C5-C12	ND		50
TBA	ND		4.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	97		67 - 130
1,2-Dichloroethane-d4 (Surr)	101		67 - 130
Toluene-d8 (Surr)	100		70 - 130

DATA REPORTING QUALIFIERS

Client: ARCADIS U.S., Inc Job Number: 720-32317-1

Lab Section	Qualifier	Description
GC/MS VOA		
	4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
GC/MS VOA					
Analysis Batch:720-83493					
LCS 720-83493/5	Lab Control Sample	T	Water	8260B/CA_LUFT	
LCS 720-83493/7	Lab Control Sample	T	Water	8260B/CA_LUFT	
LCSD 720-83493/6	Lab Control Sample Duplicate	T	Water	8260B/CA_LUFT	
LCSD 720-83493/8	Lab Control Sample Duplicate	T	Water	8260B/CA_LUFT	
MB 720-83493/4	Method Blank	T	Water	8260B/CA_LUFT	
720-32288-A-27 MS	Matrix Spike	T	Water	8260B/CA_LUFT	
720-32288-A-27 MSD	Matrix Spike Duplicate	T	Water	8260B/CA_LUFT	
720-32317-1	AS-4I	T	Water	8260B/CA_LUFT	
Analysis Batch:720-83549					
LCS 720-83549/7	Lab Control Sample	T	Water	8260B/CA_LUFT	
LCS 720-83549/9	Lab Control Sample	T	Water	8260B/CA_LUFT	
LCSD 720-83549/10	Lab Control Sample Duplicate	T	Water	8260B/CA_LUFT	
LCSD 720-83549/8	Lab Control Sample Duplicate	T	Water	8260B/CA_LUFT	
MB 720-83549/6	Method Blank	T	Water	8260B/CA_LUFT	
720-32317-2	AS-6I	T	Water	8260B/CA_LUFT	
720-32317-2MS	Matrix Spike	T	Water	8260B/CA_LUFT	
720-32317-2MSD	Matrix Spike Duplicate	T	Water	8260B/CA_LUFT	
720-32317-3	NW-2S	T	Water	8260B/CA_LUFT	
720-32317-4	NW-2I	T	Water	8260B/CA_LUFT	
720-32317-5	NW-2D	T	Water	8260B/CA_LUFT	
720-32317-6	MW-4	T	Water	8260B/CA_LUFT	
720-32317-7	ASMW-5D	T	Water	8260B/CA_LUFT	
720-32317-8	ASMW-5I	T	Water	8260B/CA_LUFT	
720-32317-9	AS-1I	T	Water	8260B/CA_LUFT	
720-32317-10	AS-3I	T	Water	8260B/CA_LUFT	
720-32317-11	ASMW-4I	T	Water	8260B/CA_LUFT	
720-32317-12	AS-4I-D	T	Water	8260B/CA_LUFT	
720-32317-13TB	TB121410	T	Water	8260B/CA_LUFT	
Analysis Batch:720-83606					
LCS 720-83606/5	Lab Control Sample	T	Water	8260B/CA_LUFT	
LCS 720-83606/7	Lab Control Sample	T	Water	8260B/CA_LUFT	
LCSD 720-83606/6	Lab Control Sample Duplicate	T	Water	8260B/CA_LUFT	
LCSD 720-83606/8	Lab Control Sample Duplicate	T	Water	8260B/CA_LUFT	
MB 720-83606/4	Method Blank	T	Water	8260B/CA_LUFT	
720-32317-4	NW-2I	T	Water	8260B/CA_LUFT	
720-32317-B-12 MSMS	Matrix Spike	T	Water	8260B/CA_LUFT	
720-32317-B-12 MSDMSD	Matrix Spike Duplicate	T	Water	8260B/CA_LUFT	

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
GC/MS VOA					
Analysis Batch:720-83639					
LCS 720-83639/5	Lab Control Sample	T	Water	8260B/CA_LUFT	
LCS 720-83639/7	Lab Control Sample	T	Water	8260B/CA_LUFT	
LCSD 720-83639/6	Lab Control Sample Duplicate	T	Water	8260B/CA_LUFT	
LCSD 720-83639/8	Lab Control Sample Duplicate	T	Water	8260B/CA_LUFT	
MB 720-83639/4	Method Blank	T	Water	8260B/CA_LUFT	
720-32317-3	NW-2S	T	Water	8260B/CA_LUFT	
720-32333-A-2 MS	Matrix Spike	T	Water	8260B/CA_LUFT	
720-32333-A-2 MSD	Matrix Spike Duplicate	T	Water	8260B/CA_LUFT	

Report Basis

T = Total

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Method Blank - Batch: 720-83493

Method: 8260B/CA_LUFTMS
Preparation: 5030B

Lab Sample ID: MB 720-83493/4
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 12/16/2010 1550
Date Prepared: 12/16/2010 1550

Analysis Batch: 720-83493
Prep Batch: N/A
Units: ug/L

Instrument ID: HP5
Lab File ID: 121610017.D
Initial Weight/Volume: 10 mL
Final Weight/Volume: 10 mL

Analyte	Result	Qual	RL
Methyl tert-butyl ether	ND		0.50
Benzene	ND		0.50
Ethylbenzene	ND		0.50
Toluene	ND		0.50
m-Xylene & p-Xylene	ND		1.0
o-Xylene	ND		0.50
Xylenes, Total	ND		1.0
Gasoline Range Organics (GRO)-C5-C12	ND		50
TBA	ND		4.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	98	67 - 130
1,2-Dichloroethane-d4 (Surr)	100	67 - 130
Toluene-d8 (Surr)	101	70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 720-83493

Method: 8260B/CA_LUFTMS
Preparation: 5030B

LCS Lab Sample ID:	LCS 720-83493/5	Analysis Batch:	720-83493	Instrument ID:	HP5
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	121610018.D
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	10 mL
Date Analyzed:	12/16/2010 1620			Final Weight/Volume:	10 mL
Date Prepared:	12/16/2010 1620				

LCSD Lab Sample ID:	LCSD 720-83493/6	Analysis Batch:	720-83493	Instrument ID:	HP5
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	121610019.D
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	10 mL
Date Analyzed:	12/16/2010 1651			Final Weight/Volume:	10 mL
Date Prepared:	12/16/2010 1651				

