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October 9, 2013

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Mr. Jerry Wickham
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Alameda, California 94502-6577

RE: Multi-Phase Extraction and Air Sparge/ Soil Vapor Extraction Pilot Test Summary Report

800, 726, and 706 Harrison Street, Oakland, California 94607
Fuel Leak Case No.: RO0000231, RO0000321, and RO0000484
Comingled Plume Claim No. 6678

Dear Mr. Wickham,

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

If you have any questions or need additional information, please contact me at (925) 790-6463.

Sincerely,

A handwritten signature in blue ink that reads "Tim Bishop".

Timothy Bishop
Union Oil of California – Project Manager

Attachment
Multi-Phase Extraction and Air Sparge/ Soil Vapor Extraction Pilot Test Summary Report

**Chevron Environmental
Management Company**

**Multi-Phase Extraction and Air Sparge/
Soil Vapor Extraction Pilot Test
Summary Report**

706/726/800 Harrison Street
Oakland, California
ACEH Case #RO0000231/321/484

October 9, 2013



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Multi-Phase Extraction and Air Sparge/Soil Vapor Extraction Pilot Test Summary Report

706/726/800 Harrison Street
Oakland, California
ACEH Case
#RO0000231/321/484

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1. Introduction

On behalf of Chevron Environmental Management Company, for itself and as Attorney-in-Fact for Union Oil Company of California, ARCADIS U.S., Inc. (ARCADIS) has prepared this Multi-Phase Extraction and Air Sparge/Soil Vapor Extraction Pilot Test Summary Report (report) for the co-mingled plume located at 706, 726, and 800 Harrison Street in Oakland, California (site). This report documents pilot test well installations at 726 Harrison Street and multi-phase extraction (MPE) and air sparge (AS)/soil vapor extraction (SVE) pilot tests conducted to address hydrocarbon impacts in groundwater and soil at the site. The site location is shown on Figure 1 and a site layout is presented on Figure 2.

The activities described in this report were proposed in the *Multi-Phase Extraction and Air Sparge/Soil Vapor Extraction Pilot Test Work Plan*, dated February 12, 2013 (ARCADIS 2013a), and *Multi-Phase Extraction and Air Sparge/Soil Vapor Extraction Pilot Test Work Plan Addendum*, dated April 19, 2013 (ARCADIS 2013b). The Addendum was prepared in response to a request presented in the Alameda County Department of Environmental Health (ACEH) *Pilot Test Work Plan Approval for Commingled Plume Assessment for Fuel Leak Case No. RO0000231*, dated March 11, 2013 (Appendix A).

This report presents relevant background information, well installation activities, pilot test procedures and results, and site-specific implementation considerations. A Commingled Plume Application was submitted for this site on August 12, 2011. The three Responsible Parties are working together during the application review period pending receipt of the Letter of Commitment, which is anticipated in 2013.

1.1 Purpose/Remedial Action Objectives

The purpose of this report is to discuss the implementation of the well installation activities proposed in the work plan (ARCADIS 2013a) and work plan addendum (ARCADIS 2013b), and to outline the MPE and AS/SVE pilot test procedures and results.

1.2 Report Organization

The remaining sections of this work plan are presented as follows:

- Section 2 summarizes the site background and history.
- Section 3 discusses the well installation activities.
- Section 4 discusses the MPE pilot test results.



- Section 5 discusses the AS/SVE pilot test results.
- Section 6 discusses conclusions and recommendations.

2. Site Background

This section describes the site's physical setting, regulatory history, site geology and hydrogeology, as well as the nature and extent of remaining petroleum hydrocarbons, and a summary of previous pilot test activities.

2.1 Site Description

The site consists of three properties located in a mixed commercial and residential area at 706, 726, and 800 Harrison Street, Oakland, California (Figure 1). Property locations and boundaries are shown on Figure 2.

The 706 Harrison Street Property is a former ARCO service station owned by Mr. Bo Gin. This property currently contains an asphalt parking lot. Former facilities at the 706 Harrison Street Property included four 1,000-gallon and two 6,000-gallon fuel underground storage tanks (USTs), one steel waste oil UST, product line piping and pump islands, and a station building. The USTs and associated piping were removed in January 1991 (Cambria Environmental Technology, Inc. [Cambria] 1995).

The property located at 726 Harrison Street is a former Shell service station owned by Mr. Peter Yee. This property currently contains an asphalt parking lot and building. Former facilities at the 726 Harrison Street Property included three 4,000-gallon and one 8,000-gallon fuel USTs, one steel 1,000-gallon waste oil UST, product line piping and pump islands, and a station building. The USTs and associated piping were removed in October 1995 (Aqua Science Engineers, Inc. [ASE] 2001).

The property located at 800 Harrison Street is an active 76 Station (Unocal) owned by Mr. Muhammad Usman. Current station facilities include a single-story convenience store, three product dispenser islands under two canopies, and two 12,000-gallon double-wall poly-steel gasoline USTs.

2.2 Site Geology and Hydrogeology

2.2.1 Geology

Property-specific well boring logs and cone penetrometer test (CPT) investigation results indicate that the site lithology is consistent with regional lithology; the general site lithology comprises primarily silty sands and fine-grained sands extending to approximately 30 feet below ground surface (bgs). Deeper CPTs were conducted in the area of 800 Harrison Street and indicate the presence of silt and clay between approximately 30 and 42 feet bgs. Below the clay, fine-grained sand and silty sand are present (Stantec 2009). Merritt Sand lies underneath the site, based on visual inspections of soil during the investigations (Stantec 2009).

2.2.2 Hydrogeology

The nearest surface waters to the site are the Oakland Inner Harbor to the south and west and Lake Merritt to the east and northeast. Each body of water is approximately ½ mile from the site (Stantec 2009).

Depth to water beneath the three properties has historically ranged from 10.93 to 20.01 feet below top of well casing (BTOC). During the second semi-annual groundwater monitoring and sampling event in August 2013, average depth-to-water measurements were approximately 16.30 (706 Harrison Street), 19.80 (726 Harrison Street), and 17.92 (800 Harrison Street) feet BTOC. A deeper water-bearing zone was encountered at depths of 42 to 50 feet bgs during advancement of the cone penetrometers. Prior to the June 2011 site assessment, no wells were installed in the deeper water-bearing zone. In June 2011, ASE oversaw the installation of monitoring well MW-6 on the 726 Harrison Street Property within the deeper water-bearing zone. MW-6 is screened from 44 to 49 feet bgs. Well construction details are included in Table 1.

The predominant groundwater gradient observed across all three properties is south-southwest with a horizontal hydraulic gradient of 0.009 foot per foot (ARCADIS 2013c; Table 2). This gradient direction indicates that groundwater flows from 800 Harrison Street toward 726 Harrison Street and from 726 Harrison Street toward 706 Harrison Street.

A groundwater potentiometric surface map from the first semi-annual 2013 monitoring event conducted on February 27, 2013 is presented on Figure 3. All wells located at 726 Harrison Street were surveyed following pilot test well installations on this property, as discussed in Section 3.4.7 of this report. An updated groundwater contour map reflecting new site survey

information will be provided with the second semi-annual 2013 groundwater monitoring report to be submitted to the ACEH.

2.3 Extent of Contamination

The current distribution of dissolved-phase petroleum hydrocarbons, as observed during the second semi-annual 2013 groundwater monitoring event conducted on August 15, 2013, is discussed below for each property.

2.3.1 706 Harrison Street

The maximum dissolved concentration of gasoline range organics (GRO) was detected in the sample collected from MW-1 at a concentration of 5,800 micrograms per liter ($\mu\text{g/L}$). The maximum dissolved concentrations of benzene (1,200 $\mu\text{g/L}$), toluene (5,600 $\mu\text{g/L}$), ethylbenzene (820 $\mu\text{g/L}$), total xylenes (4,400 $\mu\text{g/L}$; called BTEX collectively), and methyl tertiary butyl ether (MTBE; 1,700 $\mu\text{g/L}$) were detected in the samples collected from MW-2. Constituents 1,2-Dibromoethane (EDB), 1,2-dichloroethane (EDC), and ethanol were not detected above the laboratory reporting limits for all wells sampled.

2.3.2 726 Harrison Street

The maximum dissolved concentrations of GRO (8,000 $\mu\text{g/L}$), BTEX (1,900 $\mu\text{g/L}$, 590 $\mu\text{g/L}$, 390 $\mu\text{g/L}$, and 1,100 $\mu\text{g/L}$, respectively), and MTBE (20,000 $\mu\text{g/L}$) were detected in the samples collected from MW-5. EDB and ethanol were not detected above the laboratory reporting limits for all wells sampled. EDC was only detected in MW-6 at a concentration of 0.79 $\mu\text{g/L}$.

2.3.3 800 Harrison Street

The maximum dissolved concentrations of GRO (410 $\mu\text{g/L}$) and MTBE (340 $\mu\text{g/L}$) were detected in the samples collected from MW-3. The maximum dissolved concentrations of BTEX (24 $\mu\text{g/L}$, 6.1 $\mu\text{g/L}$, 2.0 $\mu\text{g/L}$, and 9.2 $\mu\text{g/L}$, respectively) were detected in the samples collected from MW-5. EDB, EDC, and ethanol were not detected above the laboratory reporting limits for all wells sampled. No additional volatile organic compounds (VOCs) or dissolved metals were detected during this sampling event. Groundwater elevations at the site vary by approximately 3 feet, creating a hydraulic gradient of 0.009 foot per foot in the southwest direction (ARCADIS 2013c).

Groundwater analytical data is included as Table 2. Isoconcentration contour maps for TPH-g, benzene, and MTBE are presented on Figures 4, 5, and 6, respectively.

2.4 Previous Pilot Testing

Prior to the investigation activities documented in this report, MPE pilot testing had not been conducted at any of the three properties. Available information regarding historical SVE pilot testing and pump testing was considered when developing anticipated operational parameters for the MPE pilot test. Previous pilot testing performed at each property is discussed below. Soil boring details are presented in Table 3 and historical soil analytical data are presented in Table 4. Table 4 includes potentially applicable California Environmental Screening Levels.

2.4.1 706 Harrison Street

In April 1994, Remediation Testing and Design installed two SVE wells (VW-1 and VW-2) and conducted an SVE pilot test on each well. The maximum vacuum applied to each extraction well was approximately 18 inches of mercury (inHg). Flow measurements recorded under maximum vacuum application ranged from 2 to 10 actual cubic feet per minute (acfm). A combined pilot test was performed on VW-1 and VW-2, operating the extraction wells simultaneously. An applied vacuum of approximately 15 inHg yielded combined flow rates ranging from 12 to 15 acfm.

In May 1998, Cambria installed three dual-nest AS/SVE wells (VW-3/SP-3, VW-4/SP-4, and VW-5/SP-5) and major AS/SVE remediation system components. The AS/SVE system startup was performed on May 6, 1998; in February 2001, the SVE component was shut down due to low influent concentrations. While operating all five SVE wells (VW-1 through VW-5), the combined system vacuum ranged from 45 to 110 inches of water (inH₂O). The combined flow rate from all five SVE wells ranged from approximately 30 to 100 acfm. The SVE system removed approximately 1,871 pounds of hydrocarbons during operation. The AS system continued to operate following SVE system shutdown. The AS system operated from startup in May 1998 until the first quarter 2003, with an individual air injection well flow rate of approximately 2 acfm at an injection pressure of 8 pounds per square inch (psi) (Stantec 2009).

2.4.2 726 Harrison Street

In August 2001, ASE installed one extraction well (EW-1), one AS well (AS-1), and two SVE wells (VE-1 and VE-2). A step drawdown test was performed at a pumping rate of 0.5 gallon per minute (gpm). A 640-minute constant rate pumping test was performed on EW-1 at an average flow rate of 0.65 gpm. Major and minor hydraulic conductivities of 20.2 and 5.02 feet per day, respectively, were determined from the constant rate pumping test.



In September 2001, ASE performed an AS/SVE pilot test on VE-1. The vacuum applied to VE-1 ranged from 26 to 54 inH₂O. Approximately 1 to 2 acfm were observed during pilot testing at these operational conditions. The AS pilot test was performed on AS-1 where applied injection pressure ranged from 1 to 5 psi. No flow was observed during the 90 minute pilot test activities (ASE 2001).

2.4.3 800 Harrison Street

In August 1995, Kapraelian Engineering, Inc. (KEI) conducted an SVE pilot test. Pilot testing activities were conducted at MW-1 and MW-3, with a maximum applied wellhead vacuum of approximately 50 inH₂O for both tests. No measureable flow was observed after sustained operation at the maximum vacuum. Additional pilot testing was performed at on-site monitoring wells MW-5 and MW-6. No measureable flow was observed after sustained operation at the maximum vacuum (Stantec 2009).

3. Pre-Field Activities

Multiple field activities were performed in preparation for the MPE and AS/SVE pilot tests. The following sections describe the pre-field tasks completed prior to pilot test activities.

3.1 Health and Safety Plan

Prior to implementing field activities, the site-specific HASP was modified and updated May 2013, for use by on-site personnel. The site-specific HASP addresses potential health and safety concerns and hazards that field personnel may encounter during the proposed field events. All personnel, including on-site subcontractors, were required to familiarize themselves with and sign the HASP.

3.2 Permitting

Prior to commencing field work, all applicable well permits were obtained from the Alameda County Public Works Agency (ACPWA). Copies of the approved well permits are included in Appendix B.

3.3 Subsurface Utility Location

A detailed utility search was performed prior to initiating drilling to verify that proposed boring locations are not within a utility line or corridor. Three lines of evidence were gathered: Underground Service Alert DigAlert Hotline, private utility locator, and a review of utility as-built maps. In addition, each borehole was pre-cleared with a vacuum truck to 8 feet 1 inch bgs.

3.4 Pilot Test Well Installation

ARCADIS installed one MPE pilot test well (MPE-1), one monitoring point (MP-1), one piezometer (PZ-1), and one SVE well (VE-3) on June 19 through 21, 2013. All of the wells proposed in the work plan and work plan addendum were installed at 726 Harrison Street. MPE-1 and PZ-1 were installed in the same borehole, approximately 10 feet north of the southern 726 Harrison Street property boundary. Pilot test monitoring point MP-1 was installed approximately 17 feet north-northwest of MPE-1. Vapor extraction well VE-3 was installed approximately 12 feet west of the existing onsite building at 726 Harrison Street. Newly installed pilot test well locations are depicted on Figure 2.

3.4.1 Well Construction Details

The borehole for MPE pilot test well MPE-1 and piezometer PZ-1 extended to a total depth of 40 feet bgs to confirm vertical delineation of the smear zone and depth of the subsurface clay layer beneath the site. MPE-1 and PZ-1 were installed to a total depth of approximately 33 feet bgs. MPE-1 was completed with a 4-inch-diameter Schedule 40 polyvinyl chloride (PVC) with a 0.020-inch slot screen extending from approximately 15 to 30 feet bgs. A 3-foot section of 4-inch-diameter blank well casing was installed approximately 30 to 33 feet bgs as a well sump. The associated piezometer PZ-1 was installed within the same borehole and completed with a 1-inch diameter Schedule 40 PVC with a 0.020-inch slot screen also extending from approximately 15 to 30 feet bgs. The borehole was completed with a locking, flush-mount, 12-inch-diameter traffic-rated well box.

MP-1 was installed to a total boring depth of approximately 30 feet bgs and was completed with a 1-inch-diameter Schedule 40 PVC with a 0.020-inch slot screen extending from approximately 15 to 30 feet bgs. The borehole for VE-3 extended to a total depth of 16 feet bgs. VE-3 was installed to a total depth of approximately 15 feet bgs and was completed with a 2-inch-diameter Schedule 40 PVC with a 0.020-inch slot screen extending from approximately 5 to 15 feet bgs.

Well construction details are presented in Table 1. Boring logs for the newly installed wells are included in Appendix D.

3.4.2 PID Screening and Soil Logging

During well installation, the soil from the borehole was continuously logged by an ARCADIS geologist in accordance with the Unified Soils Classification System. Soils were screened with a photo ionization detector (PID) and a flame ionization detector (FID) to ensure that the selected pilot test well location was installed in an area of the site with elevated VOC

concentrations in the smear zone. The PID results, in parts per million, from the field screening were recorded on the field boring logs.

Lithology data was collected during pilot test well installation activities to verify site lithology and the extent and distribution of contamination within the smear zone. Utilizing this collected data in conjunction with data from previous subsurface investigations, the base of the smear zone in the dissolved-phase source area was confirmed between 25 and 30 feet bgs.

3.4.3 Soil Sampling

Soil samples were collected for laboratory analysis biased toward the highest probable degree of petroleum hydrocarbon concentration, based on the highest PID readings during soil screening. Soil samples were collected for laboratory analysis approximately every five feet, and when elevated PID readings or other indicators of potential hydrocarbon impacts (e.g., notable odor or soil staining) were observed during well installation.

A total of 20 soil samples were collected and analyzed for the presence of the following constituents:

- Total purgeable petroleum hydrocarbons (TPPH) by United States Environmental Protection Agency (USEPA) Method 8260B
- BTEX, MTBE, EDB, and EDC by USEPA Method 8260B

Soil analytical results were compared the San Francisco Regional Water Quality Control Board's (SFRWQCB's) Environmental Screening Levels (ESLs) and are presented in Table 4. Soil analytical results from pilot test well installations are summarized below:

- TPPH was detected above its respective ESL in the MPE-1 soil boring at 22 feet bgs (670 milligrams per kilogram [mg/kg]) and in the VE-3 boring at 9, 10, 15, and 16 feet bgs (1,300 mg/kg, 350 mg/kg, 4,700 mg/kg, and 2,900 mg/kg, respectively). TPPH was not detected in the MP-1 boring.
- Benzene was detected above its respective ESL of 0.044 mg/kg in the MPE-1 borehole at 22 feet bgs (0.73 mg/kg) and 25 feet bgs (0.087 mg/kg) and at VE-3 at 15 feet bgs (0.72 mg/kg) and 16 feet bgs (0.54 mg/kg). Benzene was not detected in the MP-1 boring.

- Toluene was not detected above its respective ESL of 2.9 mg/kg in any of the pilot test well soil borings. The sample collected from 22 feet bgs in the MPE-1 boring exhibited a toluene concentration of 1.4 mg/kg.
- Ethylbenzene was detected above its respective ESL of 3.3 mg/kg in the VE-3 boring at 9 feet bgs (3.9 mg/kg), 15 feet bgs (7.4 mg/kg), and 16 feet bgs (7.6 mg/kg). Ethylbenzene was detected at concentrations less than its respective ESL in MPE-1, and it was not detected throughout the MP-1 boring.
- Total xylenes were detected above the respective ESL of 2.3 mg/kg at MPE-1 at 22 feet bgs (10 mg/kg) and at VE-3 at 15 feet bgs (13 mg/kg) and 16 feet bgs (13 mg/kg). Total xylenes were not detected at MP-1.
- EDB and EDC were not detected in soil samples collected during pilot test well installation.

Soil analytical results are included in Table 4. Laboratory analytical reports are included in Appendix E.

3.4.4 Well Development

Well development was conducted prior to sampling and in accordance with the ARCADIS' Well Development SOP. Well development included the surging of the screen interval and purging fine-grained material out of the well.

3.4.5 Groundwater Sampling

Groundwater samples were collected from MPE-1 and other site monitoring wells during the second semi-annual groundwater monitoring event on August 15, 2013.

The groundwater samples were analyzed for the presence of the following constituents:

- TPHH by United States Environmental Protection Agency (USEPA) Method 8260B
- BTEX, MTBE, EDB, and EDC by USEPA Method 8260B

Groundwater analytical results are provided in Table 2. Laboratory analytical reports are included in Appendix E.



3.4.6 Decontamination and Waste Disposal

Drilling augers and sampling tools were decontaminated after drilling in accordance with ARCADIS Field Equipment Decontamination SOP (Appendix C). Soil cuttings and decontamination water were collected in labeled drums and temporarily stored on site, pending receipt of laboratory analytical results. Waste profile forms were prepared based on laboratory analytical results and waste was transported for offsite disposal in accordance with applicable regulations.

3.4.7 Survey

On August 21, 2013, all wells located at 726 Harrison Street, including the newly installed pilot test wells (MP-1, MPE-1, and VE-3), were surveyed by Muir Consulting, Inc., a licensed surveyor. The top of casing (TOC) elevation data is included in the well construction details presented in Table 1.

4. Multi-Phase Extraction Pilot Test

On September 10 and 11, 2013, ARCADIS conducted an MPE pilot test to evaluate the effectiveness of this technology to remediate hydrocarbon-impacted groundwater and vadose zone soils at the site.

Objectives of the pilot test included:

- Measure relevant drawdown information from the designated MPE well to determine the radius of influence.
- Determine air/water yields necessary to achieve sufficient drawdown.
- Determine an average mass removal rate for each operating condition by collecting VOC measurements, and flow, vacuum, and temperature data. Collect flow measurements in actual cubic feet per minute and converted to standard cubic feet per minute for mass calculations with air emissions samples.
- Determine the degree of dewatering possible in the dissolved-phase source area.

4.1 Multi-Phase Extraction Pilot Test Procedures

The MPE pilot test was conducted on September 10 and 11, 2013 and consisted of two operational phases on pilot test well MPE-1. Phase 1 consisted of a pump test to determine the ability to dewater the screen interval of MPE to expose soils in the smear zone for remediation through vacuum application. A three hour pump test was performed on MPE-1 prior to initiating vacuum application and MPE operation. Once sufficient dewatering was observed in MPE-1, Phase 2 was initiated and vacuum was applied to the wellhead to determine optimal vacuum and flow rate operational parameters. The MPE pilot test operated under a 5-day pilot test exemption from air permitting with the Bay Area Air Quality Management District (BAAQMD).

4.2 Field and System Measurements

Baseline static water levels were recorded for the pilot test well piezometer (PZ-1) and three pilot test observation wells (MW-5 (726 Harrison), MW-4 (706 Harrison), and MP-1) using an interface probe prior to initiating the pilot test. Down-hole pressure transducers with data logging capabilities were installed in extraction well MPE-1 and the observation wells. The transducers were set to record the groundwater elevation at a 1-minute interval throughout the duration of the pilot test to document changes in groundwater elevation. Water level

measurements and drawdown observed during the pilot test in MPE-1 and the monitoring network are provided in Appendix F.

Pilot test well vacuum measurements and induced monitoring network wellhead vacuum measurements were recorded throughout pilot testing. Cumulative extracted groundwater volume was recorded from an in-line flow totalizer prior to flowing into the on-site storage tank. Storage tank water level measurements were used as secondary measurement of groundwater accumulation.

Air flow was measured using an anemometer inserted in a sample port on the MPE-1 air distribution line at the MPE treatment system manifold prior to the knockout tank and vacuum pump inlet as a secondary measurement to automated flow recordings in the mobile remediation trailer (MRT) unit utilized for pilot test activities. Organic vapor concentration measurements were collected periodically throughout the test using an FID and a PID.

MPE pilot test field data and pilot test monitoring network data are included in Table 5 and 6, respectively.

4.3 Phase 1: Pump Test Results

On September 10, 2013, the pump test portion of the MPE pilot test was initiated on MPE-1. The initial groundwater extraction rate was 1 gallon per minute (gpm). Groundwater was extracted at a rate of 1 gpm for approximately 30 minutes, until a pump malfunction occurred and the pump test was suspended for submersible pump troubleshooting and repair. The pump test was restarted at approximately 3 gpm after minimal drawdown (approximately 0.5 feet) was observed during the initial 30 minute interval at 1 gpm. Groundwater was extracted for 60 minutes at approximately 3 gpm and a drawdown of approximately 5.3 feet in PZ-1 was observed during this timeframe. The extraction rate was then increased to 3.5 gpm (maximum capacity of submersible pump) in an attempt to dewater MPE-1 to completely expose the screen interval. Groundwater was extracted at 3.5 gpm for approximately 2 hours and a maximum depth to water of 25.60 feet BTOC was observed from PZ-1 pressure transducer data. This depth to water measurement correlates to a maximum water level drawdown of 6.23 feet in PZ-1 and a total exposed screen interval in MPE-1 of 10.60 feet. A water level plot depicting drawdown in PZ-1 during the pump test is provided in Appendix F, Figure 1. Pressure transducer data recorded during Phase 1 of the MPE pilot test are provided in Appendix F, Table 1.

Water level drawdown data from pressure transducers installed in the MPE pilot test monitoring network indicated maximum drawdown levels in MW-5, MW-4, and MP-1 of

2.87, 1.70, and 1.25 feet BTOC. A water level plot depicting drawdown in MPE pilot test monitoring network during the pump test is provided in Appendix F, Figure 1. Pressure transducer data recorded during Phase 1 of the MPE pilot test are provided in Appendix F, Table 1.

4.4 Phase 2: MPE Pilot Test Results

Phase 2 was initiated on September 10, 2013, immediately following the completion of Phase 1. The initial wellhead vacuum at MPE-1 was 10 inH₂O and subsequent vacuum steps of approximately 25, 40, and 60 inH₂O were applied to MPE-1 during Phase 2 startup. Wellhead vacuum was sustained at approximately 60 inH₂O throughout Phase 2. A maximum vacuum of 61.2 inH₂O was observed with a flow rate of 11.2 scfm during Phase 2. The FID used to measure organic vapor concentration in the vapor stream flamed out after the first four readings from the influent vapor stream. A PID was used to collect subsequent influent vapor stream VOC concentration measurements. The maximum observed PID during the pilot test was 382 parts per million (ppm). Vapor extraction data measurements collected during Phase 2 are provided in Table 5.

Induced vacuum measurements were collected from the pilot test monitoring network wellheads during Phase 2. Maximum induced wellhead vacuums at MW-5, MW-4, and MP-1 during Phase 2 were 9.83, 1.84, and 0.23 inH₂O, respectively. Induced wellhead vacuum data from Phase 2 are provided in Table 6.

The average groundwater extraction flow rate from MPE-1 during Phase 2 was 3.5 gpm. The minimum and maximum depth to water measurements in PZ-1 during Phase 2 were 22.64 and 27.28 feet BTOC, respectively. The average depth to water in PZ-1 was 24.88 feet BTOC. When compared to the depth to water observed in PZ-1 during Phase I, 0.72 fewer feet of screen were exposed in MPE-1 when vacuum was applied to the casing while extracting groundwater. The total amount of groundwater extracted from MPE-1 during both phases of the pilot test was 5,065.5 gallons.

4.5 Sampling Activities

To assess dissolved-phase mass removal, influent water to the on-site storage tank was sampled at the following intervals: 1 hour into the pilot test, 24 hours into the pilot test, and at the completion of the pilot test. Samples were collected in analytical laboratory supplied bottles and submitted to a California Department of Health Services- (CDHS-) approved analytical laboratory for the following analyses:

- BTEX, MTBE, tertiary butyl alcohol, di-isopropyl ether, ethyl tertiary butyl ether, tertiary amyl methyl ether and ethanol by USEPA Method 8260B

To characterize the vapor-phase stream, analytical samples were collected in SUMMA[®] canisters from the influent vapor stream before treatment by the oxidizer and submitted to a CDHS-approved analytical laboratory for the following analyses:

- Total Petroleum Hydrocarbon as gasoline (TPH-g) by USEPA TO-15
- BTEX and MTBE by USEPA TO-15
- Methane by ASTM International D1946

Vapor samples were collected from an influent sample port to characterize the vapor stream. One vapor sample was collected from the effluent of the treatment system to confirm destruction efficiency of the catalytic oxidizer. The analytical data will be used to confirm FID/PID measurements during the test and to estimate CatOx mass removal and destruction rates.

4.5.1 Analytical Results

Three groundwater samples were collected from the influent water to the on-site storage tank during MPE operations. Benzene concentrations ranged from 13 µg/L to 97 µg/L. MTBE concentrations ranged from 360 µg/L to 450 µg/L. The highest concentration of benzene was detected in the water sample collected 1 hour after MPE pilot test Phase 2 startup, while the highest detection of MTBE was observed in the sample collected after 24 hours of Phase 2 operation. Pilot test influent water analytical results are summarized in Table 7. Laboratory analytical reports are included as Appendix E.

Three vapor samples were collected from the system influent during MPE operations at MPE-1.

- Benzene vapor concentrations ranged from 0.35 parts per million by volume (ppmv) to 5.7 ppmv.
- TPH-g vapor concentrations ranged from 210 ppmv to 1,100 ppmv.
- MTBE vapor concentrations ranged from 0.6 ppmv to 3.7 ppmv.
- Total BTEX vapor concentrations ranged from 1.91 ppmv to 14.80 ppmv.

- Methane vapor concentrations ranged from 0.18 to 0.27% by volume.

The lowest concentrations of each COC were detected in the influent sample collected 1 hour after MPE pilot test Phase 2 startup, while the highest detections were observed in the sample collected after 24 hours of Phase 2 operation. Pilot test soil vapor analytical results are summarized in Table 8. Laboratory analytical reports are included as Appendix E.

4.5.2 Mass Removal Estimates

Mass removal rates for benzene and MTBE during MPE operation ranged from approximately 2.98 to 3.50 pounds per day (lbs/day) and 13.34 to 18.39 lbs/day, respectively. Groundwater analytical results for MPE-1 from the August 15, 2013 semi-annual sampling event were used to estimate the dissolved phase TPH-g mass removal rates during the MPE pilot test. Mass removal rates for TPH-g during MPE operation ranged from approximately 29.57 to 32.04 lbs/day. The estimated cumulative mass removed for benzene, MTBE, and TPH-g during 26 hours of MPE operation was 3.31, 19.35, and 36.02 pounds. Estimated dissolved phase mass removal calculations are included as Table 9.

Mass removal rates for TPH-g and BTEX during MPE operation ranged from approximately 0.71 to 5.0 lbs/day and 0.006 to 0.063 lbs/day, respectively. The estimated cumulative mass removed for TPH-g and total BTEX during 23 hours of MPE Phase 2 operation was 3.31, 19.35, and 36.02 pounds. Estimated mass removal calculations are included as Table 10.

4.6 Investigation-Derived Waste and Disposal

Groundwater extracted during pilot testing activities was stored in a baker tank, staged on 706 Harrison Street. An investigation-derived waste (IDW) sample was collected from extracted groundwater and submitted to a CDHS-approved analytical laboratory. Groundwater IDW will be removed from the site by a certified subcontractor and the onsite storage tank will be decontaminated. Groundwater IDW laboratory analytical results are provided in Appendix E.

5. Air Sparge/Soil Vapor Extraction Pilot Test

A combined AS/SVE pilot test was conducted on September 12, 2013 to determine if sufficient air delivery into the groundwater table can be achieved through air sparging.

5.1 AS/SVE Pilot Test Equipment

An air compressor capable of at least approximately 20 acfm at a pressure of 40 psi was used for AS pilot testing. One of the 20-horsepower rotary claw vacuum pumps included with the MRT was used for soil vapor extraction pilot testing.

5.2 AS/SVE Pilot Test Procedures

SVE data collected during MPE pilot testing will be used to evaluate the effectiveness of SVE application in the subsurface. The vacuum, flow, and monitoring network wellhead measurements collected during MPE pilot test activities provide sufficient data to determine the potential success of implementing SVE at 706 and 726 Harrison Street. Vapor extraction operated during AS pilot test activities to capture vapors from the vadose zone. A one day AS/SVE pilot test operated under the 5-day pilot test exemption from the BAAQMD. Vacuum was applied to existing extraction well EW-1 (approximately 8 feet away from AS-1) and newly installed VE-3 (6.5 feet away from AS-1) to capture vapors from the vadose zone during AS pilot testing. The initial applied wellhead vacuum at EW-1 and VE-3 was 40 inH₂O. Vapor extraction operated for approximately 15 minutes at the initial vacuum conditions. Vacuum application at each extraction well subsequently increased at approximately 20 inH₂O intervals until sustained flow was observed. Soil vapor was extracted from EW-1 and VE-3 at approximately 75 inH₂O and 12.5 scfm. Extraction air flows from EW-1 and VE-3 were measured using components and methods similar to MPE pilot testing. Organic vapor concentration measurements from EW-1 and VE-3 were collected periodically throughout the test using an FID or PID to optimize applied vacuums.

The AS pilot test consisted of injecting air into one AS well (AS-1), located at 726 Harrison Street. A step test was performed to determine formation breakthrough pressure. The step test injection pressure began operation at 1 psi and was gradually increased until sustained, measureable flow was observed. Injection air flow for AS-1 was measured with an in-line rotameter with a flow range of 1 to 20 acfm. The injection pressure during the pilot test ranged from 1 to 6 psi, with a flow rate of approximately 1 to 7.1 scfm. AS-1 injection air flow and pressure measurements during the pilot test are provided in Table 11. SVE operational data from extraction wells EW-1 and VE-3 is also presented in Table 11.

PID measurements were used to evaluate increases in vapor-phase VOC concentrations due to air sparging during the pilot test. The PID concentrations in EW-1 and VE-1 during initial SVE only pilot test operation were 675 and 380 ppm, respectively. Influent VOC vapor concentrations in EW-1 and VE-3 after approximately 4 hours of AS/SVE operation increased to 1,300 and 750 ppm, respectively.

6. Conclusions

Based on data collected during the 2013 MPE and AS/SVE pilot test activities, as well as data collected during previous investigations, ARCADIS concludes the following:

- Data collected during the installation of pilot test well MPE-1 confirms the base of the smear zone in the dissolved-phase source area extends between 25 and 30 feet bgs. This closes a data gap identified in the *Multi-Phase Extraction and Air Sparge/Soil Vapor Extraction Pilot Test Work Plan*.
- Residual dissolved phase hydrocarbon mass in groundwater and vadose zone soils remains on the 706 and 726 Harrison Street properties.
- Pilot test well MPE-1 fully dewatered at a flow rate of 3.5 gpm during the pump test portion of the MPE pilot test. Water production continued at a constant rate once maximum drawdown level was achieved.
- Maximum drawdown water level in MPE-1 was not sustained when vacuum was applied to the well casing during the MPE pilot test. A water level increase of 0.72 feet in MPE-1 was observed when vacuum was applied during groundwater extraction.
- The AS pilot test demonstrated that air can be delivered into the groundwater table at pressures less than the formation fracture pressure of 20.4 psi. During AS pilot testing a flow rate of 7.1 scfm was observed at a pressure of 6 psi.

MPE and AS/SVE will be further evaluated as potential remedial alternatives and a Remedial Action Plan (RAP) will be prepared to document the remedy selection process for the site. The RAP, which will include a remedial alternatives evaluation and selection and preliminary system design, construction, and monitoring activities, will be submitted to ACEH by the end of the First Quarter 2014.



7. References

Aqua Science Engineers, Inc. 2001. Soil and Groundwater Assessment and Corrective Action Plan. December 21.

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ARCADIS U.S., Inc. 2013a. Multi-Phase Extraction and Air Sparge/ Soil Vapor Extraction Pilot Test Work Plan. February 12.

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ARCADIS U.S., Inc. 2013c. Second Semi-Annual 2013 Groundwater Monitoring Report. October 15.

Cambria Environmental Technology, Inc. 1995. Subsurface Investigation Report for 706 Harrison Street, Oakland, California. March 10.

Stantec. 2009. Site Conceptual Model 800, 726, and 706 Harrison Street Commingled Plume Oakland, California. September 30.

ARCADIS

Tables

Table 2
Historical Groundwater Analytical Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)	TPH-g (µg/L)	EPA 8260B					8021B	
						Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)	
MW-7	10/22/01	29.67	16.95	12.72	--	--	--	--	--	--	--	
MW-7	01/02/02	29.67	16.14	13.53	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0	
MW-7	10/05/02	29.67	15.30	14.37	--	--	--	--	--	--	--	
MW-7	08/07/02	29.67	15.73	13.94	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0	
MW-7	02/10/02	29.67	16.24	13.43	--	--	--	--	--	--	--	
MW-7	01/23/03	29.67	15.70	13.97	<50	23	<0.5	<0.5	<0.5	--	<5.0	
MW-7	04/29/03	29.67	12.68	16.99	--	--	--	--	--	--	--	
MW-7	07/18/03	26.70	15.19	11.51	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0	
MW-7	09/10/03	26.70	14.45	12.25	--	--	--	--	--	--	--	
MW-7	01/28/04	26.70	13.88	12.82	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0	
MW-7	07/04/04	26.70	15.71	10.99	--	--	--	--	--	--	--	
MW-7	07/23/04	26.70	14.85	11.85	<50	<0.5	<0.5	<0.5	<0.5	120	130	
MW-7	12/10/04	26.70	16.90	9.80	--	--	--	--	--	--	--	
MW-7	02/14/05	26.70	14.42	12.28	<50	<0.5	<0.5	<0.5	<0.5	200	190	
MW-7	04/27/05	26.70	13.75	12.95	<50	<0.5	<0.5	<0.5	<0.5	1	<5.0	
MW-7	07/19/05	26.70	14.91	11.79	<50	<0.5	<0.5	<0.5	<0.5	66	65	
MW-7	10/18/05	26.70	15.40	11.30	<50	<0.5	<0.5	<0.5	<0.5	15	12	
MW-7	01/23/06	26.70	13.99	12.71	<50	<0.5	<0.5	<0.5	<0.5	2.2	<5.0	
MW-7	12/04/06	26.70	12.32	14.38	<50	<0.5	<0.5	<0.5	<0.5	2	<5.0	
MW-7	10/07/06	26.70	14.31	12.39	<50	<0.5	<0.5	<0.5	<0.5	1.5	<5.0	
MW-7	10/16/06	26.70	16.23	10.47	--	--	--	--	--	--	--	
MW-7	01/26/07	26.70	16.61	10.09	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	
MW-7	04/18/07	26.70	16.54	10.16	--	--	--	--	--	--	--	
MW-7	02/08/07	26.70	16.93	9.77	<50	<0.5	<0.5	<0.5	<0.5	2	<5.0	
MW-7	10/23/07	26.70	17.36	9.34	--	--	--	--	--	--	--	
MW-7	01/30/08	26.70	16.36	10.34	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	
MW-7	04/18/08	26.70	16.85	9.85	--	--	--	--	--	--	--	
MW-7	07/28/08	26.70	17.43	9.27	<50	<0.5	<0.5	<0.5	<0.5	1.1	<5.0	
MW-7	05/12/08	26.70	17.91	8.79	--	--	--	--	--	--	--	
MW-7	01/26/09	26.70	17.65	9.05	<50	<0.5	<0.5	<0.5	<0.5	0.96	<5.0	
MW-7	03/08/09	29.70	17.17	12.53	<50	<0.5	<0.5	<0.5	<0.5	0.87	<5.0	
MW-7	01/25/10	29.70	16.65	13.05	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	
MW-7	03/08/10	29.70	16.74	12.96	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	
MW-7	02/17/11	29.70	16.69	13.01	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0	
MW-7	08/23/11	29.70	16.79	12.91	<50	<0.50	<0.50	<0.50	<1.0	89	--	
MW-7	02/07/12	29.70	17.40	12.30	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--	
MW-7	08/09/12	29.70	16.38	13.32	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--	
MW-7	02/27/13	29.70	16.83	12.87	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--	
MW-7	08/15/13	29.70	17.67	12.03	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--	
706 Harrison Street												
VW-3	06/03/03	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0	
VW-3	03/25/03	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0	
706 Harrison Street												
VW-4	06/03/03	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0	
VW-4	03/25/03	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0	
726 Harrison Street												
AS-1	08/15/13	34.50	18.17	16.33	--	--	--	--	--	--	--	
726 Harrison Street												
EW-1	02/27/13	*--	18.17	*--	960	180	6.0	3.6	12	170	--	
EW-1	08/15/13	34.37	18.98	15.39	290	67	1.7	1.3	3.3	57	--	
726 Harrison Street												
MP-1	08/15/13	34.16	19.03	15.13	<50	<0.50	<0.50	<0.50	<1.0	2.4	--	
726 Harrison Street												
MPE-1	08/15/13	34.36	19.24	15.12	820	110	23	17	45	610	--	
726 Harrison Street												
MW-1	07/03/97	NA	NA	NA	18000	2700	350	450	900	--	7400	
MW-1	12/15/98	31.95	17.32	14.63	18000	1500	270	260	560	--	14000	
MW-1	04/03/99	31.95	15.52	16.43	44000	2800	400	440	960	--	43000	
MW-1	06/17/99	31.95	16.90	15.05	33000	2200	250	460	660	--	25000	
MW-1	08/27/99	31.95	17.39	14.56	6000	1000	97	190	230	16000	14000	
MW-1	09/12/99	31.95	18.03	13.92	15000	1500	160	220	420	--	17000	

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Historical Groundwater Analytical Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California**

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)	TPH-g (µg/L)	EPA 8260B					8021B
						Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
MW-1	07/03/00	31.95	15.11	16.84	9300	1500	210	66	530	--	12000
MW-1	07/06/00	31.95	16.66	15.29	26000	1700	<250	360	580	--	30000
MW-1	11/10/00	31.95	18.08	13.87	13000	1600	<100	140	160	--	19000
MW-1	01/18/01	31.95	17.96	13.99	14000	450	<100	110	230	--	9600
MW-1	05/04/01	31.95	16.35	15.60	38000	2200	180	290	590	--	35000
MW-1	07/17/01	31.95	16.94	15.01	35000	1800	<100	300	170	--	35000
MW-1	05/01/10	28.98	17.35	11.63	17000	1500	210	420	790	--	27000
MW-1	01/18/02	28.98	15.40	13.58	18000	1500	120	160	220	--	22000
MW-1	11/04/02	28.98	15.76	13.22	41000	2700	210	340	380	--	30000
MW-1	08/07/02	28.98	16.17	12.81	36000	2800	140	360	300	--	31000
MW-1	09/02/10	28.98	16.72	12.26	30000	1700	310	<100	<100	--	19000
MW-1	01/29/03	28.98	16.26	12.72	26000	2400	<100	310	520	--	20000
MW-1	11/04/03	28.98	16.56	12.42	22000	1700	<100	270	580	--	16000
MW-1	07/18/03	28.98	16.42	12.56	40000	3200	290	480	830	--	39000
MW-1	09/03/10	28.98	16.88	12.10	54000	3300	<130	350	310	--	49000
MW-1	01/28/04	28.98	16.10	12.88	26000	3000	310	420	800	--	31000
MW-1	07/04/04	28.98	15.43	13.55	33000	2800	130	310	310	--	39000
MW-1	07/23/04	28.98	16.41	12.57	56000	4500	<250	390	<500	--	53000
MW-1	12/04/10	28.98	17.73	11.25	25000	1400	<250	<250	<500	--	25000
MW-1	01/29/05	28.98	15.02	13.96	24000	1600	<100	160	<200	--	19000
MW-1	04/28/05	28.98	14.99	13.99	10000	2000	<100	160	100	--	34000
MW-1	07/19/05	28.98	16.36	12.62	37000	2100	83	210	230	--	28000
MW-1	10/18/05	28.98	17.82	11.16	37000	1300	<250	<250	<250	--	23000
MW-1	01/23/06	28.98	15.80	13.18	23000	780	<100	160	260	--	11000
MW-1	12/04/06	28.98	13.24	15.74	11000	1500	87	360	670	--	17000
MW-1	10/07/06	28.98	15.64	13.34	72000	4700	<250	350	<500	--	66000
MW-1	10/16/06	28.98	17.51	11.47	26000	1600	<250	330	<500	--	22000
MW-1	01/26/07	28.98	18.36	10.62	7200	1500	<70	140	96	--	34000
MW-1	04/18/07	28.98	17.79	11.19	5400	1100	<50	200	120	--	21000
MW-1	02/08/07	28.98	18.20	10.78	6600	1500	64	240	190	--	32000
MW-1	10/23/07	28.98	18.75	10.23	5900	1300	52	200	180	--	28000
MW-1	01/30/08	28.98	17.90	11.08	2700	300	21	64	90	--	5200
MW-1	04/18/08	28.98	18.21	10.77	3800	930	41	110	130	--	15000
MW-1	07/28/08	28.98	18.85	10.13	6000	900	52	140	160	--	10000
MW-1	10/29/08	28.98	19.24	9.74	7300	1700	74	140	220	--	17000
MW-1	01/26/09	28.98	19.17	9.81	4900	720	48	140	180	--	6300
MW-1	03/08/09	31.98	18.62	13.36	4000	870	44	110	120	--	13000
MW-1	01/25/10	31.98	18.26	13.72	3200	360	26	82	86	--	3000
MW-1	03/08/10	31.98	18.13	13.85	3800	560	27	97	92	--	8600
MW-1	02/17/11	31.98	18.15	13.83	6000	1100	51	110	110	--	11000
MW-1	08/23/11	31.98	18.60	13.38	8200	290	36	66	79	4700	--
MW-1	02/07/12	31.98	18.77	13.21	370	46	1.7	4.2	4.5	3800	--
MW-1	08/09/12	31.98	17.82	14.16	6600	760	27	58	60	6700	--
MW-1	02/27/13	31.98	18.21	13.77	3000	480	26	52	56	2600	--
MW-1	08/15/13	34.45	19.03	15.42	7200	820	50	65	99	7300	--
726 Harrison Street											
MW-2	12/15/98	32.40	18.03	14.37	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0
MW-2	03/04/99	32.40	16.11	16.29	--	--	--	--	--	--	--
MW-2	06/17/99	32.40	17.72	14.68	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0
MW-2	08/27/99	NA	NA	NA	--	--	--	--	--	--	--
MW-2	12/09/99	NA	NA	NA	--	--	--	--	--	--	--
MW-2	03/07/00	NA	NA	NA	--	--	--	--	--	--	--
MW-2	06/07/00	32.40	17.67	14.73	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-2	10/11/00	32.40	18.91	13.49	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-2	01/18/01	32.40	18.66	13.74	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-2	04/05/01	32.40	16.97	15.43	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-2	07/17/01	32.40	17.54	14.86	NA	NA	NA	NA	NA	NA	NA
MW-2	10/05/01	29.44	17.98	11.46	NA	NA	NA	NA	NA	NA	NA
MW-2	01/18/02	29.44	15.87	13.57	NA	NA	NA	NA	NA	NA	NA
MW-2	04/11/02	29.44	16.36	13.08	NA	NA	NA	NA	NA	NA	NA
MW-2	07/18/02	29.44	16.72	12.72	NA	NA	NA	NA	NA	NA	NA
MW-2	10/09/02	29.44	17.33	12.11	NA	NA	NA	NA	NA	NA	NA
MW-2	01/29/03	29.44	16.82	12.62	NA	NA	NA	NA	NA	NA	NA
MW-2	04/11/03	29.44	17.15	12.29	NA	NA	NA	NA	NA	NA	NA
MW-2	07/18/03	29.44	17.05	12.39	NA	NA	NA	NA	NA	NA	NA
MW-2	10/09/03	29.44	17.52	11.92	NA	NA	NA	NA	NA	NA	NA
MW-2	01/28/04	29.44	16.70	12.74	NA	NA	NA	NA	NA	NA	NA

Table 2
Historical Groundwater Analytical Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)	TPH-g (µg/L)	EPA 8260B					8021B
						Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
MW-5	01/18/02	29.06	15.68	13.38	24000	3200	1300	390	1500	--	5700
MW-5	04/11/02	29.06	16.17	12.89	23000	2700	980	38	950	--	4300
MW-5	07/08/02	29.06	16.51	12.55	19000	3300	25	360	1100	--	2100
MW-5	10/09/02	29.06	17.10	11.96	24000	2800	990	360	820	--	2400
MW-5	01/29/03	29.06	16.58	12.48	17000	2100	1400	380	1400	--	<250
MW-5	04/11/03	29.06	16.87	12.19	26000	2900	2200	590	2200	--	630
MW-5	07/18/03	29.06	16.77	12.29	26000	3500	1700	480	1300	--	1300
MW-5	10/09/03	29.06	17.21	11.85	27000	3800	1900	510	1700	--	1200
MW-5	01/28/04	29.06	16.34	12.72	29000	4800	2900	770	2300	--	3300
MW-5	04/07/04	29.06	15.38	13.68	23000	4400	2700	720	2200	--	1700
MW-5	07/23/04	29.06	16.55	12.51	29000	5200	2200	810	1400	--	2200
MW-5	10/12/04	29.06	17.02	12.04	26000	4300	2000	670	1300	--	2200
MW-5	01/29/05	29.06	15.23	13.83	NA	NA	NA	NA	NA	--	NA
MW-5	04/28/05	29.06	15.41	13.65	NA	NA	NA	NA	NA	--	NA
MW-5	07/19/05	29.06	16.79	12.27	NA	NA	NA	NA	NA	--	NA
MW-5	10/18/05	29.06	17.28	11.78	NA	NA	NA	NA	NA	--	NA
MW-5	01/23/06	29.06	15.28	13.78	21000	1800	1200	270	820	--	13000
MW-5	04/12/06	29.06	13.66	15.40	NA	NA	NA	NA	NA	--	NA
MW-5	07/10/06	29.06	16.14	12.92	45000	3700	2600	650	1800	--	23000
MW-5	10/16/06	29.06	19.33	9.73	66000	4200	3300	800	2100	--	35000
MW-5	01/26/07	29.06	18.94	10.12	30000	3200	2600	610	2400	--	38000
MW-5	04/18/07	29.06	18.21	10.85	30000	4300	3300	800	2600	--	27000
MW-5	08/02/07	29.06	19.00	10.06	26000	3700	2800	690	1900	--	32000
MW-5	10/23/07	29.06	19.15	9.91	34000	4400	3700	860	3200	--	34000
MW-5	01/30/08	29.06	18.21	10.85	28000	3900	2800	750	2300	--	26000
MW-5	04/18/08	29.06	18.61	10.45	30000	4300	3200	810	2000	--	32000
MW-5	07/28/08	29.06	19.23	9.83	34000	3700	3000	740	2900	--	28000
MW-5	10/29/08	29.06	19.62	9.44	29000	3300	2900	680	2800	--	27000
MW-5	01/26/09	29.06	19.51	9.55	19000	2100	1500	410	1500	--	18000
MW-5	03/08/09	32.06	19.00	13.06	28000	3500	2800	630	2600	--	28000
MW-5	01/25/10	32.06	18.43	13.63	12000	1400	750	270	900	--	7500
MW-5	03/08/10	32.06	18.50	13.56	24000	3300	2200	620	1700	--	26000
MW-5	02/17/11	32.06	18.47	13.59	27000	3500	1900	630	2200	--	24000
MW-5	08/23/11	32.06	19.02	13.04	19000	1100	400	190	390	14000	--
MW-5	02/07/12	32.06	19.16	12.90	19000	890	410	360	990	17000	--
MW-5	08/09/12	32.06	18.24	13.82	16000	1400	580	470	960	16000	--
MW-5	02/27/13	32.06	--	--	--	--	--	--	--	--	--
MW-5	08/15/13	32.06	19.40	12.66	8000	1900	590	390	1100	20000	--
726 Harrison Street											
MW-6	08/23/11	32.04	28.35	3.69	500	<0.50	<0.50	<0.50	<1.0	740	--
MW-6	02/07/12	32.04	26.53	5.51	410	<0.50	<0.50	<0.50	<1.0	970	--
MW-6	08/09/12	32.04	28.27	3.77	830	<0.50	<0.50	<0.50	<1.0	970	--
MW-6	02/27/13	32.04	26.48	5.56	<50	<0.50	<0.50	<0.50	<1.0	970	--
MW-6	08/15/13	34.53	28.85	5.68	58	<0.50	<0.50	<0.50	<1.0	1000	--
800 Harrison Street											
MW-1	06/05/91	34.94	--	--	ND	ND	ND	ND	ND	--	--
MW-1	09/30/91	34.94	--	--	ND	ND	ND	ND	ND	--	--
MW-1	12/30/91	34.94	--	--	ND	ND	ND	ND	ND	--	--
MW-1	04/02/92	34.94	--	--	ND	ND	ND	ND	ND	--	--
MW-1	06/30/92	34.94	--	--	ND	ND	ND	ND	ND	--	--
MW-1	09/15/92	34.94	--	--	76	1	ND	ND	ND	--	--
MW-1	12/21/92	34.94	21.17	13.77	95	0.69	ND	ND	1	--	--
MW-1	04/28/93	34.94	--	--	920	3.1	2.3	1.2	9.7	--	--
MW-1	07/23/93	34.94	20.13	14.81	ND	0.5	0.66	ND	ND	--	--
MW-1	10/05/93	34.69	20.30	14.39	92	1.5	ND	ND	0.72	--	--
MW-1	01/03/94	34.69	20.52	14.17	ND	ND	ND	ND	ND	--	--
MW-1	04/02/94	34.69	20.16	14.53	ND	ND	ND	ND	ND	--	--
MW-1	07/05/94	34.69	19.27	15.42	250	4.8	13	1.2	7.3	--	--
MW-1	10/06/94	34.69	20.87	13.82	540	1.4	ND	0.66	11	--	--
MW-1	01/02/95	34.69	19.67	15.02	140	ND	ND	ND	ND	--	--
MW-1	04/03/95	34.69	17.61	17.08	580	3.6	0.8	ND	4	--	--
MW-1	07/14/95	34.69	18.58	16.11	260	2.1	ND	ND	1.2	--	--
MW-1	10/10/95	34.69	19.60	15.09	220	2	ND	25	5.6	--	29
MW-1	01/03/96	34.69	19.69	15.00	190	2.4	ND	0.71	1.2	--	--
MW-1	04/10/96	34.69	17.65	17.04	540	8.9	1.7	1.5	7.4	--	50
MW-1	07/09/96	34.69	18.52	16.17	490	3	1.4	1.3	2.5	--	150

Table 2
Historical Groundwater Analytical Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)	EPA 8260B						8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
MW-8	08/11/04	32.00	15.86	16.14	350	<2.5	<2.5	<2.5	<5.0	310	--
MW-8	03/31/05	32.00	13.73	18.27	<2000	<0.50	<0.50	<0.50	<1.0	2100	--
MW-8	09/30/05	32.00	15.94	16.06	1200	<0.50	0.5	<0.50	<1.0	6900	--
MW-8	03/27/06	32.00	13.13	18.87	460	<0.50	<0.50	<0.50	<1.0	820	--
MW-8	09/27/06	32.00	16.75	15.25	520	<5.0	<5.0	<5.0	8.2	870	--
MW-8	03/27/07	32.00	16.87	15.13	1400	<0.50	<0.50	<0.50	<0.50	3600	--
MW-8	09/28/07	32.00	17.91	14.09	280	<2.5	<2.5	<2.5	<2.5	670	--
MW-8	03/26/08	32.00	17.45	14.55	110	<0.50	<0.50	<0.50	<1.0	210	--
MW-8	07/28/08	32.00	18.50	13.50	<50	<0.50	<0.50	<0.50	<1.0	11	--
MW-8	01/26/09	32.00	18.65	13.35	<50	<0.50	<0.50	<0.50	<1.0	22	--
MW-8	08/03/09	32.03	18.11	13.92	67	<0.50	<0.50	<0.50	<1.0	64	--
MW-8	01/25/10	32.03	17.67	14.36	<50	<0.50	<0.50	<0.50	<1.0	10	--
MW-8	08/03/10	32.03	17.58	14.45	<50	<0.50	<0.50	<0.50	<1.0	10	--
MW-8	02/17/11	32.03	17.53	14.50	<50	<0.50	<0.50	<0.50	<1.0	2.5	--
MW-8	08/03/11	32.03	17.18	14.85	<50	<0.50	<0.50	<0.50	<1.0	1.6	--
MW-8	02/07/12	32.03	18.15	13.88	<50	<0.50	<0.50	<0.50	<1.0	0.75	--
MW-8	08/09/12	32.03	17.29	14.74	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-8	02/27/13	32.03	17.58	14.45	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-8	08/15/13	32.03	18.46	13.57	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
Tier 1 ESLs for Groundwater (Residential)					100	1	40	30	20	5	5
Tier 1 ESLs for Groundwater (Commercial/Industrial)					500	46	130	43	100	1,800	1,800

Abbreviations:

- TOC Top of casing
- ft MSL Feet relative to mean sea level
- ft BTOC Feet below top of casing
- TPH-g Total petroleum hydrocarbons as gasoline
- MTBE Methyl tertiary butyl ether
- NA Not available
- ND Non-detect
- Not analyzed
- <0.0005 Not detected at concentration threshold as shown
- J Estimated value
- ESL Table C. Environmental Screening Levels (ESLs), Groundwater (>3meters below ground surface), Groundwater is a Nondrinking Water Resource, CRWQCB-SFBR, Table C, November 2007
- BOLD** Indicates analytical result is above ESL for residential groundwater

Table 3
Soil Boring Details
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Sample Name	Installation Date	Surface Elevation (ft MSL)	Boring Depth (ft bgs)	Boring Diameter (inches)	First Water (ft bgs)	Location
706 Harrison Street						
GP-5	06/24/11	31.16	20.0	2.5	NA	Onsite
GP-6	06/24/11	31.19	20.0	2.5	NA	Onsite
GP-7	06/24/11	30.29	20.0	2.5	NA	Onsite
SB-B	11/28/94	NA	30.0	NA	NA	Onsite
SB-I	12/02/94	NA	27.0	NA	NA	Onsite
726 Harrison Street						
BH-A	08/17/01	NA	25.0	4.0	19.0	Onsite
BH-B	08/17/01	NA	25.0	4.0	19.0	Onsite
BH-C	08/17/01	NA	25.0	4.0	19.0	Onsite
BH-D	07/17/02	NA	24.0	2.0	20.0	Onsite
BH-E	07/17/02	NA	24.0	2.0	20.0	Onsite
BH-F	07/17/02	NA	24.0	2.0	20.0	Onsite
BH-G	07/17/02	NA	24.0	2.0	20.0	Onsite
BH-H	07/17/02	NA	20.0	2.0	18.0	Offsite
GP-3	06/20/11	NA	24.0	2.5	20.0	Onsite
800 Harrison Street						
CPT-1	02/07/07	NA	50.0	NA	NA	Onsite
CPT-2	02/07/07	NA	50.0	NA	NA	Onsite
CPT-3	02/06/07	NA	50.0	NA	NA	Offsite
CPT-4	02/05/07	NA	50.0	NA	NA	Offsite
CPT-5	02/05/07	NA	50.0	NA	NA	Offsite
CPT-6	02/06/07	NA	50.0	NA	NA	Offsite
EB-1	05/29/91	NA	23.0	8.0	22.5	Onsite
EB-2	05/29/91	NA	23.0	8.0	23.0	Onsite
EB-3	03/18/94	NA	20.5	8.5	20.5	Onsite
EB-4	03/18/94	NA	20.5	8.5	20.5	Onsite
EB-5	03/17/94	NA	20.5	8.5	20.5	Onsite
EB-6	03/18/94	NA	20.5	8.5	20.5	Onsite
EB-7	03/17/94	NA	19.5	8.5	19.5	Onsite
EB-8	03/17/94	NA	19.5	8.5	19.5	Onsite
EB-9	03/17/94	NA	20.5	8.5	20.5	Onsite
EB-10	03/17/94	NA	20.5	8.5	20.5	Onsite
EB-11	03/18/94	NA	10.5	3.0	NA	Onsite
EB-12	03/18/94	NA	11.0	3.0	NA	Onsite
GP-1	03/28/12	NA	20.0	2.5	NA	Onsite
GP-2	06/24/11	35.03	20.0	2.5	NA	Onsite

Abbreviations:

ft MSL Feet relative to mean sea level

ft bgs Feet below ground surface

NA Not available

Table 4
Historical Soil Analytical Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Sample Name	Sample Date	Sample Depth (ft bgs)	LUFT GC/MS					EPA 8260B							
			TPPH (mg/kg)	TPH-d (mg/kg)	TPH-g (mg/kg)	TPH-mo (mg/kg)	TOG (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	EDB (mg/kg)	1,2-DCA (mg/kg)	Lead (mg/kg)
706 Harrison Street															
GP-5	06/24/11	5.0	<0.30	NA	NA	NA	NA	<0.0074	<0.0074	<0.0074	<0.015	<0.0074	<0.0074	<0.0074	NA
	06/24/11	10.0	<0.18	NA	NA	NA	NA	<0.0044	<0.0044	<0.0044	<0.0089	<0.0044	<0.0044	<0.0044	NA
	06/24/11	15.0	<0.16	NA	NA	NA	NA	<0.0040	<0.0040	<0.0040	<0.0081	<0.0040	<0.0040	<0.0040	NA
	06/24/11	20.0	2.1	NA	NA	NA	NA	<0.0043	<0.0043	0.0057	<0.0085	0.0099	<0.0043	<0.0043	NA
GP-6	06/24/11	5.0	<0.19	NA	NA	NA	NA	<0.0047	<0.0047	<0.0047	<0.0094	<0.0047	<0.0047	<0.0047	NA
	06/24/11	10.0	<0.17	NA	NA	NA	NA	<0.0043	<0.0043	<0.0043	<0.0086	<0.0043	<0.0043	<0.0043	NA
	06/24/11	15.0	<0.18	NA	NA	NA	NA	<0.0045	<0.0045	<0.0045	<0.0089	<0.0045	<0.0045	<0.0045	NA
GP-7	06/24/11	5.0	<0.23	NA	NA	NA	NA	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	NA
	06/24/11	10.0	<0.19	NA	NA	NA	NA	<0.0048	<0.0048	<0.0048	<0.0096	<0.0048	<0.0048	<0.0048	NA
	06/24/11	15.0	<0.17	NA	NA	NA	NA	<0.0043	<0.0043	<0.0043	<0.0086	<0.0043	<0.0043	<0.0043	NA
MW-1	07/23/93	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	07/23/93	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	07/23/93	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	07/23/93	20.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
MW-2	07/23/93	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	07/23/93	10.0	NA	NA	ND	NA	NA	0.059	0.036	0.0061	0.031	NA	NA	NA	ND
	07/23/93	15.0	NA	NA	48	NA	NA	0.56	2.8	1.5	8.8	NA	NA	NA	ND
MW-3	07/23/93	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	07/23/93	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	07/23/93	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	07/23/93	20.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
MW-4	11/28/94	16.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	11/28/94	17.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	11/28/94	26.0	NA	NA	ND/0.021	NA	NA	ND/ND	ND/ND	ND/ND	ND/ND	NA	NA	NA	ND
MW-5	11/30/94	18.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
MW-6	12/01/94	16.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
MW-7	12/02/94	16.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	12/02/94	18.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	12/02/94	26.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
SB-B	11/28/94	11.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	11/28/94	16.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	11/28/94	26.0	NA	NA	1.1	NA	NA	0.18	0.054	0.024	0.071	NA	NA	NA	ND
SB-I	12/02/94	11.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
VW-1	07/23/93	17.0	NA	NA	360	NA	NA	18	40	13	68	NA	NA	NA	ND
VW-2	07/23/93	17.0	NA	NA	6,000	NA	NA	210	890	210	1,200	NA	NA	NA	ND
VW-3	11/28/94	11.0	NA	NA	410	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	11/28/94	18.0	NA	NA	14,000	NA	NA	120	620	220	1,100	NA	NA	NA	ND
	11/28/94	26.0	NA	NA	ND	NA	NA	0.059	0.041	0.0028	0.050	NA	NA	NA	ND
VW-4	11/29/94	17.5	NA	NA	15,000	NA	NA	160	700	240	1,200	NA	NA	NA	ND
VW-5	11/30/94	11.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	11/30/94	17.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	11/30/94	26.0	NA	NA	ND	NA	NA	ND	0.012	ND	ND	NA	NA	NA	ND

Table 4
Historical Soil Analytical Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Sample Name	Sample Date	Sample Depth (ft bgs)	LUFT GC/MS					EPA 8260B								
			TPPH (mg/kg)	TPH-d (mg/kg)	TPH-g (mg/kg)	TPH-mo (mg/kg)	TOG (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	EDB (mg/kg)	1,2-DCA (mg/kg)	Lead (mg/kg)	
800 Harrison Street																
EB-1	05/29/91	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	05/29/91	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	05/29/91	15.0	NA	NA	ND	NA	NA	0.0087	ND	ND	ND	NA	NA	NA	NA	
	05/29/91	20.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	05/29/91	22.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
EB-2	05/29/91	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	05/29/91	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	05/29/91	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	05/29/91	20.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	05/29/91	22.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
EB-3	03/18/94	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	9.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	14.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	19.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
EB-4	03/18/94	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	9.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	14.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	19.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
EB-5	03/18/94	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	19.0	NA	NA	310	NA	NA	0.71	2.4	1.3	2.2	NA	NA	NA	NA	
EB-6	03/18/94	4.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	9.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	14.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	19.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
EB-7	03/18/94	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	19.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
EB-8	03/18/94	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	18.5	NA	NA	21,000	NA	NA	7.0	78	26	140	NA	NA	NA	NA	
EB-9	03/18/94	5.5	NA	ND	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	10.0	NA	ND	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	15.0	NA	ND	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	20.0	NA	ND	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
EB-10	03/18/94	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	20.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
EB-11	03/18/94	5.0	NA	ND	1.8	NA	NA	ND	0.0091	ND	0.0088	NA	NA	NA	NA	
	03/18/94	6.0	NA	19	3.6	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	10.0	NA	ND	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
EB-12	03/18/94	5.0	NA	ND	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	
	03/18/94	10.5	NA	ND	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	

