Roya C. Kambin
Project Manager
Marketing Business Unit

Chevron Environmental Management Company
6101 Bollinger Canyon Road
San Ramon, CA 94583
Tel (925) 790-6270
RKLG@chevron.com

February 12, 2013

Mr. Jerry Wickham
Alameda County Health Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

RE: Multi-Phase Extraction and Air Sparge/ Soil Vapor Extraction Pilot Test Work Plan
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 925.790.6270.

Sincerely,

Roya Kambin
Union Oil of California – Project Manager

Attachment
Multi-Phase Extraction and Air Sparge/ Soil Vapor Extraction Pilot Test Work Plan

ARCADIS
Infrastructure · Water · Environment · Buildings

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Chevron Environmental Management Company

Multi-Phase Extraction and Air Sparge/ Soil Vapor Extraction Pilot Test Work Plan

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

February 12, 2013

ARCADIS

Tyler Sale
Environmental Engineer II

Katherine Brandt
Project Manager

David Lay
Professional Geologist

Multi-Phase Extraction and Air Sparge/Soil Vapor Extraction Pilot Test Work Plan

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

Prepared for:
Chevron Environmental Management Company

Prepared by:
ARCADIS
2000 Powell Street
Suite 700
Emeryville
California 94608
Tel 510.596.9675
Fax 510.652.4906

Our Ref.:
B0047339.2012

Date:
February 12, 2013

ARCADIS

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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) prepared this Multi-Phase Extraction and Air Sparge/Soil Vapor Extraction Pilot Test Work Plan (work plan). This work plan proposes a multi-phase extraction (MPE) pilot test to address the petroleum-hydrocarbon-impacted groundwater in the co-mingled plume at 706, 726, and 800 Harrison Street in Oakland, California (site). Figure 1 illustrates the general area of the site and Figure 2 presents a layout of the three properties.

This work plan was prepared according to the Alameda County Department of Environmental Health's (ACEH's) requirements presented in a letter dated December 10, 2012 (Appendix A). This work plan presents relevant background information, pilot testing objectives, procedures, 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 work plan is to communicate the updated conceptual site model (CSM), outline the MPE and air sparge (AS)/SVE pilot test objectives and proposed implementation and reporting activities, and summarize the proposed implementation schedule.

1.2 Work Plan Organization

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

- Section 2 summarizes the CSM.
- Section 3 discusses the proposed MPE pilot test.
- Section 4 discusses the proposed AS/SVE pilot test.
- Section 5 discusses data analysis, reporting, and proposed schedule.

2. Conceptual Site Model

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 in the groundwater.

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). All 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

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). It is assumed that Merritt Sand lies under the site, based on visual inspections of soil during the investigations (Stantec 2009).

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 bgs. During the second semiannual groundwater monitoring and sampling event in August 2012, average depth-to-water measurements were approximately 16.30 (706 Harrison Street), 19.80 (726 Harrison Street), and 17.92 (800 Harrison Street) feet below top of well casing. 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 in the source area near EW-1 on the 726 Harrison Street Property within the deeper water-bearing zone. MW-6 is screened from 44 to 49 feet bgs (Table 1).

The predominant groundwater gradient observed across all three properties is south-southwest with a horizontal hydraulic gradient of 0.007 foot per foot (ARCADIS 2011). 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 second semiannual 2012 monitoring event is presented on Figure 3.

2.3 Extent of Contamination

The current distribution of dissolved-phase petroleum hydrocarbons is discussed below for each of the properties following the second semiannual 2012 groundwater monitoring event conducted on August 9, 2012.

2.3.1 706 Harrison Street

The maximum dissolved concentrations of total petroleum hydrocarbons as gasoline (TPH-g) (2,200 micrograms per liter [µg/L]) and benzene (850 µg/L) were detected in the samples collected from MW-1. The maximum dissolved concentrations of toluene (1,800 µg/L), ethylbenzene (440 µg/L), total xylenes (1,900 µg/L), and methyl tert-butyl ether (MTBE; 4,100 µg/L) were detected in the samples collected from MW-2. 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

ARCADIS and ASE collected split samples from 726 Harrison Street. The maximum dissolved concentrations detected in ASE samples were total purgeable petroleum hydrocarbon (TPPH; 16,000 µg/L), benzene (1,400 µg/L), and MTBE (16,000 µg/L) in the samples collected from MW-5. The maximum dissolved concentrations of toluene (5,800 µg/L), ethylbenzene (4,700 µg/L), and total xylenes (9,600 µg/L) were also 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 1.2 µg/L. Split sample results collected by ARCADIS were similar to the above concentrations and are presented in Table 2.

2.3.3 800 Harrison Street

The maximum dissolved concentrations of TPH-g (1,900 µg/L), benzene (81 µg/L), toluene (18 µg/L), ethylbenzene (10 µg/L), and total xylenes (22 µg/L) were detected in the samples collected from MW-5. The maximum dissolved concentration of MTBE (370 µg/L) was detected in the samples collected from MW-3. 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 2012).

Isoconcentration contour maps for TPH-g, benzene, and MTBE are presented on Figures 4, 5, and 6, respectively.

2.4 Previous Pilot Testing

MPE pilot testing has 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 from historical site investigations and historical soil analytical data are presented in Tables 3 and 4, respectively. 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 (inH_2O). The combined flow rate from all five SVE wells ranged from approximately 30 to 100 acfm. The AS/SVE system removed approximately 1,871 pounds of hydrocarbons during operation. The AS system continued to operate following SVE system shutdown until the first quarter 2003. The AS system has operated continuously since startup in May 1998, 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 inH_2O. 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 short-term pilot testing 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 inH_2O 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 under the same operational conditions as the other SVE pilot testing activities (Stantec 2009).

2.5 Data Gaps

Current soil investigation data indicates that the base of the smear zone extends to approximately 25 to 30 feet bgs. Additional data will be collected during pilot test well installation activities to verify site lithology and the extent and distribution of contamination within the smear zone. This data will be used to confirm the base of the smear zone in the dissolved-phase source area and to determine appropriate well screen depths for extraction and/or air injection remediation wells.

3. Proposed Multi-Phase Extraction Pilot Test

MPE systems are typically categorized as two-phase extraction (TPE) or dual-phase extraction (DPE). A TPE system relies on a drop pipe, or "stinger" pipe, which is extended to the bottom of the smear zone within an extraction well. One high-vacuum liquid ring pump (capable of 24 to 29 inHg vacuum) is typically used to extract groundwater and soil vapors with a small (typically 1-inch-diameter) drop pipe. In contrast, a DPE pilot test uses a submersible pump to extract groundwater and lower the water table while a separate pump applies a vacuum to the well casing to remove soil vapor. ARCADIS proposes to conduct a DPE pilot test near the dissolved-phase source area located at 726 Harrison Street for the following reasons:

- DPE systems are less likely to fail to dewater.
- DPE systems often operate more reliably than TPE systems.

3.1 Objectives

The purpose of the MPE pilot test is to determine optimal MPE well design and system operational parameters. The pilot test will include completion of the following tasks:

- 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. Flow measurements will be collected 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.

MPE pilot testing will be performed on one proposed MPE pilot test well located at 726 Harrison Street (MPE-1). The site-specific MPE pilot test activities, including test equipment; extraction and observation well installation, locations, and construction; test duration; field and system measurements; and sampling activities are summarized in Sections 3.2 and 3.3.

3.2 Extraction Well/Monitoring Point Installation

One MPE well (MPE-1) will be installed to serve as both a groundwater extraction point for the MPE pilot test and to further delineate the potential impacts to groundwater and subsurface soils. The proposed location of the new well is shown on Figure 7. A detailed utility search will be performed prior to initiating drilling to verify that the proposed boring location is not within a utility line or corridor. Three lines of evidence will be gathered, including, but not limited to, Underground Service Alert DigAlert Hotline, private utility locator, a review of utility as-built maps. In addition, each borehole will be pre-cleared with hand auger or vacuum excavation techniques to at least 8 feet 1 inch bgs, and with a diameter at least 110% the size of the auger to be used. Following borehole clearance, a 10-inch hollow stem auger (HSA) will be utilized during MPE-1 installation.