	% Rec.					
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Methyl tert-butyl ether	123	104	62 - 130	17	20		
Benzene	103	103	82 - 127	1	20		
Ethylbenzene	107	105	86 - 135	3	20		
Toluene	103	102	83 - 129	2	20		
m-Xylene & p-Xylene	105	106	70 - 142	1	20		
o-Xylene	110	108	89 - 136	2	20		
TBA	100	103	82 - 116	3	20		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	100	100	67 - 130
1,2-Dichloroethane-d4 (Surr)	96	95	67 - 130
Toluene-d8 (Surr)	103	104	70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 720-83493

Method: 8260B/CA_LUFTMS
Preparation: 5030B

LCS Lab Sample ID:	LCS 720-83493/7	Analysis Batch:	720-83493	Instrument ID:	HP5
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	121610020.D
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	10 mL
Date Analyzed:	12/16/2010 1722			Final Weight/Volume:	10 mL
Date Prepared:	12/16/2010 1722				

LCSD Lab Sample ID:	LCSD 720-83493/8	Analysis Batch:	720-83493	Instrument ID:	HP5
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	121610021.D
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	10 mL
Date Analyzed:	12/16/2010 1752			Final Weight/Volume:	10 mL
Date Prepared:	12/16/2010 1752				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Gasoline Range Organics (GRO)-C5-C12	99	94	62 - 117	5	20		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	125	105	67 - 130
1,2-Dichloroethane-d4 (Surr)	103	104	67 - 130
Toluene-d8 (Surr)	104	103	70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 720-83493

Method: 8260B/CA_LUFTMS
Preparation: 5030B

MS Lab Sample ID:	720-32288-A-27 MS	Analysis Batch:	720-83493	Instrument ID:	HP5
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	121610025.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Date Analyzed:	12/16/2010 1954			Final Weight/Volume:	10 mL
Date Prepared:	12/16/2010 1954				

MSD Lab Sample ID:	720-32288-A-27 MSD	Analysis Batch:	720-83493	Instrument ID:	HP5
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	121610026.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Date Analyzed:	12/16/2010 2025			Final Weight/Volume:	10 mL
Date Prepared:	12/16/2010 2025				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Methyl tert-butyl ether	101	103	60 - 138	2	20		
Benzene	102	101	60 - 140	1	20		
Ethylbenzene	107	105	60 - 140	2	20		
Toluene	104	102	60 - 140	2	20		
m-Xylene & p-Xylene	104	103	60 - 140	2	20		
o-Xylene	108	106	60 - 140	2	20		
TBA	103	97	60 - 140	6	20		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
4-Bromofluorobenzene	99	98	67 - 130
1,2-Dichloroethane-d4 (Surr)	98	98	67 - 130
Toluene-d8 (Surr)	101	101	70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Method Blank - Batch: 720-83549

Method: 8260B/CA_LUFTMS
Preparation: 5030B

Lab Sample ID: MB 720-83549/6
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 12/17/2010 1032
Date Prepared: 12/17/2010 1032

Analysis Batch: 720-83549
Prep Batch: N/A
Units: ug/L

Instrument ID: HP5
Lab File ID: 121710004.D
Initial Weight/Volume: 10 mL
Final Weight/Volume: 10 mL

Analyte	Result	Qual	RL
Methyl tert-butyl ether	ND		0.50
Benzene	ND		0.50
Ethylbenzene	ND		0.50
Toluene	ND		0.50
m-Xylene & p-Xylene	ND		1.0
o-Xylene	ND		0.50
Xylenes, Total	ND		1.0
Gasoline Range Organics (GRO)-C5-C12	ND		50
TBA	ND		4.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	107	67 - 130
1,2-Dichloroethane-d4 (Surr)	100	67 - 130
Toluene-d8 (Surr)	101	70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 720-83549

Method: 8260B/CA_LUFTMS
Preparation: 5030B

LCS Lab Sample ID:	LCS 720-83549/7	Analysis Batch:	720-83549	Instrument ID:	HP5
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	121710005.D
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	10 mL
Date Analyzed:	12/17/2010 1103			Final Weight/Volume:	10 mL
Date Prepared:	12/17/2010 1103				

LCSD Lab Sample ID:	LCSD 720-83549/8	Analysis Batch:	720-83549	Instrument ID:	HP5
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	121710006.D
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	10 mL
Date Analyzed:	12/17/2010 1134			Final Weight/Volume:	10 mL
Date Prepared:	12/17/2010 1134				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Methyl tert-butyl ether	103	105	62 - 130	1	20		
Benzene	106	106	82 - 127	0	20		
Ethylbenzene	110	110	86 - 135	0	20		
Toluene	108	109	83 - 129	1	20		
m-Xylene & p-Xylene	108	108	70 - 142	0	20		
o-Xylene	114	113	89 - 136	1	20		
TBA	97	101	82 - 116	4	20		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	110	110	67 - 130
1,2-Dichloroethane-d4 (Surr)	98	98	67 - 130
Toluene-d8 (Surr)	104	104	70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 720-83549

Method: 8260B/CA_LUFTMS
Preparation: 5030B

LCS Lab Sample ID:	LCS 720-83549/9	Analysis Batch:	720-83549	Instrument ID:	HP5
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	121710007.D
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	10 mL
Date Analyzed:	12/17/2010 1205			Final Weight/Volume:	10 mL
Date Prepared:	12/17/2010 1205				

LCSD Lab Sample ID:	LCSD 720-83549/10	Analysis Batch:	720-83549	Instrument ID:	HP5
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	121710008.D
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	10 mL
Date Analyzed:	12/17/2010 1236			Final Weight/Volume:	10 mL
Date Prepared:	12/17/2010 1236				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Gasoline Range Organics (GRO)-C5-C12	100	102	62 - 117	2	20		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	101	98	67 - 130
1,2-Dichloroethane-d4 (Surr)	104	103	67 - 130
Toluene-d8 (Surr)	101	103	70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 720-83549

Method: 8260B/CA_LUFTMS
Preparation: 5030B

MS Lab Sample ID:	720-32317-2	Analysis Batch:	720-83549	Instrument ID:	HP5
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	121710010.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Date Analyzed:	12/17/2010 1347			Final Weight/Volume:	10 mL
Date Prepared:	12/17/2010 1347				