Table 4
Historical Soil Analytical Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Sample Name	Sample Date	Sample Depth (ft bgs)	LUFT GC/MS					EPA 8260B							
			TPPH (mg/kg)	TPH-d (mg/kg)	TPH-g (mg/kg)	TPH-mo (mg/kg)	TOG (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	EDB (mg/kg)	1,2-DCA (mg/kg)	Lead (mg/kg)
GP-1	03/28/12	6.0	<0.16	NA	NA	NA	NA	<0.0040	<0.0040	<0.0040	<0.0079	<0.0040	<0.0040	<0.0040	NA
	03/28/12	10.0	<0.18	NA	NA	NA	NA	<0.0045	<0.0045	<0.0045	<0.0090	<0.0045	<0.0045	<0.0045	NA
	03/28/12	14.0	<0.16	NA	NA	<4.0	<50	<0.0040	<0.0040	<0.0040	<0.0079	<0.0040	<0.0040	<0.0040	NA
GP-2	06/24/11	5.0	<0.63	NA	NA	NA	NA	<0.016	<0.016	<0.016	<0.031	<0.016	<0.016	<0.016	NA
	06/24/11	10.0	21	NA	NA	NA	NA	<0.0044	<0.0044	<0.0044	<0.0088	0.013	<0.0044	<0.0044	NA
	06/24/11	14.0	3,200	NA	NA	NA	NA	<0.0044	<0.0044	0.013	0.11	0.028	<0.0044	<0.0044	NA
	06/24/11	17.0	1,000	NA	NA	NA	NA	<0.0044	0.024	0.015	0.098	0.060	<0.0044	<0.0044	NA
MW-1	05/30/91	5.0	NA	2.2	1.1	NA	NA	ND	ND	ND	0.010	NA	NA	NA	NA
	05/30/91	10.0	NA	43	43	NA	NA	ND	0.0059	0.0074	0.43	NA	NA	NA	NA
	05/30/91	15.0	NA	120	250	NA	NA	0.80	0.73	0.91	2.9	NA	NA	NA	NA
	05/30/91	20.0	NA	ND	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	05/30/91	24.0	NA	ND	ND	NA	NA	ND	ND	ND	0.0073	NA	NA	NA	NA
MW-2	05/30/91	5.0	NA	NA	ND	NA	NA	ND	ND	ND	0.0054	NA	NA	NA	NA
	05/30/91	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	05/30/91	15.0	NA	NA	ND	NA	NA	0.015	ND	0.0064	0.025	NA	NA	NA	NA
	05/30/91	20.0	NA	NA	ND	NA	NA	0.0086	ND	ND	ND	NA	NA	NA	NA
	05/30/91	22.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
MW-3	05/30/91	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	05/30/91	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	05/30/91	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	05/30/91	20.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	05/30/91	23.0	NA	NA	2.9	NA	NA	0.0079	ND	0.012	0.031	NA	NA	NA	NA
MW-4	10/01/92	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	20.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	22.5	NA	NA	27	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
MW-5	10/01/92	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	20.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	22.0	NA	NA	27	NA	NA	ND	0.0060	ND	0.014	NA	NA	NA	NA
MW-6	10/01/92	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	20.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	21.5	NA	NA	170	NA	NA	ND	0.38	1.8	4.5	NA	NA	NA	NA
MW-7	04/14/93	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	04/14/93	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	04/14/93	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	04/14/93	21.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
MW-8	04/14/93	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	04/14/93	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	04/14/93	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	04/14/93	20.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
ESLs for Residential Soils			83	-	-	-	-	0.044	2.9	3.3	2.3	0.023	-	-	-
ESLs for Commercial/Industrial Soils			500	-	-	-	-	1.2	9.3	4.7	11	8.4	-	-	-

Table 4
Historical Soil Analytical Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Sample Name	Sample Date	Sample Depth (ft bgs)	LUFT GC/MS					EPA 8260B						
			TPPH (mg/kg)	TPH-d (mg/kg)	TPH-g (mg/kg)	TPH-mo (mg/kg)	TOG (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	EDB (mg/kg)	1,2-DCA (mg/kg)

Abbreviations:

- ft bgs Feet below ground surface
- mg/kg Milligrams per kilogram
- TPPH Total purgeable petroleum hydrocarbons
- TPH-g Total petroleum hydrocarbons as gasoline
- TPH-mo Total petroleum hydrocarbons as motor oil
- TOG Total oil and grease
- MTBE Methyl tertiary butyl ether
- EDB 1,2-Dibromoethane
- 1,2-DCA 1,2-Dichloroethane
- NA Not analyzed
- ND Non-detect
- <0.0005 Not detected at concentration threshold as shown
- J Estimated value
- ESL Table C. Environmental Screening Levels (ESLs), Deep Soils (>3meters below ground surface), Groundwater is a Current or Potential Source of Drinking Water, CRWQCB-SFBR, Table C, November 2007
- BOLD** Indicates analytical result is above ESL for residential soils

Table 5
Summary of MPE Pilot Test Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Date: 9/10/13 & 9/11/13
MPE Well ID: MPE-1
Initial DTW: 19.37 ft BTOC
MPE Well TD: 32.99 ft BTOC

Depth to Top of Screen: 15 ft BTOC
Pump Intake Depth: 32 ft BTOC
Pump Type (make & model): QED AP4+ Long
Pump Capacity (gpm): 14 GPM

Time (hh:mm)	Elapsed Time (hh:mm)	Casing Vacuum (H ₂ O)	Casing Flow Rate (acfm)	Temperature (°F)	Casing Flow Rate (scfm)	VOC Concentration - FID (ppmv)	VOC Concentration - PID (ppmv)	DTW* (ft BTOC)	Cumulative Gallons (totalizer, gal)
9/10/2013									
12:50	0:00	10.0	27.0	77.1	26.4	--	--	25.55	617
12:55	0:05	10.0	27.0	77.0	26.4	100.2	5.5	25.63	--
13:00	0:10	10.0	28.0	77.5	30.5	--	--	25.11	--
13:05	0:15	25.0	50.1	78.9	47.0	100	8.6	25.30	--
13:10	0:20	25.0	50.1	79.0	47.0	--	--	25.26	685
13:15	0:25	25.0	50.1	79.5	46.9	--	--	24.93	--
13:30	0:40	40.0	10.9	80.0	9.8	1500	55.0	25.20	757
14:00	1:10	40.2	10.1	81.3	9.1	1500	55.5	24.94	--
14:18	1:28	--	--	--	--	--	--	25.35	905
14:37	1:47	40.0	10.0	81.1	9.0	--	--	25.01	--
14:40	1:50	40.0	10.0	80.8	9.0	--	--	25.16	--
14:55	2:05	61.0	12.5	79.6	10.6	--	--	25.93	--
15:35	2:45	61.2	12.6	78.9	10.7	--	90.4	25.37	--
15:55	3:05	61.2	12.8	78.6	10.8	--	--	24.97	--
16:11	3:21	--	--	--	--	--	--	24.95	1278
16:35	3:45	--	--	--	--	--	--	24.61	1354
17:00	4:10	61.2	13.2	78.5	11.2	--	93.7	24.86	--
17:05	4:15	61.2	13.2	78.5	11.2	--	--	24.81	1451
9/11/2013									
7:05	18:15	61.0	12.8	69.4	11.1	--	381.0	24.83	4114
8:16	19:16	61.8	12.9	70.1	11.1	--	380.0	24.67	4337
9:05	20:05	61.5	13.5	71.1	11.6	--	300.0	24.80	--
9:19	20:19	--	--	--	--	--	--	25.03	4534
10:05	21:05	61.0	14.0	71.2	12.1	--	289.0	25.10	--
10:31	21:31	--	--	--	--	--	--	25.52	4762
11:15	22:15	61.4	14.5	73.5	12.4	--	--	25.20	--
11:50	22:50	61.0	14.4	74.8	12.3	--	382.0	24.64	--
12:00	23:00	61.0	14.4	75.0	12.3	--	--	25.14	5048
12:05	23:05	--	--	--	--	--	--	--	5066

Conclusion of MPE Pilot Test

Abbreviations:
MPE - Multi-phase extraction
DTW - Depth to water
ft BTOC - Feet below top of casing
TD - Total depth
H₂O - Inches of water
acfm - Actual cubic feet per minute
°F - Degrees Fahrenheit
scfm - Standard cubic feet per minute
ppmv - Parts per million, by volume
gal - Gallons
-- Not collected

Notes:
*Depth to water measurements displayed are recorded measurements from pressure transducer installed in PZ-1

Table 6
Summary of MPE Pilot Test Monitoring Network Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Date: 9/10/13 & 9/11/13

MPE Pilot Test Well ID: MPE-1

MPE Well Screen Interval 15 - 30 ft BTOC

Monitoring Network Well ID = MP-1				Monitoring Network Well ID = MW-5 (726 Harrison)				Monitoring Network Well ID = MW-4 (706 Harrison)			
Distance from MPE pilot test well = 17 feet				Distance from MPE pilot test well = 6 feet				Distance from MPE pilot test well = 14 feet			
Static DTW (ft BTOC) = 19.18				Static DTW (ft BTOC) = 19.58				Static DTW (ft BTOC) = 18.83			
Well Diameter (in.) = 1				Well Diameter (in.) = 2				Well Diameter (in.) = 2			
Well TD (ft BTOC) = 28.99				Well TD (ft BTOC) = 29.60				Well TD (ft BTOC) = 25.53			
Screen top (ft BTOC) = 15				Screen top (ft BTOC) = 10				Screen top (ft BTOC) = 9.5			
Time (hh:mm)	DTW* (ft BTOC)	Drawdown (ft)	Induced Vacuum ("H ₂ O)	Time (hh:mm)	DTW* (ft BTOC)	Drawdown (ft BTOC)	Induced Vacuum ("H ₂ O)	Time (hh:mm)	DTW* (ft BTOC)	Drawdown (ft BTOC)	Induced Vacuum ("H ₂ O)
9/10/2013											
7:55	19.22	0.04	--	8:07	19.61	0.03	--	8:18	18.81	-0.02	--
12:10	20.41	1.23	--	12:08	22.51	2.93	--	12:16	20.61	1.78	--
13:06	20.39	1.21	0.0	13:07	22.37	2.79	0.10	13:05	20.40	1.57	0.03
14:15	20.48	1.30	0.0	14:17	22.49	2.91	0.78	14:13	20.47	1.64	0.27
15:05	20.52	1.34	0.0	15:06	22.56	2.98	1.45	15:03	20.51	1.68	0.44
15:29	20.54	1.36	0.0	15:28	22.55	2.97	1.68	15:30	20.53	1.70	0.50
16:09	20.57	1.39	0.01	16:08	22.56	2.98	2.08	16:11	20.55	1.72	0.54
16:51	20.53	1.35	0.03	16:53	22.43	2.85	2.50	16:50	20.48	1.65	0.62
9/11/2013											
7:23	20.69	1.51	0.17	7:25	22.51	2.93	9.23	7:21	20.61	1.78	1.10
8:13	20.70	1.52	0.18	8:15	22.53	2.95	9.54	8:12	20.62	1.79	1.15
9:13	20.71	1.53	0.21	9:14	22.96	3.38	9.68	9:12	20.67	1.84	1.15
10:28	20.72	1.54	0.22	10:29	22.54	2.96	9.72	10:27	20.64	1.81	1.21
11:54	20.72	1.54	0.23	11:56	22.50	2.92	9.83	11:53	20.62	1.79	1.24
Abbreviations: ft BTOC - Feet below top of casing in. - inches DTW - depth to water TD - total depth "H ₂ O - inches of water Notes: *Depth to water measurements displayed are recorded measurements from pressure transducer installed in PZ-1											

Table 7
MPE Pilot Test Extracted Groundwater Analytical Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Sample Name	Sample Date	Sample Time (hh:mm)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)
726 Harrison Street							
MPE-1	09/10/13	11:05	97	13	11	25	370
MPE-1	09/11/13	10:05	73	64	48	110	450
MPE-1	09/11/13	11:55	94	27	22	53	360
ESLs for Residential Groundwater			1	40	30	20	5

Abbreviations:

µg/L Unit of measure, micrograms per liter

MTBE Methyl tertiary butyl ether

ESL Table C. Environmental Screening Levels (ESLs), Deep Soils (>3meters below ground surface),

Groundwater is a Current or Potential Source of Drinking Water, CRWQCB-SFBR, Table C, November 2007

Notes:

BOLD Indicates analytical result exceeded ESL for dissolved phase hydrocarbon constituent

Table 8
MPE Pilot Test Soil Vapor Analytical Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Sample Name	Sample Date	Sample Time (hh:mm)	GRO (ppmv)	Benzene (ppmv)	Toluene (ppmv)	Ethylbenzene (ppmv)	Total Xylenes (ppmv)	MTBE (ppmv)	Methane (% by volume)
726 Harrison Street									
Influent-1	09/10/13	14:40	210	0.35	0.81	<0.25	<0.50	0.64	0.27
Influent-1	09/11/13	10:05	1100	5.7	3.5	1.4	3.6	3.7	0.18
Influent-1	09/11/13	11:50	970	5.1	3.7	1.7	4.3	3.3	0.20
Effluent	09/11/13	11:50	0.63	<0.0025	0.003	<0.0025	<0.005	<0.0025	0.012

Abbreviations:

GRO Gasoline range organics (C₄ - C₁₂)

MTBE Methyl tertiary butyl ether

ppmv Parts per million, by volume

Influent-1 Pre-dilution soil vapor sample port

Effluent Effluent vapor sample port, aka 'exhaust' and 'outlet of oxidizer'

<0.0025 Not detected at concentration threshold as shown

Table 9
MPE Pilot Test Dissolved Phase Mass Removal Calculations
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

System Operational Data					Groundwater Extraction Flow Rate		Analytical Concentrations							Instantaneous Mass Removal Rate			Cumulative Mass Removed During Pilot Test ^[1]		
Date	Time (hh:mm)	Test Description	Operational Hours	Sample Location	Flow Rate (gpm)	Total Flow (gal)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	GRO (lbs/day)	Benzene (lbs/day)	MTBE (lbs/day)	GRO (lbs)	Benzene (lbs)	MTBE (lbs)
9/10/2013	11:05	MPE Operation (MPE-1)	1.0	MPE-1 Sample Port	3.0	180.0	820	97	13	11	25	146	370	0.0296	0.0035	0.013	0.00	0.00	0.00
9/11/2013	10:05	MPE Operation (MPE-1)	24.0	MPE-1 Sample Port	3.4	4896.0	820	73	64	48	110	295	450	0.0296	0.0035	0.018	0.03	0.00	0.02
9/11/2013	11:50	MPE Operation (MPE-1)	26.0	MPE-1 Sample Port	3.25	5070.0	820	94	27	22	53	196	360	0.0296	0.0035	0.014	0.03	0.00	0.02

Abbreviations:

- MPE Multi-phase extraction
- Vac Vacuum
- Temp Temperature
- GRO Gasoline Range Organics
- B Benzene
- T Toluene
- E Ethylbenzene
- X Total Xylenes
- F Degrees Fahrenheit
- gpm Gallons per minute
- gal Gallons
- µg/L Micrograms per liter
- lbs/day Pounds per day
- lbs Pounds

Mass Removal Rate Equation Variables and Constants:	
$E_{lb/day}$	Mass Removal Rate
$Conc_{mg/L}$	Constituent concentration, in milligrams per liter
Wt_{air}	Weight of Air (0.075 lb/ft ³)
$FlowRate_{gal/min}$	Groundwater extraction flow rate, in gallons per minute
Mass Removal Rate Calculation:	
$E_{lb/day} = Conc_{mg/L} \times FlowRate_{gal/min} \times \left(\frac{3.79L}{gal} \right) \times \left(\frac{1,440min}{day} \right) \times \left(\frac{1lb}{454,000mg} \right)$	

Notes:

- [1] Cumulative mass removed totals are based on overall operation time of the MPE system. Values are approximate.

Table 10
MPE Pilot Test Soil Vapor Mass Removal Calculations
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

System Operational Data							Volumetric Flow Rate		Analytical Concentrations						Instantaneous Mass Removal Rate		Cumulative Mass Removed During Pilot Test ^[1]	
Date	Time	Test Description	Operational Hours	Sample Location	Vac (in H2O)	Temp (F)	Flow Rate (acfm)	Flow Rate (scfm)	GRO (ppmv)	B (ppmv)	T (ppmv)	E (ppmv)	X (ppmv)	Total BTEX (ppmv)	GRO (lbs/day)	BTEX ^[2] (lbs/day)	GRO (lbs)	BTEX (lbs)
9/10/2013	14:40	MPE Operation (MPE-1)	1.0	SVE Influent-1	40	81.1	10.0	9.0	210	0.35	0.81	0.25	0.5	1.91	0.71	0.0061	0.03	0.000
9/11/2013	10:05	MPE Operation (MPE-1)	24.0	SVE Influent-1	61	71.2	14.0	12.1	1100	5.70	3.50	1.40	3.6	14.2	5.0	0.0583	4.78	0.058
9/11/2013	11:50	MPE Operation (MPE-1)	26.0	SVE Influent-1	61	74.8	14.4	12.3	970	5.1	3.7	1.70	4.3	14.8	4.5	0.0631	4.87	0.068

Abbreviations:

- MPE Multi-phase extraction
- Vac Vacuum
- Temp Temperature
- GRO Gasoline Range Organics
- B Benzene
- T Toluene
- E Ethylbenzene
- X Total Xylenes
- in H2O Inches of water
- F Degrees Fahrenheit
- acfm Actual cubic feet per minute
- scfm Standard cubic feet per minute
- ppmv Parts per million by volume
- lbs/day Pounds per day
- lbs Pounds

Notes:

- [1] Cumulative mass removed totals are based on overall operation time of the MPE system. Values are approximate.
- [2] BTEX mass removal rates are calculated using a weighted average of individual BTEX constituents to determine the sample specific molecular weight of BTEX.

Equation Variables and Constants:			
$E_{lb/min}$	Mass Removal Rate	$MW_{Toluene}$	Molecular Weight of Toluene (92.14 g/mol)
MW_{air}	Molecular Weight of Air (29 g/mol)	$MW_{EBenzene}$	Molecular Weight of Ethylbenzene (106.17 g/mol)
W_{air}	Weight of Air (0.075 lb/ft ³)	$MW_{Xylenes}$	Molecular Weight of Total Xylenes (106.10 g/mol)
$MW_{Benzene}$	Molecular Weight of Benzene (78.11 g/mol)	MW_{GRO}	Molecular Weight of GRO(101.0 g/mol)

Mass Removal Rate Calculation:

$$\left(\frac{E}{W_{air}} \right) = SCFM \left(\frac{W_{air}}{1000000} \right) - \left((0.075) / \left(\frac{T}{459.67} \right)^3 \right) \left(\frac{P_{atm}}{P_{gauge}} \right) \times (1/1000000) \times \left(\frac{E}{W_{air}} \right)$$

Flow Rate Correction for Standard Conditions:	
Assumptions:	
P_{atm}	Atmospheric pressure at sea level is approximately 406.8 "w.c.
$P_{elevation}$	Atmospheric pressure in Oakland, CA, located at 43 ft above mean sea level, is approximately 407.7 in H2O.
P_{gauge}	Pressure/Vacuum of shed process flow
T_{std}	Standard Temperature of 77 degrees Fahrenheit
T_{gauge}	Temperature of process flow in degrees Fahrenheit
459.67	Conversion factor from degrees Fahrenheit to degrees Rankine

$$= \left(\frac{P_{atm}}{P_{gauge}} \right) \left(\frac{459.67}{T_{gauge} + 459.67} \right)^3$$

Table 11
Summary of AS/SVE Pilot Test Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Time	AS-1 (Air Sparge Well)				EW-1 (Vapor Extraction Well)					VE-3 (Vapor Extraction Well)				
	Manifold Pressure (psi)	Wellhead Pressure (psi)	Flow Rate (acfm)	Temperature (°F)	Flow Rate (scfm)	Vacuum (in H ₂ O)	Flow Rate (acfm)	Temperature (°F)	Flow Rate (scfm)	PID Reading (ppm)	Vacuum (in H ₂ O)	Flow Rate (acfm)	Temperature (°F)	Flow Rate (scfm)

Abbreviations:

- in H₂O Inches of water
- psi Pounds per square inch
- acfm Actual cubic feet per minute
- scfm Standard cubic feet per minute
- °F Degrees Fahrenheit
- ppm Parts per million
- mg/L Milligrams per liter
- hr Hour(s)
- Not available; Not recorded

Air Sparge Flow Rate Correction for Standard Conditions:	
Assumptions:	
P _{atm} = Atmospheric pressure at sea level is approximately 14.68 psi.	
P _{elevation} = Atmospheric pressure in Oakland, CA, located at 43 ft above mean sea level, is approximately 14.71 psi.	
P _{gauge} = Pressure/Vacuum of shed process flow	
T _{std} = Standard Temperature of 77 degrees Fahrenheit	
T _{gauge} = Temperature of process flow in degrees Fahrenheit	$= \frac{((- + -) / -) ((- +459.67) / (- +459.67))}{}$
459.67 = Conversion factor from degrees Fahrenheit to degrees Rankine	

SVE Flow Rate Correction for Standard Conditions:	
Assumptions:	
P _{atm} = Atmospheric pressure at sea level is approximately 406.8 in. H ₂ O	
P _{elevation} = Atmospheric pressure in Oakland, CA, located at 43 ft above mean sea level, is approximately 407.7 in H ₂ O.	
P _{gauge} = Pressure/Vacuum of shed process flow	
T _{std} = Standard Temperature of 77 degrees Fahrenheit	
T _{gauge} = Temperature of process flow in degrees Fahrenheit	$= \frac{((- + -) / -) ((- +459.67) / (- +459.67))}{}$
459.67 = Conversion factor from degrees Fahrenheit to degrees Rankine	

ARCADIS

Figures

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 Oakland West.jpg



REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. □UAD., OAKLAND WEST, CALIFORNIA, 1993.



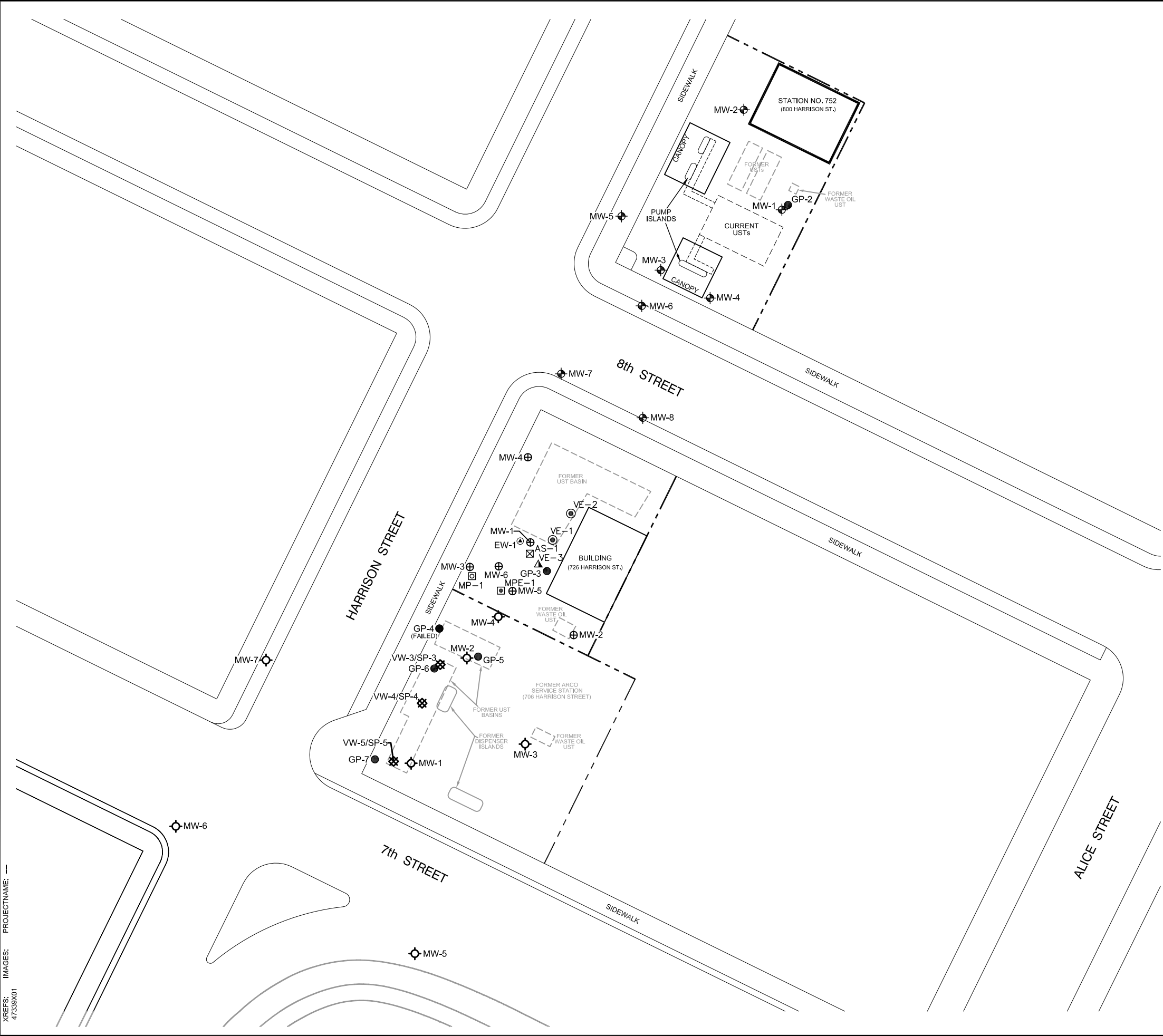
UNION OIL OF CALIFORNIA
 STATION NO. 0752/YEE/GIN COMMINGLED
 706/726/800 HARRIS STREET
 OAKLAND, CALIFORNIA

SITE LOCATION MAP



FIGURE
1

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
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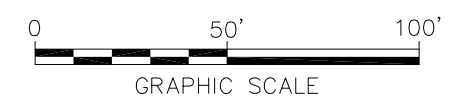


LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 ⊕ GROUNDWATER MONITORING WELL (UNOCAL)
- MW-1 ⊕ GROUNDWATER MONITORING WELL (GIN)
- VW-3/SP-3 ⊗ SOIL VAPOR/SPARGE WELL (UNABLE TO LOCATE) (GIN)
- MW-1 ⊕ GROUNDWATER MONITORING WELL (YEE)
- AS-1 ⊗ AIR SPARGE WELL (YEE)
- EW-1 ⊕ EXTRACTION WELL (YEE)
- GP-2 ● GEOPROBE™ (JUNE 2011)
- MPE-1 ⊕ MULTI-PHASE EXTRACTION PILOT TEST WELL (PZ-1 IS LOCATED IN THE SAME BOREHOLE)
- MP-1 ⊕ PILOT TEST MONITORING POINT
- VE-1 ⊕ VAPOR EXTRACTION WELL
- VE-3 ▲ PILOT TEST VAPOR EXTRACTION WELL

NOTE:

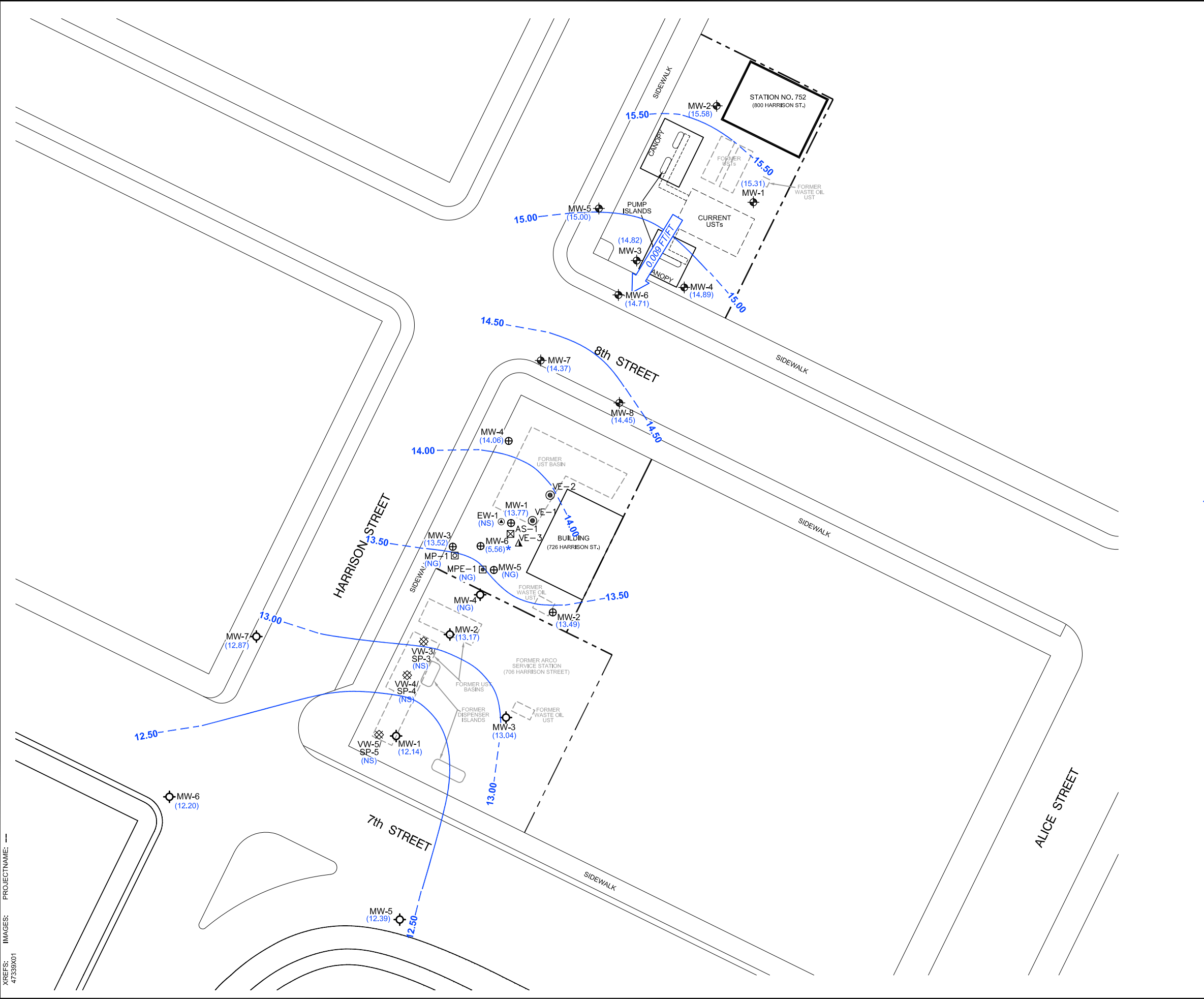
1. BASE MAP PROVIDED BY MID COAST ENGINEERS, DATED 06/29/11, AT A SCALE OF 1"=50'. ADDITIONAL SITE FEATURES PROVIDED BY STANTEC, INC., DATED 03/05/10, AT A SCALE OF 1"=50'.
2. COORDINATES ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, ZONE III, NAD 83.



UNION OIL OF CALIFORNIA STATION NO. 0752/YEE/GIN COMMINGLED 706/726/800 HARRISON STREET OAKLAND, CALIFORNIA	
SITE PLAN	
	FIGURE 2

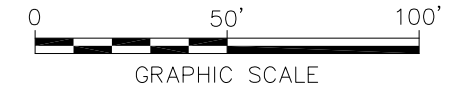


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- LEGEND**
- PROPERTY BOUNDARY
 - PRODUCT PIPING
 - MW-1 ⊕ GROUNDWATER MONITORING WELL (UNOCAL SITE)
 - MW-1 ⊕ GROUNDWATER MONITORING WELL (YEE SITE)
 - EW-1 ⊕ EXTRACTION WELL (YEE SITE)
 - MW-1 ⊕ GROUNDWATER MONITORING WELL (GIN SITE)
 - VW-3/SP-3 ⊗ SOIL VAPOR/SPARGE WELL (UNABLE TO LOCATE) (GIN SITE)
 - MPE-1 ⊕ MULTI-PHASE EXTRACTION PILOT TEST WELL (PZ-1 IS LOCATED IN THE SAME BOREHOLE)
 - MP-1 ⊕ PILOT TEST MONITORING POINT
 - VE-1 ⊕ VAPOR EXTRACTION WELL
 - VE-3 ▲ PILOT TEST VAPOR EXTRACTION WELL
 - AS-1 ⊗ AIR SPARGE WELL
 - (15.31) GROUNDWATER ELEVATION CONTOUR IN FEET RELATIVE TO MEAN SEA LEVEL (FT MSL)
 - 15.00 — GROUNDWATER ELEVATION CONTOUR (FT MSL; DASHED WHERE INFERRED)
 - ← 0.009 FT/FT APPROXIMATE GROUNDWATER FLOW DIRECTION AND GRADIENT (FOOT PER FOOT)
 - (NG) NOT GAUGED
 - (NS) NO SURVEY DATA AVAILABLE
 - * NOT USED IN GROUNDWATER CONTOURING AND GRADIENT CALCULATION

- NOTES:**
1. BASE MAP PROVIDED BY MID COAST ENGINEERS, DATED 06/29/11, AT A SCALE OF 1"=50'. ADDITIONAL SITE FEATURES PROVIDED BY STANTEC, INC., DATED 03/05/10, AT A SCALE OF 1"=50'.
 2. COORDINATES ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, ZONE III, NAD 83.
 3. MW-6 - AT 726 HARRISON STREET IS NOT USED IN THE GROUNDWATER CONTOURS BECAUSE IT IS LOCATED IN A LOWER WATER BEARING ZONE.



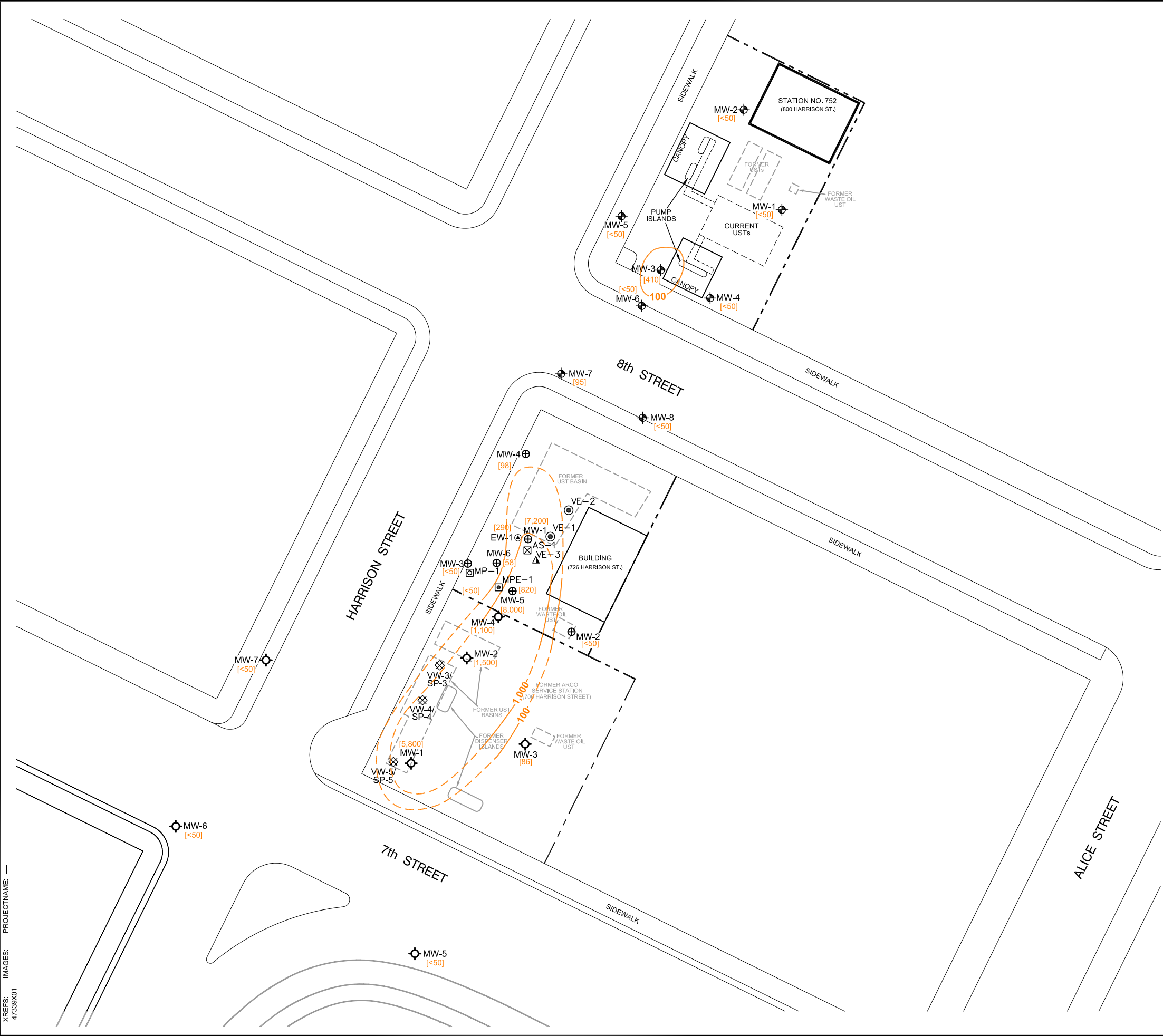
UNION OIL OF CALIFORNIA
 STATION NO. 0752/YEE/GIN COMMINGLED
 706/726/800 HARRISON STREET
 OAKLAND, CALIFORNIA

**GROUNDWATER ELEVATION
 CONTOUR MAP
 FEBRUARY 27, 2013**

ARCADIS

FIGURE
3

CITY: PETALUMA, CA. DIV/GROUP: ENV. DB: J. HARRIS. G:\ENV\CAD\lakewood+COACT\10047339\2013\147339\04.dwg LAYOUT: 4. SAVED: 10/22/2013 12:17 PM. ACADVER: 18.1S (LMS TECH). PAGES: 4. PAGES SETUP: ---. PLOTSTYLETABLE: ARCADIS-DEN.CTB. PLOTTED: 10/11/2013 4:03 PM. BY: HOEFER, MATTHEW. XREFS: IMAGES: PROJECTNAME: ---. 47339X01

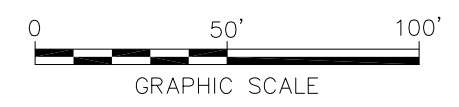


LEGEND

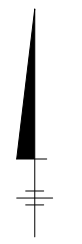
- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 ⊕ GROUNDWATER MONITORING WELL (UNOCAL SITE)
- MW-1 ⊕ GROUNDWATER MONITORING WELL (YEE SITE)
- EW-1 ⊕ EXTRACTION WELL (YEE SITE)
- MW-1 ⊕ GROUNDWATER MONITORING WELL (GIN SITE)
- VW-3/SP-3 ⊗ SOIL VAPOR/SPARGE WELL (UNABLE TO LOCATE) (GIN SITE)
- MPE-1 ⊕ MULTI-PHASE EXTRACTION PILOT TEST WELL (PZ-1 IS LOCATED IN THE SAME BOREHOLE)
- MP-1 ⊕ PILOT TEST MONITORING POINT
- VE-1 ⊕ VAPOR EXTRACTION WELL
- VE-3 ▲ PILOT TEST VAPOR EXTRACTION WELL
- AS-1 ⊗ AIR SPARGE WELL
- [95] TOTAL PURGEABLE PETROLEUM HYDROCARBONS (TPPH) CONCENTRATION IN MICROGRAMS PER LITER (µg/L)
- 100 ——— TPPH ISOCONCENTRATION CONTOUR (µg/L; DASHED WHERE INFERRED)
- < DENOTES LESS THAN LABORATORY REPORTING LIMIT

NOTES:

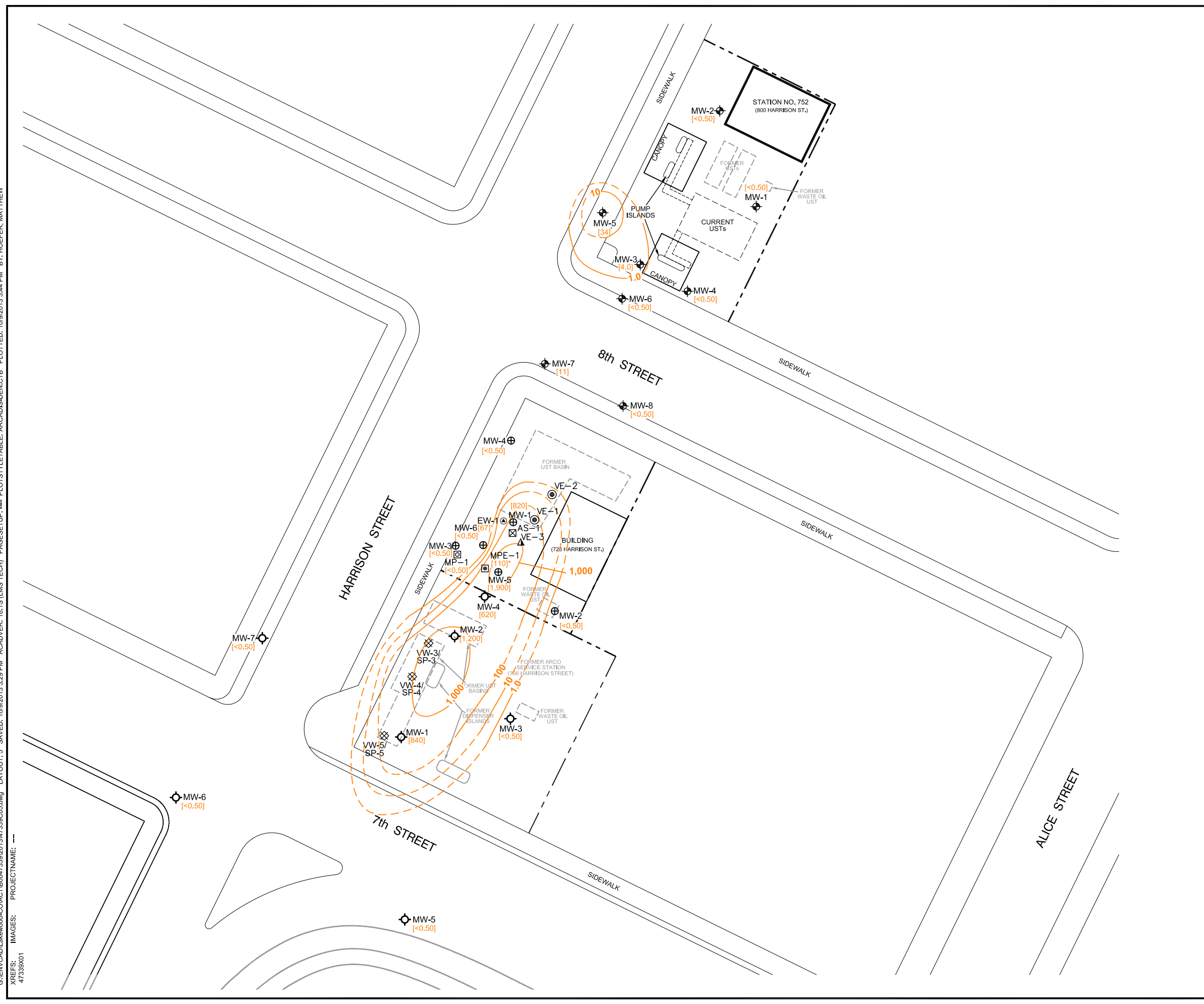
1. BASE MAP PROVIDED BY MID COAST ENGINEERS, DATED 06/29/11, AT A SCALE OF 1"=50'. ADDITIONAL SITE FEATURES PROVIDED BY STANTEC, INC., DATED 03/05/10, AT A SCALE OF 1"=50'.
2. COORDINATES ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, ZONE III, NAD 83.
3. MW-6 IS NOT USED IN CONTOURING BECAUSE IT IS LOCATED IN A LOWER WATER BEARING ZONE.



UNION OIL OF CALIFORNIA STATION NO. 0752/YEE/GIN COMMINGLED 706/726/800 HARRISON STREET OAKLAND, CALIFORNIA	
TPPH CONCENTRATION MAP	
	FIGURE 4

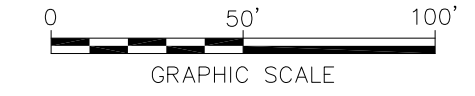


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 XREFS: IMAGES: PROJECTNAME: --



- LEGEND**
- PROPERTY BOUNDARY
 - PRODUCT PIPING
 - MW-1 ⊕ GROUNDWATER MONITORING WELL (UNOCAL SITE)
 - MW-1 ⊕ GROUNDWATER MONITORING WELL (YEE SITE)
 - EW-1 ⊕ EXTRACTION WELL (YEE SITE)
 - MW-1 ⊕ GROUNDWATER MONITORING WELL (GIN SITE)
 - VW-3/SP-3 ⊗ SOIL VAPOR/SPARGE WELL (UNABLE TO LOCATE) (GIN SITE)
 - MPE-1 ⊕ MULTI-PHASE EXTRACTION PILOT TEST WELL (PZ-1 IS LOCATED IN THE SAME BOREHOLE)
 - MP-1 ⊕ PILOT TEST MONITORING POINT
 - VE-1 ⊕ VAPOR EXTRACTION WELL
 - VE-3 ▲ PILOT TEST VAPOR EXTRACTION WELL
 - AS-1 ⊗ AIR SPARGE WELL
 - [4.0] BENZENE CONCENTRATION IN MICROGRAMS PER LITER (µg/L)
 - 100 — BENZENE ISOCONCENTRATION CONTOUR (µg/L; DASHED WHERE INFERRED)
 - < DENOTES LESS THAN LABORATORY REPORTING LIMIT
 - WELL NOT USED IN CONCENTRATION CONTOURING

- NOTES:**
1. BASE MAP PROVIDED BY MID COAST ENGINEERS, DATED 06/29/11, AT A SCALE OF 1"=50'. ADDITIONAL SITE FEATURES PROVIDED BY STANTEC, INC., DATED 03/05/10, AT A SCALE OF 1"=50'.
 2. COORDINATES ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, ZONE III, NAD 83.
 3. MW-6 IS NOT USED IN CONTOURING BECAUSE IT IS LOCATED IN A LOWER WATER BEARING ZONE.



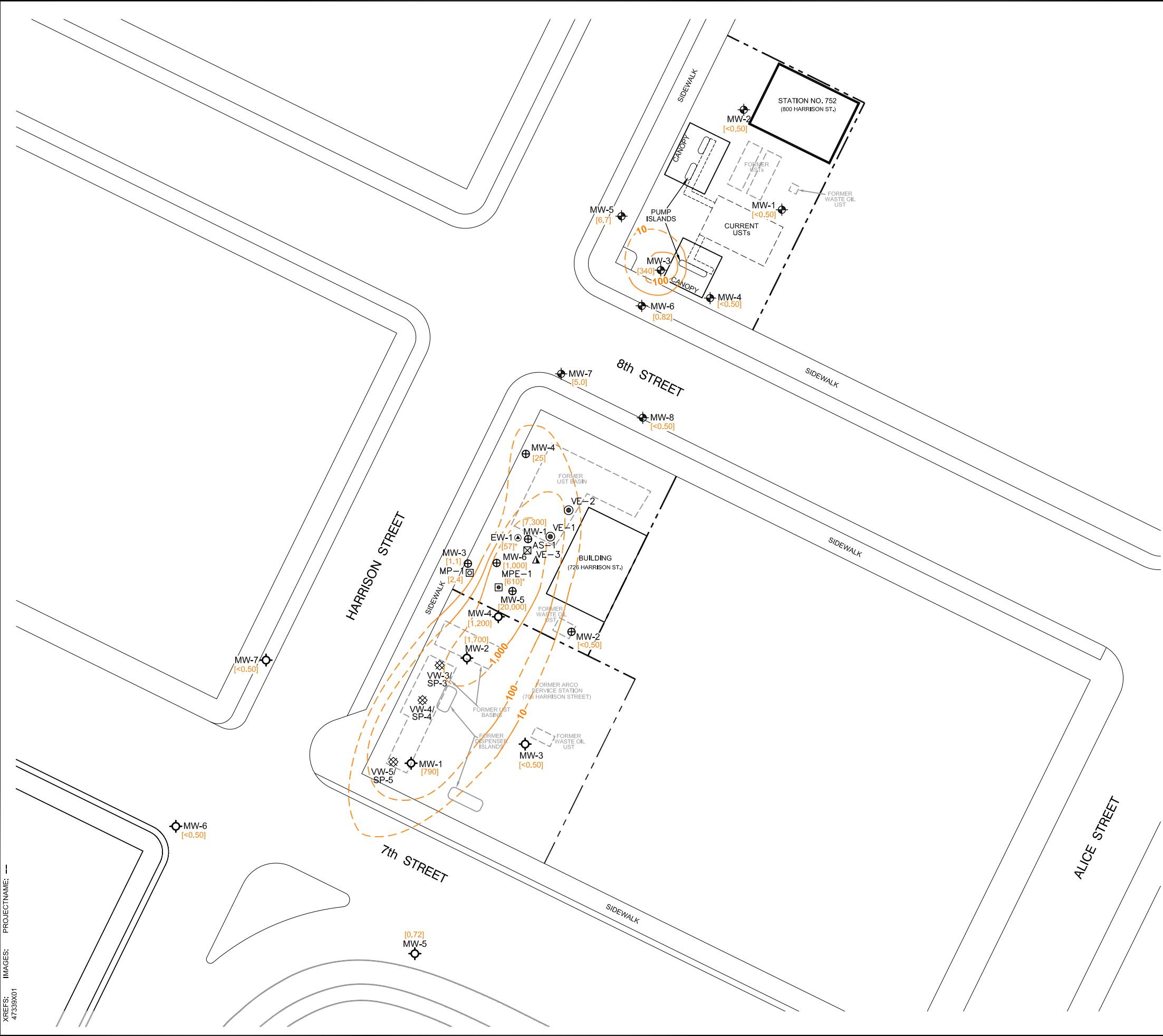
UNION OIL OF CALIFORNIA
 STATION NO. 0752/YEE/GIN COMMINGLED
 706/726/800 HARRISON STREET
 OAKLAND, CALIFORNIA

BENZENE CONCENTRATION MAP

ARCADIS

FIGURE
5

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
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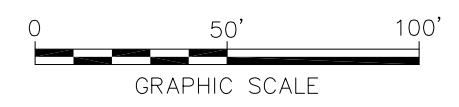


LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 ⊕ GROUNDWATER MONITORING WELL (UNOCAL SITE)
- MW-1 ⊕ GROUNDWATER MONITORING WELL (YEE SITE)
- EW-1 ⊕ EXTRACTION WELL (YEE SITE)
- MW-1 ⊕ GROUNDWATER MONITORING WELL (GIN SITE)
- VW-3/SP-3 ⊗ SOIL VAPOR/SPARGE WELL (UNABLE TO LOCATE) (GIN SITE)
- MPE-1 ⊕ MULTI-PHASE EXTRACTION PILOT TEST WELL (PZ-1 IS LOCATED IN THE SAME BOREHOLE)
- MP-1 ⊕ PILOT TEST MONITORING POINT
- VE-1 ⊕ VAPOR EXTRACTION WELL
- VE-3 ▲ PILOT TEST VAPOR EXTRACTION WELL
- AS-1 ⊗ AIR SPARGE WELL
- [5.0] METHYL TERTIARY BUTYL ETHER CONCENTRATION IN MICROGRAMS PER LITER (µg/L)
- 100 ——— MTBE ISOCONCENTRATION CONTOUR (µg/L; DASHED WHERE INFERRED)
- < DENOTES LESS THAN LABORATORY REPORTING LIMIT
- WELL NOT USED IN CONCENTRATION CONTOURING

NOTES:

1. BASE MAP PROVIDED BY MID COAST ENGINEERS, DATED 06/29/11, AT A SCALE OF 1"=50'. ADDITIONAL SITE FEATURES PROVIDED BY STANTEC, INC., DATED 03/05/10, AT A SCALE OF 1"=50'.
2. COORDINATES ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, ZONE III, NAD 83.
3. MW-6 IS NOT USED IN CONTOURING BECAUSE IT IS LOCATED IN A LOWER WATER BEARING ZONE.



UNION OIL OF CALIFORNIA
 STATION NO. 0752/YEE/GIN COMMINGLED
 706/726/800 HARRISON STREET
 OAKLAND, CALIFORNIA

MTBE CONCENTRATION MAP

ARCADIS

FIGURE
6



Appendix A

Correspondence



ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

March 11, 2013

RO0000231 Responsible Parties:

Roya Kambin
Chevron Environmental Management Company
6101 Bollinger Canyon Road, 5th Floor
San Ramon, CA 94583-5186
(Sent via E-mail to: RKLG@chevron.com)

Eric Hetrick
ConocoPhillips Company
76 Broadway
Sacramento, CA 95818
(Sent via E-mail to: eric.g.hetrick@conocophillips.com)

Muhammad Usman
800 Harrison Street
Oakland, CA 94607

Mahmood M Ali
Armsco, Inc.
P.O. Box 5427
Novato, CA 94948-5427

RO0000321 Responsible Parties:

Peter Yee
1000 San Antonio Avenue
Alameda, CA 94501

Kin Chan
4328 Edgewood Avenue
Oakland, CA 94602-1316

RO0000484 Responsible Parties:

Bo Gin
342 Lester Avenue
Oakland, CA 94606-1317

Subject: Pilot Test Work Plan Approval for Commingled Plume Assessment for Fuel Leak Case No. RO0000231 (GeoTracker Global ID T0600101486), Unocal #0752, 800 Harrison Street, Oakland, CA 94607; Fuel Leak Case No. RO0000321 (GeoTracker Global ID T0600102122), Chan's Service Station/Shell, 726 Harrison Street, Oakland, CA 94607; and Fuel Leak Case No. RO0000484 (GeoTracker Global ID T0600100985), Oakland Auto Parts, 706 Harrison Street, Oakland, CA 94607

Dear Responsible Parties:

Alameda County Environmental Health (ACEH) staff has reviewed the fuel leak case files for the above referenced sites including the document entitled, "*Multi-Phase Extraction and Air Sparge/Soil Vapor Extraction Pilot Test Work Plan, 706, 726 and 800 Harrison Street, Oakland, California,*" dated February 12, 2013 (Work Plan). The Work Plan, which was prepared on your behalf by ARCADIS, presents plans to conduct pilot tests for multi-phase extraction and air sparging/soil vapor extraction.

The proposed scope of work for the pilot test is generally acceptable. However, we have one technical comment regarding monitoring during the air sparging/soil vapor extraction that will require preparation of a Work Plan Addendum. Therefore, we request that you prepare a Pilot Test Work Plan Addendum to address technical comment 1 below.

TECHNICAL COMMENTS

1. **Vapor Monitoring or Extraction during Air Sparging/Soil Vapor Extraction Pilot Test.** The Work Plan proposes air sparging at 726 Harrison Street using existing well AS-1, which is approximately 15 feet west of the on-site building. Vacuum will be applied to existing well EW-1, which is 8 feet west of AS-1, to capture vapors from the vadose zone during testing. Existing monitoring wells MW-1 and MW-5, which are north and south southwest of AS-1, respectively, will be used as observation wells during the pilot test. No monitoring points or extraction wells are located east of AS-1 or between AS-1 and the on-site building. We request that you prepare a Work Plan Addendum that includes plans to monitor vapors or extract vapors between AS-1 and the on-site building.

TECHNICAL REPORT REQUEST

Please upload technical reports to the ACEH ftp site (Attention: Jerry Wickham), and to the State Water Resources Control Board's GeoTracker website according to the following schedule and file-naming convention:

- **April 24, 2013** – Pilot Test Work Plan Addendum
File to be named: WP_R_yyyy-mm-dd RO231, RO321, RO484
- **April 29, 2013** – Semi-Annual Groundwater Monitoring Report – First Quarter 2013
File to be named: GWM_R_yyyy-mm-dd RO231, RO321, RO484
- **October 17, 2013** – Semi-Annual Groundwater Monitoring Report – Third Quarter 2013
File to be named: GWM_R_yyyy-mm-dd RO231, RO321, RO484

If you have any questions, please call me at (510) 567-6791 or send me an electronic mail message at jerry.wickham@acgov.org. Case files can be reviewed online at the following website: <http://www.acgov.org/aceh/index.htm>. As your email address does not appear on the cover page of this notification ACEH is requesting you provide your email address so that we can correspond with you quickly and efficiently regarding your case.

Sincerely,

Jerry Wickham, California PG 3766, CEG 1177, and CHG 297
Senior Hazardous Materials Specialist

Attachment: Responsible Party(ies) Legal Requirements/Obligations

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

Responsible Parties
RO0000231, RO0000321, and RO0000484
March 11, 2013
Page 3

cc: Leroy Griffin, Oakland Fire Department, 250 Frank H. Ogawa Plaza, Ste. 3341, Oakland, CA 94612-2032 (*Sent via E-mail to: lgriffin@oaklandnet.com*)

Katherine Brandt, ARCADIS, 1900 Powell Street, 11th Floor, Emeryville, CA 94608 (*Sent via E-mail to: Katherine.Brandt@arcadis-us.com*)

Robert Foss, Conestoga-Rovers & Associates, 5900 Hollis Street, Suite A, Emeryville, CA 94608 2032 (*Sent via E-mail to: bfoss@croworld.com*)

Robert Kitay, Aqua Science Engineers, Inc., 55 Oak Ct., Suite 220, Danville, CA 94526 (*Sent via E-mail to: rkitay@aquascienceengineers.com*)

Donna Drogos, ACEH (*Sent via E-mail to: donna.drogos@acgov.org*)
Jerry Wickham, ACEH (*Sent via E-mail to: jerry.wickham@acgov.org*)

GeoTracker, eFile

Attachment 1

Responsible Party(ies) Legal Requirements/Obligations

REPORT/DATA REQUESTS

These reports/data are being requested pursuant to Division 7 of the California Water Code (Water Quality), Chapter 6.7 of Division 20 of the California Health and Safety Code (Underground Storage of Hazardous Substances), and Chapter 16 of Division 3 of Title 23 of the California Code of Regulations (Underground Storage Tank Regulations).

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (Local Oversight Program [LOP] for unauthorized releases from petroleum Underground Storage Tanks [USTs], and Site Cleanup Program [SCP] for unauthorized releases of non-petroleum hazardous substances) require submission of reports in electronic format pursuant to Chapter 3 of Division 7, Sections 13195 and 13197.5 of the California Water Code, and Chapter 30, Articles 1 and 2, Sections 3890 to 3895 of Division 3 of Title 23 of the California Code of Regulations (23 CCR). Instructions for submission of electronic documents to the ACEH FTP site are provided on the attached "Electronic Report Upload Instructions."

Submission of reports to the ACEH FTP site is in addition to requirements for electronic submittal of information (ESI) to the State Water Resources Control Board's (SWRCB) Geotracker website. In April 2001, the SWRCB adopted 23 CCR, Division 3, Chapter 16, Article 12, Sections 2729 and 2729.1 (Electronic Submission of Laboratory Data for UST Reports). Article 12 required electronic submittal of analytical laboratory data submitted in a report to a regulatory agency (effective September 1, 2001), and surveyed locations (latitude, longitude and elevation) of groundwater monitoring wells (effective January 1, 2002) in Electronic Deliverable Format (EDF) to Geotracker. Article 12 was subsequently repealed in 2004 and replaced with Article 30 (Electronic Submittal of Information) which expanded the ESI requirements to include electronic submittal of any report or data required by a regulatory agency from a cleanup site. The expanded ESI submittal requirements for petroleum UST sites subject to the requirements of 23 CCR, Division, 3, Chapter 16, Article 11, became effective December 16, 2004. All other electronic submittals required pursuant to Chapter 30 became effective January 1, 2005. Please visit the SWRCB website for more information on these requirements. (http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/)

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 7835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, late reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to \$10,000 per day for each day of violation.

Alameda County Environmental Cleanup Oversight Programs (LOP and SCP)	REVISION DATE: July 25, 2012
	ISSUE DATE: July 5, 2005
	PREVIOUS REVISIONS: October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010
SECTION: Miscellaneous Administrative Topics & Procedures	SUBJECT: Electronic Report Upload (ftp) Instructions

The Alameda County Environmental Cleanup Oversight Programs (petroleum UST and SCP) require submission of all reports in electronic form to the county's FTP site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

REQUIREMENTS

- **Please do not submit reports as attachments to electronic mail.**
- Entire report including cover letter must be submitted to the ftp site as a **single Portable Document Format (PDF) with no password protection.**
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
- **Signature pages and perjury statements must be included and have either original or electronic signature.**
- **Do not password protect the document.** Once indexed and inserted into the correct electronic case file, the document will be secured in compliance with the County's current security standards and a password. **Documents with password protection will not be accepted.**
- Each page in the PDF document should be rotated in the direction that will make it easiest to read on a computer monitor.
- Reports must be named and saved using the following naming convention:

RO#_Report Name_Year-Month-Date (e.g., RO#5555_WorkPlan_2005-06-14)

Submission Instructions

- 1) Obtain User Name and Password
 - a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
 - i) Send an e-mail to .loptoxic@acgov.org
 - b) In the subject line of your request, be sure to include "**ftp PASSWORD REQUEST**" and in the body of your request, include the **Contact Information, Site Addresses, and the Case Numbers (RO# available in Geotracker) you will be posting for.**
- 2) Upload Files to the ftp Site
 - a) Using Internet Explorer (IE4+), go to <://alcoftp1.acgov.org>
 - (i) Note: Netscape, Safari, and Firefox browsers will not open the FTP site as they are NOT being supported at this time.
 - b) Click on Page located on the Command bar on upper right side of window, and then scroll down to Open FTP Site in Windows Explorer.
 - c) Enter your User Name and Password. (Note: Both are Case Sensitive.)
 - d) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
 - e) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.
- 3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
 - a) Send email to .loptoxic@acgov.org notify us that you have placed a report on our ftp site.
 - b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name @acgov.org. (e.g., firstname.lastname@acgov.org)
 - c) The subject line of the e-mail must start with the RO# followed by **Report Upload**. (e.g., Subject: RO1234 Report Upload) If site is a new case without an RO#, use the street address instead.
 - d) If your document meets the above requirements and you follow the submission instructions, you will receive a notification by email indicating that your document was successfully uploaded to the ftp site.



Appendix B

Pilot Test Well Installation Permits

Alameda County Public Works Agency - Water Resources Well Permit



399 Elmhurst Street
Hayward, CA 94544-1395
Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 06/04/2013 By jamesy

Permit Numbers: W2013-0408 to W2013-0410
Permits Valid from 06/13/2013 to 06/20/2013

Application Id: 1369933890144
Site Location: 726 Harrison St, Oakland, CA
Project Start Date: 06/13/2013
Assigned Inspector: Contact Steve Miller at (510) 670-5517 or stevem@acpwa.org

City of Project Site: Oakland

Completion Date: 06/20/2013

Applicant: Arcadis - Katherine Brandt
2000 Powell St, Suite 700, Emeryville, CA 94608
Property Owner: Peter Yee Kin Chan
1000 San Antonio Ave, Alameda, CA 94501
Client: Roya Kambin Chevron
6101 Bollinger Canyon Rd, San Ramon, CA 94583

Phone: 510-596-9675

Phone: --

Phone: 925-790-6270

	Total Due:	\$1191.00
Receipt Number: WR2013-0194	Total Amount Paid:	\$1191.00
Payer Name : Arcadis	Paid By: CHECK	PAID IN FULL

Works Requesting Permits:

Well Construction-Monitoring-Monitoring - 3 Wells
Driller: Gregg Drilling - Lic #: 485165 - Method: hstem

Work Total: \$1191.00

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth
W2013-0408	06/04/2013	09/11/2013	MP1	8.25 in.	1.00 in.	0.00 ft	30.00 ft
W2013-0409	06/04/2013	09/11/2013	MPE-1	10.00 in.	4.00 in.	0.00 ft	30.00 ft
W2013-0410	06/04/2013	09/11/2013	VE-3	8.25 in.	2.00 in.	0.00 ft	30.00 ft

Specific Work Permit Conditions

1. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.

2. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or waterways or be allowed to move off the property where work is being completed.

3. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

Alameda County Public Works Agency - Water Resources Well Permit

4. Compliance with the well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate State reporting-requirements related to well construction or destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the Alameda County Public Works Agency, Water Resources Section, within 60 days. Include permit number and site map.
 5. Applicant shall submit the copies of the approved encroachment permit to this office within 60 days.
 6. Applicant shall contact Steve Miller for an inspection time at (510) 670-5517 or email to stevem@acpwa.org at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.
 7. Wells shall have a Christy box or similar structure with a locking cap or cover. Well(s) shall be kept locked at all times. Well(s) that become damaged by traffic or construction shall be repaired in a timely manner or destroyed immediately (through permit process). No well(s) shall be left in a manner to act as a conduit at any time.
 8. Minimum surface seal thickness is two inches of cement grout placed by tremie.
 9. Minimum seal (Neat Cement seal) depth for monitoring wells is 5 feet below ground surface(BGS) or the maximum depth practicable or 20 feet.
 10. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of \$500.00.
-



Appendix C

ARCADIS Standard Operating
Procedures

Soil Drilling and Sample Collection

Rev. #: 2

Rev Date: March 8, 2011

Approval Signatures

Prepared by: Caron Hoff Date: 03/08/2011

Reviewed by: Michael J. Seftell Date: 03/08/2011
(Technical Expert)

I. Scope and Application

Overburden drilling is commonly performed using the hollow-stem auger drilling method. Other drilling methods suitable for overburden drilling, which are sometimes necessary due to site-specific geologic conditions, include: drive-and-wash, spun casing, Rotasonic, dual-rotary (Barber Rig), and fluid/mud rotary. Direct-push techniques (e.g., Geoprobe or cone penetrometer) may also be used. The drilling method to be used at a given site will be selected based on site-specific consideration of anticipated drilling depths, site or regional geologic knowledge, types of sampling to be conducted, required sample quality and volume, and cost.

No oils or grease will be used on equipment introduced into the boring (e.g., drill rod, casing, or sampling tools).

II. Personnel Qualifications

The Project Manager (a qualified geologist, environmental scientist, or engineer) will identify the appropriate soil boring locations, depth and soil sample intervals in a written plan.

Personnel responsible for overseeing drilling operations must have at least 16 hours of prior training overseeing drilling activities with an experienced geologist, environmental scientist, or engineer with at least 2 years of prior experience.

III. Equipment List

The following materials will be available during soil boring and sampling activities, as required:

- Site Plan with proposed soil boring/well locations;
- Work Plan or Field Sampling Plan (FSP), and site Health and Safety Plan (HASP);
- personal protective equipment (PPE), as required by the HASP;
- drilling equipment required by the American Society for Testing and Materials (ASTM) D 1586, when performing split-spoon sampling;
- disposable plastic liners, when drilling with direct-push equipment;
- appropriate soil sampling equipment (e.g., stainless steel spatulas, knife);

- equipment cleaning materials;
- appropriate sample containers and labels;
- chain-of-custody forms;
- insulated coolers with ice, when collecting samples requiring preservation by chilling;
- photoionization detector (PID) or flame ionization detector (FID); and
- field notebook and/or personal digital assistant (PDA).

IV. Cautions

Prior to beginning field work, underground utilities in the vicinity of the drilling areas will be identified by one of the following three actions (lines of evidence):

- Contact the State One Call
- Obtain a detailed site utility plan drawn to scale, preferably an “as-built” plan
- Conduct a detailed visual site inspection

In the event that one or more of the above lines of evidence cannot be conducted, or if the accuracy of utility location is questionable, a minimum of one additional line of evidence will be utilized as appropriate or suitable to the conditions. Examples of additional lines of evidence include but are not limited to:

- Private utility locating service
- Research of state, county or municipal utility records and maps including computer drawn maps or geographical information systems (GIS)
- Contact with the utility provider to obtain their utility location records
- Hand augering or digging
- Hydro-knife
- Air-knife
- Radio Frequency Detector (RFD)

- Ground Penetrating Radar (GPR)
- Any other method that may give ample evidence of the presence or location of subgrade utilities.

Overhead power lines also present risks and the following safe clearance must be maintained from them.

Power Line Voltage Phase to Phase (kV)	Minimum Safe Clearance (feet)
50 or below	10
Above 50 to 200	15
Above 200 to 350	20
Above 350 to 500	25
Above 500 to 750	35
Above 750 to 1,000	35

ANSI Standard B30.5-1994, 5-3.4.5

Avoid using drilling fluids or materials that could impact groundwater or soil quality, or could be incompatible with the subsurface conditions.

Water used for drilling and sampling of soil or bedrock, decontamination of drilling/sampling equipment, or grouting boreholes upon completion will be of a quality acceptable for project objectives. Testing of water supply should be considered.

Specifications of materials used for backfilling borehole will be obtained, reviewed and approved to meet project quality objectives.

V. Health and Safety Considerations

Field activities associated with overburden drilling and soil sampling will be performed in accordance with a site-specific HASP, a copy of which will be present on site during such activities.

VI. Procedure

Drilling Procedures

The drilling contractor will be responsible for obtaining accurate and representative samples; informing the supervising geologist of changes in drilling pressure; and

keeping a separate general log of soils encountered, including blow counts (i.e., the number of blows from a soil sampling drive weight [140 pounds] required to drive the split-barrel sampler in 6-inch increments). The term “samples” means soil materials from particular depth intervals, whether or not portions of these materials are submitted for laboratory analysis. Records will also be kept of occurrences of premature refusal due to boulders or construction materials that may have been used as fill. Where a boring cannot be advanced to the desired depth, the boring will be abandoned and an additional boring will be advanced at an adjacent location to obtain the required sample. Where it is desirable to avoid leaving vertical connections between depth intervals, the borehole will be sealed using cement and/or bentonite. Multiple refusals may lead to a decision by the supervising geologist to abandon that sampling location.

Soil Characterization Procedures

Soils encountered while drilling soil borings will be collected using one of the following methods:

- 2-inch split-barrel (split-spoon) sampler, if using the ASTM D 1586 - Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils
- Plastic internal soil sample sleeves if using direct-push drilling.

Soils are typically field screened with an FID or PID at sites where volatile organic compounds are present in the subsurface. Field screening is performed using one of the following methods:

- Upon opening the sampler, the soil is split open and the PID or FID probe is placed in the opening and covered with a gloved hand. Such readings should be obtained at several locations along the length of the sample
- A portion of the collected soil is placed in a jar, which is covered with aluminum foil, sealed, and allowed to warm to room temperature. After warming, the cover is removed, the foil is pieced with the FID or PID probe, and a reading is obtained.

Samples selected for laboratory analysis will be handled, packed, and shipped in accordance with the procedures outlined in the Work Plan, FSP, or Chain-of-Custody, Handling, Packing, and Shipping SOP.

A geologist will be onsite during drilling and sampling operations to describe each soil interval on the soil boring log, including:

- percent recovery;
- structure and degree of sample disturbance;
- soil type;
- color;
- moisture condition;
- density;
- grain-size;
- consistency; and
- other observations, particularly relating to the presence of waste materials

Further details regarding geologic description of soils are presented in the Soil Description SOP.

Particular care will be taken to fully describe any sheens observed, oil saturation, staining, discoloration, evidence of chemical impacts, or unnatural materials.

VII. Waste Management

Water generated during cleaning procedures will be collected and contained onsite in appropriate containers for future analysis and appropriate disposal.

PPE (such as gloves, disposable clothing, and other disposable equipment) resulting from personnel cleaning procedures and soil sampling/handling activities will be placed in plastic bags. These bags will be transferred into appropriately labeled 55-gallon drums or a covered roll-off box for appropriate disposal.

Soil materials will be placed in sealed 55-gallon steel drums or covered roll-off boxes and stored in a secured area. Once full, the material will be analyzed to determine the appropriate disposal method.

VIII. Data Recording and Management

The supervising geologist or scientist will be responsible for documenting drilling events using a bound field notebook and/or PDA to record all relevant information in a clear and concise format. The record of drilling events will include:

- start and finish dates of drilling;
- name and location of project;
- project number, client, and site location;
- sample number and depths;
- blow counts and recovery;
- depth to water;
- type of drilling method;
- drilling equipment specifications, including the diameter of drilling tools;
- documentation of any elevated organic vapor readings;
- names of drillers, inspectors, or other people onsite; and
- weather conditions.

IX. Quality Assurance

Equipment will be cleaned prior to use onsite, between each drilling location, and prior to leaving the site. Drilling equipment and associated tools, including augers, drill rods, sampling equipment, wrenches, and other equipment or tools that may have come in contact with soils and/or waste materials will be cleaned with high-pressure steam-cleaning equipment using a potable water source. The drilling equipment will be cleaned in an area designated by the supervising engineer or geologist that is located outside of the work zone. More elaborate cleaning procedures may be required for reusable soil samplers (split-spoons) when soil samples are obtained for laboratory analysis of chemical constituents.

X. References

American Society of Testing and Materials (ASTM) D 1586 - *Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils.*

Utilities and Structures Checklist

Project: _____
 Project Number: _____
 Date: _____
 Work locations applicable to this clearance checklist: _____

Pre-Field Work

One Call or "811" notified 48-72 hours in advance of work? Yes No
 Utility companies notified during the One Call process See attached ticket

List any other utilities requiring notification: None

Client provided utility maps or "as built" drawings showing utilities? Yes No

Field Work

Markings present: Paint Pin flags/stakes Other None

Subsurface Utility Lines of Evidence Used (3 Minimum):

- One Call/"811"
- Client Provided Maps/Drawings
- Client Clearance
- Interviews: Name(s)/Affiliation(s) _____

Did persons interviewed indicate depths of any utilities in the subsurface?

- Yes, depths provided:
- Did not know or refused to answer

Comments:

- Site Inspection
- GPR
- Air-Knife
- Hydro-Knife
- Public Records/Maps
- Radiofrequency
- Metal Detector
- Handauger
- Potholing
- Probing
- Private Locator: Name and Company: _____
- Marine Locator: Name and Company: _____
- Other: _____

Tips for Successful Utility Location:

1. No excessive turning or downward force of handaugers/shovels, etc.
2. No hammering- no pickaxes-no digging bars-no hurrying or shortcutting
3. Select alternate/backup locations for clearance
4. Utilities may run directly under asphalt/concrete or be > 5 ft depth
5. Be on site when utilizing private utility locators



Site Inspection

During inspections look for the following ("YES" requires follow up investigation):

		Utility color codes				
a)	Natural gas line present (evidence of a gas meter)?	Yellow	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
b)	Evidence of subsurface electric lines :	Red				
	i) Conduits to ground from electric meter?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
	ii) Overhead electric lines absent		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
	iii) Light poles, electric devices with no overhead lines?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
c)	Evidence of water lines:	Blue				
	i) Water meter on site?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
	ii) Fire hydrants in vicinity of work?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
	iii) Irrigation systems?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
d)	Evidence of sewers or storm drains:	Green				
	i) Restrooms or kitchen on site?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
	ii) Gutter down spouts going into ground		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
	iii) Grates in ground in work area		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
e)	Evidence of telecommunication lines:	Orange				
	i) Fiber optic warning signs in areas?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
	ii) Lines from cable boxes running into ground?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
	iii) Conduits from power poles running into ground?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
	iv) Aboveground boxes or housings in work area?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
f)	Underground storage tanks:					
	i) Tank pit present?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
	ii) Product lines running to dispensers/buildings?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
	iii) Vent present away from tank pit?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
g)	Proposed excavation markings in work area?	White	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
h)	Other:					
	i) Evidence of linear asphalt or concrete repair		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
	ii) Evidence of linear ground subsidence or change in vegetation?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
	iii) Manholes or valve covers in work area?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
	iv) Warning signs ("Call Before you Dig", etc) on or adjacent to site?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
	v) Utility color markings not illustrated in this checklist?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
i)	Aboveground lines in or near the work area:					
	i) < 50 kV within 10 ft of work area?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
	ii) >50 - 200 kV within 15 ft of work area?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
	iii) >200-350 kV within 20 ft of work area?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
	iv) >350-500 kV within 25 ft of work area?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
	v) >500-750 kV within 35 ft or work area?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
	vi) >750-1000 kV within 45 ft of work area?		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No

Comments:

Do not initiate intrusive work if utilities are suspected to be present in area and are not located, markings are over 14 days old, or if clearance methods provide incomplete or conflicting information. Do not perform intrusive work within 30 inches of a utility marking without hand clearing.

Name and signature of person completing the checklist:

Name:

Signature:

Date:

Investigation-Derived Waste Handling and Storage

Rev. #: 2

Rev Date: March 6, 2009

Approval Signatures

Prepared by: Andrew Kamik Date: 3/6/09

Reviewed by: Jim Marsh Date: 3/6/09
(Technical Expert)

I. Scope and Application

The objective of this Standard Operating Procedure (SOP) is to describe the procedures to manage investigation-derived wastes (IDW), both hazardous and non-hazardous, generated during site activities, which may include, but are not limited to - drilling, trenching/excavation, construction, demolition, monitoring well sampling, soil sampling, decontamination and remediation. Please note that this SOP is intended for materials that have been deemed a solid waste as defined by 40 CFR § 261.2 (which may include liquids, solids, and sludges). In some cases, field determinations will be made based on field screening or previous data that materials are not considered a solid waste. IDW may include soil, groundwater, drilling fluids, decontamination liquids, personal protective equipment (PPE), sorbent materials, construction and demolition debris, and disposable sampling materials that may have come in contact with potentially impacted materials. IDW will be collected and staged at the point of generation. Quantities small enough to be containerized in 55-gallon drums will be taken to a designated temporary storage area (discussed in further detail under Drum Storage) onsite pending characterization and disposal. Waste materials will be analyzed for constituents of concern to evaluate proper disposal methods. PPE and disposable sampling equipment will be placed in DOT-approved drums prior to disposal and typically does not require laboratory analysis. This SOP describes the necessary equipment, field procedures, materials, regulatory references, and documentation procedures necessary for proper handling and storage of IDW up to the time it is properly disposed. The procedures for handling IDW are based on the United States Environmental Protection Agency's Guide to Management of Investigation Derived Wastes (USEPA, 1992). IDW is assumed to be contaminated with the site constituents of concern (COCs) until analytical evidence indicates otherwise. IDW will be managed to ensure the protection of human health and the environment and will comply with all applicable or relevant and appropriate requirements (ARAR). The following Laws and Regulations on Hazardous Waste Management are potential ARAR for this site.

State Laws and Regulations

- To Be Determined Based on Location of Site and Location of Treatment, Storage, and/or Disposal Facility (TSDF) to be utilized

Federal Laws and Regulations

- Resource Conservation and Recovery Act (RCRA) 42 USC § 6901-6987
- Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) 42 USC § 9601-9675

- Superfund Amendments and Reauthorization Act (SARA)
- Department of Transportation (DOT) Hazardous Materials Transportation

Pending characterization, IDW will be stored appropriately within each area of contamination (AOC). Under RCRA, "storage" is defined as the holding of hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere" (40 CFR § 260.10). The onsite waste staging area will be in a secure and controlled area. Waste characterization can either be based on generator knowledge, such as using materials safety data sheets (MSDS'), or can be based upon analytical results. The laboratory used for waste characterization analysis must have the appropriate state and federal certifications and be approved by ARCADIS and Client. IDW will be classified as RCRA hazardous or non-regulated under RCRA based on the waste characterization.

If IDW is characterized as RCRA hazardous waste, RCRA and DOT requirements must be followed for packaging, labeling, transporting, storing, and record keeping as described in 40 CFR § 262 and 49 CFR § 171-178. Wastes judged to potentially meet the criteria for hazardous wastes shall be stored in DOT approved packaging. Waste material classified as RCRA non-hazardous may be handled and disposed of as an industrial waste.

Liquid wastes judged to potentially meet the criteria for hazardous wastes shall be stored in DOT approved 55 gallon drums or other approved containers that are compatible with the type of material stored therein. Solid materials deemed to potentially meet hazardous criteria will be drummed where practicable. Large quantities of potentially hazardous solid materials must be containerized (such as in a roll-off box) for up to a maximum of 90 or 180 days as described in the Excavated Solids Section. Waste material classified as non-hazardous may be handled and disposed of as an industrial waste and is not subject to the 90-day or 180-day on-site storage limitation.

This is a standard (i.e., typically applicable) operating procedure which may be varied or changed as required, dependent upon site conditions, equipment limitations, or limitations imposed by the procedure. The ultimate procedure employed will be documented in the project work plans or reports. If changes to the sampling procedures are required due to unanticipated field conditions, the changes will be discussed with the Project Manager and Client as soon as practicable and documented in the report.

II. Personnel Qualifications

ARCADIS field sampling personnel will have current health and safety training including 40-hour HAZWOPER training, site supervisor training, site-specific training, first aid, and CPR, as needed. ARCADIS personnel may sign manifests on a case-to-case basis for clients, provided the appropriate agreement is in place between ARCADIS and the client documenting that ARCADIS is not the generator, but is acting as authorized representative for the generator. ARCADIS personnel who sign hazardous waste manifests will have the current DOT hazardous materials transportation training according to 49 CFR § 172.704. ARCADIS field personnel will also comply with client-specific training such as LPS. In addition, ARCADIS field sampling personnel will be versed in the relevant SOPs and possess the required skills and experience necessary to successfully complete the desired field work.

III. Equipment List

The following materials, as required, shall be available for IDW handling and storage:

Appropriate personal protective equipment as specified in the Site Health and Safety Plan

- 55-gallon steel drums, DOT 1A2 or equivalent
- $\frac{3}{4}$ -inch socket wrench
- Hammer
- Leather gloves
- Drum dolly
- Appropriate drum labels (outdoor waterproof self adhesive)
- Polyethylene storage tank
- Appropriate labeling, packing, chain-of-custody forms, and shipping materials as specified in the *Chain-of-Custody SOP* and *Field Sampling Handling, Packing, and Shipping SOP*.
- Indelible ink and/or permanent marking pens
- Plastic sheeting

- Appropriate sample containers, labels, and forms
- Stainless-steel bucket auger
- Stainless steel spatula or knife
- Stainless steel hand spade
- Stainless steel scoop
- Digital camera
- Field logbook.

IV. Cautions

- Filled drums can be very heavy, always use appropriate moving techniques and equipment.
- Similar media will be stored in the same drums to aid in sample analysis and disposal.
- Drum lids must be secured to prevent rainwater from entering the drums.
- Drums containing solid material may not contain any free liquids.
- Waste containers stored for extended periods of time may be subject to deterioration. Drum over packs may be used as secondary containment.
- All drums must be in good condition to prevent potential leakage and facilitate subsequent disposal. Inspect the drums for dents and rust, and verify the drum has a secure lid prior to use.

V. Health and Safety Considerations

- Appropriate personal protective equipment must be worn by all field personnel within the designated work area.
- Air monitoring may be required during certain field activities as required in the Site Health and Safety Plan.

- If excavating in potentially hazardous areas is possible, contingency plans should be developed to address the potential for encountering gross contamination or non-aqueous phase liquids.
- ARCADIS field personnel will be familiar and compliant with Client-specific health and safety requirements such as Chevron's hand safety policy including the prohibition of fixed and/or folding blade knives.

VI. Procedure

Waste storage and handling procedures to be used depend upon the type of generated waste. For this reason, IDW should be stored in a secure location onsite in separate 55-gallon storage drums, solids can be stockpiled onsite (if non-hazardous), and purge water may be stored in polyethylene tanks. Waste materials such as broken sample bottles or equipment containers and wrappings will be stored in 55-gallon drums unless they were not in contact with sample media.

Management of IDW

Minimization of IDW should be considered by the Project Manager during all phases of the project. Site managers may want to consider techniques such as replacing solvent-based cleaners with aqueous-based cleaners for decontamination of equipment, reuse of equipment (where it can be decontaminated), limitation of traffic between exclusion and support zones, and drilling methods and sampling techniques that generate little waste. Alternative drilling and subsurface sampling methods may include the use of small diameter boreholes, as well as borehole testing methods such as a core penetrometer or direct push technique instead of coring (EPA, 1993).

Drum Storage

Drums containing hazardous waste shall be stored in accordance with the requirements of 40 CFR 265 Subpart I (for containers) and 265 Subpart DD (for containment buildings). All 55-gallon drums will be stored at a secure, centralized on-site location that is readily accessible for vehicular pick-up. Drums confirmed as, or believed to contain hazardous waste will be stored over an impervious surface provided with secondary containment. The storage location will, for drums containing liquid, have a containment system that can contain at least the larger of 10% of the aggregate volume of staged materials or 100% of the volume of the largest container. Drums will be closed during storage and be in good condition in accordance with the Guide to Management of Investigation-Derived Wastes (USEPA, 1992).

Hazardous Waste Determination

Waste material must be characterized to determine if it meets any of the federal definitions of hazardous waste as required by 40 CFR § 262.11. If the waste does not meet any of the federal definitions, it must then be established if any state-specific hazardous waste criteria exist/apply.

Generator Status

Once hazardous waste determination has been made, the generator status will be determined. Large quantity generators (LQG) are generators who generate more than 1,000 kilograms of hazardous waste in a calendar month. Small quantity generators (SQG) of hazardous waste are generators who generate greater than 100 kilograms but less than 1,000 kilograms of hazardous waste in a calendar month. Conditionally exempt small quantity generators (CESQG) are generators who generate less than 100 kilograms of hazardous waste per month. Please note that a generator status may change from month to month and that a notice of this change is usually required by the generator's state agency.

Accumulation Time for Hazardous Waste

A LQG may accumulate hazardous waste on site for 90 days or less without a permit and without having interim status provided that such accumulation is in compliance with specifications in 40 CFR § 262.34. A SQG may accumulate hazardous waste on site for 180 days or less without a permit or without having interim status subject to the requirements of 40 CFR § 262.34(d). CESQG requirements are found in 40 CFR § 261.5. **NOTE:** The CESQG and SQG provisions of 40 CFR § 261.5, 262.20(e), 262.42(b) and 262.44 may not be recognized by some states (e.g. Rhode Island).

State-specific regulations must be reviewed and understood prior to the generation of hazardous waste.

Satellite Accumulation of Hazardous Waste

Satellite accumulation (SAA) shall mean the accumulation of as much as fifty-five (55) gallons of hazardous waste, or the accumulation of as much as one quart of acutely hazardous waste, in containers at or near any point of generation where the waste initially accumulates, which is under the control of the operator of the process generating the waste, without a permit or interim status and without complying with the requirements of 40 CFR § 262.34(a) and without any storage time limit, provided that the generator complies with 40 CFR § 262.34(c)(1)(i).

Once more than 55 gallons of hazardous waste accumulates in SAA, the generator has three days to move this waste into storage.

Storage recommendations for hazardous waste include:

- Ignitable Hazardous wastes must be >50 feet from the property line per 40 CFR § 265.176 (LQG generators only).
- Hazardous waste must be stored on a concrete slab (asphalt is acceptable if there are no free liquids in the waste) per 40 CFR § 265.176.
- Drainage must be directed away from the accumulation area.
- Area must be properly vented.
- Area must be secure.

Drum/Container Labeling

Drums will be labeled on both the side and lid of the drum using a permanent marking pen. Old drum labels must be removed to the extent possible, descriptions crossed out should any information remain, and new labels affixed on top of the old labels. Other containers used to store various types of waste (polyethylene tanks, roll-off boxes, end-dump trailers, etc.) will be labeled with an appropriate "Waste Container" or "Testing in Progress" label pending characterization. Drums and containers will be labeled as follows:

- Appropriate waste characterization label (Testing In Progress, Hazardous, or Non-Hazardous)
- Waste generator's name (e.g., client name)
- Project name
- Name and telephone number of ARCADIS project manager
- Composition of contents (e.g., used oil, acetone 40%, toluene 60%)
- Media (e.g., solid, liquid)
- Accumulation start date

- Drum number of total drums as reconciled with the Drum Inventory maintained in the field log book.

IDW containers will remain closed except when adding or removing waste. Immediately upon beginning to place waste into the drum/container, a "Waste Container" or "Testing in Progress" label will be filled out to include the information specified above, and affixed to the container. Once the contents of the container are identified as either non-hazardous or hazardous, the following additional labels will be applied. Containers with waste determined to be non-hazardous will be labeled with a green and white "Non-Hazardous Waste" label over the "Waste Container" label. Containers with waste determined to be hazardous will be stored in an onsite storage area and will be labeled with the "Hazardous Waste" label and affixed over the "Waste Container" label. The ACCUMULATION DATE for the hazardous waste is the date the waste is first placed in the container and is the same date as the date on the "Waste Container" label. DOT hazardous class labels must be applied to all hazardous waste containers for shipment offsite to an approved disposal or recycling facility. In addition a DOT proper shipping name shall be included on the hazardous waste label. The transporter should be equipped with the appropriate DOT placards. However, placarding or offering placards to the initial transporter is the responsibility of the generator per 40 CFR § 262.33.

Inspections and Documentation

All IDW will be documented as generated on a Drum Inventory Log maintained in the field log book. The Drum Inventory will record the generation date, type, quantity, matrix and origin (e.g. Boring-1, Test Pit 3, etc) of materials in every drum, as well as a unique identification number for each drum. The drum inventory will be used during drum pickup to assist with labeling of drums. The drum storage area and any other areas of temporarily staged waste, such as soil/debris piles, will be inspected weekly. The weekly inspections will be recorded in the field notebook or on a Weekly Inspection Log. Digital photographs will be taken upon the initial generation and drumming/staging of waste, and final labeling after characterization to document compliance with labeling and storage protocols, and condition of the container. Evidence of damage, tampering or other discrepancy should be documented photographically.

Emergency Response and Notifications

Specific procedures for responding to site emergencies will be detailed in the HASP. If the generator is designated as a LQG, a Contingency Plan will need to be prepared to include emergency response and notification procedures per 40 CFR § 265 Subpart D. In the event of a fire, explosion, or other release which could threaten human health

outside of the site or when Client or ARCADIS has knowledge of a spill that has reached surface water, Client or ARCADIS must immediately notify the National Response Center (800-424-8802) in accordance with 40 CFR § 262.34. Other notifications to state agencies may also be necessary.

Drilling Soil Cuttings and Muds

Soil cuttings are solid to semi-solid soils generated during trenching activities, subsurface soil sampling, or installation of monitoring wells. Depending on the drilling method, drilling fluids known as "muds" may be used to remove soil cuttings. Drilling fluids flushed from the borehole must be directed into a settling section of a mud pit. This allows reuse of the decanted fluids after removal of the settled sediments. Soil cuttings will be labeled and stored in 55-gallon drums with bolt-sealed lids.

Excavated Solids

Excavated solids may include, but are not limited to soil, fill and construction and demolition debris. Excavated solids may be temporarily stockpiled onsite as long as the material is a RCRA non-hazardous waste and the solids will be treated onsite pursuant to a certified, authorized, or permitted treatment method, or properly disposed off-site. Stockpiled materials characterized as hazardous must be immediately containerized and removed from the site within 90 days of generation (except for soils using satellite accumulation). Excavated solids should be stockpiled and maintained in a secure area onsite. At a minimum, the floor of the stockpile area will be covered with a 20-mil high density polyethylene liner that is supported by a foundation or at least a 60-mil high density polyethylene liner that is not supported by a foundation. The excavated material will not contain free liquids. The owner/operator will provide controls for windblown dispersion, run-on control, and precipitation runoff. The run-on control system will prevent flow onto the active portion of the pile during peak discharge from at least a 25-year storm and the run-off management system will collect and control at least the water volume resulting from a 24-hour, 25-year storm (EPA, 1992). Additionally, the stockpile area will be inspected on a weekly basis and after storm events. Individual states may require that the stockpile be inspected/certified by a licensed professional engineer. Stockpiled material will be covered with a 6-mil polyvinyl chloride (PVC) liner. The stockpile cover will be secured in place with appropriate material (concrete blocks, weights, etc.) to prevent the movement of the cover. Excavated solids may also be placed in roll off containers and covered with a 6-mil PVC liner pending results for waste characterization.

Decontamination Solutions

Decontamination solutions are generated during the decontamination of personal protective equipment and sampling equipment. Decontamination solutions may range from detergents, organic solvents and acids used to decontaminate small field sampling equipment to steam cleaning rinsate used to wash heavy field equipment. These solutions are to be labeled and stored in 55-gallon drums with bolt-sealed lids.

Disposable Equipment

Disposable equipment includes personal protective equipment (tyvek coveralls, gloves, booties and APR cartridges) and disposable sampling equipment such as trowels or disposable bailers. If the media sampled exhibits hazardous characteristics per results of waste characterization sampling, disposable equipment will also be disposed of as a hazardous waste. These materials will be stored onsite in labeled 55-gallon drums pending analytical results for waste characterization.

Purge Water

Purge water includes groundwater generated during well development, groundwater sampling, or aquifer testing. The volume of groundwater generated will dictate the appropriate storage procedure. Monitoring well development and groundwater sampling may generate three well volumes of groundwater or more. This volume will be stored in labeled 55-gallon drums. Aquifer tests may generate significantly greater volumes of groundwater depending on the well yield and the duration of the test. Therefore, large-volume portable polyethylene tanks will be considered for temporary storage pending groundwater-waste characterization.

Purged Water Storage Tank Decontamination and Removal

The following procedures will be used for inspection, cleaning, and offsite removal of storage tanks used for temporary storage of purge water. These procedures are intended to be used for rented portable tanks such as Baker Tanks or Rain for Rent containers. Storage tanks will be made of inert polyethylene materials.

The major steps for preparing a rented tank for return to a vendor include characterizing the purge water, disposing of the purge water, decontaminating the tank, final tank inspection, and mobilization. Decontamination and inspection procedures are describe in further detail below.

- Tank Cleaning: Most vendors require that tanks be free of any sediment and water before returning, a professional cleaning service may be required. Each

specific vendor should be consulted concerning specific requirements for returning tanks.

- Tank Inspection: After emptying the tank, purged water storage tanks should be inspected for debris, chemical staining, and physical damage. The vendors require that tanks be returned in the original condition (i.e., free of sediment, staining and no physical damage).

VII. Waste Characterization Sampling and Shipping

Soil/Solids Characterization

Waste characterization will be conducted in accordance with waste hauler, waste handling facility, and state/federal requirements. In general, RCRA hazardous wastes are those solid wastes determined by a Toxicity Characteristic Leaching Procedure (TCLP) test or to contain levels of certain toxic metals, pesticides, or other organic chemicals above specific federally regulated thresholds. If the one or more of 40 toxic compounds listed in Table I of 40 CFR § 261.24 are detected in the sample at levels above the maximum unregulated concentrations, the waste must be characterized as a toxic hazardous waste. Wastes can also be considered "listed" hazardous waste depending on site-specific processes.

Composite soil samples will be collected at a frequency of one sample per 10 cubic yard basis for stockpiled soil or one per 55-gallon drum for containerized. A four point composite sample will be collected per 10 cubic yards of stockpiled material and for each drum. Sample and composite frequencies may be adjusted in accordance with the waste handling facility's requirements. Waste characterization samples may be analyzed for the TCLP volatile organic compounds (VOCs), TCLP semi-volatile organic compounds (SVOCs), TCLP RCRA metals, and polychlorinated biphenyls, as well as corrosivity (pH), reactivity and flammability (flashpoint). Additional samples may be collected and analyzed by the laboratory on a contingency basis.

Wastewater Characterization

Waste characterization will be conducted in accordance with the requirements of the waste hauler, waste handling facility, and state/federal governments. In general, purge water should be analyzed by methods appropriate for the known contaminants, if any, that have been historically detected in the monitoring wells. Samples will be collected and analyzed in accordance with the requirements of the waste disposal facility.

Wastewater characterization samples may be analyzed for TCLP volatile organic compounds (VOCs), TCLP semi-volatile organic compounds (SVOCs), TCLP RCRA

metals, and polychlorinated biphenyls, as well as corrosivity (pH), reactivity and flammability (flashpoint). Additional samples may be collected and analyzed by the laboratory on a contingency basis.

Sample Handling and Shipping

All samples will be appropriately labeled, packed, and shipped, and the chain-of-custody will be filled out in accordance with the Chain-of-Custody SOP and Field Sampling Handling, Packing, and Shipping SOP and Hazardous Materials Packaging and Shipping SOP.

It should be noted that additional training is required for packaging and shipping of hazardous and/or dangerous materials. Please reference the following ARCADIS intranet team page for more information: <http://team/sites/hazmat/default.aspx>.

Preparing Waste Shipment Documentation (Hazardous and Non-Hazardous)

Waste profiles will be prepared by the ARCADIS PM and forwarded, along with laboratory analytical data to the Client PM for approval/signature. The Client PM will then return the profile to ARCADIS who will then forward to the waste removal contractor for preparation of a manifest. The manifest will be reviewed by ARCADIS prior to forwarding to the Client PM for approval. Upon approval of the manifest, the Client PM will return the original signed manifest directly to the waste contractor or to the ARCADIS PM for forwarding to the waste contractor.

Final drum labeling and pickup will be supervised by an ARCADIS representative who is experienced with waste labeling procedures. The ARCADIS representative will have a copy of the drum inventory maintained in the field book and will reconcile the drum inventory with the profile numbers on the labels and on the manifest. Different profile numbers will be generated for different matrices or materials in the drums. For example, the profile number for drill cuttings will be different than the profile number for purge water. **When there are multiple profiles it is critical that the proper label, with the profile number appropriate to a specific material be affixed to the proper drums.** A copy of the ARCADIS drum inventory will be provided to the waste transporter during drum pickup and to the facility receiving the waste.

VIII. Data Recording and Management

Waste characterization sample handling, packing, and shipping procedures will be documented in accordance with the *Quality Assurance Project Plan*, if one exists. Copies of the chains-of-custody forms will be maintained in the project file.

Following waste characterization, IDW containers will be re-labeled with the appropriate waste hazardous or non-hazardous waste labels and the client will initiate disposal at the appropriate waste disposal facility.

IX. Quality Assurance

The chain-of-custody and sample labels for waste characterization samples will be filled out in accordance with the *Quality Assurance Project Plan*.

X. References

United States Environmental Protection Agency (USEPA). 1992. Guide to Management of Investigation-Derived Wastes. Office of Remedial and Emergency Response. Hazardous Site Control Division. January 1992.

USEPA. 1991. *Guide to Discharging CERCLA Aqueous Wastes to Publicly Owned Treatment Works (POTWs)*. Office of Remedial and Emergency Response. Hazardous Site Control Division OS-220W. March 1991.

Field Equipment Decontamination

Rev. #: 3

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Approval Signatures

Prepared by: 

Keith Shepherd

Date: 4/26/2010

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Richard Murphy (Technical Expert)

Date: 4/26/2010

I. Scope and Application

Equipment decontamination is performed to ensure that sampling equipment that contacts a sample, or monitoring equipment that is brought into contact with environmental media to be sampled, is free from analytes of interest and/or constituents that would interfere with laboratory analysis for analytes of interest. Equipment must be cleaned prior to use for sampling or contact with environmental media to be sampled, and prior to shipment or storage. The effectiveness of the decontamination procedure should be verified by collecting and analyzing equipment blank samples.

The equipment cleaning procedures described herein includes pre-field, in the field, and post-field cleaning of sampling tools which will be conducted at an established equipment decontamination area (EDA) on site (as appropriate). Equipment that may require decontamination at a given site includes: soil sampling tools; groundwater, sediment, and surface-water sampling devices; water testing instruments; down-hole instruments; and other activity-specific sampling equipment. Non-disposable equipment will be cleaned before collecting each sample, between sampling events, and prior to leaving the site. Cleaning procedures for sampling equipment will be monitored by collecting equipment blank samples as specified in the applicable work plan or field sampling plan. Dedicated and/or disposable (not to be re-used) sampling equipment will not require decontamination.

II. Personnel Qualifications

ARCADIS field sampling personnel will have current health and safety training, including 40-hour HAZWOPER training, site supervisor training, and site-specific training, as needed. In addition, ARCADIS field sampling personnel will be versed in the relevant SOPs and possess the skills and experience necessary to successfully complete the desired fieldwork. The project HASP and other documents will identify any other training requirements such as site specific safety training or access control requirements.

III. Equipment List

- health and safety equipment, as required in the site Health and Safety Plan (HASP)
- distilled water

- Non-phosphate detergent such as Alconox or, if sampling for phosphorus phosphorus-containing compounds, Luminox (or equivalent).
- tap water
- rinsate collection plastic containers
- DOT-approved waste shipping container(s), as specified in the work plan or field sampling plan (if decontamination waste is to be shipped for disposal)
- brushes
- large heavy-duty garbage bags
- spray bottles
- (Optional) – Isopropyl alcohol (free of ketones) or methanol
- Ziploc-type bags
- plastic sheeting

IV. Cautions

Rinse equipment thoroughly and allow the equipment to dry before re-use or storage to prevent introducing solvent into sample medium. If manual drying of equipment is required, use clean lint-free material to wipe the equipment dry.

Store decontaminated equipment in a clean, dry environment. Do not store near combustion engine exhausts.

If equipment is damaged to the extent that decontamination is uncertain due to cracks or dents, the equipment should not be used and should be discarded or submitted for repair prior to use for sample collection.

A proper shipping determination will be performed by a DOT-trained individual for cleaning materials shipped by ARCADIS.

V. Health and Safety Considerations

Review the material safety data sheets (MSDS) for the cleaning materials used in decontamination. If solvent is used during decontamination, work in a well-ventilated area and stand upwind while applying solvent to equipment. Apply solvent in a manner that minimizes potential for exposure to workers. Follow health and safety procedures outlined in the HASP.

VI. Procedure

A designated area will be established to clean sampling equipment in the field prior to sample collection. Equipment cleaning areas will be set up within or adjacent to the specific work area, but not at a location exposed to combustion engine exhaust. Detergent solutions will be prepared in clean containers for use in equipment decontamination.

Cleaning Sampling Equipment

1. Wash the equipment/pump with potable water.
2. Wash with detergent solution (Alconox, Liquinox or equivalent) to remove all visible particulate matter and any residual oils or grease.
3. If equipment is very dirty, precleaning with a brush and tap water may be necessary.
4. (Optional) – Flush with isopropyl alcohol (free of ketones) or with methanol. This step is optional but should be considered when sampling in highly impacted media such as non-aqueous phase liquids or if equipment blanks from previous sampling events showed the potential for cross contamination of organics.
5. Rinse with distilled/deionized water.

Decontaminating Submersible Pumps

Submersible pumps may be used during well development, groundwater sampling, or other investigative activities. The pumps will be cleaned and flushed before and between uses. This cleaning process will consist of an external detergent solution wash and tap water rinse, a flush of detergent solution through the pump, followed

by a flush of potable water through the pump. Flushing will be accomplished by using an appropriate container filled with detergent solution and another contained filled with potable water. The pump will run long enough to effectively flush the pump housing and hose (unless new, disposable hose is used). Caution should be exercised to avoid contact with the pump casing and water in the container while the pump is running (do not use metal drums or garbage cans) to avoid electric shock. Disconnect the pump from the power source before handling. The pump and hose should be placed on or in clean polyethylene sheeting to avoid contact with the ground surface.

VII. Waste Management

Equipment decontamination rinsate will be managed in conjunction with all other waste produced during the field sampling effort. Waste management procedures are outlined in the work plan or Waste Management Plan (WMP).

VIII. Data Recording and Management

Equipment cleaning and decontamination will be noted in the field notebook. Information will include the type of equipment cleaned, the decontamination location and any deviations from this SOP. Specific factors that should be noted include solvent used (if any), and source of water.

Any unusual field conditions should be noted if there is potential to impact the efficiency of the decontamination or subsequent sample collection.

An inventory of the solvents brought on site and used and removed from the site will be maintained in the files. Records will be maintained for any solvents used in decontamination, including lot number and expiration date.

Containers with decontamination fluids will be labeled.

IX. Quality Assurance

Equipment blanks should be collected to verify that the decontamination procedures are effective in minimizing potential for cross contamination. The equipment blank is prepared by pouring deionized water over the clean and dry tools and collecting the deionized water into appropriate sample containers. Equipment blanks should be analyzed for the same set of parameters that are performed on the field samples collected with the equipment that was cleaned. Equipment blanks are collected per equipment set, which represents all of the tools needed to collect a specific sample.

X. References

USEPA Region 9, Field Sampling Guidance #1230, Sampling Equipment Decontamination.

USEPA Region 1, Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells.

Monitoring Well Development

Rev. #: 2.2

Rev. Date: March 22, 2010

Approval Signatures

Prepared by:  Date: 03/22/2010

Reviewed by:  Date: 03/22/2010
(Technical Expert)

I. Scope and Application

Monitoring wells (or piezometers, well points, or micro-wells) will be developed to clear them of fine-grained sediment to enhance the hydraulic connection between the well and the surrounding geologic formation. Development will be accomplished by evacuating well water by either pumping or bailing. Prior to pumping or bailing, the screened interval will be gently surged using a surge block, bailer, or inertia pump with optional surgeblock fitting as appropriate. Accumulated sediment in the bottom of the well (if present) will be removed by bailing with a bottom-loading bailer or via pumping using a submersible or inertia pump with optional surge-block fitting. Wells will also be gently brushed with a weighted brush to assist in removing loose debris, silt or flock attached to the inside of the well riser and/or screen prior to development. Pumping methods will be selected based on site-specific geologic conditions, anticipated well yield, water table depth, and groundwater monitoring objectives, and may include one or more of the following:

- submersible pump
- inertial pump (Waterra™ pump or equivalent)
- bladder pump
- peristaltic pump
- centrifugal pump

When developing a well using the pumping method, the pump (or, with inertial pumps, the tubing) is lowered to the screened portion of the well. During purging, the pump or tubing is moved up and down the screened interval until the well yields relatively clear water.

Submersible pumps have a motor-driven impeller that pushes the groundwater through discharge tubing to the ground surface. Inertial pumps have a check valve at the bottom of stiff tubing which, when operated up and down, lifts water to the ground surface. Bladder pumps have a bottom check valve and a flexible internal bladder that fills from below and is then compressed using pressurized air to force water out the top of the bladder through the discharge tubing to the ground surface. These three types of pumps have a wide range of applicability in terms of well depth and water depth.

Centrifugal and peristaltic pumps use atmospheric pressure to lift water from the well, and therefore can only be practically used where the depth to water is less than 25 feet.

II. Personnel Qualifications

Monitoring well development activities will be performed by persons who have been trained in proper well development procedures under the guidance of an experienced field geologist, engineer, or technician.

III. Equipment List

Materials for monitoring well development using a pump include the following:

- health and safety equipment, as required by the site Health and Safety Plan (HASP):
- cleaning equipment
- photoionization detector (PID) to measure headspace vapors
- pump
- polyethylene pump discharge tubing
- plastic sheeting
- power source (generator or battery)
- field notebook and/or personal digital assistant (PDA)
- graduated pails
- appropriate containers

- monitoring well keys
- water level indicator

Materials for monitoring well development using a bailer include the following:

- personal protective equipment (PPE) as required by the HASP
- cleaning equipment
- PID to measure headspace vapors
- bottom-loading bailer, sand bailer
- polypropylene or nylon rope
- plastic sheeting
- graduated pails
- appropriate containers
- keys to wells
- field notebook and/or PDA
- water level indicator
- weighted brush for well brushing

IV. Cautions

Where surging is performed to assist in removing fine-grained material from the sand pack, surging must be performed in a gentle manner. Excessive suction could promote fine-grained sediment entry into the outside of the sand pack from the formation.

Avoid using development fluids or materials that could impact groundwater or soil quality, or could be incompatible with the subsurface conditions.

In some cases it may be necessary to add potable water to a well to allow surging and development, especially for new monitoring wells installed in low permeability formations. Before adding potable water to a well, the Project Manager (PM) must be notified and the PM shall make the decision regarding the appropriateness and applicability of adding potable water to a well during well development procedures. If potable water is to be added to a well as part of development, the potable water source should be sampled and analyzed for constituents of concern, and the results evaluated by the PM prior to adding the potable water to the well. If potable water is added to a well for development purposes, at the end of development the well will be purged dry to remove the potable water, or if the well no longer goes dry then the well will be purged to remove at least three times the volume of potable water that was added.

V. Health and Safety Considerations

Field activities associated with monitoring well development will be performed in accordance with a site-specific HASP, a copy of which will be present on site during such activities.

VI. Procedure

The procedures for monitoring well development are described below. (Note: Steps 7, 8, and 10 can be performed at the same time using an inertial pump with a surge-block fitting.)

1. Don appropriate PPE (as required by the HASP).
2. Place plastic sheeting around the well.
3. Clean all equipment entering each monitoring well, except for new, disposable materials that have not been previously used.

4. Open the well cover while standing upwind of the well, remove well cap. Insert PID probe approximately 4 to 6 inches into the casing or the well headspace and cover with gloved hand. Record the PID reading in the field notebook. If the well headspace reading is less than 5 PID units, proceed; if the headspace reading is greater than 5 PID units, screen the air within the breathing zone. If the PID reading in the breathing zone is below 5 PID units, proceed. If the PID reading is above 5 PID units, move upwind from well for 5 minutes to allow the volatiles to dissipate. Repeat the breathing zone test. If the reading is still above 5 PID units, don the appropriate respiratory protection in accordance with the requirements of the HASP. Record all PID readings.
5. Obtain an initial measurement of the depth to water and the total well depth from the reference point at the top of the well casing. Record these measurements in the field log book.
6. Prior to redeveloping older wells that may contain solid particulate debris along the inside of the well casing and screen, gently lower and raise a weighted brush along the entire length of the well screen and riser to free and assist in removing loose debris, silt or flock. Perform a minimum of 4 "passes" along the screened and cased intervals of the well below the static water level in the well. Allow the resulting suspended material to settle for a minimum of one day prior to continuing with redevelopment activities.
7. Lower a surge block or bailer into the screened portion of the well. Gently raise and lower the surge block or bailer within the screened interval of the well to force water in and out of the screen slots and sand pack. Continue surging for 15 to 30 minutes.
8. Lower a bottom-loading bailer, submersible pump, or inertia pump tubing with check valve to the bottom of the well and gently bounce the bailer, pump, pump tubing on the bottom of the well to collect/remove accumulated sediment, if any. Remove and empty the bailer, if used. Repeat until the bailed/pumped water is free of excessive sediment and the bottom of the well feels solid. Alternatively, measurement of the well depth with a water level indicator can be used to verify that sediment and/or silt has been removed to the extent practicable, based on a comparison with the well installation log or previous measurement of total well depth.
9. After surging the well and removing excess accumulated sediment from the bottom of the well, re-measure the depth-to-water and the total well depth from the reference point at the top of the well casing. Record these measurements in the field log book.
10. Remove formation water by pumping or bailing. Where pumping is used, measure and record the pre-pumping water level. Operate the pump at a relatively constant rate. Measure the pumping rate using a calibrated container and stop watch, and record the pumping rate in the field log book. Measure and record the water level in the well at least

once every 5 minutes during pumping. Note any relevant observations in terms of water color, visual level of turbidity, sheen, odors, etc. Pump or bail until termination criteria specified in the Field Sampling Plan (FSP) are reached. Record the total volume of water purged from the well.

11. If the well goes dry, stop pumping or bailing. Note the time that the well went dry. After allowing the well to recover, note the time and depth to water. Resume pumping or bailing when sufficient water has recharged the well.
12. Contain all water in appropriate containers.
13. When complete, secure the lid back on the well.
14. Place disposable materials in plastic bags for appropriate disposal and decontaminate reusable, downhole pump components and/or bailer.

VII. Waste Management

Materials generated during monitoring well installation and development will be placed in appropriate labeled containers and disposed of as described in the Work Plan or Field Sampling Plan.

VIII. Data Recording and Management

Well development activities will be documented in a proper field notebook and/or PDA. Pertinent information will include personnel present on site; times of arrival and departure; significant weather conditions; timing of well development activities; development method(s); observations of purge water color, turbidity, odor, sheen, etc.; purge rate; and water levels before and during pumping.

IX. Quality Assurance

All reused, non-disposable, downhole well development equipment will be cleaned in accordance with the procedures outlined in the Field Equipment Cleaning-Decontamination SOP.

X. References

Not applicable.

Standard Groundwater Sampling for Monitoring Wells

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Approval Signatures

Prepared by: *Sonja A Cadde* Date: 7/16/08

Reviewed by: *[Signature]* Date: 7/16/08
(Technical Expert)

I. Scope and Application

This Standard Operating Procedure (SOP) describes the procedures to be used to collect groundwater samples using traditional purging and sampling techniques. For low-flow purging techniques, please refer to the Low Flow Purging SOP. Monitoring wells must be developed after installation at least 1 week prior to groundwater sample collection. Monitoring wells will not be sampled until the well has been developed. During precipitation events, groundwater sampling will be discontinued until precipitation ceases or a cover has been erected over the sampling area and monitoring well.

Both filtered and unfiltered groundwater samples may be collected using this SOP. Filtered samples may be obtained using a 1.0-, 0.45-, or 0.1-micron disposable filter.

II. Personnel Qualifications

ARCADIS personnel directing, supervising, or leading groundwater sample collection activities should have a minimum of 2 years of previous groundwater sampling experience. Field employees with less than 6 months of experience should be accompanied by a supervisor (as described above) to ensure that proper sample collection techniques are employed.

III. Equipment List

The following materials shall be available, as required, during groundwater sampling:

- site plan of monitoring well locations and site Field Sampling Plan (FSP);
- appropriate health and safety equipment, as specified in the site Health and Safety Plan (HASP);
- photoionization detector (PID) or flame ionization detector (FID), as needed, in accordance with the HASP;
- monitoring well construction logs or tables and historical water level information, if available;
- dedicated plastic sheeting or other clean surface to prevent sample contact with the ground;
- if bailers are to be used in sampling:

- appropriate dedicated bottom-loading, bottom-emptying bailers (i.e., polyvinyl chloride [PVC], Teflon, or stainless steel);
 - polypropylene rope;
- if submersible pumps are to be used in sampling:
 - dedicated tubing and other equipment necessary for purging;
 - generator or battery for operation of pumps, if required;
 - a pump selected in accordance with the FSP or Work Plan (parameter-specific [e.g., submersible, bladder, peristaltic]);
- graduated buckets to measure purge water;
- water-level or oil/water interface probe, in accordance with the FSP or Work Plan;
- conductivity/temperature/pH meter;
- down-hole dissolved oxygen meter, oxidation reduction potential meter, and/or turbidity meter, if specified in the FSP;
- water sample containers appropriate for the analytical method(s) with preservative, as needed (parameter-specific);
- filter, as needed, in accordance with the analytical method and parameter;
- appropriate blanks (trip blank supplied by the laboratory), as specified in the FSP;
- Ziploc-type freezer bags for use as ice containers;
- appropriate transport containers (coolers) with ice and appropriate labeling, packing, and shipping materials;
- appropriate groundwater sampling log (example attached);
- chain-of-custody forms;
- site map with well locations and groundwater contour maps;

- keys to wells and contingent bolt cutters for rusted locks and replacement keyed-alike locks; and
- drums or other containers for purge water, as specified by the site investigation derived waste (IDW) management plan.

IV. Cautions

If heavy precipitation occurs and no cover over the sampling area and monitoring well can be erected, sampling must be discontinued until adequate cover is provided. Rain water could contaminate groundwater samples.

Remember that field logs and some forms are considered to be legal documents. All field logs and forms should therefore be filled out in indelible ink.

It may be necessary to field filter some parameters (e.g., metals) prior to collection, depending on preservation, analytical method, and project quality objectives.

Check monitoring well logs for use of bentonite pellets. Make note of potential use of bentonite pellets on the groundwater sampling log. Coated bentonite pellets have been found to contaminate monitoring wells with elevated levels of acetone.

Store and/or stage empty and full sample containers and coolers out of direct sunlight.

To mitigate potential cross-contamination, groundwater samples are to be collected in a pre-determined order from least impacted to more impacted based on previous analytical data. If no analytical data are available, samples are to be collected in the following order:

1. First sample the upgradient well(s).
2. Next, sample the well located furthest downgradient of the interpreted or known source.
3. The remaining wells should be progressively sampled in order from downgradient to upgradient, such that the wells closest to the interpreted or known source are sampled last.

Be careful not to over-tighten lids with Teflon liners or septa (e.g., 40 mL vials). Over-tightening can impair the integrity of the seal.

V. Health and Safety Considerations

If thunder or lightning is present, discontinue sampling until 30 minutes have passed after the last occurrence of thunder or lightning.

VI. Procedure

The procedures to sample monitoring wells will be as follows:

1. Don safety equipment, as required in the HASP. Depending on site-specific security and safety considerations, this often must be done prior to entering the work area.
2. Review equipment list (Section III above) to confirm that the appropriate equipment has been acquired.
3. Record site and monitoring well identification on the groundwater sampling log, along with date, arrival time, and weather conditions. Also identify the personnel present, equipment utilized, and other relevant data requested on the log.
4. Label all sample containers with indelible ink.
5. Place plastic sheeting adjacent to the well for use as a clean work area, if conditions allow. Otherwise, prevent sampling equipment from contacting the ground or other surface that could compromise sample integrity.
6. Remove lock from well and if rusted or broken, replace with a new brass keyed-alike lock.
7. Unlock and open the well cover while standing upwind of the well. Remove well cap and place on the plastic sheeting.
8. Set the sampling device, meters, and other sampling equipment on the plastic sheeting. If a dedicated sampling device stored in the well is to be used, this may also be set temporarily on the plastic sheeting, for convenience. However, if a dedicated sampling device is stored below the water table, removing it may compromise water-level data, so water level measurements should be taken prior to removing the device.
9. Obtain a water-level depth and bottom-of-well depth using an electric well probe and record on the groundwater sampling log using indelible ink. Clean the probe(s) after each use in accord with the FSP or the equipment

decontamination SOP.

Note: Water levels may be measured at all wells prior to initiating any sampling activities, depending on FSP requirements.

10. Calculate the number of gallons of water in the well using the length of water column (in feet). Record the well volume on the groundwater sampling log using indelible ink.
11. Remove the required purge volume of water from the well (measure purge water volume in measuring buckets). The required purge volume will be three to five well volumes (the water column in the well screen and casing) unless the well runs dry, in which case, the water that comes into the well will be sampled (USEPA, 1996). In any case, the pumping rate will be decreased during sampling to limit the potential for volatilization of organics potentially present in the groundwater.
12. Field parameter measurements will be periodically collected in accord with FSP specifications. The typical time intervals of field parameter measurement are (1) after each well volume removed, and (2) before sampling. If the field parameters are being measured above-ground (rather than with a downhole probe), then the final pre-sampling parameter measurement should be collected at the reduced flow rate to be used during sampling. The physical appearance of the purged water should be noted on the groundwater sampling log. In addition, water level measurements should be collected and recorded to verify that the well purging is in accord with the guidelines set forth in the previous step.
13. Unless otherwise specified by the applicable regulatory agencies, all purge water will be contained. Contained purge water will be managed in accordance with the FSP or Work Plan. If historical concentrations in the well are less than federal or state regulated concentrations appropriate for current land use, *and permission has been granted by the oversight regulatory agency* to dispose of clean purge water on the ground next to the well(s), then purge water will be allowed to infiltrate into the ground surface downgradient from the monitoring well after the well is sampled.
14. After the appropriate purge volume of groundwater in the well has been removed, or if the well has been bailed dry and allowed to recover, obtain the groundwater sample needed for analysis with the dedicated bailer or from the dedicated sampling tubing, pour the groundwater directly from the sampling device into the appropriate container in the order of volatilization sensitivity of

the parameters sampled, and tightly screw on the cap (snug, but not too tight). The suggested order for sample parameter collection, based on volatilization sensitivity, is presented below:

- a. volatile organic compounds (VOCs);
 - b. semi-volatile organic compounds (SVOCs);
 - c. polychlorinated biphenyls (PCBs)/pesticides;
 - d. metals; and
 - e. wet chemistry.
15. When sampling for volatiles, water samples will be collected directly from the bailer or dedicated tubing into 40 mL vials with Teflon-lined septa.
 16. For other analytical samples, sample containers for each analyte type should be filled in the order specified by the FSP. If a bailer is used, then the sample for dissolved metals and/or filtered PCBs should either be placed directly from the bailer into a pressure filter apparatus or pumped directly from the bailer with a peristaltic pump, through an in-line filter, into the pre-preserved sample bottle. If dedicated sample tubing is used, then the filter should be installed in-line just prior to filtered sample collection.
 17. If sampling for total and filtered metals and/or PCBs, a filtered and unfiltered sample will be collected. Sample filtration for the filtered sample will be performed in the field utilizing a pump prior to preservation. Attach (clamp) a new 1.0-, 0.45-, or 0.1-micron filter to the discharge tubing of the pump (note the filter flow direction). Turn the pump on and allow 100 mL (or manufacturer recommended amount) of fluid through the filter before sample collection. Dispense the filtered liquid directly into the laboratory sample bottles. If bailers are used for purging and sampling, a proper volume of purge water will be placed in a disposable or decontaminated polyethylene container and pumped through the filter and into the sample container using a peristaltic pump.
 18. Place the custody seal around the cap and the sampler container, if required. Note the time on the sample label. Secure with packing material and maintain at approximately 4°C on wet ice contained in double Ziploc-type freezer bags during storage in an insulated, durable transport container.
 19. Replace the well cap and lock well, or install a new lock if needed.

20. Record the time sampling procedures were completed on the appropriate field logs (using indelible ink).
21. Complete the procedures for chain-of-custody, handling, packing, and shipping. Chain-of-custody forms should be filled out and checked against the labels on the sample containers progressively after each sample is collected.
22. Place all disposable sampling materials (such as plastic sheeting, disposable tubing or bailers, and health and safety equipment) in appropriate containers.
23. If new locks were installed, forward copies of the keys to the client Project Manager (PM) and ARCADIS PM at the end of the sampling activities.

VII. Waste Management

Purge water will be managed as specified in the FSP or Work Plan, and according to state and/or federal requirements. Personal protective equipment (PPE) and decontaminated fluids will be contained separately and staged at the sampling location. Containers must be labeled at the time of collection. Labels will include date, location(s), site name, city, state, and description of matrix contained (e.g., soil, groundwater, PPE). General guidelines for IDW management are set forth in a separate IDW management SOP.

VIII. Data Recording and Management

Initial field logs and chain-of-custody records will be transmitted to the ARCADIS PM at the end of each day unless otherwise directed by the PM. The groundwater team leader retains copies of the groundwater sampling logs. All field data should be recorded in indelible ink.

IX. Quality Assurance

Field-derived quality assurance blanks will be collected as specified in the FSP, depending on the project quality objectives. Typically, field rinse blanks will be collected when non-dedicated equipment is used during groundwater sampling. Field rinse blanks will be used to confirm that decontamination procedures are sufficient and samples are representative of site conditions. Trip blanks for VOCs, which aid in the detection of contaminants from other media, sources, or the container itself, will be kept with the coolers and the sample containers throughout the sampling activities.

X. References

USEPA. 1986. RCRA Groundwater Monitoring Technical Enforcement Guidance Document (September 1986).

USEPA. 1991. Handbook Groundwater, Volume ii Methodology, Office of Research and Development, Washington, DC. USEPN62S, /6-90/016b (July, 1991).

U.S. Geological Survey (USGS). 1977. National Handbook of Recommended Methods for Water-Data Acquisition: USGS Office of Water Data Coordination. Reston, Virginia.