MPE pilot test well MPE-1 will be installed to a total boring depth of approximately 33 feet bgs. The well will be 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. The screen will be installed across the water table based on field observations during drilling. A 3-foot section of 4-inch-diameter blank well casing will be installed approximately 30 to 33 feet bgs as a well sump. The extraction pilot test well will be installed and constructed according to ARCADIS' Well Installation Standard Operating Procedure (SOP), and completed with a locking, flush-mount, 12-inch-diameter traffic-rated well box. All relevant ARCADIS SOPs are included in Appendix B. Drilling augers and sampling tools will be decontaminated after drilling in accordance with ARCADIS Field Equipment Decontamination SOP. Soil cuttings and decontamination water will be collected in labeled drums and temporarily stored on site until the laboratory data has been evaluated. Waste profile forms will be prepared and the soil and purge water will be disposed of at an accredited waste disposal facility.

During well installation, the soil from the borehole will be continuously logged by a geologist in accordance with the Unified Soils Classification System and screened with a photo ionization detector (PID). The PID results, in parts per million, from the field screening will be recorded on the field boring logs. Soil samples will be collected for laboratory analysis biased toward the highest probable degree of petroleum hydrocarbon concentration, based on the highest PID readings greater than the background concentration. Soil samples will be collected for laboratory analysis at a frequency of every 5 feet if FID readings are not detected above background concentrations, and if other indicators of potential hydrocarbon impacts (e.g., staining, odor) are absent. If elevated FID readings or other indicators of potential hydrocarbon impacts are observed during well installation, additional soil samples will be collected.

The soil and groundwater samples will be analyzed for the presence of the following constituents:

- TPPH by United States Environmental Protection Agency (USEPA) Method 8260B
- Benzene, toluene, ethylbenzene, and total xylenes (collectively, BTEX); MTBE, EDB, and EDC by USEPA Method 8260B

Groundwater samples will be collected from MPE-1 and other site monitoring wells during the second quarter semiannual groundwater monitoring event, in accordance with ARCADIS' Standard Sampling for Monitoring Wells SOP (Appendix B). Well development will be conducted prior to sampling and in accordance with the ARCADIS' Well Development SOP (Appendix B). Well development will include surging the screen interval and purging the fines out of the well.

The groundwater samples will be collected and analyzed for TPPH, BTEX, and oxygenates by USEPA Method 8260B. Well development and sampling purge water will be collected in labeled drums and temporarily stored on site until the laboratory data has been evaluated. Waste profile forms will be prepared and the purge water will be disposed of at an accredited waste disposal facility**.**

3.3 Multi-Phase Extraction Pilot Test Activities

3.3.1 Pilot Test Equipment

Groundwater will be extracted using a low-flow, submersible pneumatic pump capable of up to 4 gpm at approximately 30 feet of water head. Temporary aboveground conveyance piping will route extracted water to a truck-mounted or closed-head polyethylene tank. A dedicated air compressor, regulator valves, and compressed air conveyance piping will be used along with the pneumatic pump. The air compressor will be capable of delivering air pressure of at least 40 psi.

A mobile remediation trailer (MRT) system will be used for vacuum application during pilot testing. The MRT is a portable SVE and catalytic oxidizer remediation system. The portable SVE system consists of a 28-foot-long equipment trailer segregated into two rooms (equipment and controls). The equipment includes two 20-horsepower rotary claw vacuum pumps capable of approximately 325 acfm at 14.2 inHg vacuum, one 120-gallon moisture separator and positive displacement transfer pump system, and one 500 standard cubic feet per minute electric catalytic oxidizer (CatOx) system with a master control panel and Supervisory Control and Data Acquisition system. Based on previous pilot testing data, a

vacuum pump capable of pulling greater than 80 inH_2O at the wellhead will be used for vapor extraction. Anticipated vapor-phase flow ranges from the extraction well are approximately 10 to 20 acfm based on historical SVE system operations at 706 Harrison Street.

3.3.2 Multi-Phase Extraction Pilot Test Extraction and Observation Wells

The MPE pilot test extraction well (MPE-1) will be constructed of 4-inch-diameter PVC and installed between MW-5, located on the 726 Harrison Street Property, and MW-4, located on the 706 Harrison Street Property. The base of the light nonaqueous phase liquid (LNAPL) smear zone will be delineated by field soil screening during the extraction well installation. Based on available information, the screen base will likely be set approximately 30 feet bgs, however field soil screening during well installation will determine the final screen interval. The screen will be 15 feet long, and a blank casing sump will be installed below the screen (30 to 33 feet bgs) to house the extraction pump in order to maximize drawdown and linear footage of dewatered screen. Drilling activities will be conducted in accordance with ARCADIS' Soil Drilling and Soil Sampling SOP (Appendix B).

Soil samples will be collected during well installation as described in Section 3.2. Air monitoring equipment, such as a flame ionization detector (FID), will be used to ensure that sufficient VOC concentration is detected in the boring (greater than 500 parts per million VOCs). If soil concentrations indicative of an LNAPL source area are not encountered during soil boring activities the pilot test well will not be installed at this location. Instead, a second attempt will be made at a different location within the source area .

Existing wells MW-3, MW-4, and MW-5 will be used as pilot test observation wells. The well locations were chosen such that the designated observation wells (MW-5, MW-4, and MW-3) are located 5, 10, and 20 feet away from the extraction well, respectively. Existing well construction details are provided in Table 1. One 1-inch-diameter piezometer observation point (MP-1) will be installed 15 feet northwest of the extraction well to complete the radial observation well coverage of MPE-1. This well will be constructed of 1-inch-diameter Schedule 40 PVC, with a total depth of 30 feet bgs and screen interval of 15 to 30 feet bgs. The proposed piezometer borehole location will be pre-cleared with hand auger or vacuum excavation techniques to at least 8 feet 1 inch bgs and with a diameter at least 110% the size of the auger to be used. Piezeometer installation activities will be consistent with MPE-1 installation procedures discussed above.

A site map detailing the locations of the proposed and existing extraction and observation wells is presented on Figure 7.

3.3.3 Multi-Phase Extraction Pilot Test Duration

Once initiated, pilot test data will be collected 24 hours a day with a not-to-exceed total duration of 72 hours. The test may be ended at the 24- or 48-hour mark if results indicate that MPE is not effective, or if steady-state groundwater drawdown conditions are achieved at the observation wells.

3.3.4 Field and System Measurements

Baseline static water levels and, if present, LNAPL levels will be recorded for all four observation wells using an interface probe prior to initiating the pilot test. A downhole pressure transducer with data logging capabilities will be installed in extraction well MPE-1, and placed at the top of the pump. The pressure transducer reference tube will be set inside the sealed well casing, as opposed to an atmospheric reference point, to facilitate accurate water level readings. The data logger will be set to record the groundwater elevation every minute to document changes in groundwater elevation and dewatering of MPE-1 due to extraction. Groundwater elevations will be collected from the observation wells every 60 minutes during the first 6 hours of the pilot test using a handheld water level meter. Groundwater elevations will be collected every 2 to 3 hours following the first 6 hours of the test.

Groundwater levels will not be collected directly from the extraction well during the test. Field staff will verify dewatering down to the pump intake at regular intervals by monitoring the pressure transducer installed in the well, and pump's operational/dewatering cycles.

Induced wellhead vacuum measurements at observation wells will be taken by hand approximately every 60 minutes during the first 6 hours of the pilot test. After this time, vacuum measurements will be collected every 2 to 3 hours for the remainder of the test. The frequency of vacuum measurement may be altered based on conditions observed in the field. For example, if limited changes are measured in the applied vacuum, the interval between measurements may be extended accordingly. A vacuum gauge will be installed at the wellhead of the extraction well and induced vacuum readings will be taken every 30 minutes for the first 6 hours of the test. Readings will be recorded every 60 minutes following the first 6 hours of pilot testing.

Groundwater flow rate and cumulative volume will be recorded from an in-line totalizer prior to prior to flowing into the on-site storage tank every 30 minutes for the first 6 hours of the test. Readings will be recorded every 60 minutes following the first 6 hours of operation. The water flow totalizer will be factory calibrated and field checked for accuracy prior to initiating pilot test activities. Tank markings and/or sight glass, as well as pump cycle

counters on submersible pumps, will be used as secondary measurements of groundwater accumulation.