MSD Lab Sample ID:	720-32317-2	Analysis Batch:	720-83549	Instrument ID:	HP5
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	121710011.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Date Analyzed:	12/17/2010 1418			Final Weight/Volume:	10 mL
Date Prepared:	12/17/2010 1418				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Methyl tert-butyl ether	107	113	60 - 138	1	20		
Benzene	102	104	60 - 140	1	20		
Ethylbenzene	101	105	60 - 140	2	20		
Toluene	102	106	60 - 140	3	20		
m-Xylene & p-Xylene	103	105	60 - 140	2	20		
o-Xylene	107	110	60 - 140	2	20		
TBA	106	99	60 - 140	1	20	4	4

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
4-Bromofluorobenzene	101	101	67 - 130
1,2-Dichloroethane-d4 (Surr)	102	99	67 - 130
Toluene-d8 (Surr)	103	102	70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Method Blank - Batch: 720-83606

Method: 8260B/CA_LUFTMS
Preparation: 5030B

Lab Sample ID: MB 720-83606/4
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 12/18/2010 1054
Date Prepared: 12/18/2010 1054

Analysis Batch: 720-83606
Prep Batch: N/A
Units: ug/L

Instrument ID: HP9
Lab File ID: 12181005.D
Initial Weight/Volume: 10 mL
Final Weight/Volume: 10 mL

Analyte	Result	Qual	RL
Methyl tert-butyl ether	ND		0.50
Benzene	ND		0.50
Ethylbenzene	ND		0.50
Toluene	ND		0.50
m-Xylene & p-Xylene	ND		1.0
o-Xylene	ND		0.50
Xylenes, Total	ND		1.0
Gasoline Range Organics (GRO)-C5-C12	ND		50
TBA	ND		4.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	99	67 - 130
1,2-Dichloroethane-d4 (Surr)	115	67 - 130
Toluene-d8 (Surr)	108	70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 720-83606

Method: 8260B/CA_LUFTMS
Preparation: 5030B

LCS Lab Sample ID:	LCS 720-83606/5	Analysis Batch:	720-83606	Instrument ID:	HP9
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	12181006.D
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	10 mL
Date Analyzed:	12/18/2010 1140			Final Weight/Volume:	10 mL
Date Prepared:	12/18/2010 1140				

LCSD Lab Sample ID:	LCSD 720-83606/6	Analysis Batch:	720-83606	Instrument ID:	HP9
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	12181007.D
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	10 mL
Date Analyzed:	12/18/2010 1213			Final Weight/Volume:	10 mL
Date Prepared:	12/18/2010 1213				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Methyl tert-butyl ether	116	109	62 - 130	6	20		
Benzene	105	104	82 - 127	1	20		
Ethylbenzene	109	109	86 - 135	0	20		
Toluene	107	107	83 - 129	0	20		
m-Xylene & p-Xylene	116	116	70 - 142	0	20		
o-Xylene	117	116	89 - 136	1	20		
TBA	104	105	82 - 116	0	20		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	103	104	67 - 130
1,2-Dichloroethane-d4 (Surr)	100	97	67 - 130
Toluene-d8 (Surr)	102	102	70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 720-83606

Method: 8260B/CA_LUFTMS
Preparation: 5030B

LCS Lab Sample ID:	LCS 720-83606/7	Analysis Batch:	720-83606	Instrument ID:	HP9
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	12181008.D
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	10 mL
Date Analyzed:	12/18/2010 1245			Final Weight/Volume:	10 mL
Date Prepared:	12/18/2010 1245				

LCSD Lab Sample ID:	LCSD 720-83606/8	Analysis Batch:	720-83606	Instrument ID:	HP9
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	12181009.D
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	10 mL
Date Analyzed:	12/18/2010 1318			Final Weight/Volume:	10 mL
Date Prepared:	12/18/2010 1318				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Gasoline Range Organics (GRO)-C5-C12	96	88	62 - 117	9	20		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	101	100	67 - 130
1,2-Dichloroethane-d4 (Surr)	102	103	67 - 130
Toluene-d8 (Surr)	105	103	70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 720-83606

Method: 8260B/CA_LUFTMS
Preparation: 5030B

MS Lab Sample ID:	720-32317-B-12 MS	Analysis Batch:	720-83606	Instrument ID:	HP9
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	12181015.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Date Analyzed:	12/18/2010 1647			Final Weight/Volume:	10 mL
Date Prepared:	12/18/2010 1647				

MSD Lab Sample ID:	720-32317-B-12 MSD	Analysis Batch:	720-83606	Instrument ID:	HP9
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	12181016.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Date Analyzed:	12/18/2010 1720			Final Weight/Volume:	10 mL
Date Prepared:	12/18/2010 1720				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Methyl tert-butyl ether	127	130	60 - 138	1	20		
Benzene	99	99	60 - 140	0	20		
Ethylbenzene	102	102	60 - 140	0	20		
Toluene	99	101	60 - 140	1	20		
m-Xylene & p-Xylene	109	109	60 - 140	0	20		
o-Xylene	111	111	60 - 140	0	20		
TBA	104	105	60 - 140	1	20		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
4-Bromofluorobenzene	105	104	67 - 130
1,2-Dichloroethane-d4 (Surr)	100	100	67 - 130
Toluene-d8 (Surr)	103	102	70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Method Blank - Batch: 720-83639

Method: 8260B/CA_LUFTMS
Preparation: 5030B

Lab Sample ID: MB 720-83639/4
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 12/20/2010 1147
Date Prepared: 12/20/2010 1147

Analysis Batch: 720-83639
Prep Batch: N/A
Units: ug/L

Instrument ID: HP5
Lab File ID: 122010005.D
Initial Weight/Volume: 10 mL
Final Weight/Volume: 10 mL

Analyte	Result	Qual	RL
Methyl tert-butyl ether	ND		0.50
Benzene	ND		0.50
Ethylbenzene	ND		0.50
Toluene	ND		0.50
m-Xylene & p-Xylene	ND		1.0
o-Xylene	ND		0.50
Xylenes, Total	ND		1.0
Gasoline Range Organics (GRO)-C5-C12	ND		50
TBA	ND		4.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	95	67 - 130
1,2-Dichloroethane-d4 (Surr)	105	67 - 130
Toluene-d8 (Surr)	98	70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 720-83639

Method: 8260B/CA_LUFTMS
Preparation: 5030B

LCS Lab Sample ID:	LCS 720-83639/5	Analysis Batch:	720-83639	Instrument ID:	HP5
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	122010006.D
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	10 mL
Date Analyzed:	12/20/2010 1218			Final Weight/Volume:	10 mL
Date Prepared:	12/20/2010 1218				