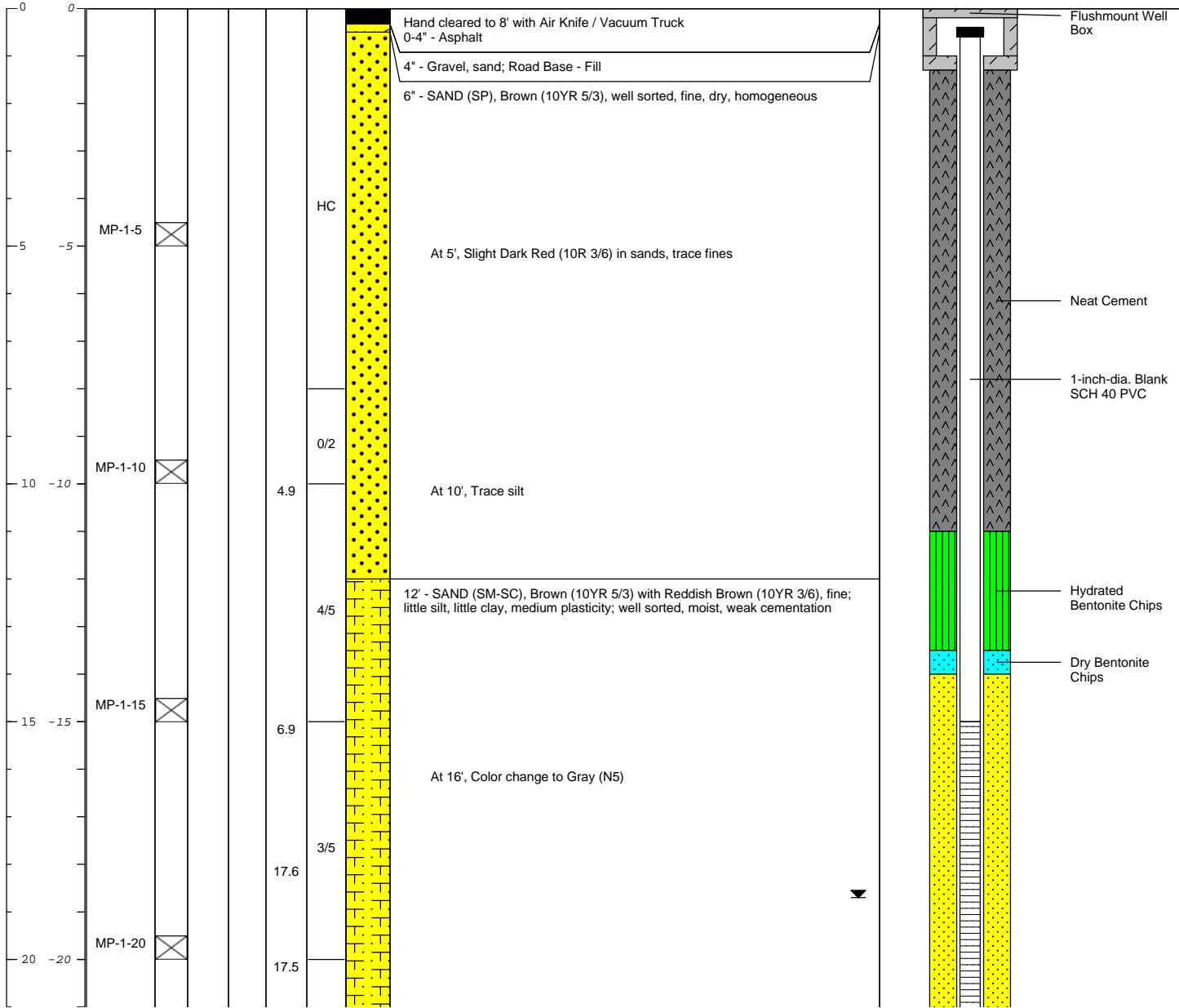


Appendix D

Boring Logs for MP-1, MPE-1/PZ-1,
and VE-3

Date Start/Finish: 6/19/2013 Drilling Company: Greg Drilling Driller's Name: Eric Santellan Drilling Method: Hollow Stem Auger (HSA) Auger Size: 6-inches OD Rig Type: MARL M-10 Sampling Method: Core Barrel OVA Equipment: Micro FID	Latitude: Longitude: Casing Elevation: N/A Borehole Depth: 30 ft bgs Surface Elevation: Descriptions By: Jamey Peterson	Well/Boring ID: MP-1 Client: Chevron Facility #351646 Location: 800 Harrison St. Oakland, CA
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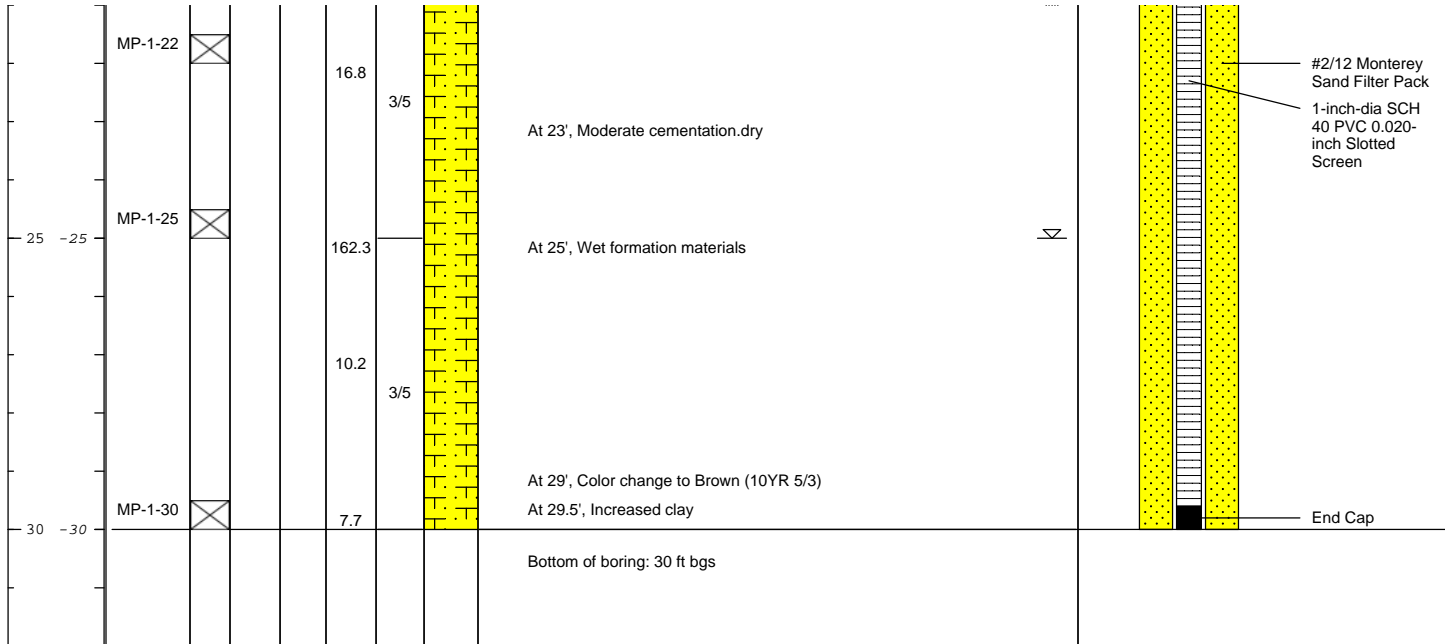
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Remarks: Abbreviations: ft bgs = feet below ground surface, PID = photoionization detector; ppm = parts per million

Date Start/Finish: 6/19/2013 Drilling Company: Greg Drilling Driller's Name: Eric Santellan Drilling Method: Hollow Stem Auger (HSA) Auger Size: 6-inches OD Rig Type: MARL M-10 Sampling Method: Core Barrel OVA Equipment: Micro FID	Latitude: Longitude: Casing Elevation: N/A Borehole Depth: 30 ft bgs Surface Elevation: Descriptions By: Jamey Peterson	Well/Boring ID: MP-1 Client: Chevron Facility #351646 Location: 800 Harrison St. Oakland, CA
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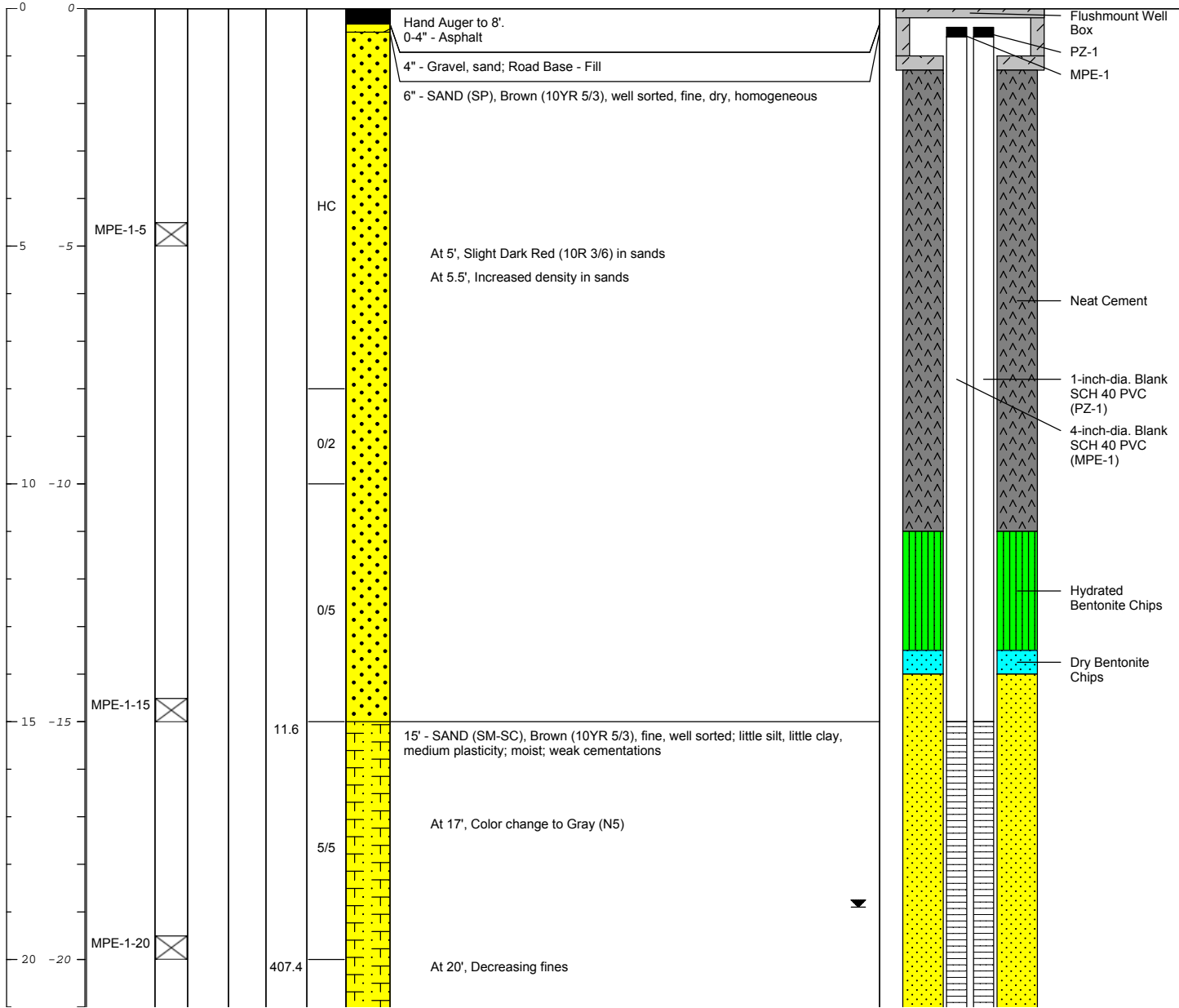
DEPTH	ELEVATION	Sample Run Number	Analytical Sample Interval	Blow Counts	N - Value	FID (ppm)	Recovery (feet)	Geologic Column	Stratigraphic Description	Well/Boring Construction
-------	-----------	-------------------	----------------------------	-------------	-----------	-----------	-----------------	-----------------	---------------------------	--------------------------




	Remarks: Abbreviations: ft bgs = feet below ground surface, PID = photoionization detector; ppm = parts per million
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Date Start/Finish: 6/19/2013 Drilling Company: Greg Drilling Driller's Name: Eric Santellan Drilling Method: Hollow Stem Auger (HSA) Auger Size: 12-inches OD Rig Type: MARL M-10 Sampling Method: Core Barrel OVA Equipment: Micro FID	Latitude: Longitude: Casing Elevation: N/A Borehole Depth: 40 ft bgs Surface Elevation: Descriptions By: Jamey Peterson	Well/Boring ID: MPE-1 / PZ-1 Client: Chevron Facility #351646 Location: 800 Harrison St. Oakland, CA
--	--	--

DEPTH	ELEVATION	Sample Run Number	Analytical Sample Interval	Blow Counts	N - Value	FID (ppm)	Recovery (feet)	Geologic Column	Stratigraphic Description	Well/Boring Construction
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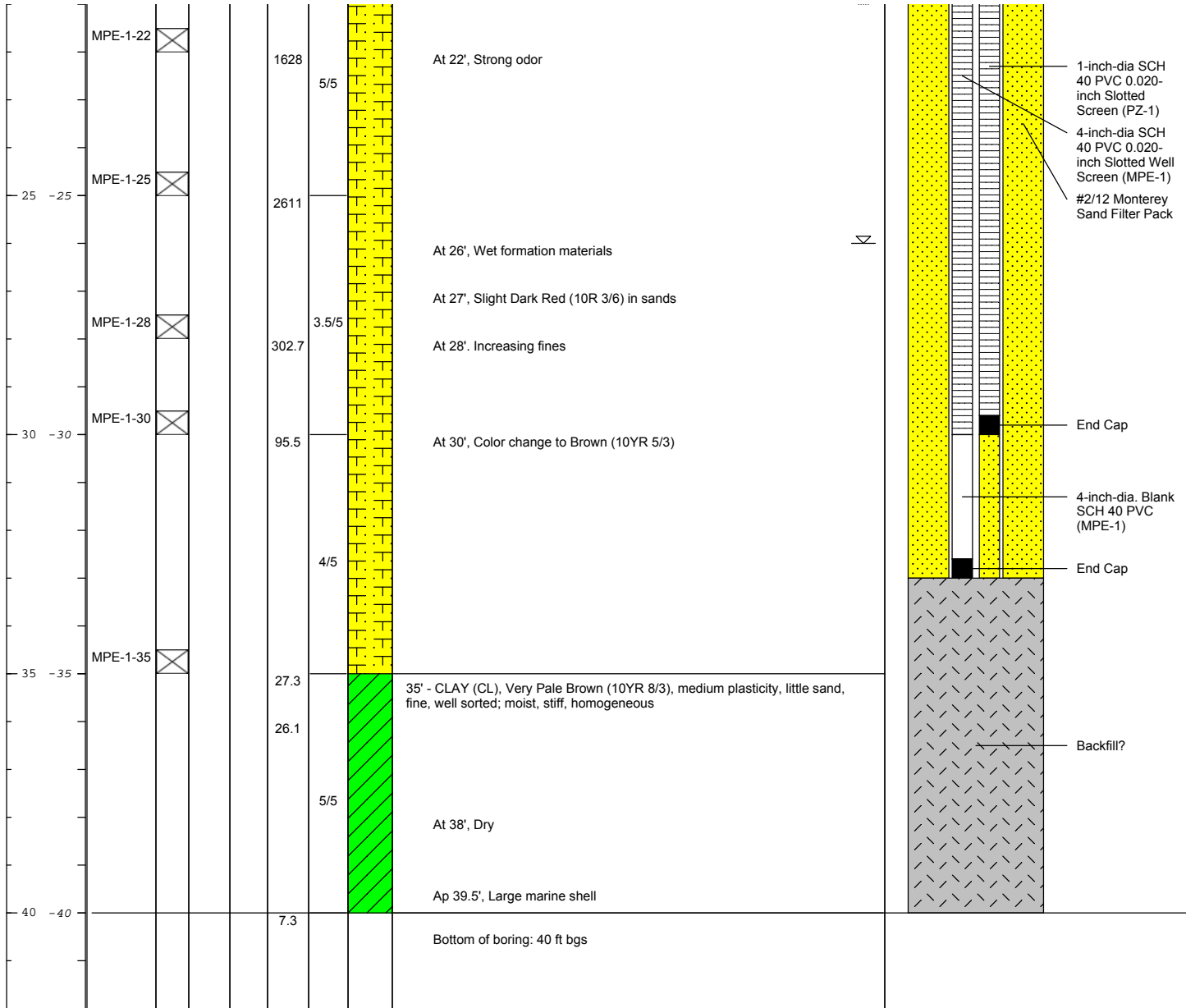




Remarks: Abbreviations: ft bgs = feet below ground surface, PID = photoionization detector; ppm = parts per million

Date Start/Finish: 6/19/2013 Drilling Company: Greg Drilling Driller's Name: Eric Santellan Drilling Method: Hollow Stem Auger (HSA) Auger Size: 12-inches OD Rig Type: MARL M-10 Sampling Method: Core Barrel OVA Equipment: Micro FID	Latitude: Longitude: Casing Elevation: N/A Borehole Depth: 40 ft bgs Surface Elevation: Descriptions By: Jamey Peterson	Well/Boring ID: MPE-1 / PZ-1 Client: Chevron Facility #351646 Location: 800 Harrison St. Oakland, CA
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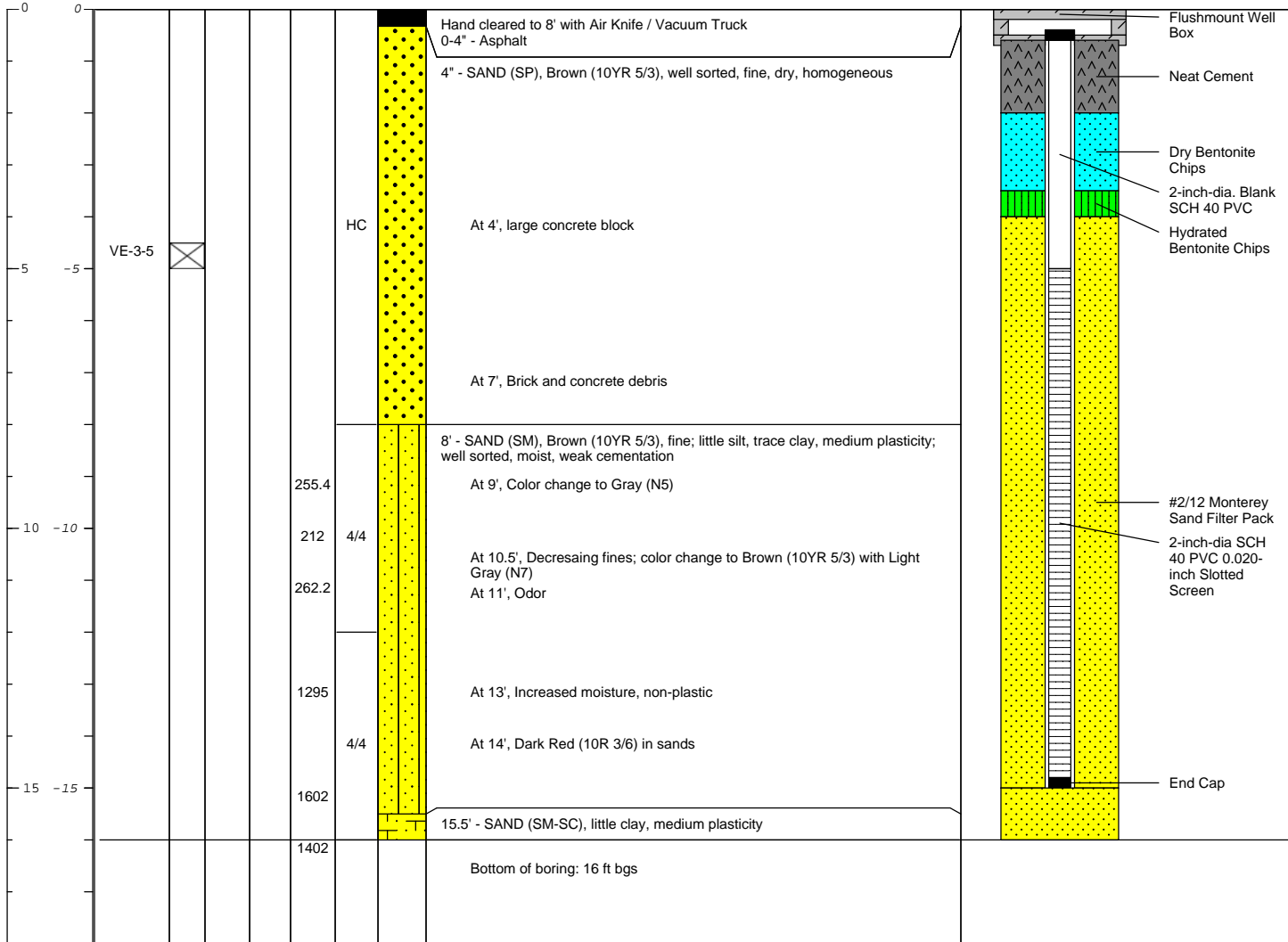
DEPTH	ELEVATION	Sample Run Number	Analytical Sample Interval	Blow Counts	N - Value	FID (ppm)	Recovery (feet)	Geologic Column	Stratigraphic Description	Well/Boring Construction
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Remarks: Abbreviations: ft bgs = feet below ground surface, PID = photoionization detector; ppm = parts per million

Date Start/Finish: 6/19/2013 Drilling Company: Greg Drilling Driller's Name: Eric Santellan Drilling Method: HSA/Direct Push Auger Size: 8-inches OD Rig Type: MARL M-10 Sampling Method: Acetate Liner OVA Equipment: Micro FID	Latitude: Longitude: Casing Elevation: N/A Borehole Depth: 16 ft bgs Surface Elevation: Descriptions By: Jamey Peterson	Well/Boring ID: VE-3 Client: Chevron Facility #351646 Location: 800 Harrison St. Oakland, CA
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DEPTH	ELEVATION	Sample Run Number	Analytical Sample Interval	Blow Counts	N - Value	FID (ppm)	Recovery (feet)	Geologic Column	Stratigraphic Description	Well/Boring Construction
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	Remarks: Abbreviations: HSA = Hollow Stem Auger; ft bgs = feet below ground surface, PID = photoionization detector; ppm = parts per million
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Appendix E

Analytical Laboratory Reports



Date of Report: 07/05/2013

Kathy Brandt

Arcadis

1900 Powell Street 12th Floor
Emeryville, CA 94608

Project: 0752
BC Work Order: 1313099
Invoice ID: B149776

Enclosed are the results of analyses for samples received by the laboratory on 6/21/2013. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Molly Meyers
Client Service Rep

Authorized Signature

Certifications: CA ELAP #1186; NV #CA00014



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13-13099

TEMP: _____

Chain of Custody

ANALYSIS REQUESTED

* Required Fields

Client/Company Name * Chevron c/o ARCADIS U.S., Inc.	Report Attention * Katherine Brandt	Phone # * 510-596-9675 FAX # :	E-mail: Katherine.Brandt@arcadis-us.com
---	--	-----------------------------------	---

Address * 2000 Powell Street #700	City * Emeryville,	State * CA	Zip * 94608	Carbon Copies: CDHS <input type="checkbox"/> Fresno Co <input type="checkbox"/> EPA <input type="checkbox"/> Merced Co <input type="checkbox"/> Tulare Co <input type="checkbox"/> Other:									
Project Information: Chevron Facility No. 351646_Oakland	PO # BCL Quote #	Regulatory Compliance Electronic Data Transfer: Y <input type="checkbox"/> N <input type="checkbox"/> System No. *											
How would you like your completed results sent? <input checked="" type="checkbox"/> E-Mail <input type="checkbox"/> Fax <input type="checkbox"/> EDD <input type="checkbox"/> Mail Only				<table border="1"> <tr> <td>TPPH (8260B)</td> <td>BTEX, MTBE (8260B)</td> <td>EDB, EDC (8260B)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	TPPH (8260B)	BTEX, MTBE (8260B)	EDB, EDC (8260B)						
TPPH (8260B)	BTEX, MTBE (8260B)	EDB, EDC (8260B)											
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Matrix Types: RSW = Raw Surface Water CFW = Chlorinated Finished Water CWW = Chlorinated Waste Water BW = Bottled Water
RGW = Raw Ground Water FW = Finished Water WW = Waste Water SW = Storm Water DW = Drinking Water SO = Solid

Sample #	# Bottles	Sampled		Sample Description / Location *	Matrix *	Comments / Station Code	TPPH (8260B)	BTEX, MTBE (8260B)	EDB, EDC (8260B)								
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-2		6/19/13	12:40	MPE-1-5	SO	above and kalla.wynne@arcadis-us.com and	X	X	X								
-3		6/19/13	14:20	MP-1-5 @ 14:20 LEW	SO	Tyler.Sale@arcadis-us.com.	X	X	X								
-4		6/20/13	8:15	MPE-1-15 @ 8:15 LEW	SO		X	X	X								
-5		6/20/13	8:20	MPE-1-20	SO		X	X	X								
-6		6/20/13	8:25	MPE-1-25 @ 8:25 LEW	SO		X	X	X								
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-8		6/20/13	8:40	MPE-1-30	SO		X	X	X								
-9		6/20/13	8:50	MPE-1-35	SO		X	X	X								
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-11		6/20/13	12:55	MPE-1-10	SO		X	X	X								

Relinquished by: (Signature and Printed Name) <i>[Signature]</i> James Peterson	Company ARCADIS	Date 6-20-13	Time 17:00	Received by: (Signature and Print Name)	Company
Relinquished by: (Signature and Printed Name)	Company	Date	Time	Received by: (Signature and Print Name)	Company

Received for Lab by: (Signature and Printed Name)	Date	Time	Payment Received at Delivery:
			Date: _____ Amount: _____ Check/Cash/Card PIA # _____ Init. _____

Shipping Method: CAO UPS GSO WALK-IN SJVC FED EX OTHER	Cooling Method: WET BLUE NONE	Packing Material:
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ER-FL-0012-00 (Analytical)

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Chain of Custody and Cooler Receipt Form for 1313099 Page 1 of 4

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Chain of Custody

* Required Fields

13-13099

TEMP: _____

ANALYSIS REQUESTED

Client/Company Name * Chevron c/o ARCADIS U.S., Inc.	Report Attention * Katherine Brandt	Phone # * 510-596-9675	FAX # *
Address * 2000 Powell Street #700		E-mail: Katherine.Brandt@arcadis-us.com	

City * Emeryville,	State * CA	Zip * 94608	Carbon Copies: CDHS <input type="checkbox"/> Fresno Co <input type="checkbox"/> EPA <input type="checkbox"/> Merced Co <input type="checkbox"/> Tulare Co <input type="checkbox"/> Other:
Project Information: Chevron Facility No. 351646_Oakland		PO #	Regulatory Compliance Electronic Data Transfer: Y <input type="checkbox"/> N <input type="checkbox"/> System No. *
How would you like your completed results sent? <input checked="" type="checkbox"/> E-Mail <input type="checkbox"/> Fax <input type="checkbox"/> EDD <input type="checkbox"/> Mail Only		QC Request <input checked="" type="checkbox"/> STD <input type="checkbox"/> Level II	Result Request ** Surcharge <input checked="" type="checkbox"/> STD <input type="checkbox"/> 5 Day** <input type="checkbox"/> 2 Day** <input type="checkbox"/> Day**

Matrix Types: RSW = Raw Surface Water CFW = Chlorinated Finished Water CWW = Chlorinated Waste Water BW = Bottled Water
RGW = Raw Ground Water FW = Finished Water WW = Waste Water SW = Storm Water DW = Drinking Water SO = Solid

Sample #	# Bottles	Sampled		Sample Description / Location *	Matrix *	Comments / Station Code	TPPH (8260B)	BTEX, MTBE (8260B)	EDB, EDC (8260B)						
		Date	Time												
-12		6/20/13	13:00	MP-1-15	SO	1. Please send log-ins and results to email	X	X	X						
-13		6/20/13	12:10	MP-1-20	SO	above and katie.wynne@arcadis-us.com and	X	X	X						
-14		6/20/13	13:20	MP-1-25	SO	Tyler.Sale@arcadis-us.com.	X	X	X						
-15		6/20/13	13:35	MP-1-30	SO		X	X	X						
-16		6/20/13	14:00	MP-1-22 LEW	SO		X	X	X						

Relinquished by: (Signature and Printed Name) <i>[Signature]</i> JAMEY PETERSON	Company ARCADIS	Date 6-20-13	Time 17:00	Received by: (Signature and Print Name) <i>[Signature]</i>	Company BC Labs
Relinquished by: (Signature and Printed Name)	Company	Date	Time	Received by: (Signature and Print Name)	Company

Received for Lab by: (Signature and Printed Name)	Date	Time	Payment Received at Delivery:
			Date: Amount: Check/Cash/Card PIA # Init.

Shipping Method: CAO UPS GSO WALK-IN SJVC FED EX OTHER	Cooling Method: WET BLUE NONE	Packing Material:
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BC LABORATORIES INC. COOLER RECEIPT FORM Rev. No. 13 08/17/12 Page ___ Of ___

Submission #: 13-13099

SHIPPING INFORMATION Federal Express <input checked="" type="checkbox"/> UPS <input type="checkbox"/> Hand Delivery <input type="checkbox"/> BC Lab Field Service <input type="checkbox"/> Other <input type="checkbox"/> (Specify) _____		SHIPPING CONTAINER Ice Chest <input checked="" type="checkbox"/> None <input type="checkbox"/> Box <input type="checkbox"/> Other <input type="checkbox"/> (Specify) _____	
--	--	---	--

Refrigerant: Ice Blue Ice None Other Comments: _____

Custody Seals: Ice Chest Containers None Comments: _____
 Intact? Yes No Intact? Yes No

All samples received? Yes No All samples containers intact? Yes No Description(s) match COC? Yes No

COC Received YES NO Emissivity: 0.95 Container: VOA Thermometer ID: 207 Date/Time: 6/21/13
 Temperature: (A) 2.6 °C / (C) 2.5 °C Analyst Initials: MQA 1045

SAMPLE CONTAINERS	SAMPLE NUMBERS									
	1	2	3	4	5	6	7	8	9	10
QT GENERAL MINERAL/ GENERAL PHYSICAL										
PT PE UNPRESERVED										
QT INORGANIC CHEMICAL METALS										
PT INORGANIC CHEMICAL METALS										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE /NITRITE										
PT TOTAL ORGANIC CARBON										
PT TOX										
PT CHEMICAL OXYGEN DEMAND										
PA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 413.1, 413.2, 418.1										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
100ml EPA 547										
100ml EPA 531.1										
QT EPA 548										
QT EPA 549										
QT EPA 632										
QT EPA 8015M										
QT ANIBER										
8 OZ. JAR										
32 OZ. JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
FERROUS IRON										
ENCORE										
SMART KIT	A(4)	A(4)	A(4)	A(4)	A(4)	A(4)	A(4)	A(4)	A(4)	A(4)

Comments: _____
 Sample Numbering-Completed-By: KIQ Date/Time: 6/24/13 0140
 A = Actual / C = Corrected

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Chain of Custody and Cooler Receipt Form for 1313099 Page 4 of 4

BC LABORATORIES INC. COOLER RECEIPT FORM Rev. No. 13 08/17/12 Page ___ Of ___

Submission #: 13-13099

SHIPPING INFORMATION: Federal Express [checked], UPS [], Hand Delivery [], BC Lab Field Service [], Other []. SHIPPING CONTAINER: Ice Chest [checked], Box [], None [], Other [].

Refrigerant: Ice [checked], Blue Ice [], None [], Other []. Comments:

Custody Seals: Ice Chest [checked], Containers [], None []. Intact? Yes [checked], No [].

All samples received? Yes [checked], No []. All samples containers intact? Yes [checked], No []. Description(s) match COC? Yes [checked], No [].

COC Received: YES [checked], NO []. Emissivity: 0.95, Container: VOA, Thermometer ID: 207, Date/Time: 6/21/13, Temperature: (A) 2.6 °C, (C) 2.5 °C, Analyst Initials: MAM 1045

Table with columns for Sample Containers and Sample Numbers (1-10). Rows include various test types like QT GENERAL MINERAL, PT PE UNPRESERVED, etc. Most cells are empty, with some handwritten 'A(4)' at the bottom.

Comments: Sample Numbering-Completed-By: KIO Date/Time: 6/24/13 @ 140 A = Actual / C = Corrected

IS:\MURDOCS\Work\Perfect\1 AB DOCS\FORMS\15AMREC131



Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/05/2013 15:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information
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1313099-01	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: VE-3-5-S-130619 Sampled By: AREC	Receive Date: 06/21/2013 10:45 Sampling Date: 06/19/2013 10:00 Sample Depth: --- Lab Matrix: Solids Sample Type: Soil Delivery Work Order: Global ID: Location ID (FieldPoint): VE-3 Matrix: SO Sample QC Type (SACode): CS Cooler ID:
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1313099-02	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MPE-1-5-S-130619 Sampled By: AREC	Receive Date: 06/21/2013 10:45 Sampling Date: 06/19/2013 12:40 Sample Depth: --- Lab Matrix: Solids Sample Type: Soil Delivery Work Order: Global ID: Location ID (FieldPoint): MPE-1 Matrix: SO Sample QC Type (SACode): CS Cooler ID:
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1313099-03	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MP-1-5-S-130619 Sampled By: AREC	Receive Date: 06/21/2013 10:45 Sampling Date: 06/19/2013 14:20 Sample Depth: --- Lab Matrix: Solids Sample Type: Soil Delivery Work Order: Global ID: Location ID (FieldPoint): MP-1 Matrix: SO Sample QC Type (SACode): CS Cooler ID:
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Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/05/2013 15:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information
------------	---------------------------

1313099-04	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MPE-1-15-S-130620 Sampled By: AREC	Receive Date: 06/21/2013 10:45 Sampling Date: 06/20/2013 08:15 Sample Depth: --- Lab Matrix: Solids Sample Type: Soil Delivery Work Order: Global ID: Location ID (FieldPoint): MPE-1 Matrix: SO Sample QC Type (SACode): CS Cooler ID:
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1313099-05	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MPE-1-20-S-130620 Sampled By: AREC	Receive Date: 06/21/2013 10:45 Sampling Date: 06/20/2013 08:20 Sample Depth: --- Lab Matrix: Solids Sample Type: Soil Delivery Work Order: Global ID: Location ID (FieldPoint): MPE-1 Matrix: SO Sample QC Type (SACode): CS Cooler ID:
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1313099-06	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MPE-1-25-S-130620 Sampled By: AREC	Receive Date: 06/21/2013 10:45 Sampling Date: 06/20/2013 08:25 Sample Depth: --- Lab Matrix: Solids Sample Type: Soil Delivery Work Order: Global ID: Location ID (FieldPoint): MPE-1 Matrix: SO Sample QC Type (SACode): CS Cooler ID:
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Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/05/2013 15:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information
------------	---------------------------

1313099-07	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MPE-1-22-S-130620 Sampled By: AREC	Receive Date: 06/21/2013 10:45 Sampling Date: 06/20/2013 08:30 Sample Depth: --- Lab Matrix: Solids Sample Type: Soil Delivery Work Order: Global ID: Location ID (FieldPoint): MPE-1 Matrix: SO Sample QC Type (SACode): CS Cooler ID:
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1313099-08	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MPE-1-30-S-130620 Sampled By: AREC	Receive Date: 06/21/2013 10:45 Sampling Date: 06/20/2013 08:40 Sample Depth: --- Lab Matrix: Solids Sample Type: Soil Delivery Work Order: Global ID: Location ID (FieldPoint): MPE-1 Matrix: SO Sample QC Type (SACode): CS Cooler ID:
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1313099-09	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MPE-1-35-S-130620 Sampled By: AREC	Receive Date: 06/21/2013 10:45 Sampling Date: 06/20/2013 08:50 Sample Depth: --- Lab Matrix: Solids Sample Type: Soil Delivery Work Order: Global ID: Location ID (FieldPoint): MPE-1 Matrix: SO Sample QC Type (SACode): CS Cooler ID:
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Arcadis
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Emeryville, CA 94608

Reported: 07/05/2013 15:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information
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1313099-10	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MPE-1-28-S-130620 Sampled By: AREC	Receive Date: 06/21/2013 10:45 Sampling Date: 06/20/2013 09:05 Sample Depth: --- Lab Matrix: Solids Sample Type: Soil Delivery Work Order: Global ID: Location ID (FieldPoint): MPE-1 Matrix: SO Sample QC Type (SACode): CS Cooler ID:
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1313099-11	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MP-1-10-S-130620 Sampled By: AREC	Receive Date: 06/21/2013 10:45 Sampling Date: 06/20/2013 12:55 Sample Depth: --- Lab Matrix: Solids Sample Type: Soil Delivery Work Order: Global ID: Location ID (FieldPoint): MP-1 Matrix: SO Sample QC Type (SACode): CS Cooler ID:
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1313099-12	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MP-1-15-S-130620 Sampled By: AREC	Receive Date: 06/21/2013 10:45 Sampling Date: 06/20/2013 13:00 Sample Depth: --- Lab Matrix: Solids Sample Type: Soil Delivery Work Order: Global ID: Location ID (FieldPoint): MP-1 Matrix: SO Sample QC Type (SACode): CS Cooler ID:
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Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/05/2013 15:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information
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1313099-13	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MP-1-20-S-130620 Sampled By: AREC	Receive Date: 06/21/2013 10:45 Sampling Date: 06/20/2013 13:10 Sample Depth: --- Lab Matrix: Solids Sample Type: Soil Delivery Work Order: Global ID: Location ID (FieldPoint): MP-1 Matrix: SO Sample QC Type (SACode): CS Cooler ID:
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1313099-14	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MP-1-25-S-130620 Sampled By: AREC	Receive Date: 06/21/2013 10:45 Sampling Date: 06/20/2013 13:20 Sample Depth: --- Lab Matrix: Solids Sample Type: Soil Delivery Work Order: Global ID: Location ID (FieldPoint): MP-1 Matrix: SO Sample QC Type (SACode): CS Cooler ID:
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1313099-15	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MP-1-30-S-130620 Sampled By: AREC	Receive Date: 06/21/2013 10:45 Sampling Date: 06/20/2013 13:35 Sample Depth: --- Lab Matrix: Solids Sample Type: Soil Delivery Work Order: Global ID: Location ID (FieldPoint): MP-1 Matrix: SO Sample QC Type (SACode): CS Cooler ID:
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Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/05/2013 15:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information
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1313099-16	COC Number: ---	Receive Date: 06/21/2013 10:45
	Project Number: 0752	Sampling Date: 06/20/2013 14:00
	Sampling Location: ---	Sample Depth: ---
	Sampling Point: MP-1-22-S-130620	Lab Matrix: Solids
	Sampled By: AREC	Sample Type: Soil
		Delivery Work Order:
		Global ID:
		Location ID (FieldPoint): MP-1
		Matrix: SO
		Sample QC Type (SACode): CS
		Cooler ID:



Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/05/2013 15:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260/5035)

BCL Sample ID: 1313099-01	Client Sample Name: 0752, VE-3-5-S-130619, 6/19/2013 10:00:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0044	EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0044	EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0044	EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0044	EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0044	EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0044	EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0088	EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.18	Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	108	%	70 - 121 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	98.4	%	81 - 117 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	98.3	%	74 - 121 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	06/25/13	06/25/13 12:25	ADC	MS-V2	0.880	BWF1413



Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/05/2013 15:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260/5035)

BCL Sample ID: 1313099-02	Client Sample Name: 0752, MPE-1-5-S-130619, 6/19/2013 12:40:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0040	EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0040	EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0040	EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0040	EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0040	EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0040	EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0080	EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.16	Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	101	%	70 - 121 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	97.5	%	81 - 117 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	102	%	74 - 121 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	06/25/13	06/25/13 12:51	ADC	MS-V2	0.800	BWF1413



Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/05/2013 15:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260/5035)

BCL Sample ID: 1313099-03	Client Sample Name: 0752, MP-1-5-S-130619, 6/19/2013 2:20:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0040	EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0040	EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0040	EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0040	EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0040	EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0040	EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0080	EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.16	Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	102	%	70 - 121 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	100	%	81 - 117 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	90.0	%	74 - 121 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	06/25/13	06/25/13 13:17	ADC	MS-V2	0.800	BWF1413

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Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/05/2013 15:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260/5035)

BCL Sample ID: 1313099-04	Client Sample Name: 0752, MPE-1-15-S-130620, 6/20/2013 8:15:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0036	EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0036	EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0036	EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0036	EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0036	EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0036	EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0071	EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.14	Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	109	%	70 - 121 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	99.9	%	81 - 117 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	104	%	74 - 121 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	06/25/13	06/25/13 13:43	ADC	MS-V2	0.710	BWF1413



Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/05/2013 15:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260/5035)

BCL Sample ID: 1313099-05	Client Sample Name: 0752, MPE-1-20-S-130620, 6/20/2013 8:20:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0038	EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0038	EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0038	EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0038	EPA-8260B	ND		1
Methyl t-butyl ether	0.0072	mg/kg	0.0038	EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0038	EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0076	EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	0.40	mg/kg	0.15	Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	107	%	70 - 121 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	102	%	81 - 117 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	106	%	74 - 121 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	06/25/13	06/25/13 14:09	ADC	MS-V2	0.760	BWF1413

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Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/05/2013 15:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260/5035)

BCL Sample ID: 1313099-06	Client Sample Name: 0752, MPE-1-25-S-130620, 6/20/2013 8:25:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	0.087	mg/kg	0.0038	EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0038	EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0038	EPA-8260B	ND		1
Ethylbenzene	0.029	mg/kg	0.0038	EPA-8260B	ND		1
Methyl t-butyl ether	0.28	mg/kg	0.066	EPA-8260B	ND	A01	2
Toluene	0.029	mg/kg	0.0038	EPA-8260B	ND		1
Total Xylenes	0.048	mg/kg	0.0077	EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	3.9	mg/kg	0.15	Luft-GC/MS	ND	S01	1
1,2-Dichloroethane-d4 (Surrogate)	105	%	70 - 121 (LCL - UCL)	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	106	%	70 - 121 (LCL - UCL)	EPA-8260B			2
Toluene-d8 (Surrogate)	108	%	81 - 117 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	105	%	81 - 117 (LCL - UCL)	EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	128	%	74 - 121 (LCL - UCL)	EPA-8260B		A19,S09	1
4-Bromofluorobenzene (Surrogate)	119	%	74 - 121 (LCL - UCL)	EPA-8260B			2

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	06/25/13	06/25/13 14:35	ADC	MS-V2	0.770	BWF1413
2	EPA-8260B	06/25/13	06/26/13 22:13	ADC	MS-V2	13.200	BWF1413



Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/05/2013 15:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260/5035)

BCL Sample ID: 1313099-07	Client Sample Name: 0752, MPE-1-22-S-130620, 6/20/2013 8:30:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	0.73	mg/kg	0.17	EPA-8260B	ND	A01	1
1,2-Dibromoethane	ND	mg/kg	0.17	EPA-8260B	ND	A01	1
1,2-Dichloroethane	ND	mg/kg	0.17	EPA-8260B	ND	A01	1
Ethylbenzene	3.0	mg/kg	0.17	EPA-8260B	ND	A01	1
Methyl t-butyl ether	1.3	mg/kg	0.17	EPA-8260B	ND	A01	1
Toluene	1.4	mg/kg	0.17	EPA-8260B	ND	A01	1
Total Xylenes	10	mg/kg	0.35	EPA-8260B	ND	A01	1
Total Purgeable Petroleum Hydrocarbons	670	mg/kg	69	Luft-GC/MS	ND	A01	2
1,2-Dichloroethane-d4 (Surrogate)	94.5	%	70 - 121 (LCL - UCL)	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	91.7	%	70 - 121 (LCL - UCL)	EPA-8260B			2
Toluene-d8 (Surrogate)	118	%	81 - 117 (LCL - UCL)	EPA-8260B		A19,S09	1
Toluene-d8 (Surrogate)	108	%	81 - 117 (LCL - UCL)	EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	145	%	74 - 121 (LCL - UCL)	EPA-8260B		A19,S09	1
4-Bromofluorobenzene (Surrogate)	127	%	74 - 121 (LCL - UCL)	EPA-8260B		A19,S09	2

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	06/25/13	06/26/13 23:05	ADC	MS-V2	34.700	BWF1413
2	EPA-8260B	06/25/13	06/26/13 22:39	ADC	MS-V2	347	BWF1413



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Reported: 07/05/2013 15:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260/5035)

BCL Sample ID: 1313099-08	Client Sample Name: 0752, MPE-1-30-S-130620, 6/20/2013 8:40:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0040	EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0040	EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0040	EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0040	EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0040	EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0040	EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0081	EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.16	Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	106	%	70 - 121 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	101	%	81 - 117 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	104	%	74 - 121 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	06/25/13	06/26/13 21:46	ADC	MS-V2	0.810	BWF1413



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Volatile Organic Analysis (EPA Method 8260/5035)

BCL Sample ID: 1313099-09	Client Sample Name: 0752, MPE-1-35-S-130620, 6/20/2013 8:50:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.099	EPA-8260B	ND	A10,Z1	1
1,2-Dibromoethane	ND	mg/kg	0.099	EPA-8260B	ND	A10,Z1	1
1,2-Dichloroethane	ND	mg/kg	0.099	EPA-8260B	ND	A10,Z1	1
Ethylbenzene	ND	mg/kg	0.099	EPA-8260B	ND	A10,Z1	1
Methyl t-butyl ether	ND	mg/kg	0.099	EPA-8260B	ND	A10,Z1	1
Toluene	ND	mg/kg	0.099	EPA-8260B	ND	A10,Z1	1
Total Xylenes	ND	mg/kg	0.20	EPA-8260B	ND	A10,Z1	1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	4.0	Luft-GC/MS	ND	A10,Z1	1
1,2-Dichloroethane-d4 (Surrogate)	95.4	%	70 - 121 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	105	%	81 - 117 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	107	%	74 - 121 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	06/25/13	06/26/13 23:31	ADC	MS-V2	19.800	BWF1413

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Volatile Organic Analysis (EPA Method 8260/5035)

BCL Sample ID: 1313099-10	Client Sample Name: 0752, MPE-1-28-S-130620, 6/20/2013 9:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	0.041	mg/kg	0.0037	EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0037	EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0037	EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0037	EPA-8260B	ND		1
Methyl t-butyl ether	0.013	mg/kg	0.0037	EPA-8260B	ND		1
Toluene	0.0044	mg/kg	0.0037	EPA-8260B	ND		1
Total Xylenes	0.012	mg/kg	0.0074	EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	1.1	mg/kg	0.15	Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	90.9	%	70 - 121 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	100	%	81 - 117 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	105	%	74 - 121 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	06/25/13	06/25/13 16:19	ADC	MS-V2	0.740	BWF1413



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Volatile Organic Analysis (EPA Method 8260/5035)

BCL Sample ID: 1313099-11	Client Sample Name: 0752, MP-1-10-S-130620, 6/20/2013 12:55:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0036	EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0036	EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0036	EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0036	EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0036	EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0036	EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0072	EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.14	Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	101	%	70 - 121 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	100	%	81 - 117 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	106	%	74 - 121 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	06/25/13	06/25/13 16:46	ADC	MS-V2	0.720	BWF1413



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Volatile Organic Analysis (EPA Method 8260/5035)

BCL Sample ID: 1313099-12	Client Sample Name: 0752, MP-1-15-S-130620, 6/20/2013 1:00:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0036	EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0036	EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0036	EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0036	EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0036	EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0036	EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0072	EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.14	Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	106	%	70 - 121 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	102	%	81 - 117 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	108	%	74 - 121 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	06/25/13	06/25/13 17:12	ADC	MS-V2	0.720	BWF1716

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Volatile Organic Analysis (EPA Method 8260/5035)

BCL Sample ID: 1313099-13	Client Sample Name: 0752, MP-1-20-S-130620, 6/20/2013 1:10:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0038	EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0038	EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0038	EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0038	EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0038	EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0038	EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0076	EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.15	Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	106	%	70 - 121 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	101	%	81 - 117 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	99.0	%	74 - 121 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	06/25/13	06/25/13 17:39	ADC	MS-V2	0.760	BWF1716

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Volatile Organic Analysis (EPA Method 8260/5035)

BCL Sample ID: 1313099-14	Client Sample Name: 0752, MP-1-25-S-130620, 6/20/2013 1:20:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0035	EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0035	EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0035	EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0035	EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0035	EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0035	EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0070	EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.14	Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	112	%	70 - 121 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	101	%	81 - 117 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	108	%	74 - 121 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	06/25/13	06/25/13 18:06	ADC	MS-V2	0.700	BWF1716



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Volatile Organic Analysis (EPA Method 8260/5035)

BCL Sample ID: 1313099-15	Client Sample Name: 0752, MP-1-30-S-130620, 6/20/2013 1:35:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0034	EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0034	EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0034	EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0034	EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0034	EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0034	EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0068	EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.14	Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	102	%	70 - 121 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	101	%	81 - 117 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	104	%	74 - 121 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	06/25/13	06/25/13 18:32	ADC	MS-V2	0.680	BWF1716



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Volatile Organic Analysis (EPA Method 8260/5035)

BCL Sample ID: 1313099-16	Client Sample Name: 0752, MP-1-22-S-130620, 6/20/2013 2:00:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0045	EPA-8260B	ND		1
1,2-Dibromoethane	ND	mg/kg	0.0045	EPA-8260B	ND		1
1,2-Dichloroethane	ND	mg/kg	0.0045	EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0045	EPA-8260B	ND		1
Methyl t-butyl ether	ND	mg/kg	0.0045	EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0045	EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.0090	EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	mg/kg	0.18	Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	112	%	70 - 121 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	102	%	81 - 117 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	106	%	74 - 121 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	06/25/13	06/26/13 15:39	ADC	MS-V2	0.900	BWF1716

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Volatile Organic Analysis (EPA Method 8260/5035)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
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QC Batch ID: BWF1413

Benzene	BWF1413-BLK1	ND	mg/kg	0.0050		
1,2-Dibromoethane	BWF1413-BLK1	ND	mg/kg	0.0050		
1,2-Dichloroethane	BWF1413-BLK1	ND	mg/kg	0.0050		
Ethylbenzene	BWF1413-BLK1	ND	mg/kg	0.0050		
Methyl t-butyl ether	BWF1413-BLK1	ND	mg/kg	0.0050		
Toluene	BWF1413-BLK1	ND	mg/kg	0.0050		
Total Xylenes	BWF1413-BLK1	ND	mg/kg	0.010		
Total Purgeable Petroleum Hydrocarbons	BWF1413-BLK1	ND	mg/kg	0.20		
1,2-Dichloroethane-d4 (Surrogate)	BWF1413-BLK1	98.2	%		70 - 121 (LCL - UCL)	
Toluene-d8 (Surrogate)	BWF1413-BLK1	98.2	%		81 - 117 (LCL - UCL)	
4-Bromofluorobenzene (Surrogate)	BWF1413-BLK1	96.8	%		74 - 121 (LCL - UCL)	

QC Batch ID: BWF1716

Benzene	BWF1716-BLK1	ND	mg/kg	0.0050		
1,2-Dibromoethane	BWF1716-BLK1	ND	mg/kg	0.0050		
1,2-Dichloroethane	BWF1716-BLK1	ND	mg/kg	0.0050		
Ethylbenzene	BWF1716-BLK1	ND	mg/kg	0.0050		
Methyl t-butyl ether	BWF1716-BLK1	ND	mg/kg	0.0050		
Toluene	BWF1716-BLK1	ND	mg/kg	0.0050		
Total Xylenes	BWF1716-BLK1	ND	mg/kg	0.010		
Total Purgeable Petroleum Hydrocarbons	BWF1716-BLK1	ND	mg/kg	0.20		
1,2-Dichloroethane-d4 (Surrogate)	BWF1716-BLK1	97.8	%		70 - 121 (LCL - UCL)	
Toluene-d8 (Surrogate)	BWF1716-BLK1	104	%		81 - 117 (LCL - UCL)	
4-Bromofluorobenzene (Surrogate)	BWF1716-BLK1	108	%		74 - 121 (LCL - UCL)	



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Volatile Organic Analysis (EPA Method 8260/5035)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab	Quals
								Percent Recovery	RPD		
QC Batch ID: BWF1413											
Benzene	BWF1413-BS1	LCS	0.12662	0.12500	mg/kg	101		70 - 130			
Toluene	BWF1413-BS1	LCS	0.13018	0.12500	mg/kg	104		70 - 130			
1,2-Dichloroethane-d4 (Surrogate)	BWF1413-BS1	LCS	0.051400	0.050000	mg/kg	103		70 - 121			
Toluene-d8 (Surrogate)	BWF1413-BS1	LCS	0.050380	0.050000	mg/kg	101		81 - 117			
4-Bromofluorobenzene (Surrogate)	BWF1413-BS1	LCS	0.050470	0.050000	mg/kg	101		74 - 121			
QC Batch ID: BWF1716											
Benzene	BWF1716-BS1	LCS	0.10471	0.12500	mg/kg	83.8		70 - 130			
Toluene	BWF1716-BS1	LCS	0.12700	0.12500	mg/kg	102		70 - 130			
1,2-Dichloroethane-d4 (Surrogate)	BWF1716-BS1	LCS	0.048230	0.050000	mg/kg	96.5		70 - 121			
Toluene-d8 (Surrogate)	BWF1716-BS1	LCS	0.051450	0.050000	mg/kg	103		81 - 117			
4-Bromofluorobenzene (Surrogate)	BWF1716-BS1	LCS	0.054920	0.050000	mg/kg	110		74 - 121			



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Volatile Organic Analysis (EPA Method 8260/5035)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery		Lab
								RPD	Percent Recovery	
QC Batch ID: BWF1413		Used client sample: N								
Benzene	MS	1310670-50	ND	0.12154	0.12500	mg/kg		97.2		70 - 130
	MSD	1310670-50	ND	0.12747	0.12500	mg/kg	4.8	102	20	70 - 130
Toluene	MS	1310670-50	ND	0.12562	0.12500	mg/kg		100		70 - 130
	MSD	1310670-50	ND	0.14408	0.12500	mg/kg	13.7	115	20	70 - 130
1,2-Dichloroethane-d4 (Surrogate)	MS	1310670-50	ND	0.048090	0.050000	mg/kg		96.2		70 - 121
	MSD	1310670-50	ND	0.046460	0.050000	mg/kg	3.4	92.9		70 - 121
Toluene-d8 (Surrogate)	MS	1310670-50	ND	0.049900	0.050000	mg/kg		99.8		81 - 117
	MSD	1310670-50	ND	0.050940	0.050000	mg/kg	2.1	102		81 - 117
4-Bromofluorobenzene (Surrogate)	MS	1310670-50	ND	0.055170	0.050000	mg/kg		110		74 - 121
	MSD	1310670-50	ND	0.050520	0.050000	mg/kg	8.8	101		74 - 121
QC Batch ID: BWF1716		Used client sample: N								
Benzene	MS	1310670-88	ND	0.10339	0.12500	mg/kg		82.7		70 - 130
	MSD	1310670-88	ND	0.091970	0.12500	mg/kg	11.7	73.6	20	70 - 130
Toluene	MS	1310670-88	ND	0.11737	0.12500	mg/kg		93.9		70 - 130
	MSD	1310670-88	ND	0.11046	0.12500	mg/kg	6.1	88.4	20	70 - 130
1,2-Dichloroethane-d4 (Surrogate)	MS	1310670-88	ND	0.052750	0.050000	mg/kg		106		70 - 121
	MSD	1310670-88	ND	0.050910	0.050000	mg/kg	3.6	102		70 - 121
Toluene-d8 (Surrogate)	MS	1310670-88	ND	0.051330	0.050000	mg/kg		103		81 - 117
	MSD	1310670-88	ND	0.053080	0.050000	mg/kg	3.4	106		81 - 117
4-Bromofluorobenzene (Surrogate)	MS	1310670-88	ND	0.059110	0.050000	mg/kg		118		74 - 121
	MSD	1310670-88	ND	0.056370	0.050000	mg/kg	4.7	113		74 - 121

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Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/05/2013 15:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Notes And Definitions

- MDL Method Detection Limit
- ND Analyte Not Detected at or above the reporting limit
- PQL Practical Quantitation Limit
- RPD Relative Percent Difference
- A01 PQL's and MDL's are raised due to sample dilution.
- A10 PQL's and MDL's were raised due to matrix interference.
- A19 Surrogate is high due to matrix interference. Interferences verified through second extraction/analysis.
- S01 Sample result is not within the quantitation range of the method.
- S09 The surrogate recovery on the sample for this compound was not within the control limits.
- Z1 Sample plugged twice when analysed straight.



Date of Report: 07/08/2013

Kathy Brandt

Arcadis

1900 Powell Street 12th Floor
Emeryville, CA 94608

Project: 0752
BC Work Order: 1313476
Invoice ID: B149799

Enclosed are the results of analyses for samples received by the laboratory on 6/26/2013. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Molly Meyers
Client Service Rep

Authorized Signature

Certifications: CA ELAP #1186; NV #CA00014



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BC LABORATORIES

4100 Atlas Court Bakersfield, Ca. 93308
(661) 327-4911 • FAX (661) 327-1918 • www.bclabs.com

Chain of Custody
ANALYSIS REQUESTED

* Required Fields

13-13476

TEMP: _____

Client/Company Name * Chevron c/o ARCADIS U.S., Inc.		Report Attention * Katherine Brandt		Phone * #: 510-596-9675 FAX * #: E-mail: Katherine.Brandt@arcadis-us.com		Carbon Copies: CDHS <input type="checkbox"/> Fresno Co <input type="checkbox"/> EPA <input type="checkbox"/> Merced Co <input type="checkbox"/> Tulare Co <input type="checkbox"/> Other: Regulatory Compliance Electronic Data Transfer: Y <input type="checkbox"/> N <input type="checkbox"/> System No. *											
Address * 2000 Powell Street #700		City * Emeryville,		State * CA								Zip * 94608		TPPH (8260B)			
Project Information: Chevron Facility No. 351646_Oakland				PO # BCL Quote #								BTEX, MTBE (8260B)			EDB, EDC (8260B)		
How would you like your completed results sent? <input checked="" type="checkbox"/> E-Mail <input type="checkbox"/> Fax <input type="checkbox"/> EDD <input type="checkbox"/> Mail Only												QC Request <input checked="" type="checkbox"/> STD <input type="checkbox"/> Level II			Result Request ** Surcharge <input checked="" type="checkbox"/> STD <input type="checkbox"/> 5 Day** <input type="checkbox"/> 2 Day** <input type="checkbox"/> 1 Day**		
Sampler Name Printed / Signature Jamey Peterson		QC Request		Result Request ** Surcharge								TPPH (8260B)			BTEX, MTBE (8260B)		
Matrix Types: RSW = Raw Surface Water CFW = Chlorinated Finished Water CWW = Chlorinated Waste Water BW = Bottled Water RGW = Raw Ground Water FW = Finished Water WW = Waste Water SW = Storm Water DW = Drinking Water SO = Solid																	
Sample #	# Bottles	Sampled		Sample Description / Location *	Matrix *	Comments / Station Code	Analysis Requested										
		Date	Time				TPPH (8260B)	BTEX, MTBE (8260B)	EDB, EDC (8260B)	Other	Regulatory Compliance						
-1		6/21/13	7:30	VE-3-10	SO	1. Please send log-ins and results to email	X	X	X								
-2		6/21/13	7:45	VE-3-15	SO	above and katie.wynne@arcadis-us.com and	X	X	X								
-3		6/21/13	8:10	VE-3-9	SO	Tyler.Sale@arcadis-us.com.	X	X	X								
-4		6/21/13	8:15	VE-3-16	SO		X	X	X								
C X BY DISTRIBUTION 4/2/13 SUB-GU																	
Relinquished by: (Signature and Printed Name) Jamey Peterson		Company ARCADIS		Date 6/25/13	Time 11:00	Received by: (Signature and Print Name) Maira Mavriga		Company BC Labs 6/26/13 1020									
Relinquished by: (Signature and Printed Name)		Company		Date	Time	Received by: (Signature and Print Name)		Company									
Received for Lab by: (Signature and Printed Name)				Date	Time	Payment Received at Delivery:											
				Date:	Amount:	Check/Cash/Card		PIA #		Init.							
Shipping Method: CAO UPS GSO WALK-IN SJVC FED EX OTHER				Cooling Method: WET BLUE NONE				Packing Material:									

All results listed in this report are for the exclusive use of the submitting party. BC Laboratories, Inc. assumes no responsibility for report alteration, separation, detachment or third party interpretation.



BC LABORATORIES INC. COOLER RECEIPT FORM Rev. No. 13 08/17/12 Page Of

Submission #: 1313476

SHIPPING INFORMATION Federal Express <input checked="" type="checkbox"/> UPS <input type="checkbox"/> Hand Delivery <input type="checkbox"/> BC Lab Field Service <input type="checkbox"/> Other <input type="checkbox"/> (Specify) _____		SHIPPING CONTAINER Ice Chest <input checked="" type="checkbox"/> None <input type="checkbox"/> Box <input type="checkbox"/> Other <input type="checkbox"/> (Specify) _____	
--	--	---	--

Refrigerant: Ice Blue Ice None Other Comments: _____

Custody Seals Ice Chest Containers None Comments: _____
 Intact? Yes No Intact? Yes No

All samples received? Yes No All samples containers intact? Yes No Description(s) match COC? Yes No

COC Received YES NO Emissivity: 0.97 Container: GLASS Thermometer ID: 207 Date/Time: 6/26/13
 Temperature: (A) 3.0 °C / (C) 2.9 °C Analyst Initials: MJM 1020

SAMPLE CONTAINERS	SAMPLE NUMBERS									
	1	2	3	4	5	6	7	8	9	10
QT GENERAL MINERAL/ GENERAL PHYSICAL										
PT PE UNPRESERVED										
QT INORGANIC CHEMICAL METALS										
PT INORGANIC CHEMICAL METALS										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE/ NITRITE										
PT TOTAL ORGANIC CARBON										
PT TOX										
PT CHEMICAL OXYGEN DEMAND										
PTA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 413.1, 413.2, 418.1										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
100ml EPA 547										
100ml EPA 531.1										
QT EPA 548										
QT EPA 549										
QT EPA 632										
QT EPA 8015M										
QT AMBER										
8 OZ. JAR										
32 OZ. JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
FERROUS IRON										
ENCORE										
SMART KIT	A(4)	A(4)	A(4)	A(4)						

Comments: _____
 Sample Numbering Completed By: KIQ Date/Time: 6/28/13 @ 1415
 A = Actual / C = Corrected

[S:\MyDOCS\Ward\Perfect\LAB_DOCS\FORMS\SAMRECR13I



Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/08/2013 10:28
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information
------------	---------------------------

1313476-01	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: VE-3-10-S-130621 Sampled By: AREC	Receive Date: 06/26/2013 10:20 Sampling Date: 06/21/2013 07:30 Sample Depth: --- Lab Matrix: Solids Sample Type: Soil Delivery Work Order: Global ID: Location ID (FieldPoint): VE-3 Matrix: SO Sample QC Type (SACode): CS Cooler ID:
-------------------	--	---

1313476-02	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: VE-3-15-S-130621 Sampled By: AREC	Receive Date: 06/26/2013 10:20 Sampling Date: 06/21/2013 07:45 Sample Depth: --- Lab Matrix: Solids Sample Type: Soil Delivery Work Order: Global ID: Location ID (FieldPoint): VE-3 Matrix: SO Sample QC Type (SACode): CS Cooler ID:
-------------------	--	---

1313476-03	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: VE-3-9-S-130621 Sampled By: AREC	Receive Date: 06/26/2013 10:20 Sampling Date: 06/21/2013 08:10 Sample Depth: --- Lab Matrix: Solids Sample Type: Soil Delivery Work Order: Global ID: Location ID (FieldPoint): VE-3 Matrix: SO Sample QC Type (SACode): CS Cooler ID:
-------------------	---	---



Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/08/2013 10:28
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information
------------	---------------------------

1313476-04

COC Number: ---
Project Number: 0752
Sampling Location: ---
Sampling Point: VE-3-16-S-130621
Sampled By: AREC

Receive Date: 06/26/2013 10:20
Sampling Date: 06/21/2013 08:15
Sample Depth: ---
Lab Matrix: Solids
Sample Type: Soil
Delivery Work Order:
Global ID:
Location ID (FieldPoint): VE-3
Matrix: SO
Sample QC Type (SACode): CS
Cooler ID:



Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/08/2013 10:28
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260/5035)

BCL Sample ID: 1313476-01	Client Sample Name: 0752, VE-3-10-S-130621, 6/21/2013 7:30:00AM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.12	EPA-8260B	ND	A01	1
1,2-Dibromoethane	ND	mg/kg	0.12	EPA-8260B	ND	A01	1
1,2-Dichloroethane	ND	mg/kg	0.12	EPA-8260B	ND	A01	1
Ethylbenzene	1.8	mg/kg	0.12	EPA-8260B	ND	A01	1
Methyl t-butyl ether	ND	mg/kg	0.12	EPA-8260B	ND	A01	1
Toluene	ND	mg/kg	0.12	EPA-8260B	ND	A01	1
Total Xylenes	1.9	mg/kg	0.24	EPA-8260B	ND	A01	1
Total Purgeable Petroleum Hydrocarbons	350	mg/kg	38	Luft-GC/MS	ND	A01	2
1,2-Dichloroethane-d4 (Surrogate)	103	%	70 - 121 (LCL - UCL)	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	100	%	70 - 121 (LCL - UCL)	EPA-8260B			2
Toluene-d8 (Surrogate)	113	%	81 - 117 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	103	%	81 - 117 (LCL - UCL)	EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	108	%	74 - 121 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	96.8	%	74 - 121 (LCL - UCL)	EPA-8260B			2

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	07/02/13	07/02/13 17:43	ML	MS-V3	23.990	BWG0149
2	EPA-8260B	07/02/13	07/03/13 06:49	ML	MS-V3	191.93	BWG0149



Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/08/2013 10:28
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260/5035)

BCL Sample ID: 1313476-02	Client Sample Name: 0752, VE-3-15-S-130621, 6/21/2013 7:45:00AM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	0.72	mg/kg	0.093	EPA-8260B	ND	A01	1
1,2-Dibromoethane	ND	mg/kg	0.093	EPA-8260B	ND	A01	1
1,2-Dichloroethane	ND	mg/kg	0.093	EPA-8260B	ND	A01	1
Ethylbenzene	7.4	mg/kg	0.093	EPA-8260B	ND	A01	1
Methyl t-butyl ether	ND	mg/kg	0.093	EPA-8260B	ND	A01	1
Toluene	ND	mg/kg	0.093	EPA-8260B	ND	A01	1
Total Xylenes	13	mg/kg	0.19	EPA-8260B	ND	A01	1
Total Purgeable Petroleum Hydrocarbons	4700	mg/kg	740	Luft-GC/MS	ND	A01	2
1,2-Dichloroethane-d4 (Surrogate)	104	%	70 - 121 (LCL - UCL)	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	118	%	70 - 121 (LCL - UCL)	EPA-8260B			2
Toluene-d8 (Surrogate)	106	%	81 - 117 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	107	%	81 - 117 (LCL - UCL)	EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	166	%	74 - 121 (LCL - UCL)	EPA-8260B		A19,S09	1
4-Bromofluorobenzene (Surrogate)	97.8	%	74 - 121 (LCL - UCL)	EPA-8260B			2

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	07/02/13	07/03/13 07:15	ML	MS-V3	18.620	BWG0149
2	EPA-8260B	07/02/13	07/05/13 09:28	ML	MS-V3	3700	BWG0149

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Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/08/2013 10:28
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260/5035)

BCL Sample ID: 1313476-03	Client Sample Name: 0752, VE-3-9-S-130621, 6/21/2013 8:10:00AM
----------------------------------	---

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.094	EPA-8260B	ND	A01	1
1,2-Dibromoethane	ND	mg/kg	0.094	EPA-8260B	ND	A01	1
1,2-Dichloroethane	ND	mg/kg	0.094	EPA-8260B	ND	A01	1
Ethylbenzene	3.9	mg/kg	0.094	EPA-8260B	ND	A01	1
Methyl t-butyl ether	ND	mg/kg	0.094	EPA-8260B	ND	A01	1
Toluene	ND	mg/kg	0.094	EPA-8260B	ND	A01	1
Total Xylenes	1.5	mg/kg	0.19	EPA-8260B	ND	A01	1
Total Purgeable Petroleum Hydrocarbons	1300	mg/kg	310	Luft-GC/MS	ND	A01	2
1,2-Dichloroethane-d4 (Surrogate)	91.5	%	70 - 121 (LCL - UCL)	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	101	%	70 - 121 (LCL - UCL)	EPA-8260B			2
Toluene-d8 (Surrogate)	107	%	81 - 117 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	97.9	%	81 - 117 (LCL - UCL)	EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	146	%	74 - 121 (LCL - UCL)	EPA-8260B		A19,S09	1
4-Bromofluorobenzene (Surrogate)	96.0	%	74 - 121 (LCL - UCL)	EPA-8260B			2

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	07/02/13	07/03/13 07:41	ML	MS-V3	18.850	BWG0149
2	EPA-8260B	07/02/13	07/05/13 19:46	ML	MS-V3	1562.5	BWG0149



Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/08/2013 10:28
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260/5035)

BCL Sample ID: 1313476-04	Client Sample Name: 0752, VE-3-16-S-130621, 6/21/2013 8:15:00AM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	0.54	mg/kg	0.098	EPA-8260B	ND	A01	1
1,2-Dibromoethane	ND	mg/kg	0.098	EPA-8260B	ND	A01	1
1,2-Dichloroethane	ND	mg/kg	0.098	EPA-8260B	ND	A01	1
Ethylbenzene	7.6	mg/kg	0.098	EPA-8260B	ND	A01	1
Methyl t-butyl ether	ND	mg/kg	0.098	EPA-8260B	ND	A01	1
Toluene	ND	mg/kg	0.098	EPA-8260B	ND	A01	1
Total Xylenes	13	mg/kg	0.20	EPA-8260B	ND	A01	1
Total Purgeable Petroleum Hydrocarbons	2900	mg/kg	750	Luft-GC/MS	ND	A01	2
1,2-Dichloroethane-d4 (Surrogate)	102	%	70 - 121 (LCL - UCL)	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	112	%	70 - 121 (LCL - UCL)	EPA-8260B			2
Toluene-d8 (Surrogate)	107	%	81 - 117 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	104	%	81 - 117 (LCL - UCL)	EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	176	%	74 - 121 (LCL - UCL)	EPA-8260B		A19,S09	1
4-Bromofluorobenzene (Surrogate)	96.2	%	74 - 121 (LCL - UCL)	EPA-8260B			2

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	07/02/13	07/03/13 08:07	ML	MS-V3	19.530	BWG0149
2	EPA-8260B	07/02/13	07/05/13 10:21	ML	MS-V3	3750	BWG0149



Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/08/2013 10:28
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260/5035)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BWG0149						
Benzene	BWG0149-BLK1	ND	mg/kg	0.0050		
1,2-Dibromoethane	BWG0149-BLK1	ND	mg/kg	0.0050		
1,2-Dichloroethane	BWG0149-BLK1	ND	mg/kg	0.0050		
Ethylbenzene	BWG0149-BLK1	ND	mg/kg	0.0050		
Methyl t-butyl ether	BWG0149-BLK1	ND	mg/kg	0.0050		
Toluene	BWG0149-BLK1	ND	mg/kg	0.0050		
Total Xylenes	BWG0149-BLK1	ND	mg/kg	0.010		
Total Purgeable Petroleum Hydrocarbons	BWG0149-BLK1	ND	mg/kg	0.20		
1,2-Dichloroethane-d4 (Surrogate)	BWG0149-BLK1	106	%	70 - 121 (LCL - UCL)		
Toluene-d8 (Surrogate)	BWG0149-BLK1	97.8	%	81 - 117 (LCL - UCL)		
4-Bromofluorobenzene (Surrogate)	BWG0149-BLK1	97.7	%	74 - 121 (LCL - UCL)		



Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/08/2013 10:28
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260/5035)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab
								Percent Recovery	RPD	
QC Batch ID: BWG0149										
Benzene	BWG0149-BS1	LCS	0.12557	0.12500	mg/kg	100		70 - 130		
Toluene	BWG0149-BS1	LCS	0.12226	0.12500	mg/kg	97.8		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	BWG0149-BS1	LCS	0.050700	0.050000	mg/kg	101		70 - 121		
Toluene-d8 (Surrogate)	BWG0149-BS1	LCS	0.050390	0.050000	mg/kg	101		81 - 117		
4-Bromofluorobenzene (Surrogate)	BWG0149-BS1	LCS	0.049590	0.050000	mg/kg	99.2		74 - 121		



Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/08/2013 10:28
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260/5035)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits		Lab Quals
									RPD	Percent Recovery	
QC Batch ID: BWG0149		Used client sample: N									
Benzene	MS	1310670-91	ND	0.11689	0.12500	mg/kg		93.5		70 - 130	
	MSD	1310670-91	ND	0.11801	0.12500	mg/kg	1.0	94.4	20	70 - 130	
Toluene	MS	1310670-91	ND	0.11429	0.12500	mg/kg		91.4		70 - 130	
	MSD	1310670-91	ND	0.11072	0.12500	mg/kg	3.2	88.6	20	70 - 130	
1,2-Dichloroethane-d4 (Surrogate)	MS	1310670-91	ND	0.052410	0.050000	mg/kg		105		70 - 121	
	MSD	1310670-91	ND	0.053810	0.050000	mg/kg	2.6	108		70 - 121	
Toluene-d8 (Surrogate)	MS	1310670-91	ND	0.050410	0.050000	mg/kg		101		81 - 117	
	MSD	1310670-91	ND	0.049750	0.050000	mg/kg	1.3	99.5		81 - 117	
4-Bromofluorobenzene (Surrogate)	MS	1310670-91	ND	0.049540	0.050000	mg/kg		99.1		74 - 121	
	MSD	1310670-91	ND	0.049580	0.050000	mg/kg	0.1	99.2		74 - 121	

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Arcadis
1900 Powell Street 12th Floor
Emeryville, CA 94608

Reported: 07/08/2013 10:28
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Notes And Definitions

- MDL Method Detection Limit
- ND Analyte Not Detected at or above the reporting limit
- PQL Practical Quantitation Limit
- RPD Relative Percent Difference
- A01 PQL's and MDL's are raised due to sample dilution.
- A19 Surrogate is high due to matrix interference. Interferences verified through second extraction/analysis.
- S09 The surrogate recovery on the sample for this compound was not within the control limits.