Air flow will be measured using a pitot tube and/or differential pressure gauge at the MPE treatment system manifold prior to the knockout tank and vacuum pump inlet. Organic vapor concentration measurements will be collected periodically throughout the test using an FID to optimize applied vacuums. FID measurements will be used to estimate vapor-phase mass emission rates (pounds per day) and cumulative mass removed (pounds). Air flow and FID measurements will be taken every 30 minutes for the first 6 hours of operation and every 60 minutes thereafter.

Additional MPE system extraction wellhead parameter measurements (e.g., runtime hours, pressure readings, and temperature readings) will also be collected at regular intervals to facilitate the proper operation of the pumping systems and CatOx system. A temporary air permit will be procured from the Bay Area Air Quality Management District (BAAQMD) for the duration of pilot testing activities.

3.3.5 Sampling Activities

To assess dissolved-phase mass removal, monitoring of the influent water stream to the on-site storage tank will be conducted 1 hour into the pilot test and approximately 24, 48, and 72 hours into the pilot test. Samples will be collected in analytical laboratory supplied bottles and submitted to a California Department of Health Services- (CDHS-) approved analytical laboratory for the following analyses:

- TPH-g by USEPA Method 8260B
- BTEX, MTBE, tert-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 will be 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:

- TPH-g by USEPA Method 25 Modified
- BTEX and MTBE by USEPA TO-14 Modified
- Methane by USEPA 18 Modified

- Oxygen and carbon dioxide by ASTM International D1946

Vapor samples will be collected from the influent and effluent of the treatment system as appropriate to ensure compliance with the treatment system's air discharge permit. Vapor samples with be collected in accordance with ARCADIS' Soil Vapor Extraction and Treatment Sampling SOPs (Appendix B). Air emissions from the MPE system will be permitted under a various locations permit issued by the BAAQMD. The analytical data will be used to confirm FID measurements during the test and to estimate CatOx mass destruction rates. When estimating vapor-phase mass removal rates, measured flow rates will be corrected to standard cubic feet per minute using corresponding vacuum and temperature readings collected near the flow measurement device.

3.3.6 Investigation-Derived Waste and Disposal

Groundwater extracted during pilot testing activities will be stored in a baker tank, staged on 706 Harrison Street. Investigation-derived waste (IDW) samples collected from extracted groundwater will be submitted to a CDHS-approved analytical laboratory and analytical results will be evaluated using the East Bay Municipal Utility District (EBMUD) publicly owned treatment works (POTW) discharge standards, which are included as Appendix C. Following extracted groundwater sample analysis, groundwater IDW will be treated using granular activated carbon, if necessary. ARCADIS will procure a POTW permit from the EBMUD for disposal of extracted groundwater produced during the pilot test. Following treatment, groundwater generated during the pilot test will be discharged into a nearby side sewer, located west of the pilot test location. Groundwater and soil IDW activities will be performed in accordance with the ARCADIS IDW Handling and Storage SOP (Appendix B).

3.3.7 Multi-Phase Extraction Success Criteria

A minimal criterion for successful MPE systems is the ability to achieve a sustained groundwater extraction rate while observing a groundwater elevation decrease. Successful dewatering of the screen interval is a key component in the successful application of MPE to remediate soil and groundwater hydrocarbon impacts. If successful dewatering in the pilot test well is not observed, ARCADIS will consider alternative remediation methods.

Additionally, ARCADIS will review drawdown observations at monitoring wells and estimate the lateral extent of drawdown within the conceptual smear zone. If observations suggest that sustained groundwater smear zone dewatering cannot be achieved, or if initial mass removal of less than 10 pounds per day is observed at the extraction well, alternative remediation technologies will be considered for the site.

4. Air Sparge/Soil Vapor Extraction Pilot Test Activities

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 will provide sufficient data to determine the potential success of implementing SVE at 706 and 726 Harrison Street.

4.1 Objectives

The purpose of the AS/SVE pilot test is to determine effectiveness of air delivery into the groundwater aquifer and vapor capture capability within the vadose zone. The pilot test will include the following tasks:

- Measure air injection flow rate and required injection pressure in one air sparge well.
- Determine optimal air sparge operating conditions
- Measure vapor extraction flow rate and associated vacuum in one vapor extraction well.
- Determine an average mass removal rate for each operating condition by collecting VOC measurements, and flow, vacuum, and temperature data. Flow measurements will be collected in actual cubic feet per minute and converted to standard cubic feet per minute for mass calculations with FID measurements.

AS/SVE pilot testing will be performed on one AS pilot test well (AS-1) and one SVE pilot test well (EW-1) located at 726 Harrison Street. The site-specific AS/SVE pilot test activities, including test equipment; pilot testing monitoring network; and field and system measurements are summarized in Section 4.2.

4.2 AS/SVE Pilot Test Activities

The AS pilot test will consist of injecting air into one AS well (AS-1) located at 726 Harrison Street. A step test will be performed to determine formation breakthrough pressure. Formation breakthrough occurs when measureable, sustained flow is observed through the AS pilot test well. The step test injection pressure will begin operation at 1 psi and will be gradually increased until sustained, measureable flow is observed. Once formation breakthrough is achieved, the optimal wellhead pressure and flow rate will be determined through correlation of increased flow rates observed during injection pressure increase. The

formation fracture pressure has been evaluated to determine appropriate air sparge operating ranges. The formation fracture pressure is equal to the combined force of overburden pressure of the soil and hydrostatic water potential. The formation fracture pressure is approximated as:

$$P_{fracture}(psig) = 0.73D$$

Where D = depth in feet below surface to the top of the sparge well screen, and reasonable assumptions are applied for specific gravity of soil, water, and porosity. The calculated formation fracture pressure based on AS-1 well construction is approximately 20.4 psi. Step test pressure increases will stop when the flow rate reaches 10 acfm or when the pressure reaches 18.4 psi (90% of the predicted formation fracture pressure), whichever occurs first. ARCADIS anticipates that the injection pressure during pilot testing will range from 1 to 12 psi, with a flow rate of approximately 5 to 10 acfm.

Vacuum will be applied to existing extraction well EW-1 (approximately 8 feet away from AS-1) to capture vapors from the vadose zone during AS pilot testing. The initial applied wellhead vacuum at EW-1 will be 40 inH_2O. Vapor extraction will operate for approximately 15 minutes or until flow is observed at the initial vacuum conditions. If flow is not observed after 15 minutes of operation, the wellhead vacuum will be increased by 20 inH_2O. This procedure will continue until flow is observed from EW-1. Based on August 9, 2012 groundwater monitoring event data, the applied wellhead vacuum at EW-1 will not exceed 110 inH_2O. The depth to groundwater in nearby monitoring well MW-1 was 17.82 ft bgs during this monitoring event. This groundwater elevation correlates to a screen length of 8.82 feet or 105 inches above the water table. Applied wellhead vacuum will not exceed 110 inH_2O to mitigate water entrainment issues during soil vapor extraction activities. If no flow or water entrainment is observed prior to reaching the 110 inH_2O threshold, vapor extraction at EW-1 will continue to operate at a wellhead vacuum of 110 inH_2O throughout AS pilot testing.

4.2.1 AS/SVE Pilot Test Equipment

The air compressor used for pneumatic pump operations during MPE pilot testing will be used to inject air into AS-1. An air compressor capable of at least approximately 20 acfm at a pressure of 40 psi will be selected for both MPE and AS pilot testing. One of the 20-horsepower rotary claw vacuum pumps included with the MRT will be used for soil vapor extraction pilot testing. This vacuum pump will accommodate anticipated vacuum and flow operating ranges during vapor extraction activities.

4.2.2 AS/SVE Pilot Test Monitoring Network

Existing monitoring wells MW-1 and MW-5 located at 726 Harrison Street will be used as pilot test observation wells during AS pilot testing. The monitoring points will be used to monitor pressure and water level increase resulting from air sparging, as discussed in Section 4.2.3. The well locations were chosen such that the designated observation wells (MW-1 and MW-5) are located 5 and 20 feet away from the extraction well, respectively. Existing well construction details are provided in Table 1.