LCSD Lab Sample ID:	LCSD 720-83639/6	Analysis Batch:	720-83639	Instrument ID:	HP5
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	122010007.D
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	10 mL
Date Analyzed:	12/20/2010 1248			Final Weight/Volume:	10 mL
Date Prepared:	12/20/2010 1248				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Methyl tert-butyl ether	102	100	62 - 130	2	20		
Benzene	99	102	82 - 127	3	20		
Ethylbenzene	103	105	86 - 135	1	20		
Toluene	99	100	83 - 129	0	20		
m-Xylene & p-Xylene	102	103	70 - 142	1	20		
o-Xylene	106	110	89 - 136	4	20		
TBA	96	110	82 - 116	13	20		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	98	98	67 - 130
1,2-Dichloroethane-d4 (Surr)	105	104	67 - 130
Toluene-d8 (Surr)	102	100	70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 720-83639

Method: 8260B/CA_LUFTMS
Preparation: 5030B

LCS Lab Sample ID:	LCS 720-83639/7	Analysis Batch:	720-83639	Instrument ID:	HP5
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	122010008.D
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	10 mL
Date Analyzed:	12/20/2010 1319			Final Weight/Volume:	10 mL
Date Prepared:	12/20/2010 1319				

LCSD Lab Sample ID:	LCSD 720-83639/8	Analysis Batch:	720-83639	Instrument ID:	HP5
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	122010009.D
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	10 mL
Date Analyzed:	12/20/2010 1349			Final Weight/Volume:	10 mL
Date Prepared:	12/20/2010 1349				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Gasoline Range Organics (GRO)-C5-C12	100	98	62 - 117	1	20		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	101	103	67 - 130
1,2-Dichloroethane-d4 (Surr)	104	104	67 - 130
Toluene-d8 (Surr)	101	101	70 - 130

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 720-83639

Method: 8260B/CA_LUFTMS
Preparation: 5030B

MS Lab Sample ID:	720-32333-A-2 MS	Analysis Batch:	720-83639	Instrument ID:	HP5
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	122010018.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Date Analyzed:	12/20/2010 1839			Final Weight/Volume:	10 mL
Date Prepared:	12/20/2010 1839				

MSD Lab Sample ID:	720-32333-A-2 MSD	Analysis Batch:	720-83639	Instrument ID:	HP5
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	122010019.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Date Analyzed:	12/20/2010 1909			Final Weight/Volume:	10 mL
Date Prepared:	12/20/2010 1909				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Methyl tert-butyl ether	96	111	60 - 138	15	20		
Benzene	103	103	60 - 140	0	20		
Ethylbenzene	106	104	60 - 140	2	20		
Toluene	106	106	60 - 140	1	20		
m-Xylene & p-Xylene	104	99	60 - 140	5	20		
o-Xylene	107	105	60 - 140	2	20		
TBA	95	95	60 - 140	0	20		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
4-Bromofluorobenzene	106	103	67 - 130
1,2-Dichloroethane-d4 (Surr)	97	101	67 - 130
Toluene-d8 (Surr)	101	105	70 - 130

720-32317

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TESTAMERICA San Francisco Chain of Custody

1220 Quarry Lane • Pleasanton CA 94566-4756

Phone: (925) 484-1919 • Fax: (925) 600-3002

Reference #: 128656

Date 12/14/10 Page 1 of 2

Report To

Attn: Ron Goloubow

Company: Arcadis - US

Address: 1900 Powell St. 11th Floor

Phone: 510.596.9558 Email: Ron.Goloubow@arcadis-us.com

Bill To:

Sampled By: Darrell Smolka

Attn:

Phone: 510.301.9849

Analysis Request

Sample ID	Date	Time	Matrix	Preserv	TPH EPA - 8260B Gas w/ BTEX MTBE	TEPH EPA 8015M* Silica Gel / Diesel / Motor Oil / Other	EPA 8260B: Gas BTEX / 5 Oxygenates / DCA, EDB / Ethanol	(HVOCs) EPA 8021 by 8260B	Volatile Organics GC/MS (VOCs) EPA 8260B / 624	Semivolatiles GC/MS EPA 8270 / 625	Oil and Grease Petroleum (EPA 1664) / Total	Pesticides EPA 8081 / 608 PCBs EPA 8082 / 608	PNAs by 8270 / 8310	CAM17 Metals (EPA 6010/7470/7471)	Metals: Lead / LUFT / RCRA Other:	Low Level Metals by EPA 200.8/6020 (ICP-MS):	W.E.T (STLC) / TCLP	Hexavalent Chromium / pH (24h hold time for H_2O)	Spec. Cond. Alkalinity / TSS / TDS	Anions: Cl / SO_4 / NO_3 / F / Br / NO_2 / PO_4	TBA (8260)				Number of Containers
1 AS-4I	12/14	1045	W	HCl	X		X														X				3
2 AS-6I		1125																							3
3 NW-2S		1200																							3
4 NW-2I		1230																							3
5 NW-2D		1300																							3
6 MW-4		1340																							3
7 ASMW-5D		1540																							3
8 ASMW-5I	12/15	0915																							3
9 AS-1I	12/15	0940																							3
10 AS-3I	12/15	1010	W	HCl	X		X														X				3

Project Info.

Project Name: Aspire

Project#: EM009155.0010

PO#:

Credit Card#:

Sample Receipt

of Containers: 38

Head Space: N-A

Temp: Iced 2.3 °C

Conforms to record:

TAT: 5 Day | 3 Day | 2 Day | 1 Day | Other: Standard

Report: ☒ Routine ☐ Level 3 ☐ Level 4 ☐ EDD ☐ State Tank Fund EDF

Special Instructions / Comments: ☐ Global ID

Please sample only TBA & MTBE under Oxygenates

See Terms and Conditions on reverse

*TestAmerica SF reports 8015M from C_8-C_{24} (industry norm). Default for 8015B is C_{10}-C_{28}

1) Relinquished by:	2) Relinquished by:	3) Relinquished by:
Signature: [illegible] Time: 1220	Signature: [illegible] Time: 1800	Signature: Time:
Printed Name: Darrell Smolka Date: 12/15/10	Printed Name: Ed Martinez Date: 12.15.10	Printed Name: Date:
Company: Arcadis-US	Company: TestAmerica	Company:

1) Received by:	2) Received by:	3) Received by:
Signature: [illegible] Time: 1220	Signature: [illegible] Time: 1300	Signature: Time:
Printed Name: Ed Martin 12-15-10 Date:	Printed Name: Mullen 12-15-10 Date:	Printed Name: Date:
Company: TASF	Company:	Company:

Rev09/09

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

720-32317

TESTAMERICA San Francisco Chain of Custody
1220 Quarry Lane • Pleasanton CA 94566-4756
Phone: (925) 484-1919 • Fax: (925) 600-3002

Reference #: 128654

Date 12/14/10 Page 2 of 2

Report To

Attn: Ron Goloubow
Company: Arcadis-US
Address: 1900 Powell St. 11th Floor
Phone: 510.596.9550 Email: Ron.Goloubow@arcadis
Bill To:
Sampled By: Darrell Smolka
Attn:
Phone: 510.301.9849

Analysis Request

Sample ID	Date	Time	Matrix	Preserv	TPH EPA 8260B ☐ Gas w/ ☐ BTEX ☐ MTBE	TEPH EPA 8015M* ☐ Silica Gel ☐ Diesel ☐ Motor Oil ☐ Other ___	EPA 8260B: ☐ Gas ☐ BTEX ☐ Oxygenates ☐ DCA, EDB ☐ Ethanol	(HVOCs) EPA 8021 by 8260B	Volatile Organics GC/MS (VOCs) ☐ EPA 8260B ☐ 624	Semivolatiles GC/MS ☐ EPA 8270 ☐ 625	Oil and Grease ☐ Petroleum (EPA 1664) ☐ Total	Pesticides ☐ EPA 8081 ☐ 608 PCBs ☐ EPA 8082 ☐ 608	PNAs by ☐ 8270 ☐ 8310	CAM17 Metals (EPA 6010/7470/7471)	Metals: ☐ Lead ☐ LUFT ☐ RCRA ☐ Other: ___	Low Level Metals by EPA 200.8/6020 (ICP-MS): ___	☐ W.E.T (STLC) ☐ TCLP	☐ Hexavalent Chromium ☐ pH (24h hold time for H_2O)	☐ Spec. Cond. ☐ Alkalinity ☐ TSS ☐ TDS	Anions: ☐ Cl ☐ SO_4 ☐ NO_3 ☐ F ☐ Br ☐ NO_2 ☐ PO_4	TBA (8260)				Number of Containers
11 AS MW-4I	12/15	1100	W	HCl	X		X														X					
12 AS-4I-D	12/14	1100	W	HCl	↓		↓														↓					
13 TB 121410	12/14		W	HCl	↓		↓														↓					

Project Info

Project Name: Aspire
Project#: EM091555.0010
PO#:
Credit Card#:

Sample Receipt

of Containers: 38
Head Space: N/A
Temp: Iced 2.3°C
Conforms to record:

TAT: 5 Day | 3 Day | 2 Day | 1 Day | Other: Standard

Report: ☒ Routine ☐ Level 3 ☐ Level 4 ☐ EDD ☐ State Tank Fund EDF

Special Instructions / Comments: ☐ Global ID ___

Please Sample Only TBA & MTBE under Oxygenates.

See Terms and Conditions on reverse
TestAmerica SF reports 8015M from C_6-C_{24} (industry norm). Default for 8015B is C_{10}-C_{28}

1) Relinquished by:	2) Relinquished by:	3) Relinquished by:
Signature: [illegible] Time: 1220	Signature: [illegible] Time: 1300	Signature: Time:
Printed Name: Darrell Smolka Date: 12/15/10	Printed Name: [illegible] Date: 12/15/10	Printed Name: Date:
Company: Arcadis-US	Company: TASF	Company:

1) Received by:	2) Received by:	3) Received by:
Signature: [illegible] Time: 1220	Signature: [illegible] Time: 1300	Signature: Time:
Printed Name: Ed Martinez Date: 12.15.10	Printed Name: [illegible] Date: 12-15-10	Printed Name: Date:
Company: TASF	Company: [illegible]	Company:

Rev09/09

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Login Sample Receipt Check List

Client: ARCADIS U.S., Inc

Job Number: 720-32317-1

Login Number: 32317

List Source: TestAmerica San Francisco

Creator: Mullen, Joan

List Number: 1

Question	T / F/ NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

ARCADIS

Appendix **B**

Field Logs

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project	Aspire				
Project Number	EM009155.0010	Site Location	Oakland	Well ID	AS-4I
Date	14-Dec-10	Sampled By	Darrell Smolko		
Sampling Time	1045	Recorded By	Darrell Smolko		
Weather	Rain, Cool	Coded Replicate No.			

Instrument Identification

Water Quality Meter(s) _____ Serial # _____

Casing Material		Purge Method	GeoPump		
Casing Diameter	2"	Screen Interval (ft bmp)	Top	Bottom	
Sounded Depth (ft bmp)		Pump Intake Depth (ft bmp)			
Depth to Water (ft bmp)		Purge Time	Start	Finish	

Field Parameter Measurements During Purging

Time	Depth to Water (ft bmp)	Minutes Elasped	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm)[1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	
1020	3.23	–	–							Start Purge
1030	7.50	10	0.3	18.53	7.12	.970	50	6.32	8.9	
1033	7.57	13	0.5	18.63	7.30	.972	51	6.19	9.0	
1036	7.80	16	0.8	18.57	7.33	.975	51	6.17	9.9	
1040	8.51	19	1.0	18.69	7.37	1.024	49	6.11	15.3	
1045									Sampled	

Collected Sample Condition Color_____ Odor_____ Appearance_____

Parameter	Container	No.	Preservative

PID Reading _____

Comments _____

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project	Aspire				
Project Number	EM009155.0010	Site Location	Oakland	Well ID	AS-6I
Date	14-Dec-10	Sampled By	Darrell Smolko		
Sampling Time	1125	Recorded By	Darrell Smolko		
Weather	Rain, Cool	Coded Replicate No.			