Date of Report: 09/17/2013

Kathy Brandt

Arcadis

2000 Powell Street 7th Floor
Emeryville, CA 94608

Project: 0752
BC Work Order: 1319668
Invoice ID: B155290

Enclosed are the results of analyses for samples received by the laboratory on 9/11/2013. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Molly Meyers
Client Service Rep

Authorized Signature

Certifications: CA ELAP #1186; NV #CA00014



Table of Contents

Sample Information

Chain of Custody and Cooler Receipt form.....	3
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Sample Results

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Environmental Testing Laboratory Since 1949

LABORATORY

Chain of Custody and Cooler Receipt Form for 1319668 Page 1 of 3



Chain of Custody Form

*Required Fields # 13-19668

Page 1 of 1

Report To: Client: * ARCADIS U.S., Inc.	Project Description: * Chevron 351646 800 Harrison Street, Oakland, CA	Analysis Requested	Billing	
Attn: * Katherine Brandt	Project Code: * B0047339.2013.00003			Client: * ARCADIS U.S., Inc. Attn: * Accounts Payable Address: * 630 Plaza Drive, Suite 600 City: * Highlands Ranch State: * CO Zip: * 80125 Are there any tests with holding times less than or equal to 48 hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No *Standard Turnaround = 10
Street Address: * 2000 Powell Street, Suite 700	Sampler (s): * Brian Henderson Tyler Sale			
City: * Emeryville State: * CA Zip: * 94608				
Phone#: * (510) 596 - 9675 Fax#: () -				
Email Address: katherine.brandt@arcadis-us.com		Notes		
Submission #:				

Sample #	Sample Description	Date	Time	Matrix*	TO-15, EPA 8260	Methanol (1946)																			
-1	Influent-1 (1 Hour)	9/10/13	14:40	0	✓	X														1-Liter Summa (Tedlar back-up)					
-2	Influent-1 (24 Hours)	9/11/13	10:05	0	✓	X														1-Liter Summa (Tedlar back-up)					
-3	Influent-1 (26 Hours)	9/11/13	11:50	0	X	X														Tedlar bag					
-4	Effluent (26 Hours)	9/11/13	11:50	0	X	X														Tedlar bag					
<table border="1"> <tr> <td>CHK BY</td> <td>DISTRIBUTION</td> </tr> <tr> <td>K10</td> <td>LH56K14</td> </tr> <tr> <td></td> <td>SUB-OUT <input type="checkbox"/></td> </tr> </table>																				CHK BY	DISTRIBUTION	K10	LH56K14		SUB-OUT <input type="checkbox"/>
CHK BY	DISTRIBUTION																								
K10	LH56K14																								
	SUB-OUT <input type="checkbox"/>																								

Matrix Types: S = Soil SL = Sludge DW = Drinking Water WW = Wastewater GW = Groundwater L = Liquid M = Miscellaneous O = Other Air

Turnaround # of working days: * 24 Hr Rush 48 Hr Rush 3-5 Day Rush Normal (10 - Days)

Lab TAT Approval: _____ *Additional Charges May Apply

Comments: Please run all samples for TPH-g with 8260*	<input type="checkbox"/> MBU Site	Cost Center:	Global ID:
	<input type="checkbox"/> CVX RCRA	1. Relinquished By: Tyler Sale Date: 9/11/13 Time: 14:25	1. Received By: Dave Bogan Date: 9-11-13 Time: 14:25
	<input type="checkbox"/> Geotracker 5 File (CA Default)	2. Relinquished By: Dave Bogan Date: 9-11-13 Time: 18:15	2. Received By: [Signature] Date: 9-11-13 Time: 18:15
<input type="checkbox"/> Geotracker 2 File	3. Relinquished By: [Signature] Date: 9-11-13 Time: 21:50	3. Received By: KOL Date: 9-11-13 Time: 21:50	
<input type="checkbox"/> Other (Specify) _____			

BC Laboratories, Inc. 4100 Atlas Court - Bakersfield CA 93308 (661) 327-4911 Fax: (661) 327-1918 www.bclabs.com

All results listed in this report are for the exclusive use of the submitting party. BC Laboratories, Inc. assumes no responsibility for report alteration, separation, detachment or third party interpretation.

4100 Atlas Court Bakersfield, CA 93308 (661) 327-4911 FAX (661) 327-1918 www.bclabs.com



Chain of Custody and Cooler Receipt Form for 1319668 Page 2 of 3

BC LABORATORIES INC. COOLER RECEIPT FORM Rev. No. 15 07/01/13 Page 1 Of 2

Submission #: 13-19668

SHIPPING INFORMATION: Federal Express UPS Hand Delivery BC Lab Field Service Other (Specify) _____

SHIPPING CONTAINER: Ice Chest None Box Other (Specify) _____

FREE LIQUID: YES NO

Refrigerant: Ice Blue Ice None Other Comments: _____

Custody Seals: Ice Chest Containers None Comments: _____
Intact? Yes No Intact? Yes No

All samples received? Yes No All samples containers intact? Yes No Description(s) match COC? Yes No

COC Received: YES NO

Emissivity: --- Container: Summa Thermometer ID: --- Date/Time: 9-11-13 2150

Temperature: (A) Room °C / (C) Temp °C Analyst Init: SAS

SAMPLE CONTAINERS	SAMPLE NUMBERS									
	1	2	3	4	5	6	7	8	9	10
QT GENERAL MINERAL/ GENERAL										
PT PE UNPRESERVED										
QT INORGANIC CHEMICAL METALS										
PT INORGANIC CHEMICAL METALS										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT TOX										
PT CHEMICAL OXYGEN DEMAND										
PIA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 413.1, 413.2, 418.1										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
100ml EPA 547										
100ml EPA 531.1										
QT EPA 548										
QT EPA 549										
QT EPA 632										
QT EPA 8015M										
QT AMBER										
8 OZ. JAR										
32 OZ. JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
FERROUS IRON										
ENCORE										
SMART KJT										
Summa Canister	A	A								

Comments: _____
 Sample Numbering Completed By: SAS Date/Time: 9-11-13 2225



Chain of Custody and Cooler Receipt Form for 1319668 Page 3 of 3

BC LABORATORIES INC. COOLER RECEIPT FORM Rev. No. 15 07/01/13 Page 2 Of 2

Submission #: 13-19668

SHIPPING INFORMATION Federal Express <input type="checkbox"/> UPS <input type="checkbox"/> Hand Delivery <input type="checkbox"/> BC Lab Field Service <input checked="" type="checkbox"/> Other <input type="checkbox"/> (Specify) _____		SHIPPING CONTAINER Ice Chest <input checked="" type="checkbox"/> None <input type="checkbox"/> Box <input type="checkbox"/> Other <input type="checkbox"/> (Specify) _____		FREE LIQUID YES <input type="checkbox"/> NO <input type="checkbox"/>	
--	--	---	--	--	--

Refrigerant: Ice Blue Ice None Other Comments: _____

Custody Seals Ice Chest Containers None Comments: _____
 Intact? Yes No Intact? Yes No

All samples received? Yes No All samples containers intact? Yes No Description(s) match COC? Yes No

COC Received YES NO Emissivity: — Container: Tedlar Thermometer ID: — Date/Time 9-11-13 2150
 Temperature: (A) Room °C / (C) Temp °C Analyst Init 445

SAMPLE CONTAINERS	SAMPLE NUMBERS									
	1	2	3	4	5	6	7	8	9	10
QT GENERAL MINERAL/ GENERAL										
PT PE UNPRESERVED										
QT INORGANIC CHEMICAL METALS										
PT INORGANIC CHEMICAL METALS										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT TOX										
PT CHEMICAL OXYGEN DEMAND										
PTA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 413.1, 413.2, 418.1										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
100ml EPA 547										
100ml EPA 531.1										
QT EPA 548										
QT EPA 549										
QT EPA 632										
QT EPA 8015M										
QT AMBER										
8 OZ. JAR										
32 OZ. JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
FERRIOUS IRON										
ENCORE										
SMARTICE <u>Tedlar</u>	<u>B</u>	<u>B</u>	<u>A</u>	<u>A</u>						
Summa Canister			<u>A</u>	<u>A</u>						

Comments: _____
 Sample Numbering Completed By: 445 Date/Time: 9-11-13 2225



Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information
------------	---------------------------

1319668-01	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: Influent-1 (1-Hour) Sampled By: AREC	Receive Date: 09/11/2013 21:50 Sampling Date: 09/10/2013 14:40 Sample Depth: --- Lab Matrix: Air Sample Type: Vapor or Air Delivery Work Order: Global ID: Location ID (FieldPoint): Influent-1 Matrix: AX Sample QC Type (SACode): CS Cooler ID:
-------------------	---	--

1319668-02	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: Influent-1 (24-Hours) Sampled By: AREC	Receive Date: 09/11/2013 21:50 Sampling Date: 09/11/2013 10:05 Sample Depth: --- Lab Matrix: Air Sample Type: Vapor or Air Delivery Work Order: Global ID: Location ID (FieldPoint): Influent-1 Matrix: AX Sample QC Type (SACode): CS Cooler ID:
-------------------	---	--

1319668-03	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: Influent-1 (26 Hours) Sampled By: AREC	Receive Date: 09/11/2013 21:50 Sampling Date: 09/11/2013 11:50 Sample Depth: --- Lab Matrix: Air Sample Type: Vapor or Air Delivery Work Order: Global ID: Location ID (FieldPoint): Influent-1 Matrix: AX Sample QC Type (SACode): CS Cooler ID:
-------------------	---	--



Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information
------------	---------------------------

1319668-04

COC Number: ---
Project Number: 0752
Sampling Location: ---
Sampling Point: Effluent (26 Hours)
Sampled By: AREC

Receive Date: 09/11/2013 21:50
Sampling Date: 09/11/2013 11:50
Sample Depth: ---
Lab Matrix: Air
Sample Type: Vapor or Air
Delivery Work Order:
Global ID:
Location ID (FieldPoint): Effluent
Matrix: AX
Sample QC Type (SACode): CS
Cooler ID:



Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Compounds by GC/MS (EPA Method TO-15)

BCL Sample ID: 1319668-01	Client Sample Name: 0752, Influent-1 (1-Hour), 9/10/2013 2:40:00PM
----------------------------------	---

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Acetone	ND	ppbv	500	EPA-TO-15	ND	A01	1
Acetonitrile	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Acrolein	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Acrylonitrile	ND	ppbv	500	EPA-TO-15	ND	A01	1
Allyl chloride	ND	ppbv	250	EPA-TO-15	ND	A01	1
t-Amyl Methyl ether	ND	ppbv	500	EPA-TO-15	ND	A01	1
Benzene	350	ppbv	250	EPA-TO-15	ND	A01	1
Benzyl chloride	ND	ppbv	500	EPA-TO-15	ND	A01	1
Bromodichloromethane	ND	ppbv	250	EPA-TO-15	ND	A01	1
Bromoform	300	ppbv	250	EPA-TO-15	ND	A01	1
Bromomethane	ND	ppbv	250	EPA-TO-15	ND	A01	1
1,3-Butadiene	ND	ppbv	250	EPA-TO-15	ND	A01	1
t-Butyl alcohol	ND	ppbv	500	EPA-TO-15	ND	A01	1
Carbon disulfide	ND	ppbv	250	EPA-TO-15	ND	A01	1
Carbon tetrachloride	ND	ppbv	250	EPA-TO-15	ND	A01	1
Chlorobenzene	ND	ppbv	250	EPA-TO-15	ND	A01	1
Chloroethane	ND	ppbv	250	EPA-TO-15	ND	A01	1
Chloroform	ND	ppbv	250	EPA-TO-15	ND	A01	1
Chloromethane	ND	ppbv	250	EPA-TO-15	ND	A01	1
Chloroprene	0	ppbv		EPA-TO-15	0	A01	1
Cyclohexane	3500	ppbv	250	EPA-TO-15	ND	A01	1
Dibromochloromethane	ND	ppbv	250	EPA-TO-15	ND	A01	1
1,2-Dibromo-3-chloropropane	ND	ppbv	250	EPA-TO-15	ND	A01	1
1,2-Dibromoethane	ND	ppbv	250	EPA-TO-15	ND	A01	1
Dibromomethane	ND	ppbv	250	EPA-TO-15	ND	A01	1
1,2-Dichlorobenzene	ND	ppbv	250	EPA-TO-15	ND	A01	1
1,3-Dichlorobenzene	ND	ppbv	250	EPA-TO-15	ND	A01	1
1,4-Dichlorobenzene	ND	ppbv	250	EPA-TO-15	ND	A01	1
trans-1,4-Dichloro-2-butene	ND	ppbv	500	EPA-TO-15	ND	A01	1
Dichlorodifluoromethane	ND	ppbv	250	EPA-TO-15	ND	A01	1
1,1-Dichloroethane	ND	ppbv	250	EPA-TO-15	ND	A01	1
1,2-Dichloroethane	ND	ppbv	250	EPA-TO-15	ND	A01	1
1,1-Dichloroethene	ND	ppbv	250	EPA-TO-15	ND	A01	1

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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Compounds by GC/MS (EPA Method TO-15)

BCL Sample ID: 1319668-01	Client Sample Name: 0752, Influent-1 (1-Hour), 9/10/2013 2:40:00PM
----------------------------------	---

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
cis-1,2-Dichloroethene	ND	ppbv	250	EPA-TO-15	ND	A01	1
trans-1,2-Dichloroethene	ND	ppbv	250	EPA-TO-15	ND	A01	1
1,2-Dichloropropane	ND	ppbv	250	EPA-TO-15	ND	A01	1
1,3-Dichloropropane	ND	ppbv	500	EPA-TO-15	ND	A01	1
2,2-Dichloropropane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,1-Dichloropropene	ND	ppbv	500	EPA-TO-15	ND	A01	1
cis-1,3-Dichloropropene	ND	ppbv	250	EPA-TO-15	ND	A01	1
trans-1,3-Dichloropropene	ND	ppbv	250	EPA-TO-15	ND	A01	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	ppbv	250	EPA-TO-15	ND	A01	1
Diisopropyl ether	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,4-Dioxane	ND	ppbv	250	EPA-TO-15	ND	A01	1
Ethanol	1400	ppbv	500	EPA-TO-15	ND	A01	1
Ethyl acetate	ND	ppbv	250	EPA-TO-15	ND	A01	1
Ethylbenzene	ND	ppbv	250	EPA-TO-15	ND	A01	1
Ethyl methacrylate	ND	ppbv	1000	EPA-TO-15	ND	A01	1
1-Ethyl-4-methylbenzene	ND	ppbv	250	EPA-TO-15	ND	A01	1
Ethyl t-butyl ether	ND	ppbv	500	EPA-TO-15	ND	A01	1
n-Heptane	4700	ppbv	250	EPA-TO-15	ND	A01	1
Hexachlorobutadiene	ND	ppbv	250	EPA-TO-15	ND	A01	1
Hexachloroethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
Hexane	9800	ppbv	500	EPA-TO-15	ND	A01	1
2-Hexanone	ND	ppbv	250	EPA-TO-15	ND	A01	1
Isobutanol	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Isooctane	ND	ppbv	250	EPA-TO-15	ND	A01	1
Isopropyl alcohol	400	ppbv	250	EPA-TO-15	ND	A01	1
Methacrylonitrile	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Methylene chloride	ND	ppbv	250	EPA-TO-15	ND	A01	1
Methyl ethyl ketone	ND	ppbv	250	EPA-TO-15	ND	A01	1
Methyl iodide	ND	ppbv	500	EPA-TO-15	ND	A01	1
Methyl isobutyl ketone	ND	ppbv	250	EPA-TO-15	ND	A01	1
Methyl methacrylate	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Methyl t-butyl ether	640	ppbv	250	EPA-TO-15	ND	A01	1
Naphthalene	ND	ppbv	500	EPA-TO-15	ND	A01	1

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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Compounds by GC/MS (EPA Method TO-15)

BCL Sample ID: 1319668-01	Client Sample Name: 0752, Influent-1 (1-Hour), 9/10/2013 2:40:00PM
----------------------------------	---

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Propionitrile	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Propylene	ND	ppbv	250	EPA-TO-15	ND	A01	1
Styrene	ND	ppbv	250	EPA-TO-15	ND	A01	1
1,1,1,2-Tetrachloroethane	ND	ppbv	250	EPA-TO-15	ND	A01	1
1,1,2,2-Tetrachloroethane	ND	ppbv	250	EPA-TO-15	ND	A01	1
Tetrachloroethene	ND	ppbv	250	EPA-TO-15	ND	A01	1
1,1,1,2-Tetrafluoroethane	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Tetrahydrofuran	ND	ppbv	250	EPA-TO-15	ND	A01	1
Toluene	810	ppbv	250	EPA-TO-15	ND	A01	1
1,2,4-Trichlorobenzene	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,1,1-Trichloroethane	ND	ppbv	250	EPA-TO-15	ND	A01	1
1,1,2-Trichloroethane	ND	ppbv	250	EPA-TO-15	ND	A01	1
Trichloroethene	ND	ppbv	250	EPA-TO-15	ND	A01	1
Trichlorofluoromethane	ND	ppbv	250	EPA-TO-15	ND	A01	1
1,2,3-Trichloropropane	ND	ppbv	250	EPA-TO-15	ND	A01	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ppbv	250	EPA-TO-15	ND	A01	1
1,2,4-Trimethylbenzene	ND	ppbv	250	EPA-TO-15	ND	A01	1
1,3,5-Trimethylbenzene	ND	ppbv	250	EPA-TO-15	ND	A01	1
Vinyl acetate	ND	ppbv	250	EPA-TO-15	ND	A01	1
Vinyl bromide	ND	ppbv	250	EPA-TO-15	ND	A01	1
Vinyl chloride	ND	ppbv	250	EPA-TO-15	ND	A01	1
p- & m-Xylenes	ND	ppbv	250	EPA-TO-15	ND	A01	1
o-Xylene	ND	ppbv	250	EPA-TO-15	ND	A01	1
Total Xylenes	ND	ppbv	500	EPA-TO-15	ND	A01	1
TPH - Gasoline	210000	ppbv	25000	EPA-TO-15	ND	A01	1
4-Bromofluorobenzene (Surrogate)	123	%	70 - 130 (LCL - UCL)	EPA-TO-15			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-TO-15	09/11/13	09/12/13 14:10	LHS	MS-A1	500	BWI0689

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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Fixed Gases by GC/TCD (ASTM D1946)

BCL Sample ID: 1319668-01	Client Sample Name: 0752, Influent-1 (1-Hour), 9/10/2013 2:40:00PM
----------------------------------	---

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane (CH4)	0.27	% by Vol.	0.00020	ASTM-D1946	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	ASTM-D1946	09/11/13	09/11/13 22:57	JMC	GC-A1	1	BWI0790

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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Compounds by GC/MS (EPA Method TO-15)

BCL Sample ID: 1319668-02	Client Sample Name: 0752, Influent-1 (24-Hours), 9/11/2013 10:05:00AM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Acetone	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Acetonitrile	ND	ppbv	2000	EPA-TO-15	ND	A01	1
Acrolein	ND	ppbv	2000	EPA-TO-15	ND	A01	1
Acrylonitrile	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Allyl chloride	ND	ppbv	500	EPA-TO-15	ND	A01	1
t-Amyl Methyl ether	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Benzene	5700	ppbv	500	EPA-TO-15	ND	A01	1
Benzyl chloride	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Bromodichloromethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
Bromoform	ND	ppbv	500	EPA-TO-15	ND	A01	1
Bromomethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,3-Butadiene	ND	ppbv	500	EPA-TO-15	ND	A01	1
t-Butyl alcohol	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Carbon disulfide	ND	ppbv	500	EPA-TO-15	ND	A01	1
Carbon tetrachloride	ND	ppbv	500	EPA-TO-15	ND	A01	1
Chlorobenzene	ND	ppbv	500	EPA-TO-15	ND	A01	1
Chloroethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
Chloroform	ND	ppbv	500	EPA-TO-15	ND	A01	1
Chloromethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
Chloroprene	0	ppbv		EPA-TO-15	0	A01	1
Cyclohexane	30000	ppbv	2000	EPA-TO-15	ND	A01	2
Dibromochloromethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,2-Dibromo-3-chloropropane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,2-Dibromoethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
Dibromomethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,2-Dichlorobenzene	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,3-Dichlorobenzene	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,4-Dichlorobenzene	ND	ppbv	500	EPA-TO-15	ND	A01	1
trans-1,4-Dichloro-2-butene	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Dichlorodifluoromethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,1-Dichloroethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,2-Dichloroethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,1-Dichloroethene	ND	ppbv	500	EPA-TO-15	ND	A01	1

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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Compounds by GC/MS (EPA Method TO-15)

BCL Sample ID: 1319668-02	Client Sample Name: 0752, Influent-1 (24-Hours), 9/11/2013 10:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
cis-1,2-Dichloroethene	ND	ppbv	500	EPA-TO-15	ND	A01	1
trans-1,2-Dichloroethene	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,2-Dichloropropane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,3-Dichloropropane	ND	ppbv	1000	EPA-TO-15	ND	A01	1
2,2-Dichloropropane	ND	ppbv	1000	EPA-TO-15	ND	A01	1
1,1-Dichloropropene	ND	ppbv	1000	EPA-TO-15	ND	A01	1
cis-1,3-Dichloropropene	ND	ppbv	500	EPA-TO-15	ND	A01	1
trans-1,3-Dichloropropene	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
Diisopropyl ether	ND	ppbv	1000	EPA-TO-15	ND	A01	1
1,4-Dioxane	ND	ppbv	500	EPA-TO-15	ND	A01	1
Ethanol	2200	ppbv	1000	EPA-TO-15	ND	A01	1
Ethyl acetate	ND	ppbv	500	EPA-TO-15	ND	A01	1
Ethylbenzene	1400	ppbv	500	EPA-TO-15	ND	A01	1
Ethyl methacrylate	ND	ppbv	2000	EPA-TO-15	ND	A01	1
1-Ethyl-4-methylbenzene	ND	ppbv	500	EPA-TO-15	ND	A01	1
Ethyl t-butyl ether	ND	ppbv	1000	EPA-TO-15	ND	A01	1
n-Heptane	44000	ppbv	2000	EPA-TO-15	ND	A01	2
Hexachlorobutadiene	ND	ppbv	500	EPA-TO-15	ND	A01	1
Hexachloroethane	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Hexane	91000	ppbv	4000	EPA-TO-15	ND	A01	2
2-Hexanone	ND	ppbv	500	EPA-TO-15	ND	A01	1
Isobutanol	ND	ppbv	2000	EPA-TO-15	ND	A01	1
Isooctane	ND	ppbv	500	EPA-TO-15	ND	A01	1
Isopropyl alcohol	ND	ppbv	500	EPA-TO-15	ND	A01	1
Methacrylonitrile	ND	ppbv	2000	EPA-TO-15	ND	A01	1
Methylene chloride	ND	ppbv	500	EPA-TO-15	ND	A01	1
Methyl ethyl ketone	ND	ppbv	500	EPA-TO-15	ND	A01	1
Methyl iodide	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Methyl isobutyl ketone	ND	ppbv	500	EPA-TO-15	ND	A01	1
Methyl methacrylate	ND	ppbv	2000	EPA-TO-15	ND	A01	1
Methyl t-butyl ether	3700	ppbv	500	EPA-TO-15	ND	A01	1
Naphthalene	ND	ppbv	1000	EPA-TO-15	ND	A01	1

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Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Compounds by GC/MS (EPA Method TO-15)

Table with 2 columns: BCL Sample ID (1319668-02) and Client Sample Name (0752, Influent-1 (24-Hours), 9/11/2013 10:05:00AM)

Main data table with columns: Constituent, Result, Units, PQL, Method, MB Bias, Lab Quals, Run #. Lists various compounds like Propionitrile, Toluene, Xylenes, etc.

QC Summary table with columns: Run #, Method, Prep Date, Run Date/Time, Analyst, Instrument, Dilution, QC Batch ID.



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Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Fixed Gases by GC/TCD (ASTM D1946)

BCL Sample ID: 1319668-02	Client Sample Name: 0752, Influent-1 (24-Hours), 9/11/2013 10:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane (CH4)	0.18	% by Vol.	0.00020	ASTM-D1946	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	ASTM-D1946	09/11/13	09/11/13 23:19	JMC	GC-A1	1	BWI0790

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Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Compounds by GC/MS (EPA Method TO-15)

BCL Sample ID: 1319668-03	Client Sample Name: 0752, Influent-1 (26 Hours), 9/11/2013 11:50:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Acetone	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Acetonitrile	ND	ppbv	2000	EPA-TO-15	ND	A01	1
Acrolein	ND	ppbv	2000	EPA-TO-15	ND	A01	1
Acrylonitrile	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Allyl chloride	ND	ppbv	500	EPA-TO-15	ND	A01	1
t-Amyl Methyl ether	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Benzene	5100	ppbv	500	EPA-TO-15	ND	A01	1
Benzyl chloride	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Bromodichloromethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
Bromoform	ND	ppbv	500	EPA-TO-15	ND	A01	1
Bromomethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,3-Butadiene	ND	ppbv	500	EPA-TO-15	ND	A01	1
t-Butyl alcohol	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Carbon disulfide	ND	ppbv	500	EPA-TO-15	ND	A01	1
Carbon tetrachloride	ND	ppbv	500	EPA-TO-15	ND	A01	1
Chlorobenzene	ND	ppbv	500	EPA-TO-15	ND	A01	1
Chloroethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
Chloroform	ND	ppbv	500	EPA-TO-15	ND	A01	1
Chloromethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
Chloroprene	0	ppbv		EPA-TO-15	0	A01	1
Cyclohexane	23000	ppbv	500	EPA-TO-15	ND	A01	1
Dibromochloromethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,2-Dibromo-3-chloropropane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,2-Dibromoethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
Dibromomethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,2-Dichlorobenzene	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,3-Dichlorobenzene	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,4-Dichlorobenzene	ND	ppbv	500	EPA-TO-15	ND	A01	1
trans-1,4-Dichloro-2-butene	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Dichlorodifluoromethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,1-Dichloroethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,2-Dichloroethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,1-Dichloroethene	ND	ppbv	500	EPA-TO-15	ND	A01	1

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Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Compounds by GC/MS (EPA Method TO-15)

BCL Sample ID: 1319668-03	Client Sample Name: 0752, Influent-1 (26 Hours), 9/11/2013 11:50:00AM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
cis-1,2-Dichloroethene	ND	ppbv	500	EPA-TO-15	ND	A01	1
trans-1,2-Dichloroethene	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,2-Dichloropropane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,3-Dichloropropane	ND	ppbv	1000	EPA-TO-15	ND	A01	1
2,2-Dichloropropane	ND	ppbv	1000	EPA-TO-15	ND	A01	1
1,1-Dichloropropene	ND	ppbv	1000	EPA-TO-15	ND	A01	1
cis-1,3-Dichloropropene	ND	ppbv	500	EPA-TO-15	ND	A01	1
trans-1,3-Dichloropropene	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
Diisopropyl ether	ND	ppbv	1000	EPA-TO-15	ND	A01	1
1,4-Dioxane	ND	ppbv	500	EPA-TO-15	ND	A01	1
Ethanol	1800	ppbv	1000	EPA-TO-15	ND	A01	1
Ethyl acetate	ND	ppbv	500	EPA-TO-15	ND	A01	1
Ethylbenzene	1700	ppbv	500	EPA-TO-15	ND	A01	1
Ethyl methacrylate	ND	ppbv	2000	EPA-TO-15	ND	A01	1
1-Ethyl-4-methylbenzene	550	ppbv	500	EPA-TO-15	ND	A01	1
Ethyl t-butyl ether	ND	ppbv	1000	EPA-TO-15	ND	A01	1
n-Heptane	42000	ppbv	2000	EPA-TO-15	ND	A01	2
Hexachlorobutadiene	ND	ppbv	500	EPA-TO-15	ND	A01	1
Hexachloroethane	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Hexane	72000	ppbv	4000	EPA-TO-15	ND	A01	2
2-Hexanone	ND	ppbv	500	EPA-TO-15	ND	A01	1
Isobutanol	ND	ppbv	2000	EPA-TO-15	ND	A01	1
Isooctane	ND	ppbv	500	EPA-TO-15	ND	A01	1
Isopropyl alcohol	ND	ppbv	500	EPA-TO-15	ND	A01	1
Methacrylonitrile	ND	ppbv	2000	EPA-TO-15	ND	A01	1
Methylene chloride	ND	ppbv	500	EPA-TO-15	ND	A01	1
Methyl ethyl ketone	ND	ppbv	500	EPA-TO-15	ND	A01	1
Methyl iodide	ND	ppbv	1000	EPA-TO-15	ND	A01	1
Methyl isobutyl ketone	ND	ppbv	500	EPA-TO-15	ND	A01	1
Methyl methacrylate	ND	ppbv	2000	EPA-TO-15	ND	A01	1
Methyl t-butyl ether	3300	ppbv	500	EPA-TO-15	ND	A01	1
Naphthalene	ND	ppbv	1000	EPA-TO-15	ND	A01	1

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2000 Powell Street 7th Floor
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Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Compounds by GC/MS (EPA Method TO-15)

BCL Sample ID: 1319668-03	Client Sample Name: 0752, Influent-1 (26 Hours), 9/11/2013 11:50:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Propionitrile	ND	ppbv	2000	EPA-TO-15	ND	A01	1
Propylene	ND	ppbv	500	EPA-TO-15	ND	A01	1
Styrene	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,1,1,2-Tetrachloroethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,1,2,2-Tetrachloroethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
Tetrachloroethene	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,1,1,2-Tetrafluoroethane	ND	ppbv	2000	EPA-TO-15	ND	A01	1
Tetrahydrofuran	ND	ppbv	500	EPA-TO-15	ND	A01	1
Toluene	3700	ppbv	500	EPA-TO-15	ND	A01	1
1,2,4-Trichlorobenzene	ND	ppbv	1000	EPA-TO-15	ND	A01	1
1,1,1-Trichloroethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,1,2-Trichloroethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
Trichloroethene	ND	ppbv	500	EPA-TO-15	ND	A01	1
Trichlorofluoromethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,2,3-Trichloropropane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,2,4-Trimethylbenzene	ND	ppbv	500	EPA-TO-15	ND	A01	1
1,3,5-Trimethylbenzene	ND	ppbv	500	EPA-TO-15	ND	A01	1
Vinyl acetate	ND	ppbv	500	EPA-TO-15	ND	A01	1
Vinyl bromide	ND	ppbv	500	EPA-TO-15	ND	A01	1
Vinyl chloride	ND	ppbv	500	EPA-TO-15	ND	A01	1
p- & m-Xylenes	3200	ppbv	500	EPA-TO-15	ND	A01	1
o-Xylene	1000	ppbv	500	EPA-TO-15	ND	A01	1
Total Xylenes	4300	ppbv	1000	EPA-TO-15	ND	A01	1
TPH - Gasoline	970000	ppbv	200000	EPA-TO-15	ND	A01	2
4-Bromofluorobenzene (Surrogate)	127	%	70 - 130 (LCL - UCL)	EPA-TO-15			1
4-Bromofluorobenzene (Surrogate)	114	%	70 - 130 (LCL - UCL)	EPA-TO-15			2

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-TO-15	09/11/13	09/12/13 15:14	LHS	MS-A1	1000	BWI0689
2	EPA-TO-15	09/11/13	09/13/13 08:25	LHS	MS-A1	4000	BWI0689

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Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Fixed Gases by GC/TCD (ASTM D1946)

BCL Sample ID: 1319668-03	Client Sample Name: 0752, Influent-1 (26 Hours), 9/11/2013 11:50:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane (CH4)	0.20	% by Vol.	0.00020	ASTM-D1946	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	ASTM-D1946	09/11/13	09/11/13 23:40	JMC	GC-A1	1	BWI0790

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Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Compounds by GC/MS (EPA Method TO-15)

BCL Sample ID: 1319668-04	Client Sample Name: 0752, Effluent (26 Hours), 9/11/2013 11:50:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Acetone	ND	ppbv	5.0	EPA-TO-15	ND	A01	1
Acetonitrile	ND	ppbv	10	EPA-TO-15	ND	A01	1
Acrolein	ND	ppbv	10	EPA-TO-15	ND	A01	1
Acrylonitrile	ND	ppbv	5.0	EPA-TO-15	ND	A01	1
Allyl chloride	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
t-Amyl Methyl ether	ND	ppbv	5.0	EPA-TO-15	ND	A01	1
Benzene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Benzyl chloride	ND	ppbv	5.0	EPA-TO-15	ND	A01	1
Bromodichloromethane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Bromoform	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Bromomethane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
1,3-Butadiene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
t-Butyl alcohol	ND	ppbv	5.0	EPA-TO-15	ND	A01	1
Carbon disulfide	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Carbon tetrachloride	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Chlorobenzene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Chloroethane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Chloroform	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Chloromethane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Chloroprene	0	ppbv		EPA-TO-15	0	A01	1
Cyclohexane	10	ppbv	2.5	EPA-TO-15	ND	A01	1
Dibromochloromethane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
1,2-Dibromo-3-chloropropane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
1,2-Dibromoethane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Dibromomethane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
1,2-Dichlorobenzene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
1,3-Dichlorobenzene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
1,4-Dichlorobenzene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
trans-1,4-Dichloro-2-butene	ND	ppbv	5.0	EPA-TO-15	ND	A01	1
Dichlorodifluoromethane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
1,1-Dichloroethane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
1,2-Dichloroethane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
1,1-Dichloroethene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1

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Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Compounds by GC/MS (EPA Method TO-15)

BCL Sample ID: 1319668-04	Client Sample Name: 0752, Effluent (26 Hours), 9/11/2013 11:50:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
cis-1,2-Dichloroethene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
trans-1,2-Dichloroethene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
1,2-Dichloropropane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
1,3-Dichloropropane	ND	ppbv	5.0	EPA-TO-15	ND	A01	1
2,2-Dichloropropane	ND	ppbv	5.0	EPA-TO-15	ND	A01	1
1,1-Dichloropropene	ND	ppbv	5.0	EPA-TO-15	ND	A01	1
cis-1,3-Dichloropropene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
trans-1,3-Dichloropropene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Diisopropyl ether	ND	ppbv	5.0	EPA-TO-15	ND	A01	1
1,4-Dioxane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Ethanol	ND	ppbv	5.0	EPA-TO-15	ND	A01	1
Ethyl acetate	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Ethylbenzene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Ethyl methacrylate	ND	ppbv	10	EPA-TO-15	ND	A01	1
1-Ethyl-4-methylbenzene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Ethyl t-butyl ether	ND	ppbv	5.0	EPA-TO-15	ND	A01	1
n-Heptane	14	ppbv	2.5	EPA-TO-15	ND	A01	1
Hexachlorobutadiene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Hexachloroethane	ND	ppbv	5.0	EPA-TO-15	ND	A01	1
Hexane	61	ppbv	5.0	EPA-TO-15	ND	A01	1
2-Hexanone	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Isobutanol	ND	ppbv	10	EPA-TO-15	ND	A01	1
Isooctane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Isopropyl alcohol	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Methacrylonitrile	ND	ppbv	10	EPA-TO-15	ND	A01	1
Methylene chloride	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Methyl ethyl ketone	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Methyl iodide	ND	ppbv	5.0	EPA-TO-15	ND	A01	1
Methyl isobutyl ketone	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Methyl methacrylate	ND	ppbv	10	EPA-TO-15	ND	A01	1
Methyl t-butyl ether	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Naphthalene	ND	ppbv	5.0	EPA-TO-15	ND	A01	1

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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Compounds by GC/MS (EPA Method TO-15)

BCL Sample ID: 1319668-04	Client Sample Name: 0752, Effluent (26 Hours), 9/11/2013 11:50:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Propionitrile	ND	ppbv	10	EPA-TO-15	ND	A01	1
Propylene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Styrene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
1,1,1,2-Tetrachloroethane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
1,1,2,2-Tetrachloroethane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Tetrachloroethene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
1,1,1,2-Tetrafluoroethane	ND	ppbv	10	EPA-TO-15	ND	A01	1
Tetrahydrofuran	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Toluene	3.1	ppbv	2.5	EPA-TO-15	ND	A01	1
1,2,4-Trichlorobenzene	ND	ppbv	5.0	EPA-TO-15	ND	A01	1
1,1,1-Trichloroethane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
1,1,2-Trichloroethane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Trichloroethene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Trichlorofluoromethane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
1,2,3-Trichloropropane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
1,2,4-Trimethylbenzene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
1,3,5-Trimethylbenzene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Vinyl acetate	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Vinyl bromide	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Vinyl chloride	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
p- & m-Xylenes	3.2	ppbv	2.5	EPA-TO-15	ND	A01	1
o-Xylene	ND	ppbv	2.5	EPA-TO-15	ND	A01	1
Total Xylenes	ND	ppbv	5.0	EPA-TO-15	ND	A01	1
TPH - Gasoline	630	ppbv	250	EPA-TO-15	ND	A01	1
4-Bromofluorobenzene (Surrogate)	121	%	70 - 130 (LCL - UCL)	EPA-TO-15			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-TO-15	09/11/13	09/12/13 15:45	LHS	MS-A1	5	BWI0689



Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Fixed Gases by GC/TCD (ASTM D1946)

BCL Sample ID: 1319668-04	Client Sample Name: 0752, Effluent (26 Hours), 9/11/2013 11:50:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane (CH4)	0.012	% by Vol.	0.00020	ASTM-D1946	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	ASTM-D1946	09/11/13	09/12/13 00:00	JMC	GC-A1	1	BWI0790

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Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Compounds by GC/MS (EPA Method TO-15)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
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QC Batch ID: BWI0689

Acetone	BWI0689-BLK1	ND	ppbv	1.0		
Acetonitrile	BWI0689-BLK1	ND	ppbv	2.0		
Acrolein	BWI0689-BLK1	ND	ppbv	2.0		
Acrylonitrile	BWI0689-BLK1	ND	ppbv	1.0		
Allyl chloride	BWI0689-BLK1	ND	ppbv	0.50		
t-Amyl Methyl ether	BWI0689-BLK1	ND	ppbv	1.0		
Benzene	BWI0689-BLK1	ND	ppbv	0.50		
Benzyl chloride	BWI0689-BLK1	ND	ppbv	1.0		
Bromodichloromethane	BWI0689-BLK1	ND	ppbv	0.50		
Bromoform	BWI0689-BLK1	ND	ppbv	0.50		
Bromomethane	BWI0689-BLK1	ND	ppbv	0.50		
1,3-Butadiene	BWI0689-BLK1	ND	ppbv	0.50		
t-Butyl alcohol	BWI0689-BLK1	ND	ppbv	1.0		
Carbon disulfide	BWI0689-BLK1	ND	ppbv	0.50		
Carbon tetrachloride	BWI0689-BLK1	ND	ppbv	0.50		
Chlorobenzene	BWI0689-BLK1	ND	ppbv	0.50		
Chloroethane	BWI0689-BLK1	ND	ppbv	0.50		
Chloroform	BWI0689-BLK1	ND	ppbv	0.50		
Chloromethane	BWI0689-BLK1	ND	ppbv	0.50		
Chloroprene	BWI0689-BLK1	0	ppbv			
Cyclohexane	BWI0689-BLK1	ND	ppbv	0.50		
Dibromochloromethane	BWI0689-BLK1	ND	ppbv	0.50		
1,2-Dibromo-3-chloropropane	BWI0689-BLK1	ND	ppbv	0.50		
1,2-Dibromoethane	BWI0689-BLK1	ND	ppbv	0.50		
Dibromomethane	BWI0689-BLK1	ND	ppbv	0.50		
1,2-Dichlorobenzene	BWI0689-BLK1	ND	ppbv	0.50		
1,3-Dichlorobenzene	BWI0689-BLK1	ND	ppbv	0.50		
1,4-Dichlorobenzene	BWI0689-BLK1	ND	ppbv	0.50		
trans-1,4-Dichloro-2-butene	BWI0689-BLK1	ND	ppbv	1.0		
Dichlorodifluoromethane	BWI0689-BLK1	ND	ppbv	0.50		
1,1-Dichloroethane	BWI0689-BLK1	ND	ppbv	0.50		
1,2-Dichloroethane	BWI0689-BLK1	ND	ppbv	0.50		
1,1-Dichloroethene	BWI0689-BLK1	ND	ppbv	0.50		
cis-1,2-Dichloroethene	BWI0689-BLK1	ND	ppbv	0.50		

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2000 Powell Street 7th Floor
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Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Compounds by GC/MS (EPA Method TO-15)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BWI0689						
trans-1,2-Dichloroethene	BWI0689-BLK1	ND	ppbv	0.50		
1,2-Dichloropropane	BWI0689-BLK1	ND	ppbv	0.50		
1,3-Dichloropropane	BWI0689-BLK1	ND	ppbv	1.0		
2,2-Dichloropropane	BWI0689-BLK1	ND	ppbv	1.0		
1,1-Dichloropropene	BWI0689-BLK1	ND	ppbv	1.0		
cis-1,3-Dichloropropene	BWI0689-BLK1	ND	ppbv	0.50		
trans-1,3-Dichloropropene	BWI0689-BLK1	ND	ppbv	0.50		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	BWI0689-BLK1	ND	ppbv	0.50		
Diisopropyl ether	BWI0689-BLK1	ND	ppbv	1.0		
1,4-Dioxane	BWI0689-BLK1	ND	ppbv	0.50		
Ethanol	BWI0689-BLK1	ND	ppbv	1.0		
Ethyl acetate	BWI0689-BLK1	ND	ppbv	0.50		
Ethylbenzene	BWI0689-BLK1	ND	ppbv	0.50		
Ethyl methacrylate	BWI0689-BLK1	ND	ppbv	2.0		
1-Ethyl-4-methylbenzene	BWI0689-BLK1	ND	ppbv	0.50		
Ethyl t-butyl ether	BWI0689-BLK1	ND	ppbv	1.0		
n-Heptane	BWI0689-BLK1	ND	ppbv	0.50		
Hexachlorobutadiene	BWI0689-BLK1	ND	ppbv	0.50		
Hexachloroethane	BWI0689-BLK1	ND	ppbv	1.0		
Hexane	BWI0689-BLK1	ND	ppbv	1.0		
2-Hexanone	BWI0689-BLK1	ND	ppbv	0.50		
Isobutanol	BWI0689-BLK1	ND	ppbv	2.0		
Isooctane	BWI0689-BLK1	ND	ppbv	0.50		
Isopropyl alcohol	BWI0689-BLK1	ND	ppbv	0.50		
Methacrylonitrile	BWI0689-BLK1	ND	ppbv	2.0		
Methylene chloride	BWI0689-BLK1	ND	ppbv	0.50		
Methyl ethyl ketone	BWI0689-BLK1	ND	ppbv	0.50		
Methyl iodide	BWI0689-BLK1	ND	ppbv	1.0		
Methyl isobutyl ketone	BWI0689-BLK1	ND	ppbv	0.50		
Methyl methacrylate	BWI0689-BLK1	ND	ppbv	2.0		
Methyl t-butyl ether	BWI0689-BLK1	ND	ppbv	0.50		
Naphthalene	BWI0689-BLK1	ND	ppbv	1.0		
Propionitrile	BWI0689-BLK1	ND	ppbv	2.0		
Propylene	BWI0689-BLK1	ND	ppbv	0.50		

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2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Compounds by GC/MS (EPA Method TO-15)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BWI0689						
Styrene	BWI0689-BLK1	ND	ppbv	0.50		
1,1,1,2-Tetrachloroethane	BWI0689-BLK1	ND	ppbv	0.50		
1,1,2,2-Tetrachloroethane	BWI0689-BLK1	ND	ppbv	0.50		
Tetrachloroethene	BWI0689-BLK1	ND	ppbv	0.50		
1,1,1,2-Tetrafluoroethane	BWI0689-BLK1	ND	ppbv	2.0		
Tetrahydrofuran	BWI0689-BLK1	ND	ppbv	0.50		
Toluene	BWI0689-BLK1	ND	ppbv	0.50		
1,2,4-Trichlorobenzene	BWI0689-BLK1	ND	ppbv	1.0		
1,1,1-Trichloroethane	BWI0689-BLK1	ND	ppbv	0.50		
1,1,2-Trichloroethane	BWI0689-BLK1	ND	ppbv	0.50		
Trichloroethene	BWI0689-BLK1	ND	ppbv	0.50		
Trichlorofluoromethane	BWI0689-BLK1	ND	ppbv	0.50		
1,2,3-Trichloropropane	BWI0689-BLK1	ND	ppbv	0.50		
1,1,2-Trichloro-1,2,2-trifluoroethane	BWI0689-BLK1	ND	ppbv	0.50		
1,2,4-Trimethylbenzene	BWI0689-BLK1	ND	ppbv	0.50		
1,3,5-Trimethylbenzene	BWI0689-BLK1	ND	ppbv	0.50		
Vinyl acetate	BWI0689-BLK1	ND	ppbv	0.50		
Vinyl bromide	BWI0689-BLK1	ND	ppbv	0.50		
Vinyl chloride	BWI0689-BLK1	ND	ppbv	0.50		
p- & m-Xylenes	BWI0689-BLK1	ND	ppbv	0.50		
o-Xylene	BWI0689-BLK1	ND	ppbv	0.50		
Total Xylenes	BWI0689-BLK1	ND	ppbv	1.0		
TPH - Gasoline	BWI0689-BLK1	ND	ppbv	50		
4-Bromofluorobenzene (Surrogate)	BWI0689-BLK1	128	%	70 - 130 (LCL - UCL)		



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2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Compounds by GC/MS (EPA Method TO-15)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab Quals
								Percent Recovery	RPD	
QC Batch ID: BWI0689										
Acetone	BWI0689-BS1	LCS	8.8700	10.000	ppbv	88.7		70 - 130		
	BWI0689-BSD1	LCSD	8.9460	10.000	ppbv	89.5	0.9	70 - 130	30	
Acetonitrile	BWI0689-BS1	LCS	ND		ppbv			70 - 130		
	BWI0689-BSD1	LCSD	ND		ppbv			70 - 130	30	
Acrolein	BWI0689-BS1	LCS	ND		ppbv			70 - 130		
	BWI0689-BSD1	LCSD	ND		ppbv			70 - 130	30	
Acrylonitrile	BWI0689-BS1	LCS	3.9800	10.000	ppbv	39.8		70 - 130		
	BWI0689-BSD1	LCSD	4.1030	10.000	ppbv	41.0	3.0	70 - 130	30	
Allyl chloride	BWI0689-BS1	LCS	7.5240	10.000	ppbv	75.2		70 - 130		
	BWI0689-BSD1	LCSD	7.6690	10.000	ppbv	76.7	1.9	70 - 130	30	
t-Amyl Methyl ether	BWI0689-BS1	LCS	10.344	10.000	ppbv	103		70 - 130		
	BWI0689-BSD1	LCSD	9.6170	10.000	ppbv	96.2	7.3	70 - 130	30	
Benzene	BWI0689-BS1	LCS	7.7220	10.000	ppbv	77.2		70 - 130		
	BWI0689-BSD1	LCSD	7.8720	10.000	ppbv	78.7	1.9	70 - 130	30	
Benzyl chloride	BWI0689-BS1	LCS	7.0810	10.000	ppbv	70.8		70 - 130		
	BWI0689-BSD1	LCSD	7.0320	10.000	ppbv	70.3	0.7	70 - 130	30	
Bromodichloromethane	BWI0689-BS1	LCS	10.909	10.000	ppbv	109		70 - 130		
	BWI0689-BSD1	LCSD	10.338	10.000	ppbv	103	5.4	70 - 130	30	
Bromoform	BWI0689-BS1	LCS	7.5390	10.000	ppbv	75.4		70 - 130		
	BWI0689-BSD1	LCSD	7.5610	10.000	ppbv	75.6	0.3	70 - 130	30	
Bromomethane	BWI0689-BS1	LCS	10.611	10.000	ppbv	106		70 - 130		
	BWI0689-BSD1	LCSD	10.813	10.000	ppbv	108	1.9	70 - 130	30	
1,3-Butadiene	BWI0689-BS1	LCS	8.3820	10.000	ppbv	83.8		70 - 130		
	BWI0689-BSD1	LCSD	8.9080	10.000	ppbv	89.1	6.1	70 - 130	30	
t-Butyl alcohol	BWI0689-BS1	LCS	16.617	20.000	ppbv	83.1		70 - 130		
	BWI0689-BSD1	LCSD	17.740	20.000	ppbv	88.7	6.5	70 - 130	30	
Carbon disulfide	BWI0689-BS1	LCS	7.5790	10.000	ppbv	75.8		70 - 130		
	BWI0689-BSD1	LCSD	7.7070	10.000	ppbv	77.1	1.7	70 - 130	30	
Carbon tetrachloride	BWI0689-BS1	LCS	7.8270	10.000	ppbv	78.3		70 - 130		
	BWI0689-BSD1	LCSD	7.9290	10.000	ppbv	79.3	1.3	70 - 130	30	
Chlorobenzene	BWI0689-BS1	LCS	11.000	10.000	ppbv	110		70 - 130		
	BWI0689-BSD1	LCSD	10.367	10.000	ppbv	104	5.9	70 - 130	30	
Chloroethane	BWI0689-BS1	LCS	9.4040	10.000	ppbv	94.0		70 - 130		
	BWI0689-BSD1	LCSD	9.5040	10.000	ppbv	95.0	1.1	70 - 130	30	
Chloroform	BWI0689-BS1	LCS	8.1530	10.000	ppbv	81.5		70 - 130		
	BWI0689-BSD1	LCSD	8.3290	10.000	ppbv	83.3	2.1	70 - 130	30	

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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Compounds by GC/MS (EPA Method TO-15)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab Quals
								Percent Recovery	RPD	
QC Batch ID: BWI0689										
Chloromethane	BWI0689-BS1	LCS	7.6640	10.000	ppbv	76.6		70 - 130		
	BWI0689-BSD1	LCSD	7.7250	10.000	ppbv	77.2	0.8	70 - 130		30
Chloroprene	BWI0689-BS1	LCS	0		ppbv			70 - 130		
	BWI0689-BSD1	LCSD	0		ppbv			70 - 130		30
Cyclohexane	BWI0689-BS1	LCS	7.1380	10.000	ppbv	71.4		70 - 130		
	BWI0689-BSD1	LCSD	7.3410	10.000	ppbv	73.4	2.8	70 - 130		30
Dibromochloromethane	BWI0689-BS1	LCS	11.507	10.000	ppbv	115		70 - 130		
	BWI0689-BSD1	LCSD	10.908	10.000	ppbv	109	5.3	70 - 130		30
1,2-Dibromo-3-chloropropane	BWI0689-BS1	LCS	9.2540	10.000	ppbv	92.5		70 - 130		
	BWI0689-BSD1	LCSD	9.1870	10.000	ppbv	91.9	0.7	70 - 130		30
1,2-Dibromoethane	BWI0689-BS1	LCS	10.456	10.000	ppbv	105		70 - 130		
	BWI0689-BSD1	LCSD	9.8060	10.000	ppbv	98.1	6.4	70 - 130		30
Dibromomethane	BWI0689-BS1	LCS	9.2630	10.000	ppbv	92.6		70 - 130		
	BWI0689-BSD1	LCSD	8.8430	10.000	ppbv	88.4	4.6	70 - 130		30
1,2-Dichlorobenzene	BWI0689-BS1	LCS	11.139	10.000	ppbv	111		70 - 130		
	BWI0689-BSD1	LCSD	11.062	10.000	ppbv	111	0.7	70 - 130		30
1,3-Dichlorobenzene	BWI0689-BS1	LCS	11.816	10.000	ppbv	118		70 - 130		
	BWI0689-BSD1	LCSD	11.730	10.000	ppbv	117	0.7	70 - 130		30
1,4-Dichlorobenzene	BWI0689-BS1	LCS	11.696	10.000	ppbv	117		70 - 130		
	BWI0689-BSD1	LCSD	11.599	10.000	ppbv	116	0.8	70 - 130		30
trans-1,4-Dichloro-2-butene	BWI0689-BS1	LCS	ND		ppbv			70 - 130		
	BWI0689-BSD1	LCSD	ND		ppbv			70 - 130		30
Dichlorodifluoromethane	BWI0689-BS1	LCS	11.821	10.000	ppbv	118		70 - 130		
	BWI0689-BSD1	LCSD	11.819	10.000	ppbv	118	0.0	70 - 130		30
1,1-Dichloroethane	BWI0689-BS1	LCS	7.8890	10.000	ppbv	78.9		70 - 130		
	BWI0689-BSD1	LCSD	8.0250	10.000	ppbv	80.2	1.7	70 - 130		30
1,2-Dichloroethane	BWI0689-BS1	LCS	8.8440	10.000	ppbv	88.4		70 - 130		
	BWI0689-BSD1	LCSD	9.0180	10.000	ppbv	90.2	1.9	70 - 130		30
1,1-Dichloroethene	BWI0689-BS1	LCS	8.7170	10.000	ppbv	87.2		70 - 130		
	BWI0689-BSD1	LCSD	8.8720	10.000	ppbv	88.7	1.8	70 - 130		30
cis-1,2-Dichloroethene	BWI0689-BS1	LCS	8.0480	10.000	ppbv	80.5		70 - 130		
	BWI0689-BSD1	LCSD	8.2310	10.000	ppbv	82.3	2.2	70 - 130		30
trans-1,2-Dichloroethene	BWI0689-BS1	LCS	7.9350	10.000	ppbv	79.4		70 - 130		
	BWI0689-BSD1	LCSD	8.1680	10.000	ppbv	81.7	2.9	70 - 130		30
1,2-Dichloropropane	BWI0689-BS1	LCS	9.6310	10.000	ppbv	96.3		70 - 130		
	BWI0689-BSD1	LCSD	9.1140	10.000	ppbv	91.1	5.5	70 - 130		30

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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Compounds by GC/MS (EPA Method TO-15)

Quality Control Report - Laboratory Control Sample

Table with columns: Constituent, QC Sample ID, Type, Result, Spike Level, Units, Percent Recovery, RPD, Control Limits (Percent Recovery, RPD), Lab (Quals). Includes a QC Batch ID: BWI0689 and various chemical compounds like 1,3-Dichloropropane, 2,2-Dichloropropane, etc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. All results listed in this report are for the exclusive use of the submitting party. BC Laboratories, Inc. assumes no responsibility for report alteration, separation, detachment or third party interpretation.



Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Compounds by GC/MS (EPA Method TO-15)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab Quals
								Percent Recovery	RPD	
QC Batch ID: BWI0689										
2-Hexanone	BWI0689-BS1	LCS	12.201	10.000	ppbv	122		70 - 130		
	BWI0689-BSD1	LCSD	11.761	10.000	ppbv	118	3.7	70 - 130	30	
Isobutanol	BWI0689-BS1	LCS	ND		ppbv			70 - 130		
	BWI0689-BSD1	LCSD	ND		ppbv			70 - 130	30	
Isooctane	BWI0689-BS1	LCS	9.6980	10.000	ppbv	97.0		70 - 130		
	BWI0689-BSD1	LCSD	9.1440	10.000	ppbv	91.4	5.9	70 - 130	30	
Isopropyl alcohol	BWI0689-BS1	LCS	9.3670	10.000	ppbv	93.7		70 - 130		
	BWI0689-BSD1	LCSD	9.8470	10.000	ppbv	98.5	5.0	70 - 130	30	
Methacrylonitrile	BWI0689-BS1	LCS	ND		ppbv			70 - 130		
	BWI0689-BSD1	LCSD	ND		ppbv			70 - 130	30	
Methylene chloride	BWI0689-BS1	LCS	7.2320	10.000	ppbv	72.3		70 - 130		
	BWI0689-BSD1	LCSD	7.4150	10.000	ppbv	74.2	2.5	70 - 130	30	
Methyl ethyl ketone	BWI0689-BS1	LCS	8.9110	10.000	ppbv	89.1		70 - 130		
	BWI0689-BSD1	LCSD	9.2440	10.000	ppbv	92.4	3.7	70 - 130	30	
Methyl iodide	BWI0689-BS1	LCS	7.0190	10.000	ppbv	70.2		70 - 130		
	BWI0689-BSD1	LCSD	7.0430	10.000	ppbv	70.4	0.3	70 - 130	30	
Methyl isobutyl ketone	BWI0689-BS1	LCS	12.072	10.000	ppbv	121		70 - 130		
	BWI0689-BSD1	LCSD	11.549	10.000	ppbv	115	4.4	70 - 130	30	
Methyl methacrylate	BWI0689-BS1	LCS	ND		ppbv			70 - 130		
	BWI0689-BSD1	LCSD	ND		ppbv			70 - 130	30	
Methyl t-butyl ether	BWI0689-BS1	LCS	7.8990	10.000	ppbv	79.0		70 - 130		
	BWI0689-BSD1	LCSD	7.9170	10.000	ppbv	79.2	0.2	70 - 130	30	
Propionitrile	BWI0689-BS1	LCS	ND		ppbv			70 - 130		
	BWI0689-BSD1	LCSD	ND		ppbv			70 - 130	30	
Propylene	BWI0689-BS1	LCS	8.2800	10.000	ppbv	82.8		70 - 130		
	BWI0689-BSD1	LCSD	8.4670	10.000	ppbv	84.7	2.2	70 - 130	30	
Styrene	BWI0689-BS1	LCS	8.2600	10.000	ppbv	82.6		70 - 130		
	BWI0689-BSD1	LCSD	8.1340	10.000	ppbv	81.3	1.5	70 - 130	30	
1,1,1,2-Tetrachloroethane	BWI0689-BS1	LCS	10.050	10.000	ppbv	100		70 - 130		
	BWI0689-BSD1	LCSD	9.4620	10.000	ppbv	94.6	6.0	70 - 130	30	
1,1,2,2-Tetrachloroethane	BWI0689-BS1	LCS	10.322	10.000	ppbv	103		70 - 130		
	BWI0689-BSD1	LCSD	10.309	10.000	ppbv	103	0.1	70 - 130	30	
Tetrachloroethene	BWI0689-BS1	LCS	10.253	10.000	ppbv	103		70 - 130		
	BWI0689-BSD1	LCSD	9.6370	10.000	ppbv	96.4	6.2	70 - 130	30	
1,1,1,2-Tetrafluoroethane	BWI0689-BS1	LCS	ND		ppbv			60 - 140		
	BWI0689-BSD1	LCSD	ND		ppbv			60 - 140	30	

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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Compounds by GC/MS (EPA Method TO-15)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab Quals
								Percent Recovery	RPD	
QC Batch ID: BWI0689										
Tetrahydrofuran	BWI0689-BS1	LCS	9.6590	10.000	ppbv	96.6		70 - 130		
	BWI0689-BSD1	LCSD	9.9820	10.000	ppbv	99.8	3.3	70 - 130	30	
Toluene	BWI0689-BS1	LCS	9.8750	10.000	ppbv	98.8		70 - 130		
	BWI0689-BSD1	LCSD	9.3090	10.000	ppbv	93.1	5.9	70 - 130	30	
1,2,4-Trichlorobenzene	BWI0689-BS1	LCS	8.9740	10.000	ppbv	89.7		70 - 130		
	BWI0689-BSD1	LCSD	9.0550	10.000	ppbv	90.6	0.9	70 - 130	30	
1,1,1-Trichloroethane	BWI0689-BS1	LCS	7.8740	10.000	ppbv	78.7		70 - 130		
	BWI0689-BSD1	LCSD	7.9590	10.000	ppbv	79.6	1.1	70 - 130	30	
1,1,2-Trichloroethane	BWI0689-BS1	LCS	10.147	10.000	ppbv	101		70 - 130		
	BWI0689-BSD1	LCSD	9.5850	10.000	ppbv	95.8	5.7	70 - 130	30	
Trichloroethene	BWI0689-BS1	LCS	9.7990	10.000	ppbv	98.0		70 - 130		
	BWI0689-BSD1	LCSD	9.3290	10.000	ppbv	93.3	4.9	70 - 130	30	
Trichlorofluoromethane	BWI0689-BS1	LCS	11.529	10.000	ppbv	115		70 - 130		
	BWI0689-BSD1	LCSD	11.623	10.000	ppbv	116	0.8	70 - 130	30	
1,2,3-Trichloropropane	BWI0689-BS1	LCS	8.7490	10.000	ppbv	87.5		70 - 130		
	BWI0689-BSD1	LCSD	8.7600	10.000	ppbv	87.6	0.1	70 - 130	30	
1,1,2-Trichloro-1,2,2-trifluoroethane	BWI0689-BS1	LCS	8.5240	10.000	ppbv	85.2		70 - 130		
	BWI0689-BSD1	LCSD	8.6380	10.000	ppbv	86.4	1.3	70 - 130	30	
1,2,4-Trimethylbenzene	BWI0689-BS1	LCS	10.544	10.000	ppbv	105		70 - 130		
	BWI0689-BSD1	LCSD	10.491	10.000	ppbv	105	0.5	70 - 130	30	
1,3,5-Trimethylbenzene	BWI0689-BS1	LCS	9.7960	10.000	ppbv	98.0		70 - 130		
	BWI0689-BSD1	LCSD	11.069	10.000	ppbv	111	12.2	70 - 130	30	
Vinyl acetate	BWI0689-BS1	LCS	7.0390	10.000	ppbv	70.4		70 - 130		
	BWI0689-BSD1	LCSD	7.0860	10.000	ppbv	70.9	0.7	70 - 130	30	
Vinyl bromide	BWI0689-BS1	LCS	10.686	10.000	ppbv	107		70 - 130		
	BWI0689-BSD1	LCSD	10.901	10.000	ppbv	109	2.0	70 - 130	30	
Vinyl chloride	BWI0689-BS1	LCS	8.0370	10.000	ppbv	80.4		70 - 130		
	BWI0689-BSD1	LCSD	8.3430	10.000	ppbv	83.4	3.7	70 - 130	30	
p- & m-Xylenes	BWI0689-BS1	LCS	16.528	20.000	ppbv	82.6		70 - 130		
	BWI0689-BSD1	LCSD	16.603	20.000	ppbv	83.0	0.5	70 - 130	30	
o-Xylene	BWI0689-BS1	LCS	8.7920	10.000	ppbv	87.9		70 - 130		
	BWI0689-BSD1	LCSD	8.7950	10.000	ppbv	88.0	0.0	70 - 130	30	
Total Xylenes	BWI0689-BS1	LCS	25.320	30.000	ppbv	84.4		70 - 130		
	BWI0689-BSD1	LCSD	25.398	30.000	ppbv	84.7	0.3	70 - 130	30	
4-Bromofluorobenzene (Surrogate)	BWI0689-BS1	LCS	8.0390	10.000	ppbv	80.4		70 - 130		
	BWI0689-BSD1	LCSD	7.5540	10.000	ppbv	75.5	6.2	70 - 130	30	

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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Fixed Gases by GC/TCD (ASTM D1946)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BWI0790						
Methane (CH4)	BWI0790-BLK1	ND	% by Vol.	0.00020		



Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Fixed Gases by GC/TCD (ASTM D1946)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab
								Percent Recovery	RPD	
QC Batch ID: BWI0790										
Methane (CH4)	BWI0790-BS1	LCS	1.9030	1.8000	% by Vol.	106		70 - 130		
	BWI0790-BSD1	LCSD	1.8950	1.8000	% by Vol.	105	0.4	70 - 130	30	



Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/17/2013 9:10
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Notes And Definitions

- MDL Method Detection Limit
- ND Analyte Not Detected at or above the reporting limit
- PQL Practical Quantitation Limit
- RPD Relative Percent Difference
- A01 PQL's and MDL's are raised due to sample dilution.