4.2.3 Field and System Measurements

Baseline static water level will be recorded for MW-1 and MW-5 using an interface probe prior to initiating the AS/SVE pilot test. The downhole pressure transducer used during MPE pilot testing will be installed in MW-1. The pressure transducer reference tube will be set inside the sealed well casing, as opposed to an atmospheric reference point, to facilitate accurate water level readings. The data logger will be set to record the groundwater elevation every minute to document changes in groundwater elevation due to air sparging. Water level in MW-5 will only be recorded before and after AS pilot testing activities. Based on available information, ARCADIS does not anticipate air sparge influence to be observed at MW-5.

Induced wellhead pressure measurements at MW-1 and MW-5 will be taken by hand approximately every 10 minutes during AS/SVE pilot testing. A pressure gauge will be installed at AS-1 and wellhead pressure readings will be taken every 10 minutes during pilot testing. A vacuum gauge will be installed at EW-1 wellhead and vacuum readings will be collected every 10 minutes throughout pilot testing.

Injection air flow for AS-1 will be measured with an in-line rotameter with a flow range of 1 to 20 acfm. Extraction air flow from EW-1 will be measured using components and methods similar to MPE pilot testing. Organic vapor concentration measurements from EW-1 will be collected periodically throughout the test using an FID to optimize applied vacuums. FID measurements will be used to estimate vapor-phase mass emission rates (pounds per day) and cumulative mass removed (pounds). Injection flow from AS-1 and extraction air flow and FID measurements from EW-1 will be collected every 10 minutes during pilot testing

The temporary air permit procured from the BAAQMD for MPE pilot testing will encompass activities associated with AS/SVE pilot testing.

5. Data Analysis, Reporting, and Schedule

Upon completion of the MPE and AS/SVE pilot tests, ARCADIS will submit a remedial action plan (RAP) and will include the results of the pilot tests, an updated CSM, a remedial alternatives evaluation considering MPE and AS/SVE, the chosen remedial alternative, and preliminary system design, construction, and monitoring activities.

ARCADIS proposes the following schedule for future activities:

1. Within 60 days of agency approval – Installation of MPE-1 and subsequent semiannual groundwater sampling for all site monitoring wells.

2. Within 120 days following agency approval – Permitting in preparation for DPE pilot test.

3. Within 60 days following permit acquisition – Implementation of DPE pilot test.

4. Within 90 days following pilot test completion – Data review and RAP development.

6. References

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

ARCADIS U.S., Inc. 2011. Site Assessment Report for 800, 726, and 706 Harrison Street. August 30.

ARCADIS U.S., Inc. 2012. Third Quarter 2012 Semi-Annual Groundwater Monitoring Report. October 3.

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 1
Well Constuction Details
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Sample Name	Installation Date	TOC (ft MSL)	Boring Depth (ft bgs)	Well Depth (ft bgs)	Boring Diameter (inches)	Well Diameter (inches)	Screen Interval (ft bgs)	Screen Size (inches)	Sand Filter Pack	Screen Zone Within Soil Type	Filter Pack Interval (ft bgs)	Seal Interval (ft bgs)	First Water (ft bgs)	Historical High GWE (ft MSL)	Historical Low GWE (ft MSL)	Location	Status	Notes
706 Harrison Street																		
MW-1	07/23/93	29.15	28.0	28.0	NA	NA	18.0-28.0	NA	NA	18.0-28.0	16.5-28.0	14.5-16.5	22.0	18.22	7.95	Onsite	Active	
MW-2	07/23/93	30.51	28.0	28.0	NA	NA	18.0-28.0	NA	NA	18.0-28.0	16.5-28.0	14.5-16.5	19.0	18.56	8.97	Onsite	Active	
MW-3	07/23/93	29.77	28.0	28.0	NA	NA	18.0-28.0	NA	NA	18.0-28.0	16.5-28.0	14.5-16.5	21.0	17.97	8.90	Onsite	Active	
MW-4	11/28/94	31.18	31.5	29.5	NA	2.0	9.5-29.5	0.010	#2/12	9.5-29.5	8.5-31.5	6.5-8.5	17.5	19.07	9.13	Onsite	Active	
MW-5	11/30/94	28.04	30.0	29.0	NA	2.0	14.5-29.0	0.010	#1/20	14.5-29.0	13.0-30.0	11.0-13.0	17.5	17.11	8.13	Offsite	Active	
MW-6	12/01/94	29.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	17.89	8.24	Offsite	Active	
MW-7	12/02/94	29.67	29.0	28.0	NA	2.0	13.0-28.0	0.010	#1/20	15.0-29.0	12.0-29.0	10.0-12.0	NA	17.91	8.79	Offsite	Active	
VW-1	07/22/93	NA	20.0	20.0	NA	NA	15.0-20.0	NA	NA	15.0-20.0	13.0-20.0	12.0-13.0	NA	NA	NA	Onsite	Active	
VW-2	07/22/93	NA	20.0	20.0	NA	NA	15.0-20.0	NA	NA	15.0-20.0	13.0-20.0	12.0-13.0	NA	NA	NA	Onsite	Active	
VW-3	11/28/94	NA	29.5	18.0	NA	2.0	8.0-18.0	0.010	#1/20	15.0-18.0	6.0-18.0	5.0-6.0	18.0	NA	NA	Onsite	Active	
VW-4	11/29/94	NA	29.5	18.0	NA	2.0	8.0-18.0	0.010	#1/20	8.0-18.0	7.0-18.0	5.0-7.0	18.0	NA	NA	Onsite	Active	
VW-5	11/30/94	NA	30.0	17.0	NA	2.0	7.0-17.0	0.010	#1/20	7.0-17.0	6.0-17.0	5.0-6.0	NA	NA	NA	Onsite	Active	
726 Harrison Street																		
AS-1	08/16/01	NA	30.0	30.0	8.0	2.0	28.0-30.0	0.020	#2/12	28.0-30.0	26.0-30.0	22.5-26.0	19.0	NA	NA	Onsite	Active	
EW-1	08/17/01	NA	30.0	30.0	12.0	6.0	9.0-30.0	0.020	#2/12	9.0-30.0	8.0-30.0	7.0-8.0	17.0	NA	NA	Onsite	Active	
MW-1	07/03/97	28.98	28.0	28.0	8.0	2.0	18.0-28.0	NA	NA	18.0-28.0	16.0-28.0	15.0-16.0	20.0	19.24	13.24	Onsite	Active	
MW-2	NA	32.44	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20.01	NA	Onsite	Active	
MW-3	NA	31.64	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	19.61	13.22	Onsite	Active	
MW-4	12/07/98	32.56	31.5	30.0	8.0	2.0	10.0-30.0	0.020	No. 2	10.0-30.0	8.0-30.0	7.0-8.0	20.0	19.53	NA	Onsite	Active	
MW-5	08/16/01	32.06	30.0	30.0	8.0	2.0	10.0-30.0	0.020	#2/12	10.0-30.0	8.0-30.0	7.0-8.0	19.5	19.62	13.66	Onsite	Active	
MW-6	06/20/11	NA	49.0	49.0	12.0	2.0	44.0-49.0	0.020	N0. 3	44.0-49.0	42.5-49.0	40.5-42.5	25.0	28.35	NA	Onsite	Active	
VE-1	08/16/01	NA	15.0	15.0	8.0	2.0	5.0-15.0	0.020	#2/12	5.0-15.0	3.5-15.0	2.5-3.5	NA	NA	NA	Onsite	Active	
VE-2	08/16/01	NA	15.0	15.0	8.0	2.0	5.0-15.0	0.020	#2/12	5.0-15.0	3.5-15.0	2.5-3.5	NA	NA	NA	Onsite	Active	
800 Harrison Street																		
MW-1	05/30/91	34.69	35.0	35.0	9.0	2.0	15.0-35.0	0.020	No. 3	15.0-35.0	11.5-35.0	9.5-11.5	24.0	20.74	15.03	Onsite	Active	
MW-2	05/30/91	34.72	33.0	33.0	9.0	2.0	15.0-33.0	0.020	No. 3	15.0-33.0	13.0-33.0	11.0-13.0	22.5	20.50	14.91	Onsite	Active	
MW-3	05/30/91	33.14	33.0	33.0	9.0	2.0	15.0-33.0	0.020	No. 3	15.0-33.0	13.0-33.0	11.0-13.0	23.0	19.54	13.66	Onsite	Active	
MW-4	09/30/92	32.71	33.0	33.0	9.0	2.0	15.0-33.0	0.020	No. 3	15.0-33.0	13.0-33.0	11.0-13.0	23.0	18.80	13.94	Onsite	Active	
MW-5	09/30/92	32.95	32.0	32.0	9.0	2.0	17.0-32.0	0.020	No. 3	17.0-32.0	13.0-32.0	11.0-13.0	22.0	19.25	13.90	Onsite	Active	
MW-6	09/30/92	32.16	32.0	32.0	9.0	2.0	17.0-32.0	0.020	No. 3	17.0-32.0	13.0-32.0	11.0-13.0	21.5	18.50	13.02	Offsite	Active	
MW-7	04/14/93	32.20	33.0	33.0	8.0	2.0	13.0-33.0	0.020	No. 3	13.0-33.0	11.0-33.0	9.0-11.0	21.5	18.90	13.40	Offsite	Active	
MW-8	04/14/93	32.00	31.0	31.0	8.0	2.0	13.0-31.0	0.020	No. 3	13.0-31.0	9.0-31.0	7.0-9.0	21.0	18.65	13.13	Offsite	Active	