Instrument Identification

Water Quality Meter(s) _____ Serial # _____

Casing Material		Purge Method	GeoPump		
Casing Diameter	2"	Screen Interval (ft bmp)	Top	Bottom	
Sounded Depth (ft bmp)	2.16	Pump Intake Depth (ft bmp)			
Depth to Water (ft bmp)		Purge Time	Start	Finish	

Field Parameter Measurements During Purging

Time	Depth to Water (ft bmp)	Minutes Elasped	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm)[1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)
1102	2.16							Start	Purge
1112	2.36	10	0.4	18.95	7.00	1,179	-51	0.25	8.0
1115	2.37	13	0.6	19.00	7.00	1,180	-55	0.24	11.0
1118	2.38	16	0.8	19.01	6.99	1,184	-58	0.22	15.0
1125								Sampled	

Collected Sample Condition Color _____ Odor _____ Appearance _____

Parameter	Container	No.	Preservative

PID Reading _____

Comments _____

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project	Aspire				
Project Number	EM009155.0010	Site Location	Oakland	Well ID	MW-25
Date	14-Dec-10	Sampled By	Darrell Smolko		
Sampling Time	1200	Recorded By	Darrell Smolko		
Weather	Rain, Cool	Coded Replicate No.			

Instrument Identification

Water Quality Meter(s) _____ Serial # _____

Casing Material		Purge Method	GeoPump		
Casing Diameter	2"	Screen Interval (ft bmp)	Top _____	Bottom	_____
Sounded Depth (ft bmp)	~~1.80~~	Pump Intake Depth (ft bmp)	_____		_____
Depth to Water (ft bmp)	1.80	Purge Time	Start _____	Finish	_____

Field Parameter Measurements During Purging

Time	Depth to Water (ft bmp)	Minutes Elasped	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)
1132	1.80						Start Purge		
1142	1.86	10	0.4	15.97	6.96	0.942	-58	0.34	19.1
1145	1.88	13	0.6	15.72	7.07	0.791	-55	0.66	15.5
1148	1.88	16	0.7	15.65	7.12	0.768	-54	0.80	12.5
1151	1.88	19	1.0	15.63	7.15	0.759	-55	0.85	13.7
1154	1.88	22	1.1	15.58	7.17	0.739	-54	0.93	10.7
1157	1.88	25	1.3	15.51	7.20	0.716	-53	0.95	9.2
1200								Sampled	

Collected Sample Condition Color_____ Odor_____ Appearance_____

Parameter	Container	No.	Preservative

PID Reading _____

Comments _____

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project	Aspire				
Project Number	EM009155.0010	Site Location	Oakland	Well ID	NW-2I
Date	14-Dec-10	Sampled By	Darrell Smolko		
Sampling Time	1230	Recorded By	Darrell Smolko		
Weather	Rain, Cool	Coded Replicate No.			

Instrument Identification

Water Quality Meter(s) _____ Serial # _____

Casing Material		Purge Method	GeoPump		
Casing Diameter	2"	Screen Interval (ft bmp)	Top	Bottom	
Sounded Depth (ft bmp)		Pump Intake Depth (ft bmp)			
Depth to Water (ft bmp)	4.31	Purge Time	Start	Finish	

Field Parameter Measurements During Purging

Time	Depth to Water (ft bmp)	Minutes Elasped	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	
1202	4.31							Start Purge		
1212	6.55	10	0.5	18.37	7.29	1.337	-73	0.82	47.2	
1215	6.70	13	0.7	18.48	7.24	1.381	-104	0.66	35.3	
1218	6.72	16	0.9	18.75	7.12	1.540	-115	0.32	459	
1221	6.74	19	1.1	18.85	7.10	1.560	-117	0.25	110	
1224	6.84	22	1.3	18.97	7.13	1.530	-120	0.23	148	*
1230								Sampled		

Collected Sample Condition Color_____ Odor_____ Appearance_____

Parameter	Container	No.	Preservative

PID Reading _____

Comments *Turb Sensor appears to be drifting * sampled regardless

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project	Aspire				
Project Number	EM009155.0010	Site Location	Oakland	Well ID	MW-2D
Date	14-Dec-10	Sampled By	Darrell Smolko		
Sampling Time	1300	Recorded By	Darrell Smolko		
Weather	Rain, Cool	Coded Replicate No.			

Instrument Identification

Water Quality Meter(s) _____ Serial # _____

Casing Material		Purge Method	GeoPump		
Casing Diameter	2"	Screen Interval (ft bmp)	Top	Bottom	
Sounded Depth (ft bmp)	4.31	Pump Intake Depth (ft bmp)			
Depth to Water (ft bmp)		Purge Time	Start	Finish	

Field Parameter Measurements During Purging

Time	Depth to Water (ft bmp)	Minutes Elasped	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)
1228	4.31							Start Purge	
1238	4.31	10	0.5	19.21	6.72	0.685	-11	1.51	
1241	4.31	13	0.7	19.11	6.66	0.682	5	0.86	15.6
1244	4.31	16	0.9	19.10	6.60	0.681	16	0.76	15.5
1247	4.31	19	1.0	19.06	6.64	0.681	23	0.70	16.4
1250	4.31	22	1.2	19.07	6.63	0.681	31	0.70	15.5
1253	4.31	25	1.4	19.09	6.63	0.682	35	0.71	15.2
1256	4.31	28	1.6	19.09	6.64	0.683	40	0.77	13.4
1300								Sample	

Collected Sample Condition Color _____ Odor _____ Appearance _____

Parameter	Container	No.	Preservative

PID Reading _____

Comments _____

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project	Aspire				
Project Number	EM009155.0010	Site Location	Oakland	Well ID	MW-4
Date	14-Dec-10	Sampled By	Darrell Smolko		
Sampling Time		Recorded By	Darrell Smolko		
Weather	Rain, Cool	Coded Replicate No.			

Instrument Identification

Water Quality Meter(s) _____ Serial # _____

Casing Material		Purge Method	GeoPump		
Casing Diameter	2"	Screen Interval (ft bmp)	Top	Bottom	
Sounded Depth (ft bmp)		Pump Intake Depth (ft bmp)			
Depth to Water (ft bmp)		Purge Time	Start	Finish	

Field Parameter Measurements During Purging

Time	Depth to Water (ft bmp)	Minutes Elasped	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)
1302	3.40							Start	Purge
1312	5.01	10	0.4	19.37	6.95	1.476	-4	1.14	19.8
1315	5.19	13	0.6	19.36	6.98	1.475	-14	1.10	17.7
1318	5.40	16	0.8	19.37	6.99	1.478	-24	0.99	16.1
1322	5.63	19	1.0	19.34	6.99	1.477	-37	0.92	15.5
1325	5.70	22	1.2	19.43	6.99	1.475	-43	0.82	16.2
1328	5.74	25	1.4	19.40	6.99	1.481	-47	0.72	15.0
1331	5.76	28	1.6	19.47	6.99	1.473	-44	0.71	14.2
1334	5.83	31	1.8	19.50	6.99	1.467	-42	0.67	13.9
1340									

Collected Sample Condition Color_____ Odor_____ Appearance_____

Parameter	Container	No.	Preservative

PID Reading _____

Comments _____

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project	Aspire				
Project Number	EM009155.0010	Site Location	Oakland	Well ID	ASMW-5D
Date	14-Dec-10	Sampled By	Darrell Smolko		
Sampling Time	1540	Recorded By	Darrell Smolko		
Weather	Rain, Cool	Coded Replicate No.			