Date of Report: 09/16/2013

Kathy Brandt

Arcadis

2000 Powell Street 7th Floor
Emeryville, CA 94608

Project: 0752
BC Work Order: 1319699
Invoice ID: B155271

Enclosed are the results of analyses for samples received by the laboratory on 9/11/2013. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Molly Meyers
Client Service Rep

Authorized Signature

Certifications: CA ELAP #1186; NV #CA00014



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Quality Control Reports

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Environmental Testing Laboratory Since 1949

MM

Chain of Custody and Cooler Receipt Form for 1319699 Page 1 of 2

13-19699

CHAIN OF CUSTODY FORM

Union Oil Company of California ■ 6101 Bollinger Canyon Road ■ San Ramon, CA 94583

COC 1 of 1

Union Oil Site ID: 351646				Union Oil Consultant: ARCADIS				ANALYSES REQUIRED																
Site Global ID:				Consultant Contact: Katherine Brandt				TPH - Diesel by EPA 8015	TPH - G by GC/MS	BTX(MTBE/OXYS by EPA 8260B	Ethanol by EPA 8260B	EPA 8260B Full List with OXYS	Turnaround Time (TAT): Standard 24 Hours <input type="checkbox"/> 48 Hours <input type="checkbox"/> 72 Hours <input checked="" type="checkbox"/>											
Site Address: 726 Harrison Street Oakland, CA				Consultant Phone No.: 510-596-9675									Special Instructions Email Report to: Katherine.Brandt@arcadis-us.com											
Union Oil PM: Tim Bishop				Sampling Company: ARCADIS									Notes / Comments											
Union Oil PM Phone No.:				Sampled By (PRINT): Tyler Sale																				
Charge Code: NWRB-0 -0- LAB				Sampler Signature:				BC Laboratories, Inc. Project Manager: Molly Mayers 4100 Atlas Court, Bakersfield, CA 93308 Phone No. 661-327-4911																
This is a LEGAL document. ALL fields must be filled out CORRECTLY and COMPLETELY.																								
SAMPLE ID				Sample Time	# of Containers	TPH - Diesel by EPA 8015	TPH - G by GC/MS	BTX(MTBE/OXYS by EPA 8260B	Ethanol by EPA 8260B	EPA 8260B Full List with OXYS														
Field Point Name	Matrix	DTW	Date (yymmdd)								Notes / Comments													
MPE-1 (1 Hour)	W-S-A		130910	11:05	4-40mL VOA			X	X	X														
MPE-1 (24 Hours)	W-S-A		130911	10:05	4-40mL VOA			X	X	X														
MPE-1 (26 Hours)	W-S-A		130911	11:55	4-40mL VOA			X	X	X														
	W-S-A																							
	W-S-A																							
	W-S-A																							
	W-S-A																							
	W-S-A																							
	W-S-A																							
	W-S-A																							
	W-S-A																							
	W-S-A																							
	W-S-A																							
Relinquished By	Company	Date / Time:		Relinquished By	Company	Date / Time:		Relinquished By	Company	Date / Time:														
Tyler Sale	ARCADIS	9/11/13 14:25		Nancy Beggs	BCLAB	9-11-13 18:15			BCLAB	9-11-13 21:50														
Received By	Company	Date / Time:		Received By	Company	Date / Time:		Received By	Company	Date / Time:														
Nancy Beggs	BCLAB	9-11-13 14:25			BCLAB	9-11-13 18:15		Ken	BCLAB	9-11-13 21:50														

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Chain of Custody and Cooler Receipt Form for 1319699 Page 2 of 2

LABORATORIES INC. COOLER RECEIPT FORM Rev. No. 15 07/01/13 Page 1 of 1

Submission #: 13-19699

SHIPPING INFORMATION
 Federal Express UPS Hand Delivery
 Lab Field Service Other (Specify) _____

SHIPPING CONTAINER
 Ice Chest None Box
 Other (Specify) _____

FREE LIQUID
 YES NO

Refrigerant: Ice Blue Ice None Other Comments: _____

Custody Seals: Ice Chest Containers None Comments: _____
 Intact? Yes No Intact? Yes No

Samples received? Yes No All samples containers intact? Yes No Description(s) match COC? Yes No

COC Received YES NO

Emissivity: .95 Container: Amber Thermometer ID: 207
 Temperature: (A) 5.1 °C (C) 15.2 °C

Date/Time 11/9/13 Analyst Init 2200

SAMPLE CONTAINERS	SAMPLE NUMBERS									
	1	2	3	4	5	6	7	8	9	10
GENERAL MINERAL/ GENERAL										
PE UNPRESERVED										
INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS										
CYANIDE										
NITROGEN FORMS										
TOTAL SULFIDE										
NITRATE / NITRITE										
TOTAL ORGANIC CARBON										
TOX										
CHEMICAL OXYGEN DEMAND										
PHENOLICS										
ml VOA VIAL TRAVEL BLANK										
ml VOA VIAL	A14	A14	A14							
EPA 413.1, 413.2, 418.1										
ODOR										
BIOLOGICAL										
STERIOLOGICAL										
ml VOA VIAL- 504										
EPA 508/608/8080										
EPA 515.1/8150										
EPA 525										
EPA 525 TRAVEL BLANK										
ml EPA 547										
ml EPA 531.1										
EPA 548										
EPA 549										
EPA 632										
EPA 8015M										
AMBER										
Z- JAR										
OZ- JAR										
IL SLEEVE										
B VIAL										
PLASTIC BAG										
PROUS IRON										
CORE										
ART KIT										
mina Canister										
Comments:	Ch... ..									

CHK BY [Signature] DISTRIBUTION [Signature]
 SUB OUT



Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/16/2013 15:04
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information
------------	---------------------------

1319699-01	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MPE-1(1 Hour)-W-130910 Sampled By: AREC	Receive Date: 09/11/2013 21:50 Sampling Date: 09/10/2013 11:05 Sample Depth: --- Lab Matrix: Water Sample Type: Water Delivery Work Order: Global ID: Location ID (FieldPoint): MPE-1 Matrix: W Sample QC Type (SACode): CS Cooler ID:
-------------------	--	---

1319699-02	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MPE-1(24 Hours)-W-130911 Sampled By: AREC	Receive Date: 09/11/2013 21:50 Sampling Date: 09/11/2013 10:05 Sample Depth: --- Lab Matrix: Water Sample Type: Water Delivery Work Order: Global ID: Location ID (FieldPoint): MPE-1 Matrix: W Sample QC Type (SACode): CS Cooler ID:
-------------------	--	---

1319699-03	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MPE-1(26 Hours)-W-130911 Sampled By: AREC	Receive Date: 09/11/2013 21:50 Sampling Date: 09/11/2013 11:55 Sample Depth: --- Lab Matrix: Water Sample Type: Water Delivery Work Order: Global ID: Location ID (FieldPoint): MPE-1 Matrix: W Sample QC Type (SACode): CS Cooler ID:
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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/16/2013 15:04
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1319699-01	Client Sample Name: 0752, MPE-1(1 Hour)-W-130910, 9/10/2013 11:05:00AM
----------------------------------	---

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	97	ug/L	0.50	EPA-8260B	ND		1
Bromobenzene	ND	ug/L	0.50	EPA-8260B	ND		1
Bromochloromethane	ND	ug/L	0.50	EPA-8260B	ND		1
Bromodichloromethane	ND	ug/L	0.50	EPA-8260B	ND		1
Bromoform	ND	ug/L	0.50	EPA-8260B	ND		1
Bromomethane	ND	ug/L	1.0	EPA-8260B	ND		1
n-Butylbenzene	ND	ug/L	0.50	EPA-8260B	ND		1
sec-Butylbenzene	ND	ug/L	0.50	EPA-8260B	ND		1
tert-Butylbenzene	ND	ug/L	0.50	EPA-8260B	ND		1
Carbon tetrachloride	ND	ug/L	0.50	EPA-8260B	ND		1
Chlorobenzene	ND	ug/L	0.50	EPA-8260B	ND		1
Chloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Chloroform	ND	ug/L	0.50	EPA-8260B	ND		1
Chloromethane	ND	ug/L	0.50	EPA-8260B	ND		1
2-Chlorotoluene	ND	ug/L	0.50	EPA-8260B	ND		1
4-Chlorotoluene	ND	ug/L	0.50	EPA-8260B	ND		1
Dibromochloromethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	EPA-8260B	ND	V01	1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		1
Dibromomethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichlorobenzene	ND	ug/L	0.50	EPA-8260B	ND		1
1,3-Dichlorobenzene	ND	ug/L	0.50	EPA-8260B	ND		1
1,4-Dichlorobenzene	ND	ug/L	0.50	EPA-8260B	ND		1
Dichlorodifluoromethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,1-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,1-Dichloroethene	ND	ug/L	0.50	EPA-8260B	ND		1
cis-1,2-Dichloroethene	ND	ug/L	0.50	EPA-8260B	ND		1
trans-1,2-Dichloroethene	ND	ug/L	0.50	EPA-8260B	ND		1
Total 1,2-Dichloroethene	ND	ug/L	1.0	EPA-8260B	ND		1
1,2-Dichloropropane	ND	ug/L	0.50	EPA-8260B	ND		1
1,3-Dichloropropane	ND	ug/L	0.50	EPA-8260B	ND		1
2,2-Dichloropropane	ND	ug/L	0.50	EPA-8260B	ND		1

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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/16/2013 15:04
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1319699-01	Client Sample Name: 0752, MPE-1(1 Hour)-W-130910, 9/10/2013 11:05:00AM
----------------------------------	---

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
1,1-Dichloropropene	ND	ug/L	0.50	EPA-8260B	ND		1
cis-1,3-Dichloropropene	ND	ug/L	0.50	EPA-8260B	ND		1
trans-1,3-Dichloropropene	ND	ug/L	0.50	EPA-8260B	ND		1
Total 1,3-Dichloropropene	ND	ug/L	1.0	EPA-8260B	ND		1
Ethylbenzene	11	ug/L	0.50	EPA-8260B	ND		1
Hexachlorobutadiene	ND	ug/L	0.50	EPA-8260B	ND		1
Isopropylbenzene	2.8	ug/L	0.50	EPA-8260B	ND		1
p-Isopropyltoluene	0.81	ug/L	0.50	EPA-8260B	ND		1
Methylene chloride	ND	ug/L	1.0	EPA-8260B	ND		1
Methyl t-butyl ether	370	ug/L	5.0	EPA-8260B	ND	A01	2
Naphthalene	7.4	ug/L	0.50	EPA-8260B	ND		1
n-Propylbenzene	2.7	ug/L	0.50	EPA-8260B	ND		1
Styrene	ND	ug/L	0.50	EPA-8260B	ND		1
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Tetrachloroethene	ND	ug/L	0.50	EPA-8260B	ND		1
Toluene	13	ug/L	0.50	EPA-8260B	ND		1
1,2,3-Trichlorobenzene	ND	ug/L	0.50	EPA-8260B	ND		1
1,2,4-Trichlorobenzene	ND	ug/L	0.50	EPA-8260B	ND		1
1,1,1-Trichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,1,2-Trichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Trichloroethene	ND	ug/L	0.50	EPA-8260B	ND		1
Trichlorofluoromethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2,3-Trichloropropane	ND	ug/L	1.0	EPA-8260B	ND		1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2,4-Trimethylbenzene	5.4	ug/L	0.50	EPA-8260B	ND		1
1,3,5-Trimethylbenzene	2.6	ug/L	0.50	EPA-8260B	ND		1
Vinyl chloride	ND	ug/L	0.50	EPA-8260B	ND		1
Total Xylenes	25	ug/L	1.0	EPA-8260B	ND		1
t-Amyl Methyl ether	ND	ug/L	0.50	EPA-8260B	ND		1
t-Butyl alcohol	450	ug/L	10	EPA-8260B	ND		1
Diisopropyl ether	5.7	ug/L	0.50	EPA-8260B	ND		1
Ethanol	ND	ug/L	250	EPA-8260B	ND		1

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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/16/2013 15:04
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1319699-01	Client Sample Name: 0752, MPE-1(1 Hour)-W-130910, 9/10/2013 11:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Ethyl t-butyl ether	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	89.6	%	75 - 125 (LCL - UCL)	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	120	%	75 - 125 (LCL - UCL)	EPA-8260B			2
Toluene-d8 (Surrogate)	103	%	80 - 120 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	100	%	80 - 120 (LCL - UCL)	EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	97.2	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	103	%	80 - 120 (LCL - UCL)	EPA-8260B			2

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	09/13/13	09/13/13 12:30	ML	HPCHEM	1	BW11132
2	EPA-8260B	09/13/13	09/13/13 17:41	ML	HPCHEM	10	BW11132



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2000 Powell Street 7th Floor
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Reported: 09/16/2013 15:04
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1319699-02	Client Sample Name: 0752, MPE-1(24 Hours)-W-130911, 9/11/2013 10:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	73	ug/L	2.5	EPA-8260B	ND	A01	1
Bromobenzene	ND	ug/L	0.50	EPA-8260B	ND		2
Bromochloromethane	ND	ug/L	0.50	EPA-8260B	ND		2
Bromodichloromethane	ND	ug/L	0.50	EPA-8260B	ND		2
Bromoform	ND	ug/L	0.50	EPA-8260B	ND		2
Bromomethane	ND	ug/L	1.0	EPA-8260B	ND		2
n-Butylbenzene	ND	ug/L	0.50	EPA-8260B	ND		2
sec-Butylbenzene	0.59	ug/L	0.50	EPA-8260B	ND		2
tert-Butylbenzene	ND	ug/L	0.50	EPA-8260B	ND		2
Carbon tetrachloride	ND	ug/L	0.50	EPA-8260B	ND		2
Chlorobenzene	ND	ug/L	0.50	EPA-8260B	ND		2
Chloroethane	ND	ug/L	0.50	EPA-8260B	ND		2
Chloroform	ND	ug/L	0.50	EPA-8260B	ND		2
Chloromethane	ND	ug/L	0.50	EPA-8260B	ND		2
2-Chlorotoluene	ND	ug/L	0.50	EPA-8260B	ND		2
4-Chlorotoluene	ND	ug/L	0.50	EPA-8260B	ND		2
Dibromochloromethane	ND	ug/L	0.50	EPA-8260B	ND		2
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	EPA-8260B	ND	V01	2
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		2
Dibromomethane	ND	ug/L	0.50	EPA-8260B	ND		2
1,2-Dichlorobenzene	ND	ug/L	0.50	EPA-8260B	ND		2
1,3-Dichlorobenzene	ND	ug/L	0.50	EPA-8260B	ND		2
1,4-Dichlorobenzene	ND	ug/L	0.50	EPA-8260B	ND		2
Dichlorodifluoromethane	ND	ug/L	0.50	EPA-8260B	ND		2
1,1-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		2
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		2
1,1-Dichloroethene	ND	ug/L	0.50	EPA-8260B	ND		2
cis-1,2-Dichloroethene	ND	ug/L	0.50	EPA-8260B	ND		2
trans-1,2-Dichloroethene	ND	ug/L	0.50	EPA-8260B	ND		2
Total 1,2-Dichloroethene	ND	ug/L	1.0	EPA-8260B	ND		2
1,2-Dichloropropane	ND	ug/L	0.50	EPA-8260B	ND		2
1,3-Dichloropropane	ND	ug/L	0.50	EPA-8260B	ND		2
2,2-Dichloropropane	ND	ug/L	0.50	EPA-8260B	ND		2

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Reported: 09/16/2013 15:04
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1319699-02		Client Sample Name: 0752, MPE-1(24 Hours)-W-130911, 9/11/2013 10:05:00AM					
Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
1,1-Dichloropropene	ND	ug/L	0.50	EPA-8260B	ND		2
cis-1,3-Dichloropropene	ND	ug/L	0.50	EPA-8260B	ND		2
trans-1,3-Dichloropropene	ND	ug/L	0.50	EPA-8260B	ND		2
Total 1,3-Dichloropropene	ND	ug/L	1.0	EPA-8260B	ND		2
Ethylbenzene	48	ug/L	0.50	EPA-8260B	ND		2
Hexachlorobutadiene	ND	ug/L	0.50	EPA-8260B	ND		2
Isopropylbenzene	5.8	ug/L	0.50	EPA-8260B	ND		2
p-Isopropyltoluene	1.8	ug/L	0.50	EPA-8260B	ND		2
Methylene chloride	ND	ug/L	1.0	EPA-8260B	ND		2
Methyl t-butyl ether	450	ug/L	2.5	EPA-8260B	ND	A01	1
Naphthalene	23	ug/L	0.50	EPA-8260B	ND		2
n-Propylbenzene	6.0	ug/L	0.50	EPA-8260B	ND		2
Styrene	ND	ug/L	0.50	EPA-8260B	ND		2
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	EPA-8260B	ND		2
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	EPA-8260B	ND		2
Tetrachloroethene	ND	ug/L	0.50	EPA-8260B	ND		2
Toluene	64	ug/L	0.50	EPA-8260B	ND		2
1,2,3-Trichlorobenzene	ND	ug/L	0.50	EPA-8260B	ND		2
1,2,4-Trichlorobenzene	ND	ug/L	0.50	EPA-8260B	ND		2
1,1,1-Trichloroethane	ND	ug/L	0.50	EPA-8260B	ND		2
1,1,2-Trichloroethane	ND	ug/L	0.50	EPA-8260B	ND		2
Trichloroethene	ND	ug/L	0.50	EPA-8260B	ND		2
Trichlorofluoromethane	ND	ug/L	0.50	EPA-8260B	ND		2
1,2,3-Trichloropropane	ND	ug/L	1.0	EPA-8260B	ND		2
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	0.50	EPA-8260B	ND		2
1,2,4-Trimethylbenzene	29	ug/L	0.50	EPA-8260B	ND		2
1,3,5-Trimethylbenzene	7.4	ug/L	0.50	EPA-8260B	ND		2
Vinyl chloride	ND	ug/L	0.50	EPA-8260B	ND		2
Total Xylenes	110	ug/L	1.0	EPA-8260B	ND		2
t-Amyl Methyl ether	ND	ug/L	0.50	EPA-8260B	ND		2
t-Butyl alcohol	700	ug/L	10	EPA-8260B	ND		2
Diisopropyl ether	17	ug/L	0.50	EPA-8260B	ND		2
Ethanol	ND	ug/L	250	EPA-8260B	ND		2

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Reported: 09/16/2013 15:04
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1319699-02	Client Sample Name: 0752, MPE-1(24 Hours)-W-130911, 9/11/2013 10:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Ethyl t-butyl ether	ND	ug/L	0.50	EPA-8260B	ND		2
1,2-Dichloroethane-d4 (Surrogate)	120	%	75 - 125 (LCL - UCL)	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	86.0	%	75 - 125 (LCL - UCL)	EPA-8260B			2
Toluene-d8 (Surrogate)	102	%	80 - 120 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	101	%	80 - 120 (LCL - UCL)	EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	107	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	99.3	%	80 - 120 (LCL - UCL)	EPA-8260B			2

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	09/13/13	09/13/13 18:29	ML	HPCHEM	5	BW11132
2	EPA-8260B	09/13/13	09/13/13 12:54	ML	HPCHEM	1	BW11132



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Reported: 09/16/2013 15:04
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1319699-03	Client Sample Name: 0752, MPE-1(26 Hours)-W-130911, 9/11/2013 11:55:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	94	ug/L	1.0	EPA-8260B	ND	A01	1
Bromobenzene	ND	ug/L	0.50	EPA-8260B	ND		2
Bromochloromethane	ND	ug/L	0.50	EPA-8260B	ND		2
Bromodichloromethane	ND	ug/L	0.50	EPA-8260B	ND		2
Bromoform	ND	ug/L	0.50	EPA-8260B	ND		2
Bromomethane	ND	ug/L	1.0	EPA-8260B	ND		2
n-Butylbenzene	ND	ug/L	0.50	EPA-8260B	ND		2
sec-Butylbenzene	ND	ug/L	0.50	EPA-8260B	ND		2
tert-Butylbenzene	ND	ug/L	0.50	EPA-8260B	ND		2
Carbon tetrachloride	ND	ug/L	0.50	EPA-8260B	ND		2
Chlorobenzene	ND	ug/L	0.50	EPA-8260B	ND		2
Chloroethane	ND	ug/L	0.50	EPA-8260B	ND		2
Chloroform	ND	ug/L	0.50	EPA-8260B	ND		2
Chloromethane	ND	ug/L	0.50	EPA-8260B	ND		2
2-Chlorotoluene	ND	ug/L	0.50	EPA-8260B	ND		2
4-Chlorotoluene	ND	ug/L	0.50	EPA-8260B	ND		2
Dibromochloromethane	ND	ug/L	0.50	EPA-8260B	ND		2
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	EPA-8260B	ND	V01	2
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		2
Dibromomethane	ND	ug/L	0.50	EPA-8260B	ND		2
1,2-Dichlorobenzene	ND	ug/L	0.50	EPA-8260B	ND		2
1,3-Dichlorobenzene	ND	ug/L	0.50	EPA-8260B	ND		2
1,4-Dichlorobenzene	ND	ug/L	0.50	EPA-8260B	ND		2
Dichlorodifluoromethane	ND	ug/L	0.50	EPA-8260B	ND		2
1,1-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		2
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		2
1,1-Dichloroethene	ND	ug/L	0.50	EPA-8260B	ND		2
cis-1,2-Dichloroethene	ND	ug/L	0.50	EPA-8260B	ND		2
trans-1,2-Dichloroethene	ND	ug/L	0.50	EPA-8260B	ND		2
Total 1,2-Dichloroethene	ND	ug/L	1.0	EPA-8260B	ND		2
1,2-Dichloropropane	ND	ug/L	0.50	EPA-8260B	ND		2
1,3-Dichloropropane	ND	ug/L	0.50	EPA-8260B	ND		2
2,2-Dichloropropane	ND	ug/L	0.50	EPA-8260B	ND		2

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Reported: 09/16/2013 15:04
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1319699-03	Client Sample Name: 0752, MPE-1(26 Hours)-W-130911, 9/11/2013 11:55:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
1,1-Dichloropropene	ND	ug/L	0.50	EPA-8260B	ND		2
cis-1,3-Dichloropropene	ND	ug/L	0.50	EPA-8260B	ND		2
trans-1,3-Dichloropropene	ND	ug/L	0.50	EPA-8260B	ND		2
Total 1,3-Dichloropropene	ND	ug/L	1.0	EPA-8260B	ND		2
Ethylbenzene	22	ug/L	0.50	EPA-8260B	ND		2
Hexachlorobutadiene	ND	ug/L	0.50	EPA-8260B	ND		2
Isopropylbenzene	3.2	ug/L	0.50	EPA-8260B	ND		2
p-Isopropyltoluene	1.0	ug/L	0.50	EPA-8260B	ND		2
Methylene chloride	ND	ug/L	1.0	EPA-8260B	ND		2
Methyl t-butyl ether	360	ug/L	5.0	EPA-8260B	ND	A01	3
Naphthalene	11	ug/L	0.50	EPA-8260B	ND		2
n-Propylbenzene	3.3	ug/L	0.50	EPA-8260B	ND		2
Styrene	ND	ug/L	0.50	EPA-8260B	ND		2
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	EPA-8260B	ND		2
1,1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	EPA-8260B	ND		2
Tetrachloroethene	ND	ug/L	0.50	EPA-8260B	ND		2
Toluene	27	ug/L	0.50	EPA-8260B	ND		2
1,2,3-Trichlorobenzene	ND	ug/L	0.50	EPA-8260B	ND		2
1,2,4-Trichlorobenzene	ND	ug/L	0.50	EPA-8260B	ND		2
1,1,1-Trichloroethane	ND	ug/L	0.50	EPA-8260B	ND		2
1,1,2-Trichloroethane	ND	ug/L	0.50	EPA-8260B	ND		2
Trichloroethene	ND	ug/L	0.50	EPA-8260B	ND		2
Trichlorofluoromethane	ND	ug/L	0.50	EPA-8260B	ND		2
1,2,3-Trichloropropane	ND	ug/L	1.0	EPA-8260B	ND		2
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	0.50	EPA-8260B	ND		2
1,2,4-Trimethylbenzene	13	ug/L	0.50	EPA-8260B	ND		2
1,3,5-Trimethylbenzene	3.8	ug/L	0.50	EPA-8260B	ND		2
Vinyl chloride	ND	ug/L	0.50	EPA-8260B	ND		2
Total Xylenes	53	ug/L	1.0	EPA-8260B	ND		2
t-Amyl Methyl ether	ND	ug/L	0.50	EPA-8260B	ND		2
t-Butyl alcohol	410	ug/L	10	EPA-8260B	ND		2
Diisopropyl ether	7.6	ug/L	0.50	EPA-8260B	ND		2
Ethanol	ND	ug/L	250	EPA-8260B	ND		2

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Reported: 09/16/2013 15:04
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1319699-03	Client Sample Name: 0752, MPE-1(26 Hours)-W-130911, 9/11/2013 11:55:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Ethyl t-butyl ether	ND	ug/L	0.50	EPA-8260B	ND		2
1,2-Dichloroethane-d4 (Surrogate)	91.4	%	75 - 125 (LCL - UCL)	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	86.5	%	75 - 125 (LCL - UCL)	EPA-8260B			2
1,2-Dichloroethane-d4 (Surrogate)	96.7	%	75 - 125 (LCL - UCL)	EPA-8260B			3
Toluene-d8 (Surrogate)	103	%	80 - 120 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	103	%	80 - 120 (LCL - UCL)	EPA-8260B			2
Toluene-d8 (Surrogate)	99.6	%	80 - 120 (LCL - UCL)	EPA-8260B			3
4-Bromofluorobenzene (Surrogate)	97.5	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	97.8	%	80 - 120 (LCL - UCL)	EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	98.4	%	80 - 120 (LCL - UCL)	EPA-8260B			3

Run #	Method	Prep Date	Run		Instrument	Dilution	QC
			Date/Time	Analyst			Batch ID
1	EPA-8260B	09/13/13	09/13/13 23:35	ML	HPCHEM	2	BW11132
2	EPA-8260B	09/13/13	09/13/13 13:18	ML	HPCHEM	1	BW11132
3	EPA-8260B	09/13/13	09/13/13 23:11	ML	HPCHEM	10	BW11132

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Reported: 09/16/2013 15:04
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BWI1132						
Benzene	BWI1132-BLK1	ND	ug/L	0.50		
Bromobenzene	BWI1132-BLK1	ND	ug/L	0.50		
Bromochloromethane	BWI1132-BLK1	ND	ug/L	0.50		
Bromodichloromethane	BWI1132-BLK1	ND	ug/L	0.50		
Bromoform	BWI1132-BLK1	ND	ug/L	0.50		
Bromomethane	BWI1132-BLK1	ND	ug/L	1.0		
n-Butylbenzene	BWI1132-BLK1	ND	ug/L	0.50		
sec-Butylbenzene	BWI1132-BLK1	ND	ug/L	0.50		
tert-Butylbenzene	BWI1132-BLK1	ND	ug/L	0.50		
Carbon tetrachloride	BWI1132-BLK1	ND	ug/L	0.50		
Chlorobenzene	BWI1132-BLK1	ND	ug/L	0.50		
Chloroethane	BWI1132-BLK1	ND	ug/L	0.50		
Chloroform	BWI1132-BLK1	ND	ug/L	0.50		
Chloromethane	BWI1132-BLK1	ND	ug/L	0.50		
2-Chlorotoluene	BWI1132-BLK1	ND	ug/L	0.50		
4-Chlorotoluene	BWI1132-BLK1	ND	ug/L	0.50		
Dibromochloromethane	BWI1132-BLK1	ND	ug/L	0.50		
1,2-Dibromo-3-chloropropane	BWI1132-BLK1	ND	ug/L	1.0		
1,2-Dibromoethane	BWI1132-BLK1	ND	ug/L	0.50		
Dibromomethane	BWI1132-BLK1	ND	ug/L	0.50		
1,2-Dichlorobenzene	BWI1132-BLK1	ND	ug/L	0.50		
1,3-Dichlorobenzene	BWI1132-BLK1	ND	ug/L	0.50		
1,4-Dichlorobenzene	BWI1132-BLK1	ND	ug/L	0.50		
Dichlorodifluoromethane	BWI1132-BLK1	ND	ug/L	0.50		
1,1-Dichloroethane	BWI1132-BLK1	ND	ug/L	0.50		
1,2-Dichloroethane	BWI1132-BLK1	ND	ug/L	0.50		
1,1-Dichloroethene	BWI1132-BLK1	ND	ug/L	0.50		
cis-1,2-Dichloroethene	BWI1132-BLK1	ND	ug/L	0.50		
trans-1,2-Dichloroethene	BWI1132-BLK1	ND	ug/L	0.50		
Total 1,2-Dichloroethene	BWI1132-BLK1	ND	ug/L	1.0		
1,2-Dichloropropane	BWI1132-BLK1	ND	ug/L	0.50		
1,3-Dichloropropane	BWI1132-BLK1	ND	ug/L	0.50		
2,2-Dichloropropane	BWI1132-BLK1	ND	ug/L	0.50		
1,1-Dichloropropene	BWI1132-BLK1	ND	ug/L	0.50		

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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/16/2013 15:04
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BWI1132						
cis-1,3-Dichloropropene	BWI1132-BLK1	ND	ug/L	0.50		
trans-1,3-Dichloropropene	BWI1132-BLK1	ND	ug/L	0.50		
Total 1,3-Dichloropropene	BWI1132-BLK1	ND	ug/L	1.0		
Ethylbenzene	BWI1132-BLK1	ND	ug/L	0.50		
Hexachlorobutadiene	BWI1132-BLK1	ND	ug/L	0.50		
Isopropylbenzene	BWI1132-BLK1	ND	ug/L	0.50		
p-Isopropyltoluene	BWI1132-BLK1	ND	ug/L	0.50		
Methylene chloride	BWI1132-BLK1	ND	ug/L	1.0		
Methyl t-butyl ether	BWI1132-BLK1	ND	ug/L	0.50		
Naphthalene	BWI1132-BLK1	ND	ug/L	0.50		
n-Propylbenzene	BWI1132-BLK1	ND	ug/L	0.50		
Styrene	BWI1132-BLK1	ND	ug/L	0.50		
1,1,1,2-Tetrachloroethane	BWI1132-BLK1	ND	ug/L	0.50		
1,1,2,2-Tetrachloroethane	BWI1132-BLK1	ND	ug/L	0.50		
Tetrachloroethene	BWI1132-BLK1	ND	ug/L	0.50		
Toluene	BWI1132-BLK1	ND	ug/L	0.50		
1,2,3-Trichlorobenzene	BWI1132-BLK1	ND	ug/L	0.50		
1,2,4-Trichlorobenzene	BWI1132-BLK1	ND	ug/L	0.50		
1,1,1-Trichloroethane	BWI1132-BLK1	ND	ug/L	0.50		
1,1,2-Trichloroethane	BWI1132-BLK1	ND	ug/L	0.50		
Trichloroethene	BWI1132-BLK1	ND	ug/L	0.50		
Trichlorofluoromethane	BWI1132-BLK1	ND	ug/L	0.50		
1,2,3-Trichloropropane	BWI1132-BLK1	ND	ug/L	1.0		
1,1,2-Trichloro-1,2,2-trifluoroethane	BWI1132-BLK1	ND	ug/L	0.50		
1,2,4-Trimethylbenzene	BWI1132-BLK1	ND	ug/L	0.50		
1,3,5-Trimethylbenzene	BWI1132-BLK1	ND	ug/L	0.50		
Vinyl chloride	BWI1132-BLK1	ND	ug/L	0.50		
Total Xylenes	BWI1132-BLK1	ND	ug/L	1.0		
t-Amyl Methyl ether	BWI1132-BLK1	ND	ug/L	0.50		
t-Butyl alcohol	BWI1132-BLK1	ND	ug/L	10		
Diisopropyl ether	BWI1132-BLK1	ND	ug/L	0.50		
Ethanol	BWI1132-BLK1	ND	ug/L	250		
Ethyl t-butyl ether	BWI1132-BLK1	ND	ug/L	0.50		
1,2-Dichloroethane-d4 (Surrogate)	BWI1132-BLK1	90.4	%	75 - 125 (LCL - UCL)		

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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/16/2013 15:04
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BWI1132						
Toluene-d8 (Surrogate)	BWI1132-BLK1	98.3	%	80 - 120 (LCL - UCL)		
4-Bromofluorobenzene (Surrogate)	BWI1132-BLK1	96.7	%	80 - 120 (LCL - UCL)		



Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/16/2013 15:04
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab	Quals
								Percent Recovery	RPD		
QC Batch ID: BWI1132											
Benzene	BWI1132-BS1	LCS	24.660	25.000	ug/L	98.6		70 - 130			
Bromodichloromethane	BWI1132-BS1	LCS	26.340	25.000	ug/L	105		70 - 130			
Chlorobenzene	BWI1132-BS1	LCS	24.400	25.000	ug/L	97.6		70 - 130			
Chloroethane	BWI1132-BS1	LCS	24.010	25.000	ug/L	96.0		70 - 130			
1,4-Dichlorobenzene	BWI1132-BS1	LCS	22.870	25.000	ug/L	91.5		70 - 130			
1,1-Dichloroethane	BWI1132-BS1	LCS	25.220	25.000	ug/L	101		70 - 130			
1,1-Dichloroethene	BWI1132-BS1	LCS	25.440	25.000	ug/L	102		70 - 130			
Toluene	BWI1132-BS1	LCS	24.950	25.000	ug/L	99.8		70 - 130			
Trichloroethene	BWI1132-BS1	LCS	28.830	25.000	ug/L	115		70 - 130			
1,2-Dichloroethane-d4 (Surrogate)	BWI1132-BS1	LCS	9.8100	10.000	ug/L	98.1		75 - 125			
Toluene-d8 (Surrogate)	BWI1132-BS1	LCS	10.180	10.000	ug/L	102		80 - 120			
4-Bromofluorobenzene (Surrogate)	BWI1132-BS1	LCS	9.8400	10.000	ug/L	98.4		80 - 120			



Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/16/2013 15:04
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery		Lab Quals
								RPD	Percent Recovery	
QC Batch ID: BWI1132		Used client sample: N								
Benzene	MS	1316295-85	ND	26.490	25.000	ug/L		106		70 - 130
	MSD	1316295-85	ND	25.700	25.000	ug/L	3.0	103	20	70 - 130
Bromodichloromethane	MS	1316295-85	ND	27.190	25.000	ug/L		109		70 - 130
	MSD	1316295-85	ND	27.060	25.000	ug/L	0.5	108	20	70 - 130
Chlorobenzene	MS	1316295-85	ND	25.620	25.000	ug/L		102		70 - 130
	MSD	1316295-85	ND	25.260	25.000	ug/L	1.4	101	20	70 - 130
Chloroethane	MS	1316295-85	ND	26.820	25.000	ug/L		107		70 - 130
	MSD	1316295-85	ND	25.530	25.000	ug/L	4.9	102	20	70 - 130
1,4-Dichlorobenzene	MS	1316295-85	ND	24.490	25.000	ug/L		98.0		70 - 130
	MSD	1316295-85	ND	24.250	25.000	ug/L	1.0	97.0	20	70 - 130
1,1-Dichloroethane	MS	1316295-85	ND	27.260	25.000	ug/L		109		70 - 130
	MSD	1316295-85	ND	26.340	25.000	ug/L	3.4	105	20	70 - 130
1,1-Dichloroethene	MS	1316295-85	ND	28.070	25.000	ug/L		112		70 - 130
	MSD	1316295-85	ND	27.130	25.000	ug/L	3.4	109	20	70 - 130
Toluene	MS	1316295-85	ND	26.720	25.000	ug/L		107		70 - 130
	MSD	1316295-85	ND	26.250	25.000	ug/L	1.8	105	20	70 - 130
Trichloroethene	MS	1316295-85	ND	30.510	25.000	ug/L		122		70 - 130
	MSD	1316295-85	ND	29.510	25.000	ug/L	3.3	118	20	70 - 130
1,2-Dichloroethane-d4 (Surrogate)	MS	1316295-85	ND	9.3700	10.000	ug/L		93.7		75 - 125
	MSD	1316295-85	ND	9.1600	10.000	ug/L	2.3	91.6		75 - 125
Toluene-d8 (Surrogate)	MS	1316295-85	ND	10.250	10.000	ug/L		102		80 - 120
	MSD	1316295-85	ND	10.130	10.000	ug/L	1.2	101		80 - 120
4-Bromofluorobenzene (Surrogate)	MS	1316295-85	ND	10.040	10.000	ug/L		100		80 - 120
	MSD	1316295-85	ND	10.040	10.000	ug/L	0	100		80 - 120

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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 09/16/2013 15:04
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Notes And Definitions

- MDL Method Detection Limit
- ND Analyte Not Detected at or above the reporting limit
- PQL Practical Quantitation Limit
- RPD Relative Percent Difference
- A01 PQL's and MDL's are raised due to sample dilution.
- V01 The Initial Calibration Verification (ICV) recovery is not within established control limits.



Date of Report: 08/29/2013

Kathy Brandt

Arcadis

2000 Powell Street 7th Floor
Emeryville, CA 94608

Project: 0752
BC Work Order: 1317587
Invoice ID: B153963

Enclosed are the results of analyses for samples received by the laboratory on 8/15/2013. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Molly Meyers
Client Service Rep

Authorized Signature

Certifications: CA ELAP #1186; NV #CA00014



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M.M.

13-17587

CHAIN OF CUSTODY FORM
 Union Oil Company of California ■ 6101 Bollinger Canyon Road ■ San Ramon, CA 94583

COC 1 of 3

Union Oil Site ID: <u>0752</u>				Union Oil Consultant: <u>ARCADIS</u>				ANALYSES REQUIRED										
Site Global ID: <u>T0600101486</u>				Consultant Contact: <u>KATHERINE BRANDT</u>				TPH - Diesel by EPA 8015 TPH - G by <u>(508)(1212-97)</u> by EPA 8260 BTX/MTBE/ <u>()</u> by EPA 8260 Ethanol by EPA 8260 EPA 8260B Fuji List with OXYS EDB/EDC (<u>8210</u>) SVOCs (<u>8210</u>) (Cd, Cr, Pb, Ni, Zn) DISSOLVED METALS (COOD) DISSOLVED IRON/NITRATE/NITRITE/ SULFATE ALKALINITY METHANE T.O.C.	Turnaround Time (TAT): Standard <input checked="" type="checkbox"/> 24 Hours <input type="checkbox"/> 48 Hours <input type="checkbox"/> 72 Hours <input type="checkbox"/>									
Site Address: <u>800 HARMISON ST., OAKLAND, CA</u>				Consultant Phone No.: <u>(510) 594-9675</u>					Special Instructions									
Site Oil PM: <u>TIMOTHY L. BISHOP</u>				Sampling Company: <u>GETTLER-RYAN</u>														
Site Oil PM Phone No.: <u>(925) 790-6463</u>				Sampled By (PRINT): <u>FRANK T., MIKE L., & JOEL</u>				Notes / Comments										
Charge Code: <u>NWRTB-0351646-0-LAB</u>				Sampler Signature: <i>Frank T.</i> BC Laboratories, Inc. Project Manager: Molly Meyers 4100 Atlas Court, Bakerfield, CA 93308 Phone No. 661-327-4911														
This is a LEGAL document. ALL fields must be filled out CORRECTLY and COMPLETELY.																		
SAMPLE ID																		
Field Point Name	Matrix	Depth	Date (yymmdd)	Sample Time	# of Containers	TPH - Diesel by EPA 8015	TPH - G by (508)(1212-97) by EPA 8260	BTX/MTBE/ () by EPA 8260	Ethanol by EPA 8260	EPA 8260B Fuji List with OXYS	EDB/EDC (8210)	SVOCs (8210)	(Cd, Cr, Pb, Ni, Zn)	DISSOLVED METALS (COOD)	DISSOLVED IRON/NITRATE/NITRITE/SULFATE ALKALINITY	METHANE	T.O.C.	
-1	QA	W-S-A	13 8 15		2													
-2	MW-1	W-S-A		1249	14	X	X	X	X	X	X	X	X	X	X	X	X	X
-3	MW-2	W-S-A		1204	11	X	X	X	X	X	X	X	X	X	X	X	X	X
-4	MW-3	W-S-A		0858	11	X	X	X	X	X	X	X	X	X	X	X	X	X
-5	MW-4	W-S-A		0935	11	X	X	X	X	X	X	X	X	X	X	X	X	X
-6	MW-5	W-S-A		1107	11	X	X	X	X	X	X	X	X	X	X	X	X	X
-7	MW-6	W-S-A		1014	11	X	X	X	X	X	X	X	X	X	X	X	X	X
-8	MW-7	W-S-A		0805	11	X	X	X	X	X	X	X	X	X	X	X	X	X
-9	MW-8	W-S-A		0725	11	X	X	X	X	X	X	X	X	X	X	X	X	X
-10	A-MW-1	W-S-A		1200	11	X	X	X	X	X	X	X	X	X	X	X	X	X
-11	A-MW-2	W-S-A		1105	11	X	X	X	X	X	X	X	X	X	X	X	X	X
-12	A-MW-3	W-S-A		1005	11	X	X	X	X	X	X	X	X	X	X	X	X	X
Relinquished By			Company	Date / Time:		Relinquished By			Company	Date / Time:		Relinquished By			Company	Date / Time:		
<i>Frank T.</i>			<u>G-R</u>	<u>8.15.13 1530</u>		<i>[Signature]</i>			<u>GR</u>	<u>08-15-13 1530</u>		<i>[Signature]</i>			<u>Nancy Bogan</u>	<u>BCLAB 8-15-13 1830</u>		
Received By			Company	Date / Time:		Received By			Company	Date / Time:		Received By			Company	Date / Time:		
<i>[Signature]</i>			<u>[Signature]</u>	<u>08-15-13 1530</u>		<i>[Signature]</i>			<u>Nancy Bogan</u>	<u>BCLAB 8-15-13 1530</u>		<i>[Signature]</i>			<u>[Signature]</u>	<u>BCLAB 8-15-13 18:30</u>		

REL. [Signature] 8-15-13 22:35
 Rec: SAS 8-15-13 2235



BC Laboratories, Inc.

13-17587

CHAIN OF CUSTODY FORM
Union Oil Company of California ■ 6101 Bollinger Canyon Road ■ San Ramon, CA 94583

COC 2 of 3

Form containing site information, analyst details, sample list, and analysis results. Includes fields for Union Oil Site ID, Consultant, Site Address, and a table of samples with their respective analysis results.

Handwritten notes and signatures at the bottom of the form, including 'REL. 8-15-13 22:35' and 'Rec: SAS 2235 8/15/13'.

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13-17587

CHAIN OF CUSTODY FORM

Union Oil Company of California ■ 6101 Bollinger Canyon Road ■ San Ramon, CA 94583

COC 3 of 3

Union Oil Site ID: 0752			Union Oil Consultant: ARCADIS			ANALYSES REQUIRED											
Site Global ID: T060010148L			Consultant Contact: KATHERINE BRANDT			TPH - Diesel by EPA 8015	TPH - G by (C6-C12)(8015)	BTEX/MTBE by EPA 8260B	Ethanol by EPA 8260B	EPA 8260B Full List with OXYS	EDC (8260)	Turnaround Time (TAT): Standard <input checked="" type="checkbox"/> 24 Hours <input type="checkbox"/> 48 Hours <input type="checkbox"/> 72 Hours <input type="checkbox"/>					
Site Address: 800 HANNISON ST., OAKLAND, CA			Consultant Phone No.: (510) 596-9675									Special Instructions					
Union Oil PM: TIMOTHY L. BISHOP			Sampling Company: (SETTLER RYAN)									Project Manager: Molly Meyers 4100 Atlas Court, Bakersfield, CA 93308 Phone No. 661-327-4911					
Union Oil PM Phone No.: (925) 790-6463			Sampled By (PRINT): Frank J., Mike L. & Joel														
Charge Code: NWRB-0 351646-0-LAB						Sampler Signature: <i>[Signature]</i>											
This is a LEGAL document. ALL fields must be filled out CORRECTLY and COMPLETELY.																	
SAMPLE ID				Sample Time	# of Containers	TPH - Diesel by EPA 8015	TPH - G by (C6-C12)(8015)	BTEX/MTBE by EPA 8260B	Ethanol by EPA 8260B	EPA 8260B Full List with OXYS	EDC (8260)	Notes / Comments					
Field Point Name	Matrix	Depth	Date (yyymmdd)														
-25 MP-1	W-S-A		13-8-15	1205	6												
	W-S-A																
	W-S-A																
	W-S-A																
	W-S-A																
	W-S-A																
	W-S-A																
	W-S-A																
	W-S-A																
	W-S-A																
	W-S-A																
Relinquished By: <i>[Signature]</i> G-N			Date / Time: 8-15-13			Relinquished By: <i>[Signature]</i> GR			Date / Time: 08-15-13 1530			Relinquished By: <i>[Signature]</i> Mary Boyan BCLAB			Date / Time: 8-15-13 1830		
Received By: <i>[Signature]</i> GR			Date / Time: 08-15-13 1530			Received By: <i>[Signature]</i> Mary Boyan BCLAB			Date / Time: 8-15-13 1530			Received By: <i>[Signature]</i> BCLAB			Date / Time: 8-15-13 18:30		
						REL. <i>[Signature]</i> 8-15-13 22:35						Rec: SAS 8-15-13 2235					

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. All results listed in this report are for the exclusive use of the submitting party. BC Laboratories, Inc. assumes no responsibility for report alteration, separation, detachment or third party interpretation. 4100 Atlas Court Bakersfield, CA 93308 (661) 327-4911 FAX (661) 327-1918 www.bclabs.com Page 8 of 167



Chain of Custody and Cooler Receipt Form for 1317587 Page 4 of 12

BC LABORATORIES INC. COOLER RECEIPT FORM Rev. No. 15 07/01/13 Page 1 of 9

Submission #: 13-17587

SHIPPING INFORMATION: Federal Express, UPS, Hand Delivery, BC Lab Field Service, Other. SHIPPING CONTAINER: Ice Chest, None, Box, Other. FREE LIQUID: YES, NO.

Refrigerant: Ice, Blue Ice, None, Other. Comments:

Custody Seals: Ice Chest, Containers, None. Intact? Yes, No.

All samples received? Yes, No. All samples containers intact? Yes, No. Description(s) match COC? Yes, No.

COC Received: YES, NO. Emissivity: 0.97. Container: Voa. Thermometer ID: 207. Date/Time: 8.15.13 2230. Temperature: (A) 1.9, (C) 1.4. Analyst Init: SAS.

Table with columns for SAMPLE CONTAINERS and SAMPLE NUMBERS (1-10). Rows include various chemical and biological tests like GENERAL MINERAL, TOX, and EPA methods.

Comments: Plate Numbering Completed By: MWL Date/Time: 8/16/13 @ 0810 Actual / C = Corrected

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Chain of Custody and Cooler Receipt Form for 1317587 Page 5 of 12

LABORATORIES INC. COOLER RECEIPT FORM Rev. No. 15 07/01/13 Page 2 of 9 Submission #: 13-17587

SHIPPING INFORMATION: Federal Express, UPS, Hand Delivery, Lab Field Service, Other. SHIPPING CONTAINER: Ice Chest, None, Box, Other. FREE LIQUID: YES, NO.

Refrigerant: Ice, Blue Ice, None, Other. Comments:

Custody Seals: Ice Chest, Containers, None. Intact? Yes, No.

1 samples received? Yes, No. All samples containers intact? Yes, No. Description(s) match COC? Yes, No.

COC Received: YES, NO. Emissivity: 0.97, Container: Vocs, Thermometer ID: 207, Date/Time: 8.15.13 2230, Temperature: (A) 1.4 C, (C) 1.4 C, Analyst Init: SAS

Table with columns for SAMPLE CONTAINERS and SAMPLE NUMBERS (1-10). Rows include: GENERAL MINERAL/GENERAL PE UNPRESERVED, INORGANIC CHEMICAL METALS, CYANIDE, NITROGEN FORMS, TOTAL SULFIDE, NITRATE/NITRITE, TOTAL ORGANIC CARBON, TOX, CHEMICAL OXYGEN DEMAND, PHENOLICS, VOA VIAL TRAVEL BLANK, VOA VIAL (A 16), EPA 413.1, 413.2, 418.1, ODOR, BIOLOGICAL, TERIOLOGICAL, VOA VIAL 500 ml/pres. (B 3), EPA 508/608/8080, PA 515.1/8150, PA 525, PA 525 TRAVEL BLANK, EPA 547, EPA 531.1, PA 548, PA 549, PA 632, PA 8015M, FIBER, JAR, SLEEVE, JAL, TIC BAG, QUS IRON, RE, T KPT, Canister.

Numbering Completed By: [Signature] Date/Time: 8/15/13 20:10



Chain of Custody and Cooler Receipt Form for 1317587 Page 6 of 12

LABORATORIES INC. COOLER RECEIPT FORM Rev. No. 15 07/01/13 Page 3 of 9

Submission #: 13-17587

SHIPPING INFORMATION: Federal Express, UPS, Hand Delivery, Lab Field Service, Other. SHIPPING CONTAINER: Ice Chest, None, Box, Other. FREE LIQUID: YES, NO.

Refrigerant: Ice, Blue Ice, None, Other. Comments:

Leak Seals: Ice Chest, Containers, None. Intact? Yes, No.

Samples received? Yes, No. All samples containers intact? Yes, No. Description(s) match COC? Yes, No.

COC Received: YES, NO. Emissivity: 0.97, Container: Vacu, Thermometer ID: 207, Date/Time: 8.15.13 2230, Temperature: (A) 1.9, (C) 1.4, Analyst Init: SAS

Table with columns for Sample Containers and Sample Numbers (2-1 to 2-10). Rows include various chemical and physical test categories.

Numbering Completed By: [Signature] Date/Time: 8/15/13 20:10



Chain of Custody and Cooler Receipt Form for 1317587 Page 7 of 12

BC LABORATORIES INC. COOLER RECEIPT FORM Rev. No. 15 07/01/13 Page 4 of 9

Submission #: 13-17587

SHIPPING INFORMATION
 Federal Express UPS Hand Delivery
 BC Lab Field Service Other (Specify) _____

SHIPPING CONTAINER
 Ice Chest None Box
 Other (Specify) _____

FREE LIQUID
 YES NO

Refrigerant: Ice Blue Ice None Other Comments: _____

Custody Seals Ice Chest Containers None Comments: _____
 Intact? Yes No Intact? Yes No

All samples received? Yes No All samples containers intact? Yes No Description(s) match COC? Yes No

COC Received
 YES NO

Emissivity: 0.98 Container: PE Thermometer ID: 207 Date/Time 8.15.13 2230
 Temperature: (A) 1.3 °C / (C) 1.4 °C Analyst Init SAS

SAMPLE CONTAINERS	SAMPLE NUMBERS									
	1	2	3	4	5	6	7	8	9	10
GENERAL MINERAL/ GENERAL		C	C			C				
PE UNPRESERVED		D								
INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS										
CYANIDE										
NITROGEN FORMS										
TOTAL SULFIDE										
NITRATE/NITRITE										
TOTAL ORGANIC CARBON		G	D			D				
TOX										
CHEMICAL OXYGEN DEMAND										
PHENOLICS										
ml VOA VIAL TRAVEL BLANK										
ml VOA VIAL										
EPA 413.1, 413.2, 418.1										
ODOR										
DILOGICAL										
CTERIOLOGICAL										
ml VOA VIAL- 504										
EPA 508/608/8080										
EPA 515.1/8150										
EPA 525										
EPA 525 TRAVEL BLANK										
ml EPA 547										
ml EPA 531.1										
EPA 548										
EPA 549										
EPA 632										
EPA 8015M										
AMBER		EF								
JAR										
Z. JAR										
SLEEVE										
VIAL										
STIC BAG										
ROUS IRON										
ORE										
RT KIT										
ma Canister										

Comments: _____
 Date Numbering Completed By: MW Date/Time: 8/16/13 @ 0810
 Actual / C = Corrected



Chain of Custody and Cooler Receipt Form for 1317587 Page 8 of 12

C. LABORATORIES INC. COOLER RECEIPT FORM Rev. No. 15 07/01/13 Page 5 of 9

Submission #: 13-17587

SHIPPING INFORMATION: Federal Express, UPS, Hand Delivery, C Lab Field Service. SHIPPING CONTAINER: Ice Chest, None, Box, Other. FREE LIQUID: YES, NO.

Refrigerant: Ice, Blue Ice, None, Other. Comments:

Custody Seals: Ice Chest, Containers, None. Intact? Yes, No.

1 samples received? Yes, No. All samples containers intact? Yes, No. Description(s) match COC? Yes, No.

COC Received: YES, NO. Emissivity: 0.98. Container: QPE. Thermometer ID: 207. Date/Time: 8.15.13 2230. Temperature: (A) 1.6 C, (C) 1.7 C. Analyst Init: SAS.

Table with columns for SAMPLE CONTAINERS and SAMPLE NUMBERS (1-10). Rows include various test types like GENERAL MINERAL, INORGANIC CHEMICAL METALS, etc. with handwritten 'C' and 'D' marks.

Comments: Sample Numbering Completed By: [Signature] Date/Time: 8/16/13 @ 0810. Actual / C = Corrected

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Chain of Custody and Cooler Receipt Form for 1317587 Page 9 of 12

BC LABORATORIES INC. COOLER RECEIPT FORM Rev. No. 15 07/01/13 Page 6 of 9 Submission #: 13-17587

SHIPPING INFORMATION: Federal Express, UPS, Hand Delivery, BC Lab Field Service. SHIPPING CONTAINER: Ice Chest, None, Box. FREE LIQUID: YES, NO.

Refrigerant: Ice, Blue Ice, None, Other. Comments:

Custody Seals: Ice Chest, Containers, None. Intact? Yes, No.

All samples received? Yes, No. All samples containers intact? Yes, No. Description(s) match COC? Yes, No.

COC Received: YES, NO. Emissivity: 0.98. Container: D+ PE. Thermometer ID: 207. Date/Time: 8.15.13 2230. Temperature: (A) 1.6, (C) 1.7. Analyst Init: SAS.

Table with columns: SAMPLE CONTAINERS, SAMPLE NUMBERS (A7-A20). Rows include: GENERAL MINERAL/GENERAL, PE UNPRESERVED, INORGANIC CHEMICAL METALS, CYANIDE, NITROGEN FORMS, TOTAL SULFIDE, NITRATE/NITRITE, TOTAL ORGANIC CARBON, TOX, CHEMICAL OXYGEN DEMAND, PHENOLICS, VOA VIAL TRAVEL BLANK, VOA VIAL, EPA 413.1, 413.2, 418.1, ODOR, BIOLOGICAL, CTERIOLOGICAL, VOA VIAL- 504, EPA 508/608/8080, EPA 515.1/8150, EPA 525, EPA 525 TRAVEL BLANK, EPA 547, EPA 531.1, EPA 548, EPA 549, EPA 632, EPA 8015M, AMBER, JAR, SLEEVE, VIAL, STIC BAG, ROUS IRON, ORE, RT KIT, Canister.

Comments: Date/Time: 8/16/13 @ 0810. File Numbering Completed By: MWI. Actual / C = Corrected.

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Chain of Custody and Cooler Receipt Form for 1317587 Page 10 of 12

BC LABORATORIES INC. COOLER RECEIPT FORM Rev. No. 15 07/01/13 Page 7 Of 9 Submission #: 13-17587

SHIPPING INFORMATION Federal Express UPS Hand Delivery 3C Lab Field Service Other (Specify) SHIPPING CONTAINER Ice Chest None Box Other (Specify) FREE LIQUID YES NO

Refrigerant: Ice Blue Ice None Other Comments: Custody Seals Ice Chest Containers None Comments: Intact? Yes No

All samples received? Yes No All samples containers intact? Yes No Description(s) match COC? Yes No

COC Received YES NO Emissivity: 0.95 Container: DAmbe Thermometer ID: 207 Date/Time 8.15.13 2230 Temperature: (A) 1.3 °C (C) 1.4 °C Analyst Init SAS

Table with columns for SAMPLE CONTAINERS and SAMPLE NUMBERS (10-19). Rows include various chemical and biological test categories like GENERAL MINERAL, INORGANIC CHEMICAL METALS, NITROGEN FORMS, etc.

Comments: e Numbering Completed By: MWL Date/Time: 8/16/13 @ 0810 Actual / C = Corrected



Chain of Custody and Cooler Receipt Form for 1317587 Page 11 of 12

BC LABORATORIES, INC. COOLER RECEIPT FORM Rev. No. 15 07/01/13 Page 6 of 7

Submission #: 13-17587

SHIPPING INFORMATION Federal Express [] UPS [] Hand Delivery BC Lab Field Service [x] Other [] (Specify)

SHIPPING CONTAINER Ice Chest [x] None [] Box [] Other [] (Specify)

FREE LIQUID YES [] NO []

Refrigerant: Ice [x] Blue Ice [] None [] Other [] Comments:

Custody Seals Ice Chest [] Containers [] None [x] Comments: Intact? Yes [] No []

All samples received? Yes [] No [] All samples containers intact? Yes [] No [] Description(s) match COC? Yes [] No []

COC Received YES [x] NO []

Emissivity: 0.95 Container: Amber Thermometer ID: 207

Date/Time 8.15.13 2230

Temperature: (A) 1.3 °C (C) 1.4 °C

Analyst Init SAS

Table with columns for Sample Containers and Sample Numbers (1-10). Rows include various test types like QT GENERAL MINERAL, PT PE UNPRESERVED, etc. Some cells contain 'D'.

Comments: Sample Numbering Completed By: MWL Date/Time: 8/16/13 6:08:10 = Actual / C = Corrected

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Chain of Custody and Cooler Receipt Form for 1317587 Page 12 of 12

BC LABORATORIES INC. COOLER RECEIPT FORM Rev. No. 15 07/01/13 Page 9 of 9

Submission #: 13-17587

SHIPPING INFORMATION: Federal Express, UPS, Hand Delivery, IC Lab Field Service, Other. SHIPPING CONTAINER: Ice Chest, None, Box, Other. FREE LIQUID: YES, NO.

Refrigerant: Ice, Blue Ice, None, Other. Comments:

Custody Seals: Ice Chest, Containers, None. Intact? Yes, No.

All samples received? Yes, No. All samples containers intact? Yes, No. Description(s) match COC? Yes, No.

COC Received: YES, NO. Emissivity: 0.98. Container: QPE. Thermometer ID: 207. Date/Time: 8/15/13 2230. Temperature: (A) 1.7, (C) 1.8. Analyst Init: SAS.

Table with columns for SAMPLE CONTAINERS and SAMPLE NUMBERS (1-10). Rows include various chemical and biological test categories.