Explanation

ft MSL	Feet relative to mean sea level
ft bgs	Feet below ground surface
TOC	Top of casing
GWE	Groundwater elevation
NA	Not available

Table 2
Historical Groundater 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)
706 Harrison Street											
MW-1	08/13/93	29.15	17.40	11.75	**20000**	**8500**	**640**	**280**	**440**	--	--
	12/14/93	29.15	17.27	11.88	**17000**	**9200**	**1200**	**4400**	**540**	--	--
	04/15/94	29.15	17.00	12.15	**9500**	**3600**	**530**	**160**	**280**	--	--
	12/29/94	29.15	16.40	12.75	--	--	--	--	--	--	--
	07/19/96	29.15	15.83	13.32	**17000**	**5200**	**1100**	**330**	**530**	--	--
	01/27/97	29.15	13.58	15.57	**30000**	**9800**	**1300**	**790**	**880**	--	**400**
	06/18/97	29.15	16.11	13.04	**19000**	**5600**	**1400**	**510**	**770**	**800**	**1200**
	09/18/97	29.15	16.62	12.53	**48000**	**18000**	**4400**	**1000**	**1700**	--	<640
	10/12/97	29.15	15.93	13.22	**22000**	**4900**	**1300**	**580**	**650**	**260**	**460**
	02/18/98	29.15	11.56	17.59	**16000**	**5000**	**750**	**400**	**780**	--	**1800**
	12/05/98	29.15	13.53	15.62	**19000**	**4600**	**810**	**450**	**770**	--	**5500**
	08/18/98	29.15	15.19	13.96	**12000**	**3600**	**1300**	**300**	**570**	**3700**	**5100**
	11/24/98	29.15	15.67	13.48	**13000**	**3600**	**890**	**330**	**380**	--	**6100**
	04/02/99	29.15	15.31	13.84	**20000**	**5900**	**830**	**450**	**500**	--	**4900**
	05/18/99	29.15	14.95	14.20	**23000**	**7000**	**1600**	**520**	**830**	--	**6100**
	08/27/99	29.15	15.84	13.31	**19000**	**5800**	**1700**	**410**	**710**	**2100**	**1800**
	11/18/99	29.15	16.39	12.76	**20000**	**4900**	**630**	**410**	**580**	**3600**	**4900**
	02/29/00	29.15	13.43	15.72	**12000**	**2800**	24	**290**	**170**	**3400**	**3100**
	05/25/00	29.15	15.08	14.07	**12000**	**2200**	**120**	**330**	**260**	**12000**	**9100**
	09/08/00	29.15	16.09	13.06	**13000**	**2500**	**44**	**310**	**140**	--	**16000**
	09/11/00	29.15	15.90	13.25	**11000**	**2500**	**140**	**380**	**150**	**12000**	**11000**
	01/29/01	29.15	16.05	13.10	**9600**	**3100**	**100**	**77**	**200**	**2400**	**2600**
	04/16/01	29.15	16.90	12.25	**3300**	**1200**	4.4	2.7	**28**	**940**	**900**
	08/14/01	29.15	17.13	12.02	**2000**	**500**	3.4	24	7.8	**53**	**68**
	10/22/01	29.15	16.11	13.04	**220**	**83**	0.63	2.8	<0.5	**5.7**	<10
	01/02/02	29.15	16.93	12.22	**640**	**220**	1.7	4.7	0.57	--	<10
	10/05/02	29.15	15.09	14.06	**230**	**26**	0.97	<0.5	<0.5	--	<5.0
	08/07/02	29.15	15.20	13.95	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
	02/10/02	29.15	15.70	13.45	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	01/23/03	29.15	15.09	14.06	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	04/29/03	29.15	13.02	16.13	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	07/18/03	26.17	14.50	11.67	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	09/10/03	26.17	13.81	12.36	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	01/28/04	26.17	13.09	13.08	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	07/04/04	26.17	14.97	11.20	**180**	**60**	0.56	1.9	<0.5	--	<5.0
	07/23/04	26.17	14.15	12.02	**130**	**36**	<0.5	0.65	<0.5	--	<5.0
	12/10/04	26.17	16.30	9.87	<50	**2.5**	1.5	<0.5	0.86	--	<5.0
	02/14/05	26.17	13.85	12.32	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	04/27/05	26.17	13.35	12.82	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	07/19/05	26.17	14.68	11.49	**4500**	**1400**	6.5	**160**	**58**	--	**630**
	10/18/05	26.17	15.15	11.02	**1700**	**340**	<5.0	28	<5.0	**7200**	**8000**
	01/23/06	26.17	13.27	12.90	**3100**	**790**	6.5	**79**	**32**	**5100**	**4200**
	12/04/06	26.17	12.33	13.84	**7200**	**2600**	**110**	**350**	**320**	**4000**	**5600**
	10/07/06	26.17	14.93	11.24	**2700**	**550**	4.2	**77**	**47**	**8300**	**5500**
	10/16/06	26.17	16.51	9.66	**2000**	**470**	6.4	**38**	13	**6400**	**6300**
	01/26/07	26.17	16.87	9.30	**3300**	**600**	36	**34**	**27**	**5900**	**6200**
	04/18/07	26.17	16.77	9.40	**5400**	**1400**	**170**	**210**	**350**	**4700**	**3600**
	02/08/07	26.17	17.21	8.96	**6100**	**1200**	**130**	**140**	**240**	**5400**	**5300**
	10/23/07	26.17	17.67	8.50	**2600**	**740**	**53**	**60**	**110**	**6900**	**5800**
	01/30/08	26.17	16.66	9.51	**1900**	**380**	2.6	15	**20**	**2800**	**2400**
	04/18/08	26.17	17.14	9.03	**1500**	**320**	4.5	13	**25**	**2900**	**2900**
	07/28/08	26.17	17.70	8.47	**1100**	**240**	3.6	6.9	15	**1800**	**1600**
	12/05/08	26.17	18.22	7.95	**1000**	**150**	2.1	4.1	15	**140**	**150**
	01/26/09	26.17	17.84	8.33	**540**	**120**	1.4	1.6	3.0	**79**	**82**
	03/08/09	29.17	17.45	11.72	**290**	**94**	2.8	3.4	6.7	**20**	**25**
	01/25/10	29.17	16.72	12.45	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
	03/08/10	29.17	16.90	12.27	**6200**	**1200**	**340**	**110**	**500**	**350**	**580**
	02/17/11	29.17	16.81	12.36	<50	**1.6**	<0.5	<0.5	<0.5	**60**	**65**
	08/23/11	29.17	17.02	12.15	**4800**	**720**	**140**	**84**	**230**	**810**	--
	02/07/12	29.17	17.33	11.84	**8900**	**1000**	**260**	**230**	**610**	**420**	--
	08/09/12	29.17	16.58	12.59	**2200**	**850**	**110**	**42**	**120**	**84**	--