Instrument Identification

Water Quality Meter(s) _____ Serial # _____

Casing Material		Purge Method	GeoPump		
Casing Diameter	2"	Screen Interval (ft bmp)	Top	Bottom	
Sounded Depth (ft bmp)		Pump Intake Depth (ft bmp)			
Depth to Water (ft bmp)	2.90	Purge Time	Start	Finish	

Field Parameter Measurements During Purging

Time	Depth to Water (ft bmp)	Minutes Elasped	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)
1450	2.90						Start Purge		
1500	3.05	10	0.4	18.67	7.22	1.54	52	8.82	5.2
1503	3.07	13	0.6	18.67	7.27	1.66	52	9.14	3.6
1506	3.07	16	0.7	18.64	7.24	1.72	60	8.95	3.8
1509	3.07	19	0.9	18.63	7.12	1.79	107	8.46	3.7
1512	3.07	22	1.1	18.66	7.10	1.81	111	8.40	4.1
1515	3.07	25	1.3	18.63	7.05	1.84	137	7.97	3.7
1518	3.07	28	1.5	18.63	7.01	1.86	150	7.71	4.3
1521	3.07	31	1.7	18.54	6.98	1.87	164	7.61	4.5
1524	3.07	34	1.9	18.57	6.96	1.88	175	7.29	4.4
1527	3.07	37	2.1	18.53	6.94	1.89	189	7.24	5.5
1530	3.07	40	2.3	18.51	6.93	1.90	196	7.06	5.1
1533	3.07	43	2.6	18.50	6.92	1.90	208	6.99	5.4
1536	3.07	47	2.9	18.48	6.92	1.90	214	6.96	5.3

Collected Sample Condition Color_____ Odor_____ Appearance_____

Parameter	Container	No.	Preservative

PID Reading _____

Comments _____

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project	Aspire				
Project Number	EM009155.0010	Site Location	Oakland	Well ID	ASMW-8I
Date	~~14-Dec-10~~ 15-Dec-10	Sampled By	Darrell Smolko		
Sampling Time	0915	Recorded By	Darrell Smolko		
Weather	Rain, Cool	Coded Replicate No.			

Instrument Identification

Water Quality Meter(s) _____ Serial # _____

Casing Material		Purge Method	GeoPump		
Casing Diameter	2"	Screen Interval (ft bmp)	Top	Bottom	
Sounded Depth (ft bmp)		Pump Intake Depth (ft bmp)			
Depth to Water (ft bmp)	2.95	Purge Time	Start	Finish	

Field Parameter Measurements During Purging

Time	Depth to Water (ft bmp)	Minutes Elasped	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)
0816	2.95								
0826	4.85	10	0.3	17.15	6.40	0.829	-36	2.69	12.2
0829	4.90	13	0.4	17.34	6.40	0.829	-43	2.35	12.1
0832	5.16	16	0.5	17.44	6.42	0.830	-51	2.04	11.1
0838	5.25	21	0.7	17.55	6.45	0.834	-60	1.56	9.8
0842	5.41	25	0.7	17.65	6.46	0.837	-65	1.35	9.9
0847	6.28	30	0.8	17.67	6.48	0.841	-67	1.17	9.5
0852	6.45	35	0.9	17.70	6.49	0.844	-69	0.98	8.2
0857	6.91	40	1.1	17.98	6.51	0.854	-74	0.78	7.1
0900	6.93	43	1.3	17.98	6.52	0.857	-75	0.71	7.8
0903	6.98	46	1.5	18.02	6.53	0.861	-76	0.68	7.1
0906	7.06	49	1.9	18.03	6.54	0.864	-77	0.64	7.1
0915								Sampled	

Collected Sample Condition Color_____ Odor_____ Appearance_____

Parameter	Container	No.	Preservative

PID Reading _____

Comments _____

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project	Aspire				
Project Number	EM009155.0010	Site Location	Oakland	Well ID	AS-1I
Date	~~14-Dec-10~~ 15-Dec-16	Sampled By	Darrell Smolko		
Sampling Time	0940	Recorded By	Darrell Smolko		
Weather	Rain, Cool	Coded Replicate No.			

Instrument Identification

Water Quality Meter(s) _____ Serial # _____

Casing Material		Purge Method	GeoPump		
Casing Diameter	2"	Screen Interval (ft bmp)	Top	Bottom	
Sounded Depth (ft bmp)		Pump Intake Depth (ft bmp)			
Depth to Water (ft bmp)		Purge Time	Start	Finish	

Field Parameter Measurements During Purging

Time	Depth to Water (ft bmp)	Minutes Elasped	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)
0916	2.89						Start Purge		
0926	5.92	10	0.4	18.72	6.96	2.71	-26	0.61	13.6
0929	6.26	13	0.5	18.86	7.00	2.71	-21	0.60	13.9
0932	6.58	16	0.6	18.81	7.02	2.72	-14	0.61	13.8
0935	6.76	19	0.7	18.92	7.03	2.72	-11	0.61	13.8
0940								Sample Collected	

Collected Sample Condition Color _____ Odor _____ Appearance _____

Parameter	Container	No.	Preservative

PID Reading _____

Comments _____

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project	Aspire				
Project Number	EM009155.0010	Site Location	Oakland	Well ID	AS-3I
Date	~~14-Dec-10~~ 15-Dec-10	Sampled By	Darrell Smolko		
Sampling Time	1010	Recorded By	Darrell Smolko		
Weather	Rain, Cool	Coded Replicate No.			