Comments: Sample Numbering Completed By: MWL Date/Time: 8/16/13 0810 Actual / C = Corrected

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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information		
1317587-01	COC Number:	---	Receive Date: 08/15/2013 22:35
	Project Number:	0752	Sampling Date: 08/15/2013 00:00
	Sampling Location:	---	Sample Depth: ---
	Sampling Point:	QA-W-130815	Lab Matrix: Water
	Sampled By:	GRD	Sample Type: Blank Water
			Delivery Work Order:
			Global ID: T0600101486
			Location ID (FieldPoint): QA
			Matrix: W
			Sample QC Type (SACode): CS
		Cooler ID:	
1317587-02	COC Number:	---	Receive Date: 08/15/2013 22:35
	Project Number:	0752	Sampling Date: 08/15/2013 12:49
	Sampling Location:	---	Sample Depth: ---
	Sampling Point:	MW-1-W-130815	Lab Matrix: Water
	Sampled By:	GRD	Sample Type: Water
			Metal Analysis: 2-Lab Filtered and Acidified
			Delivery Work Order:
			Global ID: T0600101486
			Location ID (FieldPoint): MW-1
			Matrix: W
		Sample QC Type (SACode): CS	
		Cooler ID:	
1317587-03	COC Number:	---	Receive Date: 08/15/2013 22:35
	Project Number:	0752	Sampling Date: 08/15/2013 12:04
	Sampling Location:	---	Sample Depth: ---
	Sampling Point:	MW-2-W-130815	Lab Matrix: Water
	Sampled By:	GRD	Sample Type: Water
			Metal Analysis: 2-Lab Filtered and Acidified
			Delivery Work Order:
			Global ID: T0600101486
			Location ID (FieldPoint): MW-2
			Matrix: W
		Sample QC Type (SACode): CS	
		Cooler ID:	



Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information
------------	---------------------------

1317587-04	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MW-3-W-130815 Sampled By: GRD	Receive Date: 08/15/2013 22:35 Sampling Date: 08/15/2013 08:58 Sample Depth: --- Lab Matrix: Water Sample Type: Water Metal Analysis: 2-Lab Filtered and Acidified Delivery Work Order: Global ID: T0600101486 Location ID (FieldPoint): MW-3 Matrix: W Sample QC Type (SACode): CS Cooler ID:
-------------------	--	--

1317587-05	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MW-4-W-130815 Sampled By: GRD	Receive Date: 08/15/2013 22:35 Sampling Date: 08/15/2013 09:35 Sample Depth: --- Lab Matrix: Water Sample Type: Water Metal Analysis: 2-Lab Filtered and Acidified Delivery Work Order: Global ID: T0600101486 Location ID (FieldPoint): MW-4 Matrix: W Sample QC Type (SACode): CS Cooler ID:
-------------------	--	--

1317587-06	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MW-5-W-130815 Sampled By: GRD	Receive Date: 08/15/2013 22:35 Sampling Date: 08/15/2013 11:07 Sample Depth: --- Lab Matrix: Water Sample Type: Water Metal Analysis: 2-Lab Filtered and Acidified Delivery Work Order: Global ID: T0600101486 Location ID (FieldPoint): MW-5 Matrix: W Sample QC Type (SACode): CS Cooler ID:
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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information
------------	---------------------------

1317587-07	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MW-6-W-130815 Sampled By: GRD	Receive Date: 08/15/2013 22:35 Sampling Date: 08/15/2013 10:14 Sample Depth: --- Lab Matrix: Water Sample Type: Water Metal Analysis: 2-Lab Filtered and Acidified Delivery Work Order: Global ID: T0600101486 Location ID (FieldPoint): MW-6 Matrix: W Sample QC Type (SACode): CS Cooler ID:
-------------------	--	--

1317587-08	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MW-7-W-130815 Sampled By: GRD	Receive Date: 08/15/2013 22:35 Sampling Date: 08/15/2013 08:05 Sample Depth: --- Lab Matrix: Water Sample Type: Water Metal Analysis: 2-Lab Filtered and Acidified Delivery Work Order: Global ID: T0600101486 Location ID (FieldPoint): MW-7 Matrix: W Sample QC Type (SACode): CS Cooler ID:
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1317587-09	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MW-8-W-130815 Sampled By: GRD	Receive Date: 08/15/2013 22:35 Sampling Date: 08/15/2013 07:25 Sample Depth: --- Lab Matrix: Water Sample Type: Water Metal Analysis: 2-Lab Filtered and Acidified Delivery Work Order: Global ID: T0600101486 Location ID (FieldPoint): MW-8 Matrix: W Sample QC Type (SACode): CS Cooler ID:
-------------------	--	--



Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information
------------	---------------------------

1317587-10	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: A-MW-1-W-130815 Sampled By: GRD	Receive Date: 08/15/2013 22:35 Sampling Date: 08/15/2013 12:00 Sample Depth: --- Lab Matrix: Water Sample Type: Water Metal Analysis: 2-Lab Filtered and Acidified Delivery Work Order: Global ID: T0600101486 Location ID (FieldPoint): A-MW-1 Matrix: W Sample QC Type (SACode): CS Cooler ID:
-------------------	--	--

1317587-11	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: A-MW-2-W-130815 Sampled By: GRD	Receive Date: 08/15/2013 22:35 Sampling Date: 08/15/2013 11:05 Sample Depth: --- Lab Matrix: Water Sample Type: Water Metal Analysis: 2-Lab Filtered and Acidified Delivery Work Order: Global ID: T0600101486 Location ID (FieldPoint): A-MW-2 Matrix: W Sample QC Type (SACode): CS Cooler ID:
-------------------	--	--

1317587-12	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: A-MW-3-W-130815 Sampled By: GRD	Receive Date: 08/15/2013 22:35 Sampling Date: 08/15/2013 10:05 Sample Depth: --- Lab Matrix: Water Sample Type: Water Metal Analysis: 2-Lab Filtered and Acidified Delivery Work Order: Global ID: T0600101486 Location ID (FieldPoint): A-MW-3 Matrix: W Sample QC Type (SACode): CS Cooler ID:
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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information
------------	---------------------------

1317587-13	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: A-MW-4-W-130815 Sampled By: GRD	Receive Date: 08/15/2013 22:35 Sampling Date: 08/15/2013 12:45 Sample Depth: --- Lab Matrix: Water Sample Type: Water Metal Analysis: 2-Lab Filtered and Acidified Delivery Work Order: Global ID: T0600101486 Location ID (FieldPoint): A-MW-4 Matrix: W Sample QC Type (SACode): CS Cooler ID:
-------------------	--	--

1317587-14	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: A-MW-5-W-130815 Sampled By: GRD	Receive Date: 08/15/2013 22:35 Sampling Date: 08/15/2013 06:30 Sample Depth: --- Lab Matrix: Water Sample Type: Water Metal Analysis: 2-Lab Filtered and Acidified Delivery Work Order: Global ID: T0600101486 Location ID (FieldPoint): A-MW-5 Matrix: W Sample QC Type (SACode): CS Cooler ID:
-------------------	--	--

1317587-15	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: A-MW-6-W-130815 Sampled By: GRD	Receive Date: 08/15/2013 22:35 Sampling Date: 08/15/2013 07:20 Sample Depth: --- Lab Matrix: Water Sample Type: Water Metal Analysis: 2-Lab Filtered and Acidified Delivery Work Order: Global ID: T0600101486 Location ID (FieldPoint): A-MW-6 Matrix: W Sample QC Type (SACode): CS Cooler ID:
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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information
------------	---------------------------

1317587-16	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: A-MW-7-W-130815 Sampled By: GRD	Receive Date: 08/15/2013 22:35 Sampling Date: 08/15/2013 08:10 Sample Depth: --- Lab Matrix: Water Sample Type: Water Metal Analysis: 2-Lab Filtered and Acidified Delivery Work Order: Global ID: T0600101486 Location ID (FieldPoint): A-MW-7 Matrix: W Sample QC Type (SACode): CS Cooler ID:
-------------------	--	--

1317587-17	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: S-MW-1-W-130815 Sampled By: GRD	Receive Date: 08/15/2013 22:35 Sampling Date: 08/15/2013 08:50 Sample Depth: --- Lab Matrix: Water Sample Type: Water Metal Analysis: 2-Lab Filtered and Acidified Delivery Work Order: Global ID: T0600101486 Location ID (FieldPoint): S-MW-1 Matrix: W Sample QC Type (SACode): CS Cooler ID:
-------------------	--	--

1317587-18	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: S-MW-2-W-130815 Sampled By: GRD	Receive Date: 08/15/2013 22:35 Sampling Date: 08/15/2013 10:10 Sample Depth: --- Lab Matrix: Water Sample Type: Water Metal Analysis: 2-Lab Filtered and Acidified Delivery Work Order: Global ID: T0600101486 Location ID (FieldPoint): S-MW-2 Matrix: W Sample QC Type (SACode): CS Cooler ID:
-------------------	--	--



Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information		
1317587-19	COC Number:	---	Receive Date: 08/15/2013 22:35
	Project Number:	0752	Sampling Date: 08/15/2013 10:50
	Sampling Location:	---	Sample Depth: ---
	Sampling Point:	S-MW-3-W-130815	Lab Matrix: Water
	Sampled By:	GRD	Sample Type: Water
			Metal Analysis: 2-Lab Filtered and Acidified
			Delivery Work Order:
			Global ID: T0600101486
			Location ID (FieldPoint): S-MW-3
			Matrix: W
			Sample QC Type (SACode): CS
			Cooler ID:
	1317587-20	COC Number:	---
Project Number:		0752	Sampling Date: 08/15/2013 09:05
Sampling Location:		---	Sample Depth: ---
Sampling Point:		S-MW-4-W-130815	Lab Matrix: Water
Sampled By:		GRD	Sample Type: Water
			Metal Analysis: 2-Lab Filtered and Acidified
			Delivery Work Order:
			Global ID: T0600101486
			Location ID (FieldPoint): S-MW-4
			Matrix: W
			Sample QC Type (SACode): CS
			Cooler ID:
1317587-21		COC Number:	---
	Project Number:	0752	Sampling Date: 08/15/2013 12:45
	Sampling Location:	---	Sample Depth: ---
	Sampling Point:	S-MW-5-W-130815	Lab Matrix: Water
	Sampled By:	GRD	Sample Type: Water
			Metal Analysis: 2-Lab Filtered and Acidified
			Delivery Work Order:
			Global ID: T0600101486
			Location ID (FieldPoint): S-MW-5
			Matrix: W
			Sample QC Type (SACode): CS
			Cooler ID:

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information
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1317587-22	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: S-MW-6-W-130815 Sampled By: GRD	Receive Date: 08/15/2013 22:35 Sampling Date: 08/15/2013 11:30 Sample Depth: --- Lab Matrix: Water Sample Type: Water Metal Analysis: 2-Lab Filtered and Acidified Delivery Work Order: Global ID: T0600101486 Location ID (FieldPoint): S-MW-6 Matrix: W Sample QC Type (SACode): CS Cooler ID:
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1317587-23	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: S-EW-1-W-130815 Sampled By: GRD	Receive Date: 08/15/2013 22:35 Sampling Date: 08/15/2013 08:12 Sample Depth: --- Lab Matrix: Water Sample Type: Water Metal Analysis: 2-Lab Filtered and Acidified Delivery Work Order: Global ID: T0600101486 Location ID (FieldPoint): S-EW-1 Matrix: W Sample QC Type (SACode): CS Cooler ID:
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1317587-24	COC Number: --- Project Number: 0752 Sampling Location: --- Sampling Point: MPE-1-W-130815 Sampled By: GRD	Receive Date: 08/15/2013 22:35 Sampling Date: 08/15/2013 09:30 Sample Depth: --- Lab Matrix: Water Sample Type: Water Delivery Work Order: Global ID: T0600101486 Location ID (FieldPoint): MPE-1 Matrix: W Sample QC Type (SACode): CS Cooler ID:
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Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information
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1317587-25	COC Number: ---	Receive Date: 08/15/2013 22:35
	Project Number: 0752	Sampling Date: 08/15/2013 12:05
	Sampling Location: ---	Sample Depth: ---
	Sampling Point: MP-1-W-130815	Lab Matrix: Water
	Sampled By: GRD	Sample Type: Water
		Delivery Work Order:
		Global ID: T0600101486
		Location ID (FieldPoint): MP-1
		Matrix: W
		Sample QC Type (SACode): CS
		Cooler ID:



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-01	Client Sample Name: 0752, QA-W-130815, 8/15/2013 12:00:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50	EPA-8260B	ND		1
Methyl t-butyl ether	ND	ug/L	0.50	EPA-8260B	ND		1
Toluene	ND	ug/L	0.50	EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0	EPA-8260B	ND		1
Ethanol	ND	ug/L	250	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	102	%	75 - 125 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	94.9	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	103	%	80 - 120 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run		Analyst	Instrument	Dilution	QC
			Date/Time					Batch ID
1	EPA-8260B	08/19/13	08/19/13	11:03	EAR	MS-V12	1	BWH1433

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-01	Client Sample Name: 0752, QA-W-130815, 8/15/2013 12:00:00AM						
Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	ND	ug/L	50	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	103	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/23/13 01:52	jjh	GC-V9	1	BWH1804



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-02	Client Sample Name: 0752, MW-1-W-130815, 8/15/2013 12:49:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50	EPA-8260B	ND		1
Methyl t-butyl ether	ND	ug/L	0.50	EPA-8260B	ND		1
Toluene	ND	ug/L	0.50	EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0	EPA-8260B	ND		1
Ethanol	ND	ug/L	250	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	100	%	75 - 125 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	86.6	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	97.5	%	80 - 120 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run		Analyst	Instrument	Dilution	QC
			Date/Time					Batch ID
1	EPA-8260B	08/19/13	08/19/13	11:20	EAR	MS-V12	1	BWH1433



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

BCL Sample ID: 1317587-02	Client Sample Name: 0752, MW-1-W-130815, 8/15/2013 12:49:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Acenaphthene	ND	ug/L	2.0	EPA-8270C	ND		1
Acenaphthylene	ND	ug/L	2.0	EPA-8270C	ND		1
Aldrin	ND	ug/L	2.0	EPA-8270C	ND		1
Aniline	ND	ug/L	5.0	EPA-8270C	ND		1
Anthracene	ND	ug/L	2.0	EPA-8270C	ND		1
Benidine	ND	ug/L	20	EPA-8270C	ND		1
Benzo[a]anthracene	ND	ug/L	2.0	EPA-8270C	ND		1
Benzo[b]fluoranthene	ND	ug/L	2.0	EPA-8270C	ND		1
Benzo[k]fluoranthene	ND	ug/L	2.0	EPA-8270C	ND		1
Benzo[a]pyrene	ND	ug/L	2.0	EPA-8270C	ND		1
Benzo[g,h,i]perylene	ND	ug/L	2.0	EPA-8270C	ND		1
Benzoic acid	ND	ug/L	10	EPA-8270C	ND		1
Benzyl alcohol	ND	ug/L	2.0	EPA-8270C	ND		1
Benzyl butyl phthalate	ND	ug/L	2.0	EPA-8270C	ND		1
alpha-BHC	ND	ug/L	2.0	EPA-8270C	ND		1
beta-BHC	ND	ug/L	2.0	EPA-8270C	ND		1
delta-BHC	ND	ug/L	2.0	EPA-8270C	ND		1
gamma-BHC (Lindane)	ND	ug/L	2.0	EPA-8270C	ND		1
bis(2-Chloroethoxy)methane	ND	ug/L	2.0	EPA-8270C	ND		1
bis(2-Chloroethyl) ether	ND	ug/L	2.0	EPA-8270C	ND		1
bis(2-Chloroisopropyl) ether	ND	ug/L	2.0	EPA-8270C	ND		1
bis(2-Ethylhexyl)phthalate	ND	ug/L	5.0	EPA-8270C	ND		1
4-Bromophenyl phenyl ether	ND	ug/L	2.0	EPA-8270C	ND		1
4-Chloroaniline	ND	ug/L	2.0	EPA-8270C	ND		1
2-Chloronaphthalene	ND	ug/L	2.0	EPA-8270C	ND		1
4-Chlorophenyl phenyl ether	ND	ug/L	2.0	EPA-8270C	ND		1
Chrysene	ND	ug/L	2.0	EPA-8270C	ND		1
4,4'-DDD	ND	ug/L	2.0	EPA-8270C	ND		1
4,4'-DDE	ND	ug/L	3.0	EPA-8270C	ND		1
4,4'-DDT	ND	ug/L	2.0	EPA-8270C	ND		1
Dibenzo[a,h]anthracene	ND	ug/L	3.0	EPA-8270C	ND		1
Dibenzofuran	ND	ug/L	2.0	EPA-8270C	ND		1
1,2-Dichlorobenzene	ND	ug/L	2.0	EPA-8270C	ND		1

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

BCL Sample ID: 1317587-02	Client Sample Name: 0752, MW-1-W-130815, 8/15/2013 12:49:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
1,3-Dichlorobenzene	ND	ug/L	2.0	EPA-8270C	ND		1
1,4-Dichlorobenzene	ND	ug/L	2.0	EPA-8270C	ND		1
3,3-Dichlorobenzidine	ND	ug/L	10	EPA-8270C	ND		1
Dieldrin	ND	ug/L	3.0	EPA-8270C	ND		1
Diethyl phthalate	ND	ug/L	2.0	EPA-8270C	ND		1
Dimethyl phthalate	ND	ug/L	2.0	EPA-8270C	ND		1
Di-n-butyl phthalate	ND	ug/L	2.0	EPA-8270C	ND		1
2,4-Dinitrotoluene	ND	ug/L	2.0	EPA-8270C	ND		1
2,6-Dinitrotoluene	ND	ug/L	2.0	EPA-8270C	ND		1
Di-n-octyl phthalate	ND	ug/L	2.0	EPA-8270C	ND		1
1,2-Diphenylhydrazine	ND	ug/L	2.0	EPA-8270C	ND		1
Endosulfan I	ND	ug/L	10	EPA-8270C	ND		1
Endosulfan II	ND	ug/L	10	EPA-8270C	ND		1
Endosulfan sulfate	ND	ug/L	3.0	EPA-8270C	ND		1
Endrin	ND	ug/L	2.0	EPA-8270C	ND		1
Endrin aldehyde	ND	ug/L	10	EPA-8270C	ND		1
Fluoranthene	ND	ug/L	2.0	EPA-8270C	ND		1
Fluorene	ND	ug/L	2.0	EPA-8270C	ND		1
Heptachlor	ND	ug/L	2.0	EPA-8270C	ND		1
Heptachlor epoxide	ND	ug/L	2.0	EPA-8270C	ND		1
Hexachlorobenzene	ND	ug/L	2.0	EPA-8270C	ND		1
Hexachlorobutadiene	ND	ug/L	2.0	EPA-8270C	ND		1
Hexachlorocyclopentadiene	ND	ug/L	2.0	EPA-8270C	ND		1
Hexachloroethane	ND	ug/L	2.0	EPA-8270C	ND		1
Indeno[1,2,3-cd]pyrene	ND	ug/L	2.0	EPA-8270C	ND		1
Isophorone	ND	ug/L	2.0	EPA-8270C	ND		1
2-Methylnaphthalene	ND	ug/L	2.0	EPA-8270C	ND		1
Naphthalene	ND	ug/L	2.0	EPA-8270C	ND		1
2-Naphthylamine	ND	ug/L	20	EPA-8270C	ND		1
2-Nitroaniline	ND	ug/L	2.0	EPA-8270C	ND		1
3-Nitroaniline	ND	ug/L	2.0	EPA-8270C	ND		1
4-Nitroaniline	ND	ug/L	5.0	EPA-8270C	ND		1
Nitrobenzene	ND	ug/L	2.0	EPA-8270C	ND		1

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Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

BCL Sample ID: 1317587-02	Client Sample Name: 0752, MW-1-W-130815, 8/15/2013 12:49:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
N-Nitrosodimethylamine	ND	ug/L	2.0	EPA-8270C	ND		1
N-Nitrosodi-N-propylamine	ND	ug/L	2.0	EPA-8270C	ND		1
N-Nitrosodiphenylamine	ND	ug/L	2.0	EPA-8270C	ND		1
Phenanthrene	ND	ug/L	2.0	EPA-8270C	ND		1
Pyrene	ND	ug/L	2.0	EPA-8270C	ND		1
1,2,4-Trichlorobenzene	ND	ug/L	2.0	EPA-8270C	ND		1
4-Chloro-3-methylphenol	ND	ug/L	5.0	EPA-8270C	ND		1
2-Chlorophenol	ND	ug/L	2.0	EPA-8270C	ND		1
2,4-Dichlorophenol	ND	ug/L	2.0	EPA-8270C	ND		1
2,4-Dimethylphenol	ND	ug/L	2.0	EPA-8270C	ND		1
4,6-Dinitro-2-methylphenol	ND	ug/L	10	EPA-8270C	ND		1
2,4-Dinitrophenol	ND	ug/L	10	EPA-8270C	ND		1
2-Methylphenol	ND	ug/L	2.0	EPA-8270C	ND		1
3- & 4-Methylphenol	ND	ug/L	2.0	EPA-8270C	ND		1
2-Nitrophenol	ND	ug/L	2.0	EPA-8270C	ND		1
4-Nitrophenol	ND	ug/L	2.0	EPA-8270C	ND		1
Pentachlorophenol	ND	ug/L	10	EPA-8270C	ND		1
Phenol	ND	ug/L	2.0	EPA-8270C	ND		1
2,4,5-Trichlorophenol	ND	ug/L	5.0	EPA-8270C	ND		1
2,4,6-Trichlorophenol	ND	ug/L	5.0	EPA-8270C	ND		1
2-Fluorophenol (Surrogate)	42.7	%	30 - 120 (LCL - UCL)	EPA-8270C			1
Phenol-d5 (Surrogate)	30.4	%	12 - 110 (LCL - UCL)	EPA-8270C			1
Nitrobenzene-d5 (Surrogate)	65.5	%	60 - 130 (LCL - UCL)	EPA-8270C			1
2-Fluorobiphenyl (Surrogate)	77.1	%	55 - 125 (LCL - UCL)	EPA-8270C			1
2,4,6-Tribromophenol (Surrogate)	80.2	%	40 - 150 (LCL - UCL)	EPA-8270C			1
p-Terphenyl-d14 (Surrogate)	75.4	%	40 - 150 (LCL - UCL)	EPA-8270C			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8270C	08/21/13	08/27/13 15:21	SKC	MS-B2	1	BWH2165

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-02	Client Sample Name: 0752, MW-1-W-130815, 8/15/2013 12:49:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	ND	ug/L	50	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	107	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/23/13 06:57	jjh	GC-V9	1	BWH1804

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-02	Client Sample Name: 0752, MW-1-W-130815, 8/15/2013 12:49:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	ND	mg/L	0.0010	RSK-175M	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 09:06	EAR	GC-V1	1	BWH1667



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-02	Client Sample Name: 0752, MW-1-W-130815, 8/15/2013 12:49:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	45	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	1.9	mg/L	0.44	EPA-300.0	ND		2
Sulfate	12	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	0.75	mg/L	0.30	EPA-415.1	ND		4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/21/13	08/21/13 10:54	RML	MET-1	1	BWH1658
2	EPA-300.0	08/16/13	08/16/13 20:08	LS1	IC5	1	BWH1408
3	EPA-353.2	08/16/13	08/16/13 11:46	TDC	KONE-1	1	BWH1341
4	EPA-415.1	08/27/13	08/27/13 14:35	CDR	TOC2	1	BWH1608



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-02	Client Sample Name: 0752, MW-1-W-130815, 8/15/2013 12:49:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Cadmium	ND	ug/L	10	EPA-6010B	ND		1
Dissolved Chromium	ND	ug/L	10	EPA-6010B	ND		1
Dissolved Iron	52	ug/L	50	EPA-6010B	ND		1
Dissolved Lead	ND	ug/L	50	EPA-6010B	ND		1
Dissolved Nickel	ND	ug/L	10	EPA-6010B	ND		1
Dissolved Zinc	ND	ug/L	10	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 13:33	ARD	PE-OP2	1	BWH1539

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-03	Client Sample Name: 0752, MW-2-W-130815, 8/15/2013 12:04:00PM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50	EPA-8260B	ND		1
Methyl t-butyl ether	ND	ug/L	0.50	EPA-8260B	ND		1
Toluene	ND	ug/L	0.50	EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0	EPA-8260B	ND		1
Ethanol	ND	ug/L	250	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	103	%	75 - 125 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	89.7	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	99.0	%	80 - 120 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run		Analyst	Instrument	Dilution	QC
			Date/Time					Batch ID
1	EPA-8260B	08/19/13	08/19/13	11:38	EAR	MS-V12	1	BWH1433



Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-03	Client Sample Name: 0752, MW-2-W-130815, 8/15/2013 12:04:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	ND	ug/L	50	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	109	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/23/13 07:17	jjh	GC-V9	1	BWH1804

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-03	Client Sample Name: 0752, MW-2-W-130815, 8/15/2013 12:04:00PM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	ND	mg/L	0.0010	RSK-175M	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 09:10	EAR	GC-V1	1	BWH1667



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-03	Client Sample Name: 0752, MW-2-W-130815, 8/15/2013 12:04:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	68	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	10	mg/L	0.44	EPA-300.0	ND		2
Sulfate	60	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	0.88	mg/L	0.30	EPA-415.1	ND		4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/21/13	08/21/13 11:06	RML	MET-1	1	BWH1658
2	EPA-300.0	08/16/13	08/16/13 20:23	LS1	IC5	1	BWH1408
3	EPA-353.2	08/16/13	08/16/13 11:46	TDC	KONE-1	1	BWH1341
4	EPA-415.1	08/27/13	08/27/13 15:30	CDR	TOC2	1	BWH1608



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-03	Client Sample Name: 0752, MW-2-W-130815, 8/15/2013 12:04:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	ND	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 13:35	ARD	PE-OP2	1	BWH1539



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-04	Client Sample Name: 0752, MW-3-W-130815, 8/15/2013 8:58:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	4.0	ug/L	0.50	EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Ethylbenzene	1.4	ug/L	0.50	EPA-8260B	ND		1
Methyl t-butyl ether	340	ug/L	2.5	EPA-8260B	ND	A01	2
Toluene	ND	ug/L	0.50	EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0	EPA-8260B	ND		1
Ethanol	ND	ug/L	250	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	106	%	75 - 125 (LCL - UCL)	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	94.9	%	75 - 125 (LCL - UCL)	EPA-8260B			2
Toluene-d8 (Surrogate)	95.6	%	80 - 120 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	85.1	%	80 - 120 (LCL - UCL)	EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	114	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	102	%	80 - 120 (LCL - UCL)	EPA-8260B			2

Run #	Method	Prep Date	Run		Instrument	Dilution	QC
			Date/Time	Analyst			Batch ID
1	EPA-8260B	08/19/13	08/19/13 11:56	EAR	MS-V12	1	BWH1433
2	EPA-8260B	08/20/13	08/20/13 19:37	EAR	MS-V12	5	BWH1433



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-04	Client Sample Name: 0752, MW-3-W-130815, 8/15/2013 8:58:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	410	ug/L	50	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	130	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/24/13 09:39	jjh	GC-V9	1	BWH1804

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-04	Client Sample Name: 0752, MW-3-W-130815, 8/15/2013 8:58:00AM
----------------------------------	---

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	1.6	mg/L	0.0050	RSK-175M	ND	A01	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 10:19	EAR	GC-V1	5	BWH1667

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-04	Client Sample Name: 0752, MW-3-W-130815, 8/15/2013 8:58:00AM						
Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	230	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	ND	mg/L	0.44	EPA-300.0	ND		2
Sulfate	11	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	3.7	mg/L	0.30	EPA-415.1	ND		4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/21/13	08/21/13 11:12	RML	MET-1	1	BWH1658
2	EPA-300.0	08/16/13	08/16/13 21:10	LS1	IC5	1	BWH1409
3	EPA-353.2	08/16/13	08/16/13 11:46	TDC	KONE-1	1	BWH1341
4	EPA-415.1	08/27/13	08/27/13 15:44	CDR	TOC2	1	BWH1608



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-04	Client Sample Name: 0752, MW-3-W-130815, 8/15/2013 8:58:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	4200	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 15:19	ARD	PE-OP2	1	BWH1540



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-05	Client Sample Name: 0752, MW-4-W-130815, 8/15/2013 9:35:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50	EPA-8260B	ND		1
Methyl t-butyl ether	ND	ug/L	0.50	EPA-8260B	ND		1
Toluene	ND	ug/L	0.50	EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0	EPA-8260B	ND		1
Ethanol	ND	ug/L	250	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	105	%	75 - 125 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	88.0	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	99.9	%	80 - 120 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	08/19/13	08/19/13 12:13	EAR	MS-V12	1	BWH1433



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-05	Client Sample Name: 0752, MW-4-W-130815, 8/15/2013 9:35:00AM
----------------------------------	---

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	ND	ug/L	50	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	107	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/24/13 10:00	jjh	GC-V9	1	BWH1804

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-05	Client Sample Name: 0752, MW-4-W-130815, 8/15/2013 9:35:00AM
----------------------------------	---

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	0.0017	mg/L	0.0010	RSK-175M	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 09:31	EAR	GC-V1	1	BWH1667

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-05	Client Sample Name: 0752, MW-4-W-130815, 8/15/2013 9:35:00AM
----------------------------------	---

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	68	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	2.2	mg/L	0.44	EPA-300.0	ND		2
Sulfate	14	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	1.2	mg/L	0.30	EPA-415.1	ND		4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/21/13	08/21/13 11:18	RML	MET-1	1	BWH1658
2	EPA-300.0	08/16/13	08/16/13 21:25	LS1	IC5	1	BWH1409
3	EPA-353.2	08/16/13	08/16/13 11:46	TDC	KONE-1	1	BWH1341
4	EPA-415.1	08/27/13	08/27/13 15:59	CDR	TOC2	1	BWH1608



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-05	Client Sample Name: 0752, MW-4-W-130815, 8/15/2013 9:35:00AM
----------------------------------	---

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	61	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 15:28	ARD	PE-OP2	1	BWH1540

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-06	Client Sample Name: 0752, MW-5-W-130815, 8/15/2013 11:07:00AM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	24	ug/L	0.50	EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Ethylbenzene	2.0	ug/L	0.50	EPA-8260B	ND		1
Methyl t-butyl ether	6.7	ug/L	0.50	EPA-8260B	ND		1
Toluene	6.1	ug/L	0.50	EPA-8260B	ND		1
Total Xylenes	9.2	ug/L	1.0	EPA-8260B	ND		1
Ethanol	ND	ug/L	250	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	102	%	75 - 125 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	94.9	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	112	%	80 - 120 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	08/19/13	08/19/13 12:31	EAR	MS-V12	1	BWH1433



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-06	Client Sample Name: 0752, MW-5-W-130815, 8/15/2013 11:07:00AM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	50	ug/L	50	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	106	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/24/13 10:20	jjh	GC-V9	1	BWH1804



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-06	Client Sample Name: 0752, MW-5-W-130815, 8/15/2013 11:07:00AM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	0.0040	mg/L	0.0010	RSK-175M	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 09:35	EAR	GC-V1	1	BWH1667

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-06	Client Sample Name: 0752, MW-5-W-130815, 8/15/2013 11:07:00AM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	150	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	ND	mg/L	0.44	EPA-300.0	ND		2
Sulfate	7.4	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	2.9	mg/L	0.30	EPA-415.1	ND		4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/21/13	08/21/13 11:24	RML	MET-1	1	BWH1658
2	EPA-300.0	08/16/13	08/16/13 21:40	LS1	IC5	1	BWH1409
3	EPA-353.2	08/16/13	08/16/13 11:46	TDC	KONE-1	1	BWH1342
4	EPA-415.1	08/27/13	08/27/13 16:40	CDR	TOC2	1	BWH1608



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-06	Client Sample Name: 0752, MW-5-W-130815, 8/15/2013 11:07:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	580	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 15:29	ARD	PE-OP2	1	BWH1540



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-07	Client Sample Name: 0752, MW-6-W-130815, 8/15/2013 10:14:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50	EPA-8260B	ND		1
Methyl t-butyl ether	0.82	ug/L	0.50	EPA-8260B	ND		1
Toluene	ND	ug/L	0.50	EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0	EPA-8260B	ND		1
Ethanol	ND	ug/L	250	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	105	%	75 - 125 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	90.5	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	105	%	80 - 120 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run		Analyst	Instrument	Dilution	QC
			Date/Time					Batch ID
1	EPA-8260B	08/19/13	08/19/13	12:49	EAR	MS-V12	1	BWH1433



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-07	Client Sample Name: 0752, MW-6-W-130815, 8/15/2013 10:14:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	ND	ug/L	50	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	106	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/24/13 10:40	jjh	GC-V9	1	BWH1804



Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-07	Client Sample Name: 0752, MW-6-W-130815, 8/15/2013 10:14:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	ND	mg/L	0.0010	RSK-175M	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 09:38	EAR	GC-V1	1	BWH1667



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-07	Client Sample Name: 0752, MW-6-W-130815, 8/15/2013 10:14:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	110	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	0.71	mg/L	0.44	EPA-300.0	ND		2
Sulfate	13	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	2.0	mg/L	0.30	EPA-415.1	ND		4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/21/13	08/21/13 11:30	RML	MET-1	1	BWH1658
2	EPA-300.0	08/16/13	08/16/13 21:56	LS1	IC5	1	BWH1409
3	EPA-353.2	08/16/13	08/16/13 11:50	TDC	KONE-1	1	BWH1342
4	EPA-415.1	08/27/13	08/27/13 16:55	CDR	TOC2	1	BWH1608



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-07	Client Sample Name: 0752, MW-6-W-130815, 8/15/2013 10:14:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	100	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 15:31	ARD	PE-OP2	1	BWH1540



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-08	Client Sample Name: 0752, MW-7-W-130815, 8/15/2013 8:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	11	ug/L	0.50	EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50	EPA-8260B	ND		1
Methyl t-butyl ether	5.0	ug/L	0.50	EPA-8260B	ND		1
Toluene	1.3	ug/L	0.50	EPA-8260B	ND		1
Total Xylenes	1.2	ug/L	1.0	EPA-8260B	ND		1
Ethanol	ND	ug/L	250	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	102	%	75 - 125 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	90.9	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	100	%	80 - 120 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	08/19/13	08/19/13 13:07	EAR	MS-V12	1	BWH1433



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-08	Client Sample Name: 0752, MW-7-W-130815, 8/15/2013 8:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	95	ug/L	50	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	112	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/24/13 11:00	jjh	GC-V9	1	BWH1804



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-08	Client Sample Name: 0752, MW-7-W-130815, 8/15/2013 8:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	ND	mg/L	0.0010	RSK-175M	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 09:43	EAR	GC-V1	1	BWH1667



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-08	Client Sample Name: 0752, MW-7-W-130815, 8/15/2013 8:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	100	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	ND	mg/L	0.44	EPA-300.0	ND		2
Sulfate	17	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	2.1	mg/L	0.30	EPA-415.1	ND		4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/19/13	08/19/13 23:48	RML	MET-1	1	BWH1521
2	EPA-300.0	08/16/13	08/16/13 22:11	LS1	IC5	1	BWH1409
3	EPA-353.2	08/16/13	08/16/13 11:50	TDC	KONE-1	1	BWH1342
4	EPA-415.1	08/27/13	08/27/13 17:09	CDR	TOC2	1	BWH1608



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-08	Client Sample Name: 0752, MW-7-W-130815, 8/15/2013 8:05:00AM
----------------------------------	---

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	260	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 15:32	ARD	PE-OP2	1	BWH1540



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-09	Client Sample Name: 0752, MW-8-W-130815, 8/15/2013 7:25:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50	EPA-8260B	ND		1
Methyl t-butyl ether	ND	ug/L	0.50	EPA-8260B	ND		1
Toluene	ND	ug/L	0.50	EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0	EPA-8260B	ND		1
Ethanol	ND	ug/L	250	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	105	%	75 - 125 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	90.2	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	98.9	%	80 - 120 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	08/19/13	08/19/13 13:25	EAR	MS-V12	1	BWH1433



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-09	Client Sample Name: 0752, MW-8-W-130815, 8/15/2013 7:25:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	ND	ug/L	50	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	112	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/24/13 11:20	jjh	GC-V9	1	BWH1804

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-09	Client Sample Name: 0752, MW-8-W-130815, 8/15/2013 7:25:00AM
----------------------------------	---

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	ND	mg/L	0.0010	RSK-175M	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 09:47	EAR	GC-V1	1	BWH1667

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-09	Client Sample Name: 0752, MW-8-W-130815, 8/15/2013 7:25:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	98	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	1.0	mg/L	0.44	EPA-300.0	ND		2
Sulfate	17	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	1.9	mg/L	0.30	EPA-415.1	ND		4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/19/13	08/20/13 00:01	RML	MET-1	1	BWH1521
2	EPA-300.0	08/16/13	08/16/13 22:27	LS1	IC5	1	BWH1409
3	EPA-353.2	08/16/13	08/16/13 11:50	TDC	KONE-1	1	BWH1342
4	EPA-415.1	08/27/13	08/27/13 17:23	CDR	TOC2	1	BWH1608



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-09	Client Sample Name: 0752, MW-8-W-130815, 8/15/2013 7:25:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	71	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 16:26	ARD	PE-OP2	1	BWH1540



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-10	Client Sample Name: 0752, A-MW-1-W-130815, 8/15/2013 12:00:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	840	ug/L	12	EPA-8260B	ND	A01	1
1,2-Dibromoethane	ND	ug/L	5.0	EPA-8260B	ND	A01	2
1,2-Dichloroethane	ND	ug/L	5.0	EPA-8260B	ND	A01	2
Ethylbenzene	93	ug/L	5.0	EPA-8260B	ND	A01	2
Methyl t-butyl ether	790	ug/L	5.0	EPA-8260B	ND	A01	2
Toluene	100	ug/L	5.0	EPA-8260B	ND	A01	2
Total Xylenes	160	ug/L	10	EPA-8260B	ND	A01	2
Ethanol	ND	ug/L	2500	EPA-8260B	ND	A01	2
1,2-Dichloroethane-d4 (Surrogate)	105	%	75 - 125 (LCL - UCL)	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	103	%	75 - 125 (LCL - UCL)	EPA-8260B			2
Toluene-d8 (Surrogate)	97.2	%	80 - 120 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	94.1	%	80 - 120 (LCL - UCL)	EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	98.5	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	97.7	%	80 - 120 (LCL - UCL)	EPA-8260B			2

Run #	Method	Prep Date	Run		Instrument	Dilution	QC
			Date/Time	Analyst			Batch ID
1	EPA-8260B	08/20/13	08/21/13 14:31	EAR	MS-V12	25	BWH1433
2	EPA-8260B	08/19/13	08/19/13 23:55	EAR	MS-V12	10	BWH1433

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-10	Client Sample Name: 0752, A-MW-1-W-130815, 8/15/2013 12:00:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	5800	ug/L	500	EPA-8015B	ND	A01	1
a,a,a-Trifluorotoluene (FID Surrogate)	107	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/26/13 16:14	jjh	GC-V9	10	BWH1804

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-10	Client Sample Name: 0752, A-MW-1-W-130815, 8/15/2013 12:00:00PM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	0.32	mg/L	0.0010	RSK-175M	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 09:50	EAR	GC-V1	1	BWH1667



Arcadis
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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-10	Client Sample Name: 0752, A-MW-1-W-130815, 8/15/2013 12:00:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	430	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	ND	mg/L	0.44	EPA-300.0	ND		2
Sulfate	34	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	12	mg/L	1.5	EPA-415.1	ND	A01	4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/19/13	08/20/13 00:07	RML	MET-1	1	BWH1521
2	EPA-300.0	08/16/13	08/16/13 22:42	LS1	IC5	1	BWH1409
3	EPA-353.2	08/16/13	08/16/13 11:50	TDC	KONE-1	1	BWH1342
4	EPA-415.1	08/27/13	08/28/13 12:04	CDR	TOC2	5	BWH1608



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-10	Client Sample Name: 0752, A-MW-1-W-130815, 8/15/2013 12:00:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	3100	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 16:27	ARD	PE-OP2	1	BWH1540



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-11	Client Sample Name: 0752, A-MW-2-W-130815, 8/15/2013 11:05:00AM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	1200	ug/L	50	EPA-8260B	ND	A01	1
1,2-Dibromoethane	ND	ug/L	5.0	EPA-8260B	ND	A01	2
1,2-Dichloroethane	ND	ug/L	5.0	EPA-8260B	ND	A01	2
Ethylbenzene	820	ug/L	50	EPA-8260B	ND	A01	1
Methyl t-butyl ether	1700	ug/L	50	EPA-8260B	ND	A01	1
Toluene	5600	ug/L	50	EPA-8260B	ND	A01	1
Total Xylenes	4400	ug/L	100	EPA-8260B	ND	A01	1
Ethanol	ND	ug/L	2500	EPA-8260B	ND	A01	2
1,2-Dichloroethane-d4 (Surrogate)	103	%	75 - 125 (LCL - UCL)	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	108	%	75 - 125 (LCL - UCL)	EPA-8260B			2
Toluene-d8 (Surrogate)	100	%	80 - 120 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	95.5	%	80 - 120 (LCL - UCL)	EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	99.5	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	102	%	80 - 120 (LCL - UCL)	EPA-8260B			2

Run #	Method	Prep Date	Run		Instrument	Dilution	QC
			Date/Time	Analyst			Batch ID
1	EPA-8260B	08/20/13	08/21/13 14:48	EAR	MS-V12	100	BWH1433
2	EPA-8260B	08/19/13	08/20/13 00:13	EAR	MS-V12	10	BWH1433

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-11	Client Sample Name: 0752, A-MW-2-W-130815, 8/15/2013 11:05:00AM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	1500	ug/L	500	EPA-8015B	ND	A01	1
a,a,a-Trifluorotoluene (FID Surrogate)	116	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/27/13 15:00	jjh	GC-V9	10	BWH1805



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-11	Client Sample Name: 0752, A-MW-2-W-130815, 8/15/2013 11:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	3.3	mg/L	0.010	RSK-175M	ND	A01	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 10:34	EAR	GC-V1	10	BWH1667

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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-11	Client Sample Name: 0752, A-MW-2-W-130815, 8/15/2013 11:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	520	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	ND	mg/L	0.44	EPA-300.0	ND		2
Sulfate	ND	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	24	mg/L	6.0	EPA-415.1	ND	A01	4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/19/13	08/20/13 00:15	RML	MET-1	1	BWH1521
2	EPA-300.0	08/16/13	08/16/13 22:57	LS1	IC5	1	BWH1409
3	EPA-353.2	08/16/13	08/16/13 11:57	TDC	KONE-1	1	BWH1342
4	EPA-415.1	08/27/13	08/28/13 15:07	CDR	TOC2	20	BWH1608



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-11	Client Sample Name: 0752, A-MW-2-W-130815, 8/15/2013 11:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	7800	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 16:29	ARD	PE-OP2	1	BWH1540



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-12	Client Sample Name: 0752, A-MW-3-W-130815, 8/15/2013 10:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50	EPA-8260B	ND		1
Methyl t-butyl ether	ND	ug/L	0.50	EPA-8260B	ND		1
Toluene	ND	ug/L	0.50	EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0	EPA-8260B	ND		1
Ethanol	ND	ug/L	250	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	103	%	75 - 125 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	87.1	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	98.8	%	80 - 120 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run		Instrument	Dilution	QC
			Date/Time	Analyst			Batch ID
1	EPA-8260B	08/19/13	08/20/13 19:55	EAR	MS-V12	1	BWH1433



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-12	Client Sample Name: 0752, A-MW-3-W-130815, 8/15/2013 10:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	86	ug/L	50	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	110	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/24/13 12:20	jjh	GC-V9	1	BWH1805



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-12	Client Sample Name: 0752, A-MW-3-W-130815, 8/15/2013 10:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	0.0036	mg/L	0.0010	RSK-175M	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 09:59	EAR	GC-V1	1	BWH1668

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-12	Client Sample Name: 0752, A-MW-3-W-130815, 8/15/2013 10:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	120	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	34	mg/L	0.44	EPA-300.0	ND		2
Sulfate	44	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	1.4	mg/L	0.30	EPA-415.1	ND		4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/19/13	08/20/13 00:24	RML	MET-1	1	BWH1521
2	EPA-300.0	08/16/13	08/16/13 23:13	LS1	IC5	1	BWH1409
3	EPA-353.2	08/16/13	08/16/13 11:57	TDC	KONE-1	1	BWH1342
4	EPA-415.1	08/27/13	08/27/13 18:33	CDR	TOC2	1	BWH1609



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-12	Client Sample Name: 0752, A-MW-3-W-130815, 8/15/2013 10:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	ND	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 16:31	ARD	PE-OP2	1	BWH1540



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-13	Client Sample Name: 0752, A-MW-4-W-130815, 8/15/2013 12:45:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	620	ug/L	12	EPA-8260B	ND	A01	1
1,2-Dibromoethane	ND	ug/L	2.5	EPA-8260B	ND	A01	2
1,2-Dichloroethane	ND	ug/L	2.5	EPA-8260B	ND	A01	2
Ethylbenzene	62	ug/L	2.5	EPA-8260B	ND	A01	2
Methyl t-butyl ether	1200	ug/L	12	EPA-8260B	ND	A01	1
Toluene	38	ug/L	2.5	EPA-8260B	ND	A01	2
Total Xylenes	67	ug/L	5.0	EPA-8260B	ND	A01	2
Ethanol	ND	ug/L	1200	EPA-8260B	ND	A01	2
1,2-Dichloroethane-d4 (Surrogate)	98.8	%	75 - 125 (LCL - UCL)	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	104	%	75 - 125 (LCL - UCL)	EPA-8260B			2
Toluene-d8 (Surrogate)	98.7	%	80 - 120 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	91.9	%	80 - 120 (LCL - UCL)	EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	101	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	96.1	%	80 - 120 (LCL - UCL)	EPA-8260B			2

Run #	Method	Prep Date	Run		Instrument	Dilution	QC
			Date/Time	Analyst			Batch ID
1	EPA-8260B	08/20/13	08/21/13 15:06	EAR	MS-V12	25	BWH1433
2	EPA-8260B	08/19/13	08/20/13 00:49	EAR	MS-V12	5	BWH1433



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-13	Client Sample Name: 0752, A-MW-4-W-130815, 8/15/2013 12:45:00PM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	1100	ug/L	500	EPA-8015B	ND	A01	1
a,a,a-Trifluorotoluene (FID Surrogate)	96.6	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/26/13 16:54	jjh	GC-V9	10	BWH1805

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-13	Client Sample Name: 0752, A-MW-4-W-130815, 8/15/2013 12:45:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	0.45	mg/L	0.0010	RSK-175M	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 10:37	EAR	GC-V1	1	BWH1668

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-13	Client Sample Name: 0752, A-MW-4-W-130815, 8/15/2013 12:45:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	510	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	ND	mg/L	0.44	EPA-300.0	ND		2
Sulfate	4.0	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	15	mg/L	1.5	EPA-415.1	ND	A01	4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/19/13	08/20/13 00:31	RML	MET-1	1	BWH1521
2	EPA-300.0	08/16/13	08/16/13 23:28	LS1	IC5	1	BWH1409
3	EPA-353.2	08/16/13	08/16/13 11:57	TDC	KONE-1	1	BWH1342
4	EPA-415.1	08/27/13	08/28/13 12:31	CDR	TOC2	5	BWH1609

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-13	Client Sample Name: 0752, A-MW-4-W-130815, 8/15/2013 12:45:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	3300	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 16:32	ARD	PE-OP2	1	BWH1540



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-14	Client Sample Name: 0752, A-MW-5-W-130815, 8/15/2013 6:30:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50	EPA-8260B	ND		1
Methyl t-butyl ether	0.72	ug/L	0.50	EPA-8260B	ND		1
Toluene	ND	ug/L	0.50	EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0	EPA-8260B	ND		1
Ethanol	ND	ug/L	250	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	106	%	75 - 125 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	95.6	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	98.0	%	80 - 120 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run		Analyst	Instrument	Dilution	QC
			Date/Time					Batch ID
1	EPA-8260B	08/19/13	08/20/13	01:06	EAR	MS-V12	1	BWH1433

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-14	Client Sample Name: 0752, A-MW-5-W-130815, 8/15/2013 6:30:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	ND	ug/L	50	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	104	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/24/13 14:41	jjh	GC-V9	1	BWH1805



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-14	Client Sample Name: 0752, A-MW-5-W-130815, 8/15/2013 6:30:00AM
----------------------------------	---

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	0.0010	mg/L	0.0010	RSK-175M	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 10:41	EAR	GC-V1	1	BWH1668

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-14	Client Sample Name: 0752, A-MW-5-W-130815, 8/15/2013 6:30:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	150	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	19	mg/L	0.44	EPA-300.0	ND		2
Sulfate	51	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	2.6	mg/L	0.30	EPA-415.1	ND		4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/19/13	08/20/13 00:40	RML	MET-1	1	BWH1521
2	EPA-300.0	08/16/13	08/17/13 00:14	LS1	IC5	1	BWH1410
3	EPA-353.2	08/16/13	08/16/13 11:57	TDC	KONE-1	1	BWH1342
4	EPA-415.1	08/27/13	08/27/13 20:11	CDR	TOC2	1	BWH1609



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-14	Client Sample Name: 0752, A-MW-5-W-130815, 8/15/2013 6:30:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	ND	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 16:34	ARD	PE-OP2	1	BWH1540



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-15	Client Sample Name: 0752, A-MW-6-W-130815, 8/15/2013 7:20:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50	EPA-8260B	ND		1
Methyl t-butyl ether	ND	ug/L	0.50	EPA-8260B	ND		1
Toluene	ND	ug/L	0.50	EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0	EPA-8260B	ND		1
Ethanol	ND	ug/L	250	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	103	%	75 - 125 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	93.6	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	99.7	%	80 - 120 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	08/19/13	08/20/13 01:24	EAR	MS-V12	1	BWH1433



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-15	Client Sample Name: 0752, A-MW-6-W-130815, 8/15/2013 7:20:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	ND	ug/L	50	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	108	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/24/13 15:02	jjh	GC-V9	1	BWH1805



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-15	Client Sample Name: 0752, A-MW-6-W-130815, 8/15/2013 7:20:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	ND	mg/L	0.0010	RSK-175M	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 11:44	EAR	GC-V1	1	BWH1668



Arcadis
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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-15	Client Sample Name: 0752, A-MW-6-W-130815, 8/15/2013 7:20:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	180	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	ND	mg/L	0.44	EPA-300.0	ND		2
Sulfate	62	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	3.4	mg/L	0.30	EPA-415.1	ND		4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/19/13	08/20/13 00:46	RML	MET-1	1	BWH1521
2	EPA-300.0	08/16/13	08/17/13 00:30	LS1	IC5	1	BWH1410
3	EPA-353.2	08/16/13	08/16/13 11:57	TDC	KONE-1	1	BWH1342
4	EPA-415.1	08/27/13	08/27/13 20:25	CDR	TOC2	1	BWH1609



Arcadis
2000 Powell Street 7th Floor
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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-15	Client Sample Name: 0752, A-MW-6-W-130815, 8/15/2013 7:20:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	120	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 16:36	ARD	PE-OP2	1	BWH1540

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-16	Client Sample Name: 0752, A-MW-7-W-130815, 8/15/2013 8:10:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50	EPA-8260B	ND		1
Methyl t-butyl ether	ND	ug/L	0.50	EPA-8260B	ND		1
Toluene	ND	ug/L	0.50	EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0	EPA-8260B	ND		1
Ethanol	ND	ug/L	250	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	99.5	%	75 - 125 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	94.7	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	98.7	%	80 - 120 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run		Analyst	Instrument	Dilution	QC
			Date/Time					Batch ID
1	EPA-8260B	08/19/13	08/20/13	01:42	EAR	MS-V12	1	BWH1637



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-16	Client Sample Name: 0752, A-MW-7-W-130815, 8/15/2013 8:10:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	ND	ug/L	50	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	106	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/24/13 15:22	jjh	GC-V9	1	BWH1805

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-16	Client Sample Name: 0752, A-MW-7-W-130815, 8/15/2013 8:10:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	ND	mg/L	0.0010	RSK-175M	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 11:22	EAR	GC-V1	1	BWH1668



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-16	Client Sample Name: 0752, A-MW-7-W-130815, 8/15/2013 8:10:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	250	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	ND	mg/L	0.44	EPA-300.0	ND		2
Sulfate	58	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	4.4	mg/L	0.30	EPA-415.1	ND		4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/19/13	08/20/13 00:53	RML	MET-1	1	BWH1521
2	EPA-300.0	08/16/13	08/17/13 00:45	LD1	IC5	1	BWH1410
3	EPA-353.2	08/16/13	08/16/13 11:57	TDC	KONE-1	1	BWH1343
4	EPA-415.1	08/27/13	08/27/13 20:40	CDR	TOC2	1	BWH1609

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-16	Client Sample Name: 0752, A-MW-7-W-130815, 8/15/2013 8:10:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	340	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 16:44	ARD	PE-OP2	1	BWH1540



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-17	Client Sample Name: 0752, S-MW-1-W-130815, 8/15/2013 8:50:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	820	ug/L	50	EPA-8260B	ND	A01	1
1,2-Dibromoethane	ND	ug/L	5.0	EPA-8260B	ND	A01	2
1,2-Dichloroethane	ND	ug/L	5.0	EPA-8260B	ND	A01	2
Ethylbenzene	65	ug/L	5.0	EPA-8260B	ND	A01	2
Methyl t-butyl ether	7300	ug/L	50	EPA-8260B	ND	A01	1
Toluene	50	ug/L	5.0	EPA-8260B	ND	A01	2
Total Xylenes	99	ug/L	10	EPA-8260B	ND	A01	2
Ethanol	ND	ug/L	2500	EPA-8260B	ND	A01	2
1,2-Dichloroethane-d4 (Surrogate)	101	%	75 - 125 (LCL - UCL)	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	102	%	75 - 125 (LCL - UCL)	EPA-8260B			2
Toluene-d8 (Surrogate)	97.8	%	80 - 120 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	94.9	%	80 - 120 (LCL - UCL)	EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	98.0	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	101	%	80 - 120 (LCL - UCL)	EPA-8260B			2

Run #	Method	Prep Date	Run		Instrument	Dilution	QC	
			Date/Time	Analyst			Batch ID	
1	EPA-8260B	08/20/13	08/21/13 15:24	EAR	MS-V12	100	BWH1637	
2	EPA-8260B	08/19/13	08/20/13 02:00	EAR	MS-V12	10	BWH1637	

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-17	Client Sample Name: 0752, S-MW-1-W-130815, 8/15/2013 8:50:00AM
----------------------------------	---

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	7200	ug/L	1000	EPA-8015B	ND	A01	1
a,a,a-Trifluorotoluene (FID Surrogate)	97.7	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/26/13 17:14	jjh	GC-V9	20	BWH1805

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-17	Client Sample Name: 0752, S-MW-1-W-130815, 8/15/2013 8:50:00AM
----------------------------------	---

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	1.7	mg/L	0.0050	RSK-175M	ND	A01	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 11:52	EAR	GC-V1	5	BWH1668



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-17	Client Sample Name: 0752, S-MW-1-W-130815, 8/15/2013 8:50:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	430	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	ND	mg/L	0.44	EPA-300.0	ND		2
Sulfate	ND	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	29	mg/L	3.0	EPA-415.1	ND	A01	4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/19/13	08/20/13 01:00	RML	MET-1	1	BWH1521
2	EPA-300.0	08/16/13	08/17/13 01:01	LD1	IC5	1	BWH1410
3	EPA-353.2	08/16/13	08/16/13 11:58	TDC	KONE-1	1	BWH1343
4	EPA-415.1	08/27/13	08/28/13 12:45	CDR	TOC2	10	BWH1609



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-17	Client Sample Name: 0752, S-MW-1-W-130815, 8/15/2013 8:50:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	3500	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 16:46	ARD	PE-OP2	1	BWH1540



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-18	Client Sample Name: 0752, S-MW-2-W-130815, 8/15/2013 10:10:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50	EPA-8260B	ND		1
Methyl t-butyl ether	ND	ug/L	0.50	EPA-8260B	ND		1
Toluene	ND	ug/L	0.50	EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0	EPA-8260B	ND		1
Ethanol	ND	ug/L	250	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	102	%	75 - 125 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	92.5	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	102	%	80 - 120 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run		Instrument	Dilution	QC
			Date/Time	Analyst			Batch ID
1	EPA-8260B	08/19/13	08/20/13 02:18	EAR	MS-V12	1	BWH1637



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-18	Client Sample Name: 0752, S-MW-2-W-130815, 8/15/2013 10:10:00AM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	ND	ug/L	50	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	110	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/24/13 16:02	jjh	GC-V9	1	BWH1805

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-18	Client Sample Name: 0752, S-MW-2-W-130815, 8/15/2013 10:10:00AM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	0.0021	mg/L	0.0010	RSK-175M	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 10:57	EAR	GC-V1	1	BWH1668

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-18	Client Sample Name: 0752, S-MW-2-W-130815, 8/15/2013 10:10:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	97	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	62	mg/L	0.44	EPA-300.0	ND		2
Sulfate	32	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	2.6	mg/L	0.30	EPA-415.1	ND		4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/20/13	08/20/13 11:06	RML	MET-1	1	BWH1561
2	EPA-300.0	08/16/13	08/17/13 01:16	LD1	IC5	1	BWH1410
3	EPA-353.2	08/16/13	08/16/13 11:58	TDC	KONE-1	1	BWH1343
4	EPA-415.1	08/27/13	08/27/13 21:08	CDR	TOC2	1	BWH1609



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-18	Client Sample Name: 0752, S-MW-2-W-130815, 8/15/2013 10:10:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	ND	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 16:48	ARD	PE-OP2	1	BWH1540



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-19	Client Sample Name: 0752, S-MW-3-W-130815, 8/15/2013 10:50:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50	EPA-8260B	ND		1
Methyl t-butyl ether	1.1	ug/L	0.50	EPA-8260B	ND		1
Toluene	ND	ug/L	0.50	EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0	EPA-8260B	ND		1
Ethanol	ND	ug/L	250	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	104	%	75 - 125 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	92.6	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	98.0	%	80 - 120 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run		Instrument	Dilution	QC
			Date/Time	Analyst			Batch ID
1	EPA-8260B	08/19/13	08/20/13 02:36	EAR	MS-V12	1	BWH1637



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-19	Client Sample Name: 0752, S-MW-3-W-130815, 8/15/2013 10:50:00AM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	ND	ug/L	50	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	107	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/24/13 16:22	jjh	GC-V9	1	BWH1805

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-19	Client Sample Name: 0752, S-MW-3-W-130815, 8/15/2013 10:50:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	ND	mg/L	0.0010	RSK-175M	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 11:02	EAR	GC-V1	1	BWH1668



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-19	Client Sample Name: 0752, S-MW-3-W-130815, 8/15/2013 10:50:00AM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	160	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	ND	mg/L	0.44	EPA-300.0	ND		2
Sulfate	19	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	1.9	mg/L	0.30	EPA-415.1	ND		4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/20/13	08/20/13 11:12	RML	MET-1	1	BWH1561
2	EPA-300.0	08/16/13	08/17/13 01:31	LD1	IC5	1	BWH1410
3	EPA-353.2	08/16/13	08/16/13 11:58	TDC	KONE-1	1	BWH1343
4	EPA-415.1	08/27/13	08/27/13 21:22	CDR	TOC2	1	BWH1609

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-19	Client Sample Name: 0752, S-MW-3-W-130815, 8/15/2013 10:50:00AM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	110	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 16:49	ARD	PE-OP2	1	BWH1540



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-20	Client Sample Name: 0752, S-MW-4-W-130815, 8/15/2013 9:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50	EPA-8260B	ND		1
Methyl t-butyl ether	25	ug/L	0.50	EPA-8260B	ND		1
Toluene	ND	ug/L	0.50	EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0	EPA-8260B	ND		1
Ethanol	ND	ug/L	250	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	106	%	75 - 125 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	93.6	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	105	%	80 - 120 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run		Analyst	Instrument	Dilution	QC
			Date/Time					Batch ID
1	EPA-8260B	08/19/13	08/20/13	02:54	EAR	MS-V12	1	BWH1637



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Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-20	Client Sample Name: 0752, S-MW-4-W-130815, 8/15/2013 9:05:00AM
----------------------------------	---

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	98	ug/L	50	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	120	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/24/13 16:42	jjh	GC-V9	1	BWH1805

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-20	Client Sample Name: 0752, S-MW-4-W-130815, 8/15/2013 9:05:00AM
----------------------------------	---

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	ND	mg/L	0.0010	RSK-175M	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 11:06	EAR	GC-V1	1	BWH1668

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-20	Client Sample Name: 0752, S-MW-4-W-130815, 8/15/2013 9:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	290	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	ND	mg/L	0.44	EPA-300.0	ND		2
Sulfate	15	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	3.9	mg/L	0.30	EPA-415.1	ND		4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/20/13	08/20/13 11:18	RML	MET-1	1	BWH1561
2	EPA-300.0	08/16/13	08/17/13 01:47	LD1	IC5	1	BWH1410
3	EPA-353.2	08/16/13	08/16/13 12:01	TDC	KONE-1	1	BWH1343
4	EPA-415.1	08/27/13	08/27/13 21:37	CDR	TOC2	1	BWH1609

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Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-20	Client Sample Name: 0752, S-MW-4-W-130815, 8/15/2013 9:05:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	1300	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 16:51	ARD	PE-OP2	1	BWH1540

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-21	Client Sample Name: 0752, S-MW-5-W-130815, 8/15/2013 12:45:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	1900	ug/L	12	EPA-8260B	ND	A01	1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		2
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		2
Ethylbenzene	390	ug/L	12	EPA-8260B	ND	A01	1
Methyl t-butyl ether	20000	ug/L	250	EPA-8260B	ND	A01	3
Toluene	590	ug/L	12	EPA-8260B	ND	A01	1
Total Xylenes	1100	ug/L	25	EPA-8260B	ND	A01	1
Ethanol	ND	ug/L	250	EPA-8260B	ND		2
1,2-Dichloroethane-d4 (Surrogate)	103	%	75 - 125 (LCL - UCL)	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	110	%	75 - 125 (LCL - UCL)	EPA-8260B			2
1,2-Dichloroethane-d4 (Surrogate)	101	%	75 - 125 (LCL - UCL)	EPA-8260B			3
Toluene-d8 (Surrogate)	95.8	%	80 - 120 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	96.9	%	80 - 120 (LCL - UCL)	EPA-8260B			2
Toluene-d8 (Surrogate)	97.7	%	80 - 120 (LCL - UCL)	EPA-8260B			3
4-Bromofluorobenzene (Surrogate)	100	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	82.7	%	80 - 120 (LCL - UCL)	EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	103	%	80 - 120 (LCL - UCL)	EPA-8260B			3

Run #	Method	Prep Date	Run		Analyst	Instrument	Dilution	QC
			Date/Time					Batch ID
1	EPA-8260B	08/20/13	08/21/13	15:41	EAR	MS-V12	25	BWH1637
2	EPA-8260B	08/19/13	08/20/13	03:12	EAR	MS-V12	1	BWH1637
3	EPA-8260B	08/22/13	08/22/13	11:01	EAR	MS-V12	500	BWH1637

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-21	Client Sample Name: 0752, S-MW-5-W-130815, 8/15/2013 12:45:00PM						
Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	8000	ug/L	2500	EPA-8015B	ND	A01	1
a,a,a-Trifluorotoluene (FID Surrogate)	96.3	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/26/13 17:34	jjh	GC-V9	50	BWH1805

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-21	Client Sample Name: 0752, S-MW-5-W-130815, 8/15/2013 12:45:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	2.2	mg/L	0.0050	RSK-175M	ND	A01	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 11:57	EAR	GC-V1	5	BWH1668



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-21	Client Sample Name: 0752, S-MW-5-W-130815, 8/15/2013 12:45:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	670	mg/L	8.2	EPA-310.1	ND		1
Nitrate as NO3	ND	mg/L	0.88	EPA-300.0	ND	A01	2
Sulfate	ND	mg/L	1.0	EPA-300.0	ND		3
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		4
Non-Volatile Organic Carbon	28	mg/L	3.0	EPA-415.1	ND	A01	5

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/20/13	08/20/13 11:25	RML	MET-1	2	BWH1561
2	EPA-300.0	08/16/13	08/17/13 02:02	LD1	IC5	2	BWH1410
3	EPA-300.0	08/16/13	08/17/13 13:42	LD1	IC5	1	BWH1410
4	EPA-353.2	08/16/13	08/16/13 12:01	TDC	KONE-1	1	BWH1343
5	EPA-415.1	08/27/13	08/28/13 13:00	CDR	TOC2	10	BWH1609



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-21	Client Sample Name: 0752, S-MW-5-W-130815, 8/15/2013 12:45:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	7300	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 16:53	ARD	PE-OP2	1	BWH1540



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-22	Client Sample Name: 0752, S-MW-6-W-130815, 8/15/2013 11:30:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane	0.79	ug/L	0.50	EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50	EPA-8260B	ND		1
Methyl t-butyl ether	1000	ug/L	12	EPA-8260B	ND	A01	2
Toluene	ND	ug/L	0.50	EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0	EPA-8260B	ND		1
Ethanol	ND	ug/L	250	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	101	%	75 - 125 (LCL - UCL)	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	100	%	75 - 125 (LCL - UCL)	EPA-8260B			2
Toluene-d8 (Surrogate)	98.1	%	80 - 120 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	97.2	%	80 - 120 (LCL - UCL)	EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	100	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	97.0	%	80 - 120 (LCL - UCL)	EPA-8260B			2

Run #	Method	Prep Date	Run		Instrument	Dilution	QC
			Date/Time	Analyst			Batch ID
1	EPA-8260B	08/19/13	08/20/13 20:12	EAR	MS-V12	1	BWH1637
2	EPA-8260B	08/22/13	08/22/13 11:19	EAR	MS-V12	25	BWH1637



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Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-22	Client Sample Name: 0752, S-MW-6-W-130815, 8/15/2013 11:30:00AM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	58	ug/L	50	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	102	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/24/13 17:23	jjh	GC-V9	1	BWH1805

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Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-22	Client Sample Name: 0752, S-MW-6-W-130815, 8/15/2013 11:30:00AM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	0.0051	mg/L	0.0010	RSK-175M	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 12:03	EAR	GC-V1	1	BWH1801



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-22	Client Sample Name: 0752, S-MW-6-W-130815, 8/15/2013 11:30:00AM
----------------------------------	--

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	180	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	6.3	mg/L	0.44	EPA-300.0	ND		2
Sulfate	26	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	7.4	mg/L	0.60	EPA-415.1	ND	A01	4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/20/13	08/20/13 11:32	RML	MET-1	1	BWH1561
2	EPA-300.0	08/16/13	08/17/13 02:18	LD1	IC5	1	BWH1410
3	EPA-353.2	08/16/13	08/16/13 12:01	TDC	KONE-1	1	BWH1343
4	EPA-415.1	08/27/13	08/28/13 14:52	CDR	TOC2	2	BWH1610

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Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-22	Client Sample Name: 0752, S-MW-6-W-130815, 8/15/2013 11:30:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	ND	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 16:54	ARD	PE-OP2	1	BWH1540



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-23	Client Sample Name: 0752, S-EW-1-W-130815, 8/15/2013 8:12:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	67	ug/L	0.50	EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Ethylbenzene	1.3	ug/L	0.50	EPA-8260B	ND		1
Methyl t-butyl ether	57	ug/L	0.50	EPA-8260B	ND		1
Toluene	1.7	ug/L	0.50	EPA-8260B	ND		1
Total Xylenes	3.3	ug/L	1.0	EPA-8260B	ND		1
Ethanol	ND	ug/L	250	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	104	%	75 - 125 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	93.6	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	106	%	80 - 120 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	08/19/13	08/20/13 03:47	EAR	MS-V12	1	BWH1637



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-23	Client Sample Name: 0752, S-EW-1-W-130815, 8/15/2013 8:12:00AM
----------------------------------	---

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	290	ug/L	50	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	110	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/24/13 17:43	jjh	GC-V9	1	BWH1805

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Gas Testing in Water

BCL Sample ID: 1317587-23	Client Sample Name: 0752, S-EW-1-W-130815, 8/15/2013 8:12:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Methane	ND	mg/L	0.0010	RSK-175M	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	RSK-175M	08/22/13	08/22/13 12:12	EAR	GC-V1	1	BWH1801



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2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

BCL Sample ID: 1317587-23	Client Sample Name: 0752, S-EW-1-W-130815, 8/15/2013 8:12:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Total Alkalinity as CaCO3	150	mg/L	4.1	EPA-310.1	ND		1
Nitrate as NO3	1.1	mg/L	0.44	EPA-300.0	ND		2
Sulfate	13	mg/L	1.0	EPA-300.0	ND		2
Nitrite as NO2	ND	mg/L	0.17	EPA-353.2	ND		3
Non-Volatile Organic Carbon	2.5	mg/L	0.30	EPA-415.1	ND		4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-310.1	08/20/13	08/20/13 11:38	RML	MET-1	1	BWH1561
2	EPA-300.0	08/16/13	08/17/13 02:33	LD1	IC5	1	BWH1410
3	EPA-353.2	08/16/13	08/16/13 12:01	TDC	KONE-1	1	BWH1343
4	EPA-415.1	08/27/13	08/27/13 23:58	CDR	TOC2	1	BWH1610