Table 2
Historical Groundater 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)
706 Harrison Street											
MW-2	08/13/93	30.51	17.05	13.46	**34000**	**6800**	**10000**	**740**	**3900**	--	--
	12/14/93	18.80	18.28	12:23	**16000**	**3200**	**4200**	**500**	**1700**	--	--
	04/15/94	30.51	18.10	12.41	**23000**	**2500**	**4200**	**470**	**1800**	--	--
	12/29/94	30.51	17.40	13.11	--	--	--	--	--	--	--
	07/19/96	30.51	16.72	13.79	**90000**	**7300**	**14000**	**1600**	**7300**	--	--
	01/27/97	30.51	14.89	15.62	**63000**	**7100**	**13000**	**1600**	**7100**	--	**500**
	06/18/97	30.51	17.12	13.39	**52000**	**5100**	**10000**	**1400**	**6000**	--	<200
	09/18/97	30.51	17.63	12.88	**110000**	**9400**	**23000**	**2600**	**13000**	--	<890
	10/12/97	30.51	16.98	13.53	**39000**	**2600**	**5300**	**940**	**3900**	**320**	**780**
	02/18/98	30.51	12.61	17.90	**85000**	**9000**	**19000**	**2300**	**11000**	--	**2400**
	12/05/98	30.51	14.45	16.06	**110000**	**9500**	**21000**	**2500**	**12000**	--	<1200
	08/18/98	30.51	16.14	14.37	**64000**	**6000**	**13000**	**1700**	**7800**	**1300**	**2000**
	11/24/98	30.51	16.70	13.81	**78000**	**5300**	**14000**	**2300**	**11000**	--	<2000
	04/02/99	30.51	18.39	12.12	**66000**	**5800**	**16000**	**2600**	**12000**	--	**3000**
	05/18/99	30.51	15.90	14.61	**78000**	**6700**	**17000**	**2400**	**10000**	--	**4300**
	08/27/99	30.51	16.79	13.72	**91000**	**7400**	**17000**	**2300**	**11000**	**1000**	**1200**
	11/18/99	30.51	17.32	13.19	**180000**	**7000**	**20000**	**3300**	**16000**	**1700**	<6000
	02/29/00	30.51	14.37	16.14	**86000**	**5500**	**13000**	**2000**	**9500**	**4700**	**3500**
	05/25/00	30.51	16.01	14.50	**110000**	**6300**	**14000**	**2400**	**10000**	**6500**	**7500**
	09/08/00	30.51	17.02	13.49	**77000**	**5000**	**13000**	**2000**	**8600**	--	**5900**
	09/11/00	30.51	17.00	13.51	**70000**	**4800**	**12000**	**1900**	**8000**	**8300**	**9400**
	01/29/01	30.51	18.31	12.20	**110000**	**8200**	**21000**	**2800**	**13000**	**1900**	**2500**
	04/16/01	30.51	18.59	11.92	**97000**	**7400**	**15000**	**2500**	**12000**	<50	<3000
	08/14/01	30.51	18.74	11.77	**97000**	**6200**	**14000**	**2400**	**13000**	<50	<250
	10/22/01	30.51	18.27	12.24	**71000**	**5900**	**15000**	**2400**	**12000**	**150**	<1400
	01/02/02	30.51	18.05	12.46	**1400**	**11**	**88**	**44**	**210**	--	<5.0
	10/05/02	30.51	17.15	13.36	**97000**	**4500**	**15000**	**2500**	**12000**	--	<3000
	08/07/02	30.51	15.30	15.21	**42000**	**2100**	**6500**	**2200**	**8800**	**65**	<1000
	02/10/02	30.51	15.89	14.62	**70000**	**1700**	**5700**	**1900**	**8300**	--	<1700
	01/23/03	30.51	17.51	13.00	**40000**	**1900**	**7800**	**1200**	**5600**	--	<1000
	04/29/03	30.51	15.31	15.20	**82000**	**2500**	**11000**	**2200**	**9400**	--	<2000
	07/18/03	27.53	16.84	10.69	**57000**	**2100**	**8700**	**2200**	**10000**	<50	--
	09/10/03	27.53	16.05	11.48	**49000**	**1800**	**7000**	**1700**	**7600**	**26**	<1500
	01/28/04	27.53	15.39	12.14	**550**	**21**	33	3.0	**61**	--	<100
	07/04/04	27.53	16.01	11.52	**41000**	**2500**	**11000**	**1900**	**8000**	--	<2000
	07/23/04	27.53	15.30	12.23	**81000**	**2000**	**12000**	**2500**	**12000**	--	<2000
	12/10/04	27.53	17.87	9.66	**75000**	**2600**	**13000**	**2300**	**11000**	--	<1300
	02/14/05	27.53	14.80	12.73	**75000**	**2600**	**12000**	**2400**	**10000**	--	<1800
	04/27/05	27.53	14.63	12.90	**61000**	**2800**	**11000**	**1600**	**7000**	--	<2700
	07/19/05	27.53	15.60	11.93	**90000**	**3700**	**14000**	**2600**	**10000**	--	<7000
	10/18/05	27.53	16.08	11.45	**77000**	**3300**	**14000**	**2400**	**11000**	**6400**	**7900**
	01/23/06	27.53	14.20	13.33	**54000**	**1600**	**8000**	**1600**	**6700**	**7000**	**6600**
	12/04/06	27.53	12.51	15.02	**43000**	**1800**	**7800**	**1300**	**5200**	**4900**	**6400**
	10/07/06	27.53	14.76	12.77	**86000**	**2800**	**11000**	**2100**	**9600**	**400**	<6500
	10/16/06	27.53	16.74	10.79	**110000**	**3600**	**16000**	**2400**	**12000**	**2700**	<6000
	01/26/07	27.53	17.10	10.43	**120000**	**3900**	**16000**	**2300**	**10000**	**3000**	<5000
	04/18/07	27.53	17.02	10.51	**100000**	**3500**	**18000**	**2500**	**12000**	**3400**	**5200**
	02/08/07	27.53	17.47	10.06	**61000**	**2700**	**11000**	**1800**	**7600**	**4600**	**6400**
	10/23/07	27.53	17.94	9.59	**56000**	**3100**	**13000**	**1800**	**8100**	--	**4500**
	01/30/08	27.53	16.99	10.54	**52000**	**2700**	**11000**	**1700**	**7300**	--	**5300**
	04/18/08	27.53	17.41	10.12	**64000**	**3400**	**13000**	**1800**	**8100**	--	<4000
	07/28/08	27.53	17.99	9.54	**51000**	**2000**	**6200**	**1300**	**2700**	**1500**	<2600
	05/12/08	27.53	18.56	8.97	**74000**	**2200**	**12000**	**1700**	**7500**	**1900**	**2500**
	01/26/09	27.53	18.20	9.33	**90000**	**2800**	**14000**	**NA**	**9500**	**1600**	<3500
	03/08/09	30.53	17.74	12.79	**67000**	**2900**	**12000**	**1800**	**8200**	**1900**	<3500
	01/25/10	30.53	17.10	13.43	**46000**	**1400**	**6200**	**1100**	**5800**	**1500**	<3500
	03/08/10	30.53	17.24	13.29	**79000**	**3300**	**14000**	**2000**	**10000**	**2300**	<6000
	01/17/11	30.53	17.35	13.18	**76000**	**3400**	**15000**	**2300**	**11000**	**1400**	<3500
	08/23/11	30.53	17.23	13.30	**17000**	**940**	**1900**	**740**	**3600**	**1500**	--
	02/07/12	30.53	17.90	12.63	**36000**	**1100**	**3600**	**990**	**4200**	**1600**	--
	08/09/12	30.53	16.90	13.63	**5100**	**810**	**1800**	**440**	**1900**	**4100**	--