Instrument Identification

Water Quality Meter(s) _____ Serial # _____

Casing Material		Purge Method	GeoPump		
Casing Diameter	2"	Screen Interval (ft bmp)	Top	Bottom	
Sounded Depth (ft bmp)		Pump Intake Depth (ft bmp)			
Depth to Water (ft bmp)	3.28	Purge Time	Start	Finish	

Field Parameter Measurements During Purging

Time	Depth to Water (ft bmp)	Minutes Elasped	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	
0942	3.28									
0952	8.01	10	0.5	18.38	6.62	12.33	38	0.27	14.4	Turned Down Pump
0955	8.45	13	0.8	18.37	6.63	12.34	39	0.27	14.2	
0959	9.13	17	1.0	18.54	6.64	12.37	40	0.26	12.9	
1010								Sampled		

Collected Sample Condition Color _____ Odor _____ Appearance _____

Parameter	Container	No.	Preservative

PID Reading _____

Comments _____

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project	Aspire				
Project Number	EM009155.0010	Site Location	Oakland	Well ID	ASMW-4I
Date	~~14-Dec-10~~ 15-Dec-10	Sampled By	Darrell Smolko		
Sampling Time	1100	Recorded By	Darrell Smolko		
Weather	Rain, Cool	Coded Replicate No.			

Instrument Identification

Water Quality Meter(s) _____ Serial # _____

Casing Material		Purge Method	GeoPump		
Casing Diameter	2"	Screen Interval (ft bmp)	Top	Bottom	
Sounded Depth (ft bmp)		Pump Intake Depth (ft bmp)			
Depth to Water (ft bmp)	2.71	Purge Time	Start	Finish	

Field Parameter Measurements During Purging

Time	Depth to Water (ft bmp)	Minutes Elasped	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)
1024	2.71						Start Purge		
1034	3.40	10	0.5	15.27	6.93	0.986	-140	0.30	57.8
1037	3.74	13	0.6	15.26	6.92	0.974	-140	0.26	18.8
1040	4.10	16	0.7	15.13	6.92	0.962	-140	0.26	144
1043	4.10	19	0.9	14.97	6.94	0.950	-123	0.73	82.4
1046	4.10	22	1.2	14.97	6.90	0.939	-132	0.31	75.1
1050	4.10	25	1.4	15.07	6.88	0.931	-132	0.26	86.3
1053	4.10	28	1.6	15.09	6.87	0.927	-132	0.24	88.3
1056	4.10	31	1.8	15.10	6.86	0.931	-132	0.24	97.1
1100									Sampled

Collected Sample Condition Color _____ Odor _____ Appearance _____

Parameter	Container	No.	Preservative

PID Reading _____

Comments _____

1) Circle one unit type

ARCADIS

Water-Level Log

Project Name and No. Aspire EM009155.0010 Site Location Oakland

Prepared By Darrell Smolko Date 14-Dec-10

Well (s)	Depth to Water (ft)	Time	Remarks
AS-4I	3.23	1000	
AS-6I	2.16	1001	
ASMW-5D	2.93	1002	
ASMW-5I	2.95	1003	
NW-2S	1.80	1004	
NW-2I	4.31	1005	
NW-2D	4.32	1006	
MW-4	3.11	1007	
AS-1I	3.20	1008	
AS-3I	3.22	1009	
ASMW-4I	2.71	1022	12/15/10

ARCADIS

Document Control Number:TGM - _____

TGM + *project number plus date as follows: xxxxxxxx.xxxx.xxxxx - dd/mm/year*

TAILGATE HEALTH & SAFETY MEETING FORM

This form documents the tailgate meeting conducted in accordance with the Project HASP. Personnel who perform work operations on-site during the day are required to attend this meeting and to acknowledge their attendance, at least daily.

Project Name: Aspire			Project Location: Oakland
Date: 12/14/10	Time: 0900	Conducted by: Darrell Smolke	Signature/Title:
Client: Aspire LLC		Client Contact:	Subcontractor companies:

TRACKing the Tailgate Meeting

Think through the Tasks (list the tasks for the day):

1 GW Levels 3 _____ 5 _____

2 GW Sampling 4 _____ 6 _____

Other Hazardous Activities - Check the box if there are any other ARCADIS, Client or other party activities that may pose hazards to ARCADIS operations ☐ If there are none, write "None" here: _____

If yes, describe them here: _____

How will they be controlled? _____

Prework Authorization - check activities to be conducted that require permit issuance or completion of a checklist or similar before work begins

	Doc #		Doc #		Doc #
☒ Not applicable		☐ Working at Height		☐ Confined Space	
☐ Energy Isolation (LOTO)		☐ Excavation/Trenching		☐ Hot Work	
☐ Mechanical Lifting Ops		☐ Overhead & Buried Utilities		☐ Other permit	

Discuss following questions (for some review provisions for typical activities) Check if yes

☐ Topics from Corp H&S to cover?		
☐ Incidents from day before to review?	☐ Lessons learned from the day before?	☐ Any Stop Work Interventions yesterday?
☐ Any corrective actions from yesterday?	☐ Will any work deviate from plan?	☐ If deviations, notify PM & client
☐ JLAs or procedures are available?	☐ Field teams to "dirty" JLAs, as needed?	☑ All equipment checked & OK?
☑ Staff has appropriate PPE?	☑ Staff knows Emergency Plan (EAP)?	☑ Staff knows gathering points?

Comments: _____

Recognize the hazards (check all those that are discussed) Examples are provided) and **A**ssess the Risks (Low, Medium, High - circle risk level) - Provide an overall assessment of hazards to be encountered today and briefly list them under the hazard category

☐ Gravity (i.e., ladder, scaffold, trips) (L M H)	☑ Motion (i.e., traffic, moving water) (L M H) Driving	☐ Mechanical (i.e., augers, motors) (L M H)
☐ Electrical (i.e., utilities, lightning) (L M H)	☐ Pressure (i.e., gas cylinders, wells) (L M H)	☑ Environment (i.e., heat, cold, ice) (L M H) Rain, Slippery
☑ Chemical (i.e., fuel, acid, paint) (L M H) Site COCs	☑ Biological (i.e., ticks, poison ivy) (L M H) Spiders	☐ Radiation (i.e., alpha, sun, laser) (L M H)
☐ Sound (i.e., machinery, generators) (L M H)	☑ Personal (i.e. alone, night, not fit) (L M H) Alone	☑ Driving (i.e. car, ATV, boat, dozer) (L M H)

Continue TRACK Process on Page 2