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

BCL Sample ID: 1317587-23	Client Sample Name: 0752, S-EW-1-W-130815, 8/15/2013 8:12:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Dissolved Iron	1300	ug/L	50	EPA-6010B	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/16/13	08/20/13 16:58	ARD	PE-OP2	1	BWH1540



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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-24	Client Sample Name: 0752, MPE-1-W-130815, 8/15/2013 9:30:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	110	ug/L	2.5	EPA-8260B	ND	A01	1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		2
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		2
Ethylbenzene	17	ug/L	0.50	EPA-8260B	ND		2
Methyl t-butyl ether	610	ug/L	5.0	EPA-8260B	ND	A01	3
Toluene	23	ug/L	0.50	EPA-8260B	ND		2
Total Xylenes	45	ug/L	1.0	EPA-8260B	ND		2
Ethanol	ND	ug/L	250	EPA-8260B	ND		2
1,2-Dichloroethane-d4 (Surrogate)	103	%	75 - 125 (LCL - UCL)	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	97.4	%	75 - 125 (LCL - UCL)	EPA-8260B			2
1,2-Dichloroethane-d4 (Surrogate)	106	%	75 - 125 (LCL - UCL)	EPA-8260B			3
Toluene-d8 (Surrogate)	93.9	%	80 - 120 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	96.2	%	80 - 120 (LCL - UCL)	EPA-8260B			2
Toluene-d8 (Surrogate)	98.1	%	80 - 120 (LCL - UCL)	EPA-8260B			3
4-Bromofluorobenzene (Surrogate)	102	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	101	%	80 - 120 (LCL - UCL)	EPA-8260B			2
4-Bromofluorobenzene (Surrogate)	97.9	%	80 - 120 (LCL - UCL)	EPA-8260B			3

Run #	Method	Prep Date	Run		Instrument	Dilution	QC
			Date/Time	Analyst			Batch ID
1	EPA-8260B	08/20/13	08/21/13 15:59	EAR	MS-V12	5	BWH1637
2	EPA-8260B	08/19/13	08/20/13 04:05	EAR	MS-V12	1	BWH1637
3	EPA-8260B	08/22/13	08/22/13 10:26	EAR	MS-V12	10	BWH1637



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Reported: 08/29/2013 11:14
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Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-24	Client Sample Name: 0752, MPE-1-W-130815, 8/15/2013 9:30:00AM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	820	ug/L	50	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	102	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/24/13 19:46	jjh	GC-V9	1	BWH1805

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1317587-25	Client Sample Name: 0752, MP-1-W-130815, 8/15/2013 12:05:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50	EPA-8260B	ND		1
Methyl t-butyl ether	2.4	ug/L	0.50	EPA-8260B	ND		1
Toluene	ND	ug/L	0.50	EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0	EPA-8260B	ND		1
Ethanol	ND	ug/L	250	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	104	%	75 - 125 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	94.6	%	80 - 120 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	104	%	80 - 120 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run		Analyst	Instrument	Dilution	QC
			Date/Time					Batch ID
1	EPA-8260B	08/19/13	08/20/13	04:23	EAR	MS-V12	1	BWH1637

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1317587-25	Client Sample Name: 0752, MP-1-W-130815, 8/15/2013 12:05:00PM
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Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C6 - C12)	ND	ug/L	50	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	97.6	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	08/22/13	08/24/13 20:06	jjh	GC-V9	1	BWH1805

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Volatile Organic Analysis (EPA Method 8260)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
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QC Batch ID: BWH1433

Benzene	BWH1433-BLK1	ND	ug/L	0.50		
1,2-Dibromoethane	BWH1433-BLK1	ND	ug/L	0.50		
1,2-Dichloroethane	BWH1433-BLK1	ND	ug/L	0.50		
Ethylbenzene	BWH1433-BLK1	ND	ug/L	0.50		
Methyl t-butyl ether	BWH1433-BLK1	ND	ug/L	0.50		
Toluene	BWH1433-BLK1	ND	ug/L	0.50		
Total Xylenes	BWH1433-BLK1	ND	ug/L	1.0		
Ethanol	BWH1433-BLK1	ND	ug/L	250		
1,2-Dichloroethane-d4 (Surrogate)	BWH1433-BLK1	102	%		75 - 125 (LCL - UCL)	
Toluene-d8 (Surrogate)	BWH1433-BLK1	99.9	%		80 - 120 (LCL - UCL)	
4-Bromofluorobenzene (Surrogate)	BWH1433-BLK1	101	%		80 - 120 (LCL - UCL)	

QC Batch ID: BWH1637

Benzene	BWH1637-BLK1	ND	ug/L	0.50		
1,2-Dibromoethane	BWH1637-BLK1	ND	ug/L	0.50		
1,2-Dichloroethane	BWH1637-BLK1	ND	ug/L	0.50		
Ethylbenzene	BWH1637-BLK1	ND	ug/L	0.50		
Methyl t-butyl ether	BWH1637-BLK1	ND	ug/L	0.50		
Toluene	BWH1637-BLK1	ND	ug/L	0.50		
Total Xylenes	BWH1637-BLK1	ND	ug/L	1.0		
Ethanol	BWH1637-BLK1	ND	ug/L	250		
1,2-Dichloroethane-d4 (Surrogate)	BWH1637-BLK1	102	%		75 - 125 (LCL - UCL)	
Toluene-d8 (Surrogate)	BWH1637-BLK1	97.8	%		80 - 120 (LCL - UCL)	
4-Bromofluorobenzene (Surrogate)	BWH1637-BLK1	101	%		80 - 120 (LCL - UCL)	



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Volatile Organic Analysis (EPA Method 8260)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab Quals
								Percent Recovery	RPD	
QC Batch ID: BWH1433										
Benzene	BWH1433-BS1	LCS	28.860	25.000	ug/L	115		70 - 130		
Toluene	BWH1433-BS1	LCS	27.470	25.000	ug/L	110		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	BWH1433-BS1	LCS	9.9900	10.000	ug/L	99.9		75 - 125		
Toluene-d8 (Surrogate)	BWH1433-BS1	LCS	9.7900	10.000	ug/L	97.9		80 - 120		
4-Bromofluorobenzene (Surrogate)	BWH1433-BS1	LCS	10.140	10.000	ug/L	101		80 - 120		
QC Batch ID: BWH1637										
Benzene	BWH1637-BS1	LCS	25.010	25.000	ug/L	100		70 - 130		
Toluene	BWH1637-BS1	LCS	23.760	25.000	ug/L	95.0		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	BWH1637-BS1	LCS	9.8700	10.000	ug/L	98.7		75 - 125		
Toluene-d8 (Surrogate)	BWH1637-BS1	LCS	9.9900	10.000	ug/L	99.9		80 - 120		
4-Bromofluorobenzene (Surrogate)	BWH1637-BS1	LCS	10.240	10.000	ug/L	102		80 - 120		



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Volatile Organic Analysis (EPA Method 8260)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Control Limits		Lab
								Percent Recovery	RPD	
QC Batch ID: BWH1433		Used client sample: N								
Benzene	MS	1316295-10	ND	25.870	25.000	ug/L		103		70 - 130
	MSD	1316295-10	ND	27.170	25.000	ug/L	4.9	109	20	70 - 130
Toluene	MS	1316295-10	ND	25.780	25.000	ug/L		103		70 - 130
	MSD	1316295-10	ND	25.300	25.000	ug/L	1.9	101	20	70 - 130
1,2-Dichloroethane-d4 (Surrogate)	MS	1316295-10	ND	9.8900	10.000	ug/L		98.9		75 - 125
	MSD	1316295-10	ND	10.500	10.000	ug/L	6.0	105		75 - 125
Toluene-d8 (Surrogate)	MS	1316295-10	ND	9.9900	10.000	ug/L		99.9		80 - 120
	MSD	1316295-10	ND	9.7300	10.000	ug/L	2.6	97.3		80 - 120
4-Bromofluorobenzene (Surrogate)	MS	1316295-10	ND	9.7600	10.000	ug/L		97.6		80 - 120
	MSD	1316295-10	ND	10.050	10.000	ug/L	2.9	100		80 - 120
QC Batch ID: BWH1637		Used client sample: N								
Benzene	MS	1316295-12	ND	25.110	25.000	ug/L		100		70 - 130
	MSD	1316295-12	ND	24.560	25.000	ug/L	2.2	98.2	20	70 - 130
Toluene	MS	1316295-12	ND	23.630	25.000	ug/L		94.5		70 - 130
	MSD	1316295-12	ND	24.170	25.000	ug/L	2.3	96.7	20	70 - 130
1,2-Dichloroethane-d4 (Surrogate)	MS	1316295-12	ND	10.330	10.000	ug/L		103		75 - 125
	MSD	1316295-12	ND	9.8300	10.000	ug/L	5.0	98.3		75 - 125
Toluene-d8 (Surrogate)	MS	1316295-12	ND	9.8900	10.000	ug/L		98.9		80 - 120
	MSD	1316295-12	ND	10.060	10.000	ug/L	1.7	101		80 - 120
4-Bromofluorobenzene (Surrogate)	MS	1316295-12	ND	9.7700	10.000	ug/L		97.7		80 - 120
	MSD	1316295-12	ND	10.010	10.000	ug/L	2.4	100		80 - 120

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Reported: 08/29/2013 11:14
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Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BWH2165						
Acenaphthene	BWH2165-BLK1	ND	ug/L	2.0		
Acenaphthylene	BWH2165-BLK1	ND	ug/L	2.0		
Aldrin	BWH2165-BLK1	ND	ug/L	2.0		
Aniline	BWH2165-BLK1	ND	ug/L	5.0		
Anthracene	BWH2165-BLK1	ND	ug/L	2.0		
Benzidine	BWH2165-BLK1	ND	ug/L	20		
Benzo[a]anthracene	BWH2165-BLK1	ND	ug/L	2.0		
Benzo[b]fluoranthene	BWH2165-BLK1	ND	ug/L	2.0		
Benzo[k]fluoranthene	BWH2165-BLK1	ND	ug/L	2.0		
Benzo[a]pyrene	BWH2165-BLK1	ND	ug/L	2.0		
Benzo[g,h,i]perylene	BWH2165-BLK1	ND	ug/L	2.0		
Benzoic acid	BWH2165-BLK1	ND	ug/L	10		
Benzyl alcohol	BWH2165-BLK1	ND	ug/L	2.0		
Benzyl butyl phthalate	BWH2165-BLK1	ND	ug/L	2.0		
alpha-BHC	BWH2165-BLK1	ND	ug/L	2.0		
beta-BHC	BWH2165-BLK1	ND	ug/L	2.0		
delta-BHC	BWH2165-BLK1	ND	ug/L	2.0		
gamma-BHC (Lindane)	BWH2165-BLK1	ND	ug/L	2.0		
bis(2-Chloroethoxy)methane	BWH2165-BLK1	ND	ug/L	2.0		
bis(2-Chloroethyl) ether	BWH2165-BLK1	ND	ug/L	2.0		
bis(2-Chloroisopropyl)ether	BWH2165-BLK1	ND	ug/L	2.0		
bis(2-Ethylhexyl)phthalate	BWH2165-BLK1	ND	ug/L	5.0		
4-Bromophenyl phenyl ether	BWH2165-BLK1	ND	ug/L	2.0		
4-Chloroaniline	BWH2165-BLK1	ND	ug/L	2.0		
2-Chloronaphthalene	BWH2165-BLK1	ND	ug/L	2.0		
4-Chlorophenyl phenyl ether	BWH2165-BLK1	ND	ug/L	2.0		
Chrysene	BWH2165-BLK1	ND	ug/L	2.0		
4,4'-DDD	BWH2165-BLK1	ND	ug/L	2.0		
4,4'-DDE	BWH2165-BLK1	ND	ug/L	3.0		
4,4'-DDT	BWH2165-BLK1	ND	ug/L	2.0		
Dibenzo[a,h]anthracene	BWH2165-BLK1	ND	ug/L	3.0		
Dibenzofuran	BWH2165-BLK1	ND	ug/L	2.0		
1,2-Dichlorobenzene	BWH2165-BLK1	ND	ug/L	2.0		
1,3-Dichlorobenzene	BWH2165-BLK1	ND	ug/L	2.0		

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BWH2165						
1,4-Dichlorobenzene	BWH2165-BLK1	ND	ug/L	2.0		
3,3-Dichlorobenzidine	BWH2165-BLK1	ND	ug/L	10		
Dieldrin	BWH2165-BLK1	ND	ug/L	3.0		
Diethyl phthalate	BWH2165-BLK1	ND	ug/L	2.0		
Dimethyl phthalate	BWH2165-BLK1	ND	ug/L	2.0		
Di-n-butyl phthalate	BWH2165-BLK1	ND	ug/L	2.0		
2,4-Dinitrotoluene	BWH2165-BLK1	ND	ug/L	2.0		
2,6-Dinitrotoluene	BWH2165-BLK1	ND	ug/L	2.0		
Di-n-octyl phthalate	BWH2165-BLK1	ND	ug/L	2.0		
1,2-Diphenylhydrazine	BWH2165-BLK1	ND	ug/L	2.0		
Endosulfan I	BWH2165-BLK1	ND	ug/L	10		
Endosulfan II	BWH2165-BLK1	ND	ug/L	10		
Endosulfan sulfate	BWH2165-BLK1	ND	ug/L	3.0		
Endrin	BWH2165-BLK1	ND	ug/L	2.0		
Endrin aldehyde	BWH2165-BLK1	ND	ug/L	10		
Fluoranthene	BWH2165-BLK1	ND	ug/L	2.0		
Fluorene	BWH2165-BLK1	ND	ug/L	2.0		
Heptachlor	BWH2165-BLK1	ND	ug/L	2.0		
Heptachlor epoxide	BWH2165-BLK1	ND	ug/L	2.0		
Hexachlorobenzene	BWH2165-BLK1	ND	ug/L	2.0		
Hexachlorobutadiene	BWH2165-BLK1	ND	ug/L	2.0		
Hexachlorocyclopentadiene	BWH2165-BLK1	ND	ug/L	2.0		
Hexachloroethane	BWH2165-BLK1	ND	ug/L	2.0		
Indeno[1,2,3-cd]pyrene	BWH2165-BLK1	ND	ug/L	2.0		
Isophorone	BWH2165-BLK1	ND	ug/L	2.0		
2-Methylnaphthalene	BWH2165-BLK1	ND	ug/L	2.0		
Naphthalene	BWH2165-BLK1	ND	ug/L	2.0		
2-Naphthylamine	BWH2165-BLK1	ND	ug/L	20		
2-Nitroaniline	BWH2165-BLK1	ND	ug/L	2.0		
3-Nitroaniline	BWH2165-BLK1	ND	ug/L	2.0		
4-Nitroaniline	BWH2165-BLK1	ND	ug/L	5.0		
Nitrobenzene	BWH2165-BLK1	ND	ug/L	2.0		
N-Nitrosodimethylamine	BWH2165-BLK1	ND	ug/L	2.0		
N-Nitrosodi-N-propylamine	BWH2165-BLK1	ND	ug/L	2.0		

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Project Manager: Kathy Brandt

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BWH2165						
N-Nitrosodiphenylamine	BWH2165-BLK1	ND	ug/L	2.0		
Phenanthrene	BWH2165-BLK1	ND	ug/L	2.0		
Pyrene	BWH2165-BLK1	ND	ug/L	2.0		
1,2,4-Trichlorobenzene	BWH2165-BLK1	ND	ug/L	2.0		
4-Chloro-3-methylphenol	BWH2165-BLK1	ND	ug/L	5.0		
2-Chlorophenol	BWH2165-BLK1	ND	ug/L	2.0		
2,4-Dichlorophenol	BWH2165-BLK1	ND	ug/L	2.0		
2,4-Dimethylphenol	BWH2165-BLK1	ND	ug/L	2.0		
4,6-Dinitro-2-methylphenol	BWH2165-BLK1	ND	ug/L	10		
2,4-Dinitrophenol	BWH2165-BLK1	ND	ug/L	10		
2-Methylphenol	BWH2165-BLK1	ND	ug/L	2.0		
3- & 4-Methylphenol	BWH2165-BLK1	ND	ug/L	2.0		
2-Nitrophenol	BWH2165-BLK1	ND	ug/L	2.0		
4-Nitrophenol	BWH2165-BLK1	ND	ug/L	2.0		
Pentachlorophenol	BWH2165-BLK1	ND	ug/L	10		
Phenol	BWH2165-BLK1	ND	ug/L	2.0		
2,4,5-Trichlorophenol	BWH2165-BLK1	ND	ug/L	5.0		
2,4,6-Trichlorophenol	BWH2165-BLK1	ND	ug/L	5.0		
2-Fluorophenol (Surrogate)	BWH2165-BLK1	50.9	%	30 - 120 (LCL - UCL)		
Phenol-d5 (Surrogate)	BWH2165-BLK1	36.0	%	12 - 110 (LCL - UCL)		
Nitrobenzene-d5 (Surrogate)	BWH2165-BLK1	83.5	%	60 - 130 (LCL - UCL)		
2-Fluorobiphenyl (Surrogate)	BWH2165-BLK1	82.6	%	55 - 125 (LCL - UCL)		
2,4,6-Tribromophenol (Surrogate)	BWH2165-BLK1	83.0	%	40 - 150 (LCL - UCL)		
p-Terphenyl-d14 (Surrogate)	BWH2165-BLK1	93.2	%	40 - 150 (LCL - UCL)		

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2000 Powell Street 7th Floor
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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab Quals
								Percent Recovery	RPD	
QC Batch ID: BWH2165										
Acenaphthene	BWH2165-BS1	LCS	47.210	50.000	ug/L	94.4		50 - 120		
1,4-Dichlorobenzene	BWH2165-BS1	LCS	44.530	50.000	ug/L	89.1		50 - 120		
2,4-Dinitrotoluene	BWH2165-BS1	LCS	49.240	50.000	ug/L	98.5		50 - 120		
Hexachlorobenzene	BWH2165-BS1	LCS	53.970	50.000	ug/L	108		60 - 120		
Hexachlorobutadiene	BWH2165-BS1	LCS	34.480	50.000	ug/L	69.0		40 - 110		
Hexachloroethane	BWH2165-BS1	LCS	45.080	50.000	ug/L	90.2		40 - 120		
Nitrobenzene	BWH2165-BS1	LCS	45.800	50.000	ug/L	91.6		50 - 120		
N-Nitrosodi-N-propylamine	BWH2165-BS1	LCS	41.560	50.000	ug/L	83.1		50 - 120		
Pyrene	BWH2165-BS1	LCS	52.060	50.000	ug/L	104		40 - 140		
1,2,4-Trichlorobenzene	BWH2165-BS1	LCS	41.820	50.000	ug/L	83.6		45 - 120		
4-Chloro-3-methylphenol	BWH2165-BS1	LCS	52.440	50.000	ug/L	105		50 - 120		
2-Chlorophenol	BWH2165-BS1	LCS	44.910	50.000	ug/L	89.8		50 - 120		
2-Methylphenol	BWH2165-BS1	LCS	44.030	50.000	ug/L	88.1		40 - 110		
3- & 4-Methylphenol	BWH2165-BS1	LCS	78.880	100.00	ug/L	78.9		40 - 110		
4-Nitrophenol	BWH2165-BS1	LCS	11.310	50.000	ug/L	22.6		10 - 110		
Pentachlorophenol	BWH2165-BS1	LCS	29.190	50.000	ug/L	58.4		30 - 120		
Phenol	BWH2165-BS1	LCS	21.220	50.000	ug/L	42.4		20 - 110		
2,4,6-Trichlorophenol	BWH2165-BS1	LCS	48.180	50.000	ug/L	96.4		54 - 120		
2-Fluorophenol (Surrogate)	BWH2165-BS1	LCS	49.630	80.000	ug/L	62.0		30 - 120		
Phenol-d5 (Surrogate)	BWH2165-BS1	LCS	36.080	80.000	ug/L	45.1		12 - 110		
Nitrobenzene-d5 (Surrogate)	BWH2165-BS1	LCS	79.680	80.000	ug/L	99.6		60 - 130		
2-Fluorobiphenyl (Surrogate)	BWH2165-BS1	LCS	73.190	80.000	ug/L	91.5		55 - 125		
2,4,6-Tribromophenol (Surrogate)	BWH2165-BS1	LCS	81.600	80.000	ug/L	102		40 - 150		
p-Terphenyl-d14 (Surrogate)	BWH2165-BS1	LCS	34.720	40.000	ug/L	86.8		40 - 150		

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Control Limits		Lab Quails
								Percent Recovery	Percent Recovery	
QC Batch ID: BWH2165		Used client sample: N								
Acenaphthene	MS	1316295-27	ND	46.820	50.000	ug/L		93.6		50 - 120
	MSD	1316295-27	ND	44.350	50.000	ug/L	5.4	88.7	30	50 - 120
1,4-Dichlorobenzene	MS	1316295-27	ND	43.700	50.000	ug/L		87.4		47 - 120
	MSD	1316295-27	ND	41.710	50.000	ug/L	4.7	83.4	30	47 - 120
2,4-Dinitrotoluene	MS	1316295-27	ND	48.480	50.000	ug/L		97.0		50 - 130
	MSD	1316295-27	ND	49.240	50.000	ug/L	1.6	98.5	30	50 - 130
Hexachlorobenzene	MS	1316295-27	ND	51.410	50.000	ug/L		103		62 - 120
	MSD	1316295-27	ND	50.300	50.000	ug/L	2.2	101	30	62 - 120
Hexachlorobutadiene	MS	1316295-27	ND	34.810	50.000	ug/L		69.6		40 - 110
	MSD	1316295-27	ND	33.720	50.000	ug/L	3.2	67.4	30	40 - 110
Hexachloroethane	MS	1316295-27	ND	41.420	50.000	ug/L		82.8		40 - 120
	MSD	1316295-27	ND	42.800	50.000	ug/L	3.3	85.6	30	40 - 120
Nitrobenzene	MS	1316295-27	ND	46.070	50.000	ug/L		92.1		50 - 120
	MSD	1316295-27	ND	41.790	50.000	ug/L	9.7	83.6	30	50 - 120
N-Nitrosodi-N-propylamine	MS	1316295-27	ND	40.870	50.000	ug/L		81.7		50 - 120
	MSD	1316295-27	ND	39.590	50.000	ug/L	3.2	79.2	30	50 - 120
Pyrene	MS	1316295-27	ND	54.110	50.000	ug/L		108		40 - 140
	MSD	1316295-27	ND	51.540	50.000	ug/L	4.9	103	30	40 - 140
1,2,4-Trichlorobenzene	MS	1316295-27	ND	42.880	50.000	ug/L		85.8		43 - 120
	MSD	1316295-27	ND	38.360	50.000	ug/L	11.1	76.7	30	43 - 120
4-Chloro-3-methylphenol	MS	1316295-27	ND	52.290	50.000	ug/L		105		50 - 120
	MSD	1316295-27	ND	49.050	50.000	ug/L	6.4	98.1	30	50 - 120
2-Chlorophenol	MS	1316295-27	ND	44.820	50.000	ug/L		89.6		50 - 120
	MSD	1316295-27	ND	45.110	50.000	ug/L	0.6	90.2	30	50 - 120
2-Methylphenol	MS	1316295-27	ND	41.150	50.000	ug/L		82.3		40 - 110
	MSD	1316295-27	ND	41.500	50.000	ug/L	0.8	83.0	30	40 - 110
3- & 4-Methylphenol	MS	1316295-27	ND	75.420	100.00	ug/L		75.4		40 - 110
	MSD	1316295-27	ND	74.040	100.00	ug/L	1.8	74.0	30	40 - 110
4-Nitrophenol	MS	1316295-27	ND	10.140	50.000	ug/L		20.3		10 - 110
	MSD	1316295-27	ND	10.610	50.000	ug/L	4.5	21.2	30	10 - 110
Pentachlorophenol	MS	1316295-27	ND	37.710	50.000	ug/L		75.4		30 - 120
	MSD	1316295-27	ND	36.470	50.000	ug/L	3.3	72.9	30	30 - 120
Phenol	MS	1316295-27	ND	20.550	50.000	ug/L		41.1		20 - 110
	MSD	1316295-27	ND	20.570	50.000	ug/L	0.1	41.1	30	20 - 110
2,4,6-Trichlorophenol	MS	1316295-27	ND	46.970	50.000	ug/L		93.9		50 - 120
	MSD	1316295-27	ND	44.850	50.000	ug/L	4.6	89.7	30	50 - 120

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2000 Powell Street 7th Floor
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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits		Lab Quals
									RPD	Percent Recovery	
QC Batch ID: BWH2165		Used client sample: N									
2-Fluorophenol (Surrogate)	MS	1316295-27	ND	48.680	80.000	ug/L		60.8		30 - 120	
	MSD	1316295-27	ND	48.360	80.000	ug/L	0.7	60.4		30 - 120	
Phenol-d5 (Surrogate)	MS	1316295-27	ND	34.520	80.000	ug/L		43.2		12 - 110	
	MSD	1316295-27	ND	34.870	80.000	ug/L	1.0	43.6		12 - 110	
Nitrobenzene-d5 (Surrogate)	MS	1316295-27	ND	75.810	80.000	ug/L		94.8		60 - 130	
	MSD	1316295-27	ND	76.920	80.000	ug/L	1.5	96.2		60 - 130	
2-Fluorobiphenyl (Surrogate)	MS	1316295-27	ND	73.470	80.000	ug/L		91.8		55 - 125	
	MSD	1316295-27	ND	69.520	80.000	ug/L	5.5	86.9		55 - 125	
2,4,6-Tribromophenol (Surrogate)	MS	1316295-27	ND	79.540	80.000	ug/L		99.4		40 - 150	
	MSD	1316295-27	ND	78.660	80.000	ug/L	1.1	98.3		40 - 150	
p-Terphenyl-d14 (Surrogate)	MS	1316295-27	ND	37.190	40.000	ug/L		93.0		40 - 150	
	MSD	1316295-27	ND	34.150	40.000	ug/L	8.5	85.4		40 - 150	



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Purgeable Aromatics and Total Petroleum Hydrocarbons

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BWH1804						
Gasoline Range Organics (C6 - C12)	BWH1804-BLK1	ND	ug/L	50		
a,a,a-Trifluorotoluene (FID Surrogate)	BWH1804-BLK1	104	%	70 - 130 (LCL - UCL)		
QC Batch ID: BWH1805						
Gasoline Range Organics (C6 - C12)	BWH1805-BLK1	ND	ug/L	50		
a,a,a-Trifluorotoluene (FID Surrogate)	BWH1805-BLK1	101	%	70 - 130 (LCL - UCL)		



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Purgeable Aromatics and Total Petroleum Hydrocarbons

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab
								Percent Recovery	RPD	
QC Batch ID: BWH1804										
Gasoline Range Organics (C6 - C12)	BWH1804-BS1	LCS	882.41	1000.0	ug/L	88.2		85 - 115		
a,a,a-Trifluorotoluene (FID Surrogate)	BWH1804-BS1	LCS	41.820	40.000	ug/L	105		70 - 130		
QC Batch ID: BWH1805										
Gasoline Range Organics (C6 - C12)	BWH1805-BS1	LCS	878.22	1000.0	ug/L	87.8		85 - 115		
a,a,a-Trifluorotoluene (FID Surrogate)	BWH1805-BS1	LCS	40.874	40.000	ug/L	102		70 - 130		



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Purgeable Aromatics and Total Petroleum Hydrocarbons

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Control Limits		Lab Quals
								Percent Recovery	Percent Recovery	
QC Batch ID: BWH1804		Used client sample: N								
Gasoline Range Organics (C6 - C12)	MS	1316245-30	ND	892.12	1000.0	ug/L		89.2		70 - 130
	MSD	1316245-30	ND	969.42	1000.0	ug/L	8.3	96.9	20	70 - 130
a,a,a-Trifluorotoluene (FID Surrogate)	MS	1316245-30	ND	36.992	40.000	ug/L		92.5		70 - 130
	MSD	1316245-30	ND	41.682	40.000	ug/L	11.9	104		70 - 130
QC Batch ID: BWH1805		Used client sample: N								
Gasoline Range Organics (C6 - C12)	MS	1316245-31	ND	991.10	1000.0	ug/L		99.1		70 - 130
	MSD	1316245-31	ND	1035.3	1000.0	ug/L	4.4	104	20	70 - 130
a,a,a-Trifluorotoluene (FID Surrogate)	MS	1316245-31	ND	40.771	40.000	ug/L		102		70 - 130
	MSD	1316245-31	ND	39.964	40.000	ug/L	2.0	99.9		70 - 130



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Gas Testing in Water

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BWH1667						
Methane	BWH1667-BLK1	ND	mg/L	0.0010		
QC Batch ID: BWH1668						
Methane	BWH1668-BLK1	ND	mg/L	0.0010		
QC Batch ID: BWH1801						
Methane	BWH1801-BLK1	ND	mg/L	0.0010		



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Gas Testing in Water

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab
								Percent Recovery	RPD	
QC Batch ID: BWH1667										
Methane	BWH1667-BS1	LCS	0.011774	0.010843	mg/L	109		80 - 120		
	BWH1667-BSD1	LCSD	0.011694	0.010843	mg/L	108	0.7	80 - 120	20	
QC Batch ID: BWH1668										
Methane	BWH1668-BS1	LCS	0.010659	0.010843	mg/L	98.3		80 - 120		
	BWH1668-BSD1	LCSD	0.010581	0.010843	mg/L	97.6	0.7	80 - 120	20	
QC Batch ID: BWH1801										
Methane	BWH1801-BS1	LCS	0.010560	0.010843	mg/L	97.4		80 - 120		
	BWH1801-BSD1	LCSD	0.010467	0.010843	mg/L	96.5	0.9	80 - 120	20	



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Water Analysis (General Chemistry)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BWH1341						
Nitrite as NO2	BWH1341-BLK1	ND	mg/L	0.17		
QC Batch ID: BWH1342						
Nitrite as NO2	BWH1342-BLK1	ND	mg/L	0.17		
QC Batch ID: BWH1343						
Nitrite as NO2	BWH1343-BLK1	ND	mg/L	0.17		
QC Batch ID: BWH1408						
Nitrate as NO3	BWH1408-BLK1	ND	mg/L	0.44		
Sulfate	BWH1408-BLK1	ND	mg/L	1.0		
QC Batch ID: BWH1409						
Nitrate as NO3	BWH1409-BLK1	ND	mg/L	0.44		
Sulfate	BWH1409-BLK1	ND	mg/L	1.0		
QC Batch ID: BWH1410						
Nitrate as NO3	BWH1410-BLK1	ND	mg/L	0.44		
Sulfate	BWH1410-BLK1	ND	mg/L	1.0		
QC Batch ID: BWH1521						
Total Alkalinity as CaCO3	BWH1521-BLK1	ND	mg/L	4.1		
QC Batch ID: BWH1561						
Total Alkalinity as CaCO3	BWH1561-BLK1	ND	mg/L	4.1		
QC Batch ID: BWH1608						
Non-Volatile Organic Carbon	BWH1608-BLK1	ND	mg/L	0.30		
QC Batch ID: BWH1609						
Non-Volatile Organic Carbon	BWH1609-BLK1	ND	mg/L	0.30		
QC Batch ID: BWH1610						
Non-Volatile Organic Carbon	BWH1610-BLK1	ND	mg/L	0.30		
QC Batch ID: BWH1658						
Total Alkalinity as CaCO3	BWH1658-BLK1	ND	mg/L	4.1		

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Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab Quals
								Percent Recovery	RPD	
QC Batch ID: BWH1341										
Nitrite as NO2	BWH1341-BS1	LCS	1.6627	1.6425	mg/L	101		90 - 110		
QC Batch ID: BWH1342										
Nitrite as NO2	BWH1342-BS1	LCS	1.6167	1.6425	mg/L	98.4		90 - 110		
QC Batch ID: BWH1343										
Nitrite as NO2	BWH1343-BS1	LCS	1.6344	1.6425	mg/L	99.5		90 - 110		
QC Batch ID: BWH1408										
Nitrate as NO3	BWH1408-BS1	LCS	23.484	22.134	mg/L	106		90 - 110		
Sulfate	BWH1408-BS1	LCS	102.41	100.00	mg/L	102		90 - 110		
QC Batch ID: BWH1409										
Nitrate as NO3	BWH1409-BS1	LCS	23.161	22.134	mg/L	105		90 - 110		
Sulfate	BWH1409-BS1	LCS	102.98	100.00	mg/L	103		90 - 110		
QC Batch ID: BWH1410										
Nitrate as NO3	BWH1410-BS1	LCS	23.537	22.134	mg/L	106		90 - 110		
Sulfate	BWH1410-BS1	LCS	103.65	100.00	mg/L	104		90 - 110		
QC Batch ID: BWH1521										
Total Alkalinity as CaCO3	BWH1521-BS3	LCS	97.520	100.00	mg/L	97.5		90 - 110		
QC Batch ID: BWH1561										
Total Alkalinity as CaCO3	BWH1561-BS3	LCS	95.390	100.00	mg/L	95.4		90 - 110		
QC Batch ID: BWH1608										
Non-Volatile Organic Carbon	BWH1608-BS1	LCS	5.0960	5.0000	mg/L	102		85 - 115		
QC Batch ID: BWH1609										
Non-Volatile Organic Carbon	BWH1609-BS1	LCS	5.1380	5.0000	mg/L	103		85 - 115		
QC Batch ID: BWH1610										
Non-Volatile Organic Carbon	BWH1610-BS1	LCS	5.1030	5.0000	mg/L	102		85 - 115		
QC Batch ID: BWH1658										
Total Alkalinity as CaCO3	BWH1658-BS3	LCS	100.10	100.00	mg/L	100		90 - 110		

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Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Control Limits		Lab Quals
								Percent Recovery	Percent Recovery	
QC Batch ID: BWH1341		Used client sample: N								
Nitrite as NO2	DUP	1317576-04	0.016918	ND		mg/L			10	A02
	MS	1317576-04	0.016918	1.8086	1.7289	mg/L		104	90 - 110	
	MSD	1317576-04	0.016918	1.8164	1.7289	mg/L	0.4	104	10	90 - 110
QC Batch ID: BWH1342		Used client sample: Y - Description: MW-5-W-130815, 08/15/2013 11:07								
Nitrite as NO2	DUP	1317587-06	0.011742	ND		mg/L			10	
	MS	1317587-06	0.011742	1.7220	1.7289	mg/L		98.9		90 - 110
	MSD	1317587-06	0.011742	1.7395	1.7289	mg/L	1.0	99.9	10	90 - 110
QC Batch ID: BWH1343		Used client sample: Y - Description: A-MW-7-W-130815, 08/15/2013 08:10								
Nitrite as NO2	DUP	1317587-16	0.0088649	ND		mg/L			10	A02
	MS	1317587-16	0.0088649	1.6682	1.7289	mg/L		96.0		90 - 110
	MSD	1317587-16	0.0088649	1.7072	1.7289	mg/L	2.3	98.2	10	90 - 110
QC Batch ID: BWH1408		Used client sample: N								
Nitrate as NO3	DUP	1317478-01	5.4007	5.7327		mg/L	6.0		10	
	MS	1317478-01	5.4007	29.208	22.358	mg/L		106		80 - 120
	MSD	1317478-01	5.4007	29.105	22.358	mg/L	0.4	106	10	80 - 120
Sulfate	DUP	1317478-01	57.726	58.222		mg/L	0.9		10	
	MS	1317478-01	57.726	164.85	101.01	mg/L		106		80 - 120
	MSD	1317478-01	57.726	165.19	101.01	mg/L	0.2	106	10	80 - 120
QC Batch ID: BWH1409		Used client sample: Y - Description: MW-3-W-130815, 08/15/2013 08:58								
Nitrate as NO3	DUP	1317587-04	0.39841	0.45153		mg/L	12.5		10	A02
	MS	1317587-04	0.39841	24.719	22.358	mg/L		109		80 - 120
	MSD	1317587-04	0.39841	24.745	22.358	mg/L	0.1	109	10	80 - 120
Sulfate	DUP	1317587-04	11.099	11.598		mg/L	4.4		10	
	MS	1317587-04	11.099	115.76	101.01	mg/L		104		80 - 120
	MSD	1317587-04	11.099	116.40	101.01	mg/L	0.6	104	10	80 - 120
QC Batch ID: BWH1410		Used client sample: Y - Description: A-MW-5-W-130815, 08/15/2013 06:30								
Nitrate as NO3	DUP	1317587-14	19.473	20.226		mg/L	3.8		10	
	MS	1317587-14	19.473	43.758	22.358	mg/L		109		80 - 120
	MSD	1317587-14	19.473	43.959	22.358	mg/L	0.5	110	10	80 - 120
Sulfate	DUP	1317587-14	51.263	53.769		mg/L	4.8		10	
	MS	1317587-14	51.263	161.88	101.01	mg/L		110		80 - 120
	MSD	1317587-14	51.263	161.78	101.01	mg/L	0.1	109	10	80 - 120
QC Batch ID: BWH1521		Used client sample: Y - Description: MW-7-W-130815, 08/15/2013 08:05								
Total Alkalinity as CaCO3	DUP	1317587-08	102.39	102.84		mg/L	0.4		10	
QC Batch ID: BWH1561		Used client sample: N								
Total Alkalinity as CaCO3	DUP	1317724-01	396.76	395.54		mg/L	0.3		10	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. All results listed in this report are for the exclusive use of the submitting party. BC Laboratories, Inc. assumes no responsibility for report alteration, separation, detachment or third party interpretation.



Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Water Analysis (General Chemistry)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Control Limits		Lab Quals
								Percent Recovery	Percent Recovery	
QC Batch ID: BWH1608		Used client sample: Y - Description: MW-1-W-130815, 08/15/2013 12:49								
Non-Volatile Organic Carbon	DUP	1317587-02	0.74800	0.77700		mg/L	3.8		10	
	MS	1317587-02	0.74800	5.9980	5.0251	mg/L		104		80 - 120
	MSD	1317587-02	0.74800	6.0221	5.0251	mg/L	0.4	105	10	80 - 120
QC Batch ID: BWH1609		Used client sample: Y - Description: A-MW-3-W-130815, 08/15/2013 10:05								
Non-Volatile Organic Carbon	DUP	1317587-12	1.3710	1.4400		mg/L	4.9		10	
	MS	1317587-12	1.3710	6.4935	5.0251	mg/L		102		80 - 120
	MSD	1317587-12	1.3710	6.4955	5.0251	mg/L	0.0	102	10	80 - 120
QC Batch ID: BWH1610		Used client sample: Y - Description: S-MW-6-W-130815, 08/15/2013 11:30								
Non-Volatile Organic Carbon	DUP	1317587-22	7.4320	8.0860		mg/L	8.4		10	
	MS	1317587-22	7.4320	18.338	10.050	mg/L		109		80 - 120
	MSD	1317587-22	7.4320	18.866	10.050	mg/L	2.8	114	10	80 - 120
QC Batch ID: BWH1658		Used client sample: Y - Description: MW-1-W-130815, 08/15/2013 12:49								
Total Alkalinity as CaCO3	DUP	1317587-02	45.180	45.030		mg/L	0.3		10	

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Arcadis
2000 Powell Street 7th Floor
Emeryville, CA 94608

Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BWH1539						
Dissolved Cadmium	BWH1539-BLK1	ND	ug/L	10		
Dissolved Chromium	BWH1539-BLK1	ND	ug/L	10		
Dissolved Iron	BWH1539-BLK1	ND	ug/L	50		
Dissolved Lead	BWH1539-BLK1	ND	ug/L	50		
Dissolved Nickel	BWH1539-BLK1	ND	ug/L	10		
Dissolved Zinc	BWH1539-BLK1	ND	ug/L	10		
QC Batch ID: BWH1540						
Dissolved Iron	BWH1540-BLK1	ND	ug/L	50		



Arcadis
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Emeryville, CA 94608

Reported: 08/29/2013 11:14
Project: 0752
Project Number: 351646
Project Manager: Kathy Brandt

Metals Analysis

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab
								Percent Recovery	RPD	
QC Batch ID: BWH1539										
Dissolved Cadmium	BWH1539-BS1	LCS	193.92	200.00	ug/L	97.0		85 - 115		
Dissolved Chromium	BWH1539-BS1	LCS	195.07	200.00	ug/L	97.5		85 - 115		
Dissolved Iron	BWH1539-BS1	LCS	1015.7	1000.0	ug/L	102		85 - 115		
Dissolved Lead	BWH1539-BS1	LCS	405.25	400.00	ug/L	101		85 - 115		
Dissolved Nickel	BWH1539-BS1	LCS	402.84	400.00	ug/L	101		85 - 115		
Dissolved Zinc	BWH1539-BS1	LCS	496.97	500.00	ug/L	99.4		85 - 115		
QC Batch ID: BWH1540										
Dissolved Iron	BWH1540-BS1	LCS	995.48	1000.0	ug/L	99.5		85 - 115		



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Emeryville, CA 94608

Reported: 08/29/2013 11:14
Project: 0752
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Project Manager: Kathy Brandt

Metals Analysis

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Control Limits		Lab
								Percent Recovery	RPD	
QC Batch ID: BWH1539		Used client sample: N								
Dissolved Cadmium	DUP	1317693-01	ND	ND		ug/L			20	
	MS	1317693-01	ND	201.80	204.08	ug/L		98.9		75 - 125
	MSD	1317693-01	ND	202.09	204.08	ug/L	0.1	99.0	20	75 - 125
Dissolved Chromium	DUP	1317693-01	ND	ND		ug/L			20	
	MS	1317693-01	ND	194.81	204.08	ug/L		95.5		75 - 125
	MSD	1317693-01	ND	194.82	204.08	ug/L	0.0	95.5	20	75 - 125
Dissolved Iron	DUP	1317693-01	32.150	ND		ug/L			20	
	MS	1317693-01	32.150	1011.3	1020.4	ug/L		96.0		75 - 125
	MSD	1317693-01	32.150	1025.1	1020.4	ug/L	1.4	97.3	20	75 - 125
Dissolved Lead	DUP	1317693-01	ND	ND		ug/L			20	
	MS	1317693-01	ND	411.41	408.16	ug/L		101		75 - 125
	MSD	1317693-01	ND	409.24	408.16	ug/L	0.5	100	20	75 - 125
Dissolved Nickel	DUP	1317693-01	ND	ND		ug/L			20	
	MS	1317693-01	ND	402.90	408.16	ug/L		98.7		75 - 125
	MSD	1317693-01	ND	403.20	408.16	ug/L	0.1	98.8	20	75 - 125
Dissolved Zinc	DUP	1317693-01	ND	ND		ug/L			20	
	MS	1317693-01	ND	506.30	510.20	ug/L		99.2		75 - 125
	MSD	1317693-01	ND	508.65	510.20	ug/L	0.5	99.7	20	75 - 125
QC Batch ID: BWH1540		Used client sample: Y - Description: MW-3-W-130815, 08/15/2013 08:58								
Dissolved Iron	DUP	1317587-04	4161.7	4091.7		ug/L	1.7		20	
	MS	1317587-04	4161.7	4893.8	1020.4	ug/L		71.7		75 - 125 A03
	MSD	1317587-04	4161.7	5020.7	1020.4	ug/L	2.6	84.2	20	75 - 125



Arcadis
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Notes And Definitions

- MDL Method Detection Limit
- ND Analyte Not Detected at or above the reporting limit
- PQL Practical Quantitation Limit
- RPD Relative Percent Difference
- A01 PQL's and MDL's are raised due to sample dilution.
- A02 The difference between duplicate readings is less than the PQL.
- A03 The sample concentration is more than 4 times the spike level.



Appendix F

MPE Pilot Test Pressure Transducer
Data

Table 1
Summary of MPE Pilot Test Pressure Transducer Data
Phase 1: Pump Test Drawdown Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Time (hh:mm)	Elapsed Time (hh:mm)	Groundwater Extraction Flow Rate (GPM)	PZ-1 DTW (ft BTOC)	MW-5 DTW (ft BTOC)	MW-4 DTW (ft BTOC)	MP-1 DTW (ft BTOC)
9:05	0:00	1.0	19.33	19.48	18.66	19.17
9:06	0:01	1.0	18.81	19.47	18.66	19.17
9:07	0:02	1.0	20.35	19.54	18.75	19.20
9:08	0:03	1.0	19.55	19.58	18.79	19.21
9:09	0:04	1.0	18.75	19.54	18.73	19.19
9:10	0:05	1.0	19.01	19.50	18.66	19.18
9:11	0:06	1.0	19.10	19.49	18.65	19.17
9:12	0:07	1.0	19.58	19.47	18.65	19.17
9:13	0:08	1.0	20.16	19.58	18.77	19.21
9:14	0:09	1.0	19.47	19.58	18.75	19.22
9:15	0:10	1.0	19.50	19.54	18.68	19.20
9:16	0:11	1.0	19.20	19.52	18.69	19.19
9:17	0:12	1.0	19.47	19.53	18.68	19.18
9:18	0:13	1.0	19.62	19.55	18.70	19.19
9:19	0:14	1.0	19.33	19.56	18.71	19.20
9:20	0:15	1.0	20.10	19.58	18.72	19.21
9:21	0:16	1.0	19.62	19.59	18.75	19.21
9:22	0:17	1.0	19.45	19.58	18.72	19.21
9:23	0:18	1.0	19.43	19.56	18.71	19.20
9:24	0:19	1.0	19.50	19.56	18.69	19.18
9:25	0:20	1.0	20.65	19.59	18.70	19.20
9:26	0:21	1.0	20.56	19.67	18.83	19.23
9:27	0:22	1.0	20.41	19.70	18.85	19.26
9:28	0:23	1.0	18.52	19.64	18.79	19.22
9:29	0:24	1.0	19.03	19.60	18.68	19.20
9:30	0:25	--	--	19.55	18.66	19.18
9:31	0:26	--	--	19.62	18.74	19.22
9:32	0:27	--	--	19.60	18.73	19.22
9:33	0:28	--	--	19.56	18.70	19.21
9:34	0:29	--	--	19.56	18.70	19.20
9:35	0:30	--	--	19.54	18.69	19.19
9:36	0:31	--	--	19.54	18.69	19.19
9:37	0:32	--	--	19.53	18.68	19.18
9:38	0:33	--	--	19.51	18.67	19.18
9:39	0:34	--	--	19.51	18.67	19.17
9:40	0:35	--	--	19.48	18.61	19.16
9:41	0:36	--	--	19.45	18.61	19.16
9:42	0:37	--	--	19.50	18.64	19.17
9:43	0:38	--	--	19.56	18.74	19.20
9:44	0:39	--	--	19.57	18.72	19.19
9:45	0:40	--	--	19.54	18.70	19.19
9:46	0:41	--	--	19.52	18.69	19.18
9:47	0:42	--	--	19.53	18.68	19.18
9:48	0:43	--	--	19.52	18.68	19.18
9:49	0:44	--	--	19.49	18.67	19.18
9:50	0:45	--	--	19.51	18.66	19.17
9:51	0:46	--	--	19.50	18.67	19.17
9:52	0:47	--	--	19.50	18.67	19.16
9:53	0:48	--	--	19.50	18.66	19.17

Table 1
Summary of MPE Pilot Test Pressure Transducer Data
Phase 1: Pump Test Drawdown Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Time (hh:mm)	Elapsed Time (hh:mm)	Groundwater Extraction Flow Rate (GPM)	PZ-1 DTW (ft BTOC)	MW-5 DTW (ft BTOC)	MW-4 DTW (ft BTOC)	MP-1 DTW (ft BTOC)
9:54	0:49	--	--	19.51	18.67	19.17
9:55	0:50	--	--	19.48	18.67	19.16
9:56	0:51	--	--	19.49	18.66	19.16
9:57	0:52	--	--	19.50	18.66	19.16
9:58	0:53	--	--	19.49	18.66	19.16
9:59	0:54	--	--	19.46	18.61	19.15
10:00	0:55	--	--	19.53	18.67	19.18
10:01	0:56	--	--	19.55	18.70	19.19
10:02	0:57	--	--	19.53	18.67	19.18
10:03	0:58	3.0	19.38	19.51	18.66	19.18
10:04	0:59	3.0	19.37	19.50	18.66	19.17
10:05	1:00	3.0	19.28	19.50	18.66	19.17
10:06	1:01	3.0	21.33	19.60	18.74	19.22
10:07	1:02	3.0	22.47	19.73	18.92	19.28
10:08	1:03	3.0	23.23	19.89	19.05	19.32
10:09	1:04	3.0	24.20	20.07	19.13	19.38
10:10	1:05	3.0	23.76	20.23	19.23	19.43
10:11	1:06	3.0	24.45	20.40	19.36	19.48
10:12	1:07	3.0	23.93	20.54	19.44	19.52
10:13	1:08	3.0	24.51	20.68	19.52	19.57
10:14	1:09	3.0	24.28	20.80	19.59	19.61
10:15	1:10	3.0	24.18	20.90	19.63	19.65
10:16	1:11	3.0	24.71	21.00	19.67	19.69
10:17	1:12	3.0	24.60	21.07	19.69	19.74
10:18	1:13	3.0	24.40	21.15	19.74	19.76
10:19	1:14	3.0	24.38	21.22	19.76	19.79
10:20	1:15	3.0	24.58	21.29	19.78	19.80
10:21	1:16	3.0	24.98	21.33	19.82	19.82
10:22	1:17	3.0	24.80	21.40	19.85	19.84
10:23	1:18	3.0	24.63	21.48	19.87	19.88
10:24	1:19	3.0	24.56	21.51	19.89	19.88
10:25	1:20	3.0	24.50	21.56	19.91	19.91
10:26	1:21	3.0	24.44	21.58	19.93	19.92
10:27	1:22	3.0	24.86	21.62	19.92	19.94
10:28	1:23	3.0	24.72	21.64	19.93	19.96
10:29	1:24	3.0	24.38	21.66	19.94	19.95
10:30	1:25	3.0	24.56	21.70	19.95	19.98
10:31	1:26	3.0	24.39	21.71	19.96	19.98
10:32	1:27	3.0	24.69	21.72	19.98	20.00
10:33	1:28	3.0	25.03	21.74	19.98	20.01
10:34	1:29	3.0	24.62	21.76	20.00	20.01
10:35	1:30	3.0	24.52	21.78	20.01	20.03
10:36	1:31	3.0	24.81	21.79	20.02	20.04
10:37	1:32	3.0	24.56	21.80	20.02	20.05
10:38	1:33	3.0	24.46	21.83	20.02	20.05
10:39	1:34	3.0	24.94	21.85	20.03	20.06
10:40	1:35	3.0	24.72	21.85	20.04	20.07
10:41	1:36	3.0	24.57	21.86	20.06	20.08
10:42	1:37	3.0	24.86	21.88	20.07	20.09

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Phase 1: Pump Test Drawdown Data
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Time (hh:mm)	Elapsed Time (hh:mm)	Groundwater Extraction Flow Rate (GPM)	PZ-1 DTW (ft BTOC)	MW-5 DTW (ft BTOC)	MW-4 DTW (ft BTOC)	MP-1 DTW (ft BTOC)
10:43	1:38	3.0	24.96	21.89	20.08	20.09
10:44	1:39	3.0	24.65	21.89	20.08	20.10
10:45	1:40	3.0	24.60	21.91	20.08	20.11
10:46	1:41	3.0	24.64	21.92	20.10	20.11
10:47	1:42	3.0	24.54	21.94	20.09	20.11
10:48	1:43	3.0	25.08	21.93	20.10	20.11
10:49	1:44	3.0	24.72	21.95	20.11	20.11
10:50	1:45	3.0	24.63	21.96	20.11	20.13
10:51	1:46	3.0	24.51	21.98	20.12	20.14
10:52	1:47	3.0	24.72	21.97	20.11	20.12
10:53	1:48	3.0	24.42	21.98	20.13	20.14
10:54	1:49	3.0	25.06	21.99	20.13	20.14
10:55	1:50	3.0	24.73	22.00	20.13	20.15
10:56	1:51	3.0	24.68	22.01	20.12	20.15
10:57	1:52	3.0	25.00	22.01	20.14	20.17
10:58	1:53	3.0	24.33	22.01	20.14	20.16
10:59	1:54	3.0	24.76	22.02	20.16	20.18
11:00	1:55	3.5	24.93	22.03	20.16	20.17
11:01	1:56	3.5	25.25	22.03	20.17	20.18
11:02	1:57	3.5	24.89	22.05	20.18	20.20
11:03	1:58	3.5	24.79	22.07	20.19	20.21
11:04	1:59	3.5	25.17	22.08	20.20	20.20
11:05	2:00	3.5	25.12	22.08	20.21	20.20
11:06	2:01	3.5	24.89	22.11	20.21	20.22
11:07	2:02	3.5	24.82	22.12	20.22	20.22
11:08	2:03	3.5	25.22	22.13	20.23	20.23
11:09	2:04	3.5	25.09	22.13	20.23	20.23
11:10	2:05	3.5	24.91	22.15	20.24	20.24
11:11	2:06	3.5	24.83	22.16	20.25	20.24
11:12	2:07	3.5	25.23	22.15	20.25	20.24
11:13	2:08	3.5	24.98	22.16	20.24	20.24
11:14	2:09	3.5	24.96	22.19	20.27	20.25
11:15	2:10	3.5	24.89	22.19	20.27	20.25
11:16	2:11	3.5	25.27	22.19	20.26	20.25
11:17	2:12	3.5	25.39	22.20	20.28	20.28
11:18	2:13	3.5	25.02	22.18	20.28	20.28
11:19	2:14	3.5	24.98	22.19	20.29	20.28
11:20	2:15	3.5	25.16	22.20	20.28	20.27
11:21	2:16	3.5	25.34	22.21	20.29	20.29
11:22	2:17	3.5	25.16	22.22	20.30	20.29
11:23	2:18	3.5	24.97	22.22	20.30	20.28
11:24	2:19	3.5	24.90	22.24	20.30	20.29
11:25	2:20	3.5	25.28	22.23	20.31	20.30
11:26	2:21	3.5	25.38	22.22	20.31	20.30
11:27	2:22	3.5	25.01	22.26	20.32	20.31
11:28	2:23	3.5	24.94	22.25	20.33	20.33
11:29	2:24	3.5	25.12	22.23	20.31	20.31
11:30	2:25	3.5	25.45	22.25	20.32	20.32
11:31	2:26	3.5	25.08	22.28	20.33	20.32

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Phase 1: Pump Test Drawdown Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Time (hh:mm)	Elapsed Time (hh:mm)	Groundwater Extraction Flow Rate (GPM)	PZ-1 DTW (ft BTOC)	MW-5 DTW (ft BTOC)	MW-4 DTW (ft BTOC)	MP-1 DTW (ft BTOC)
11:32	2:27	3.5	25.00	22.26	20.33	20.31
11:33	2:28	3.5	24.93	22.28	20.33	20.33
11:34	2:29	3.5	25.31	22.28	20.33	20.33
11:35	2:30	3.5	25.12	22.28	20.34	20.33
11:36	2:31	3.5	25.07	22.28	20.34	20.35
11:37	2:32	3.5	25.05	22.29	20.34	20.34
11:38	2:33	3.5	24.99	22.29	20.35	20.34
11:39	2:34	3.5	25.36	22.29	20.35	20.35
11:40	2:35	3.5	25.33	22.28	20.35	20.34
11:41	2:36	3.5	25.07	22.29	20.35	20.34
11:42	2:37	3.5	24.99	22.29	20.35	20.35
11:43	2:38	3.5	25.27	22.30	20.35	20.35
11:44	2:39	3.5	25.38	22.30	20.35	20.35
11:45	2:40	3.5	25.22	22.31	20.35	20.35
11:46	2:41	3.5	25.09	22.32	20.36	20.36
11:47	2:42	3.5	25.06	22.34	20.36	20.36
11:48	2:43	3.5	24.95	22.31	20.36	20.37
11:49	2:44	3.5	25.35	22.33	20.36	20.36
11:50	2:45	3.5	25.29	22.32	20.37	20.36
11:51	2:46	3.5	25.07	22.33	20.37	20.37
11:52	2:47	3.5	25.03	22.34	20.38	20.39
11:53	2:48	3.5	24.96	22.35	20.37	20.36
11:54	2:49	3.5	25.34	22.37	20.38	20.37
11:55	2:50	3.5	25.43	22.35	20.38	20.38
11:56	2:51	3.5	25.08	22.36	20.38	20.38
11:57	2:52	3.5	25.02	22.36	20.39	20.38
11:58	2:53	3.5	24.97	22.37	20.38	20.38
11:59	2:54	3.5	25.29	22.36	20.38	20.39
12:00	2:55	3.5	25.46	22.35	20.38	20.39
12:01	2:56	3.5	25.15	22.37	20.38	20.39
12:02	2:57	3.5	25.05	22.36	20.39	20.38
12:03	2:58	3.5	24.93	22.37	20.40	20.38
12:04	2:59	3.5	24.97	22.37	20.39	20.39
12:05	3:00	3.5	25.20	22.38	20.40	20.41
12:06	3:01	3.5	25.39	22.37	20.40	20.39
12:07	3:02	3.5	25.36	22.37	20.40	20.39
12:08	3:03	3.5	25.13	22.37	20.40	20.39
12:09	3:04	3.5	25.01	22.36	20.41	20.39
12:10	3:05	3.5	24.99	22.38	20.41	20.40
12:11	3:06	3.5	25.34	22.38	20.41	20.40
12:12	3:07	3.5	25.33	22.39	20.42	20.40
12:13	3:08	3.5	25.48	22.36	20.42	20.39
12:14	3:09	3.5	25.31	22.40	20.42	20.41
12:15	3:10	3.5	25.14	22.41	20.42	20.40
12:16	3:11	3.5	25.05	22.39	20.42	20.41
12:17	3:12	3.5	25.02	22.39	20.42	20.41
12:18	3:13	3.5	25.12	22.40	20.41	20.41
12:19	3:14	3.5	25.31	22.39	20.42	20.41
12:20	3:15	3.5	25.45	22.41	20.41	20.41

Table 1
Summary of MPE Pilot Test Pressure Transducer Data
Phase 1: Pump Test Drawdown Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Time (hh:mm)	Elapsed Time (hh:mm)	Groundwater Extraction Flow Rate (GPM)	PZ-1 DTW (ft BTOC)	MW-5 DTW (ft BTOC)	MW-4 DTW (ft BTOC)	MP-1 DTW (ft BTOC)
12:21	3:16	3.5	25.18	22.41	20.43	20.41
12:22	3:17	3.5	25.21	22.41	20.43	20.41
12:23	3:18	3.5	25.09	22.39	20.43	20.42
12:24	3:19	3.5	24.94	22.41	20.43	20.41
12:25	3:20	3.5	25.00	22.40	20.42	20.43
12:26	3:21	3.5	25.20	22.41	20.42	20.42
12:27	3:22	3.5	25.40	22.43	20.43	20.42
12:28	3:23	3.5	25.28	22.41	20.43	20.42
12:29	3:24	3.5	25.23	22.40	20.43	20.42
12:30	3:25	3.5	25.10	22.41	20.44	20.43
12:31	3:26	3.5	25.08	22.41	20.43	20.42
12:32	3:27	3.5	25.02	22.42	20.43	20.45
12:33	3:28	3.5	25.15	22.44	20.44	20.43
12:34	3:29	3.5	25.47	22.42	20.44	20.43
12:35	3:30	3.5	25.34	22.42	20.44	20.43
12:36	3:31	3.5	25.18	22.45	20.44	20.44
12:37	3:32	3.5	25.05	22.41	20.44	20.42
12:38	3:33	3.5	25.03	22.42	20.45	20.43
12:39	3:34	3.5	25.02	22.42	20.45	20.43
12:40	3:35	3.5	25.29	22.44	20.46	20.43
12:41	3:36	3.5	25.45	22.43	20.45	20.45
12:42	3:37	3.5	25.42	22.43	20.45	20.44
12:43	3:38	3.5	25.22	22.44	20.45	20.45
12:44	3:39	3.5	25.11	22.43	20.45	20.44
12:45	3:40	3.5	24.98	22.42	20.44	20.44
12:46	3:41	3.5	25.01	22.43	20.45	20.43
12:47	3:42	3.5	25.36	22.44	20.45	20.46
12:48	3:43	3.5	25.49	22.44	20.45	20.44
12:49	3:44	3.5	25.60	22.46	20.48	20.46
12:50	3:45	3.5	25.55	22.48	20.51	20.47

Notes:
MPE - Multi-phase extraction
GPM - Gallon per minute
DTW - Depth to water
ft - Feet
BTOC - Below top of casing

Figure 1
Water Level in PZ-1
Pressure Transducer Data
Multi-Phase Extraction Pilot Test

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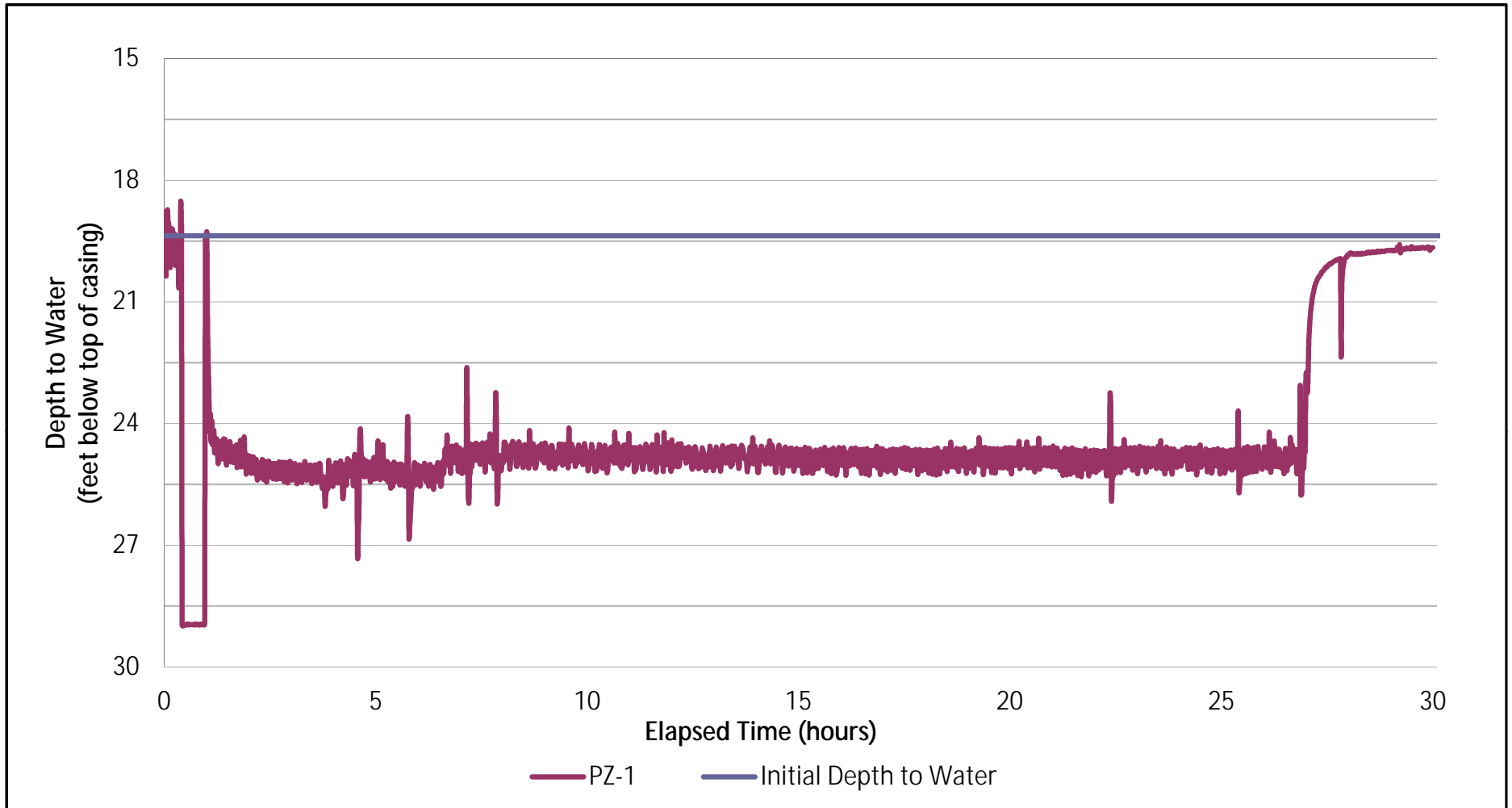


Figure 2
Water Level in Monitoring Network Wells
Pressure Transducer Data
Multi-Phase Extraction Pilot Test: Phase 1 and Phase 2

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