Table 2
Historical Groundater 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)
706 Harrison Street											
MW-3	08/13/93	29.77	17.05	12.72	<50	<0.50	<0.50	<0.50	<1.5	--	--
	12/14/93	29.77	17.70	12.07	<50	<0.50	<0.50	<0.50	<1.5	--	--
	04/15/94	29.77	17.40	12.37	<50	<0.5	<0.5	<0.5	<0.5	--	--
	12/29/94	29.77	16.80	12.97	--	--	--	--	--	--	--
	07/19/96	29.77	16.28	13.49	<50	<0.5	<0.5	<0.5	<0.5	--	--
	01/27/97	29.77	13.83	15.94	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	06/18/97	29.77	16.53	13.24	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	09/18/97	29.77	17.07	12.70	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	10/12/97	29.77	16.15	13.62	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	02/18/98	29.77	11.80	17.97	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	12/05/98	29.77	13.85	15.92	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	08/18/98	29.77	15.57	14.20	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	11/24/98	29.77	16.04	13.73	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	04/02/99	29.77	17.80	11.97	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	05/18/99	29.77	15.29	14.48	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	08/27/99	29.77	16.15	13.62	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	11/18/99	29.77	16.77	13.00	--	--	--	--	--	--	--
	02/29/00	29.77	13.71	16.06	<50	**2**	<0.5	<0.5	<0.5	--	<5.0
	05/25/00	29.77	15.46	14.31	--	--	--	--	--	--	--
	09/08/00	29.77	16.46	13.31	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	09/11/00	29.77	16.25	13.52	--	--	--	--	--	--	--
	01/29/01	29.77	16.52	13.25	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	04/16/01	29.77	16.95	12.82	--	--	--	--	--	--	--
	08/14/01	29.77	17.11	12.66	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	10/22/01	29.77	16.50	13.27	--	--	--	--	--	--	--
	01/02/02	29.77	16.90	12.87	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	10/05/02	29.77	15.03	14.74	--	--	--	--	--	--	--
	08/07/02	29.77	14.45	15.32	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	02/10/02	29.77	15.03	14.74	--	--	--	--	--	--	--
	01/23/03	29.77	15.48	14.29	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	04/29/03	29.77	12.49	17.28	--	--	--	--	--	--	--
	07/18/03	26.79	14.80	11.99	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	09/10/03	26.79	14.13	12.66	--	--	--	--	--	--	--
	01/28/04	26.79	13.47	13.32	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	07/04/04	26.79	15.41	11.38	--	--	--	--	--	--	--
	07/23/04	26.79	14.54	12.25	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	12/10/04	26.79	16.58	10.21	--	--	--	--	--	--	--
	02/14/05	26.79	14.19	12.60	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	04/27/05	26.79	13.68	13.11	--	--	--	--	--	--	--
	07/19/05	26.79	15.15	11.64	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	10/18/05	26.79	15.60	11.19	--	--	--	--	--	--	--
	01/23/06	26.79	13.65	13.14	<50	<0.5	<0.5	<0.5	<0.5	**260**	**270**
	12/04/06	26.79	11.94	14.85	--	--	--	--	--	--	--
	10/07/06	26.79	14.48	12.31	<50	<0.5	<0.5	<0.5	<0.5	**1600**	**1100**
	10/16/06	26.79	16.19	10.60	--	--	--	--	--	--	--
	01/26/07	26.79	16.56	10.23	<50	<0.5	<0.5	<0.5	<0.5	**3400**	**2500**
	04/18/07	26.79	16.45	10.34	--	--	--	--	--	--	--
	02/08/07	26.79	16.92	9.87	<100	<1.0	<1.0	<1.0	<1.0	**3500**	**3300**
	10/23/07	26.79	17.42	9.37	--	--	--	--	--	--	--
	01/30/08	26.79	16.45	10.34	<250	<2.5	<2.5	<2.5	<2.5	**10000**	**8400**
	04/18/08	26.79	16.87	9.92	--	--	--	--	--	--	--
	07/28/08	26.79	17.41	9.38	<250	<2.5	<2.5	<2.5	<25	**6900**	**6400**
	05/12/08	26.79	17.89	8.90	--	--	--	--	--	--	--
	01/26/09	26.79	17.50	9.29	<50	<0.5	<0.5	<0.5	<0.5	**3800**	**3400**
	03/08/09	29.79	17.18	12.61	<50	<0.5	<0.5	<0.5	<0.5	**3100**	**2900**
	01/25/10	29.79	16.39	13.40	**300**	<1.7	2.5	<1.7	<1.7	**4500**	**4600**
	03/08/10	29.79	16.61	13.18	<50	<0.5	<0.5	<0.5	<0.5	**1500**	**1200**
	02/17/11	29.79	16.60	13.19	<50	<0.5	<0.5	<0.5	<0.5	**79**	**55**
	08/23/11	29.79	16.65	13.14	**310**	0.53	2.4	2.6	10	**200**	--
	02/07/12	29.79	17.23	12.56	<50	<0.50	<0.50	<0.50	<1.0	**110**	--
	08/09/12	29.79	16.32	13.47	<50	<0.50	<0.50	<0.50	<1.0	0.8	--

Table 2
Historical Groundater 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)
706 Harrison Street											
MW-4	12/16/94	31.18	18.10	13.08	**2500**	**32**	6.5	4.5	17	--	--
	12/29/94	31.18	17.95	13.23	--	--	--	--	--	--	--
	07/19/96	31.18	17.38	13.80	**3300**	**520**	39	**67**	**60**	--	--
	01/27/97	31.18	15.25	15.93	**4500**	**860**	**55**	**100**	**91**	--	**1100**
	06/18/97	31.18	17.61	13.57	**2700**	**700**	**52**	**81**	**76**	**2300**	**2200**
	09/18/97	31.18	18.01	13.17	**3900**	**760**	38	**56**	**64**	--	<170
	10/12/97	31.18	17.45	13.73	**12000**	**1800**	**120**	**210**	**210**	**2600**	**2900**
	02/18/98	31.18	13.09	18.09	**1700**	**210**	8.0	6.7	16	--	**200**
	12/05/98	31.18	14.78	16.40	**2100**	**300**	15	**36**	**34**	--	**920**
	08/18/98	31.18	16.59	14.59	**4700**	**1000**	**130**	**110**	**150**	**4900**	**5200**
	11/24/98	31.18	17.18	14.00	**3000**	**810**	**44**	**76**	**94**	--	**4800**
	04/02/99	31.18	18.90	12.28	**2800**	**770**	**50**	**69**	**69**	--	**3100**
	05/18/99	31.18	16.30	14.88	**4000**	**780**	**57**	7.7	**79**	--	**4800**
	08/27/99	31.18	17.21	13.97	**4100**	**870**	**51**	**74**	**99**	**4100**	**3300**
	11/18/99	31.18	17.77	13.41	**3000**	**760**	**43**	**67**	**65**	**5400**	**5100**
	02/29/00	31.18	14.85	16.33	**4600**	**1000**	**64**	**94**	**170**	**4600**	**4100**
	05/25/00	31.18	16.45	14.73	**2600**	**540**	39	**59**	**41**	**5300**	**3500**
	09/08/00	31.18	17.47	13.71	**4400**	**930**	**66**	**98**	**79**	--	**9400**
	09/11/00	31.18	17.45	13.73	**4200**	**630**	34	**54**	**44**	**9400**	**7800**
	01/29/01	31.18	18.90	12.28	**3100**	**710**	34	**66**	**51**	**8000**	**9400**
	04/16/01	31.18	19.17	12.01	**160**	**1.2**	1.3	<0.5	12	**20**	**22**
	08/14/01	31.18	19.20	11.98	**1700**	**190**	11	**35**	13	**250**	**300**
	10/22/01	31.18	18.95	12.23	**1100**	**120**	3.7	29	7.9	**16**	<25
	01/02/02	31.18	19.05	12.13	**2600**	**25**	**43**	21	**280**	--	<5.0
	10/05/02	31.18	17.69	13.49	**490**	**3.5**	2.0	2.1	2.2	--	<5.0
	08/07/02	31.18	15.75	15.43	**170**	0.51	0.62	1.6	1.2	2.0	<5.0
	02/10/02	31.18	16.30	14.88	**240**	**1.7**	2.0	2.2	0.88	--	<5.0
	01/23/03	31.18	17.74	13.44	<50	0.52	4.1	<0.5	1.9	--	<5.0
	04/29/03	31.18	15.47	15.71	**1,300**	**75**	4.8	21	7.3	**120**	**130**
	07/18/03	28.20	17.08	11.12	<50	<0.5	<0.5	<0.5	<0.5	0.74	--
	09/10/03	28.20	16.25	11.95	**210**	**4.7**	0.57	1.6	1.1	**10**	<10
	01/28/04	28.20	15.65	12.55	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	07/04/04	28.20	16.49	11.71	--	--	--	--	--	--	--
	12/04/04	--	--	--	**770**	**56**	3.2	7.0	6.5	**160**	**120**
	07/23/04	28.20	15.86	12.34	**1100**	**130**	11	17	17	**800**	**790**
	12/10/04	28.20	18.05	10.15	**150**	0.86	<0.5	<0.5	0.97	--	<10
	02/14/05	28.20	15.30	12.90	**1500**	**200**	16	**30**	**31**	**550**	**420**
	04/27/05	28.20	14.20	14.00	**3000**	**520**	**100**	27	**86**	**480**	**600**
	07/19/05	28.20	16.08	12.12	**1800**	**310**	16	**36**	**25**	**1100**	**1000**
	10/18/05	28.20	16.55	11.65	**2500**	**450**	28	**47**	**51**	**4500**	**3800**
	01/23/06	28.20	14.66	13.54	**1300**	**170**	13	14	14	**3300**	**2500**
	12/04/06	28.20	12.92	15.28	**940**	**150**	12	7.6	12	**3300**	**3400**
	10/07/06	28.20	15.38	12.82	**1700**	**260**	14	26	**20**	**5900**	**4300**
	10/16/06	28.20	17.21	10.99	**3200**	**440**	26	**34**	**63**	**7500**	**7800**
	01/26/07	28.20	17.58	10.62	**2000**	**290**	20	28	**42**	**8300**	**8300**
	04/18/07	28.20	17.46	10.74	**2300**	**350**	28	**38**	**42**	**7800**	**5900**
	02/08/07	28.20	17.95	10.25	**3600**	**480**	33	**47**	**72**	**9000**	**7500**
	10/23/07	28.20	18.41	9.79	**1700**	**280**	13	27	**25**	**8800**	**7000**
	01/30/08	28.20	17.49	10.71	**1300**	**130**	5	13	12	**8200**	**6500**
	04/18/08	28.20	17.90	10.30	**2300**	**240**	14	25	**27**	**6400**	**6900**
	07/28/08	28.20	18.49	9.71	**3400**	**390**	**100**	**33**	**100**	**5000**	**4600**
	05/12/08	28.20	19.07	9.13	**2400**	**310**	30	**41**	**67**	**1700**	**2100**
	01/26/09	28.20	18.71	9.49	**1600**	**180**	14	21	**33**	**1200**	**1300**
	03/08/09	31.20	18.23	12.97	**2300**	**370**	39	**37**	**89**	**1600**	**1700**
	01/25/10	31.20	17.64	13.56	**690**	**77**	7.4	8.6	**20**	**280**	**240**
	03/08/10	31.20	17.72	13.48	**1600**	**190**	17	23	**44**	**990**	**770**
	07/17/11	31.20	17.69	13.51	**3400**	**620**	25	**52**	**100**	**1300**	**1900**
	08/23/11	31.20	17.71	13.49	**1800**	**98**	11	14	**26**	**260**	--
	02/07/12	31.20	18.43	12.77	**1800**	**140**	15	21	**32**	**430**	--
	08/09/12	31.20	--	--	--	--	--	--	--	--	--

Table 2
Historical Groundater 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)
706 Harrison Street											
MW-5	12/16/94	28.04	16.07	11.97	<50	**1.1**	<0.5	<0.5	2.4	--	--
	12/29/94	28.04	16.10	11.94	--	--	--	--	--	--	--
	07/19/96	28.04	15.49	12.55	<50	<0.5	<0.5	<0.5	<0.5	--	--
	01/27/97	28.04	13.60	14.44	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	06/18/97	28.04	15.55	12.49	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	09/18/97	28.04	16.16	11.88	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	10/12/97	28.04	15.41	12.63	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	02/18/98	28.04	10.93	17.11	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	12/05/98	28.04	13.25	14.79	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	08/18/98	28.04	14.75	13.29	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	11/24/98	28.04	15.15	12.89	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	04/02/99	28.04	14.61	13.43	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	05/18/99	28.04	14.15	13.89	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	08/27/99	28.04	15.43	12.61	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	11/18/99	28.04	15.97	12.07	--	--	--	--	--	--	--
	02/29/00	28.04	13.16	14.88	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	05/25/00	28.04	14.72	13.32	--	--	--	--	--	--	--
	09/08/00	28.04	15.68	12.36	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	09/11/00	28.04	15.39	12.65	--	--	--	--	--	--	--
	01/29/01	28.04	15.97	12.07	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	04/16/01	28.04	16.24	11.80	--	--	--	--	--	--	--
	08/14/01	28.04	17.39	10.65	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	10/22/01	28.04	15.90	12.14	--	--	--	--	--	--	--
	01/02/02	28.04	16.55	11.49	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	10/05/02	28.04	15.12	12.92	--	--	--	--	--	--	--
	08/07/02	28.04	15.92	12.12	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	02/10/02	28.04	16.42	11.62	--	--	--	--	--	--	--
	01/23/03	28.04	14.90	13.14	<50	**20**	<0.5	<0.5	<0.5	--	<5.0
	04/29/03	28.04	12.05	15.99	--	--	--	--	--	--	--
	07/18/03	25.07	14.28	10.79	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	09/10/03	25.07	13.36	11.71	--	--	--	--	--	--	--
	01/28/04	25.07	12.68	12.39	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	07/04/04	25.07	14.71	10.36	--	--	--	--	--	--	--
	07/23/04	25.07	13.49	11.58	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	12/10/04	25.07	15.88	9.19	--	--	--	--	--	--	--
	02/14/05	25.07	13.22	11.85	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	04/27/05	25.07	13.40	11.67	--	--	--	--	--	--	--
	07/19/05	25.07	14.21	10.86	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	10/18/05	25.07	14.79	10.28	--	--	--	--	--	--	--
	01/23/06	25.07	13.12	11.95	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	12/04/06	25.07	11.39	13.68	--	--	--	--	--	--	--
	10/07/06	25.07	14.40	10.67	<50	<0.5	<0.5	<0.5	<0.5	--	**25**
	10/16/06	25.07	15.44	9.63	--	--	--	--	--	--	--
	01/26/07	25.07	15.76	9.31	<50	<0.5	<0.5	<0.5	<0.5	--	**490**
	04/18/07	25.07	15.61	9.46	--	--	--	--	--	--	--
	02/08/07	25.07	16.04	9.03	<50	<0.5	<0.5	<0.5	<0.5	**760**	**660**
	10/23/07	25.07	16.89	8.18	--	--	--	--	--	--	--
	01/30/08	25.07	15.61	9.46	<50	<0.5	<0.5	<0.5	<0.5	**280**	**250**
	04/18/08	25.07	15.99	9.08	--	--	--	--	--	--	--
	07/28/08	25.07	16.45	8.62	<50	<0.5	<0.5	<0.5	<0.5	**670**	**640**
	05/12/08	25.07	16.94	8.13	--	--	--	--	--	--	--
	01/26/09	25.07	16.54	8.53	<50	<0.5	<0.5	<0.5	<0.5	**3700**	**3500**
	03/08/09	28.07	16.23	11.84	<50	<0.5	<0.5	<0.5	<0.5	**1400**	**1300**
	01/25/10	28.07	15.58	12.49	<50	<0.5	<0.5	<0.5	<0.5	**1400**	**1300**
	03/08/10	28.07	15.55	12.52	<50	<0.5	<0.5	<0.5	<0.5	**450**	**400**
	02/17/11	28.07	15.56	12.51	<50	<0.5	<0.5	<0.5	<0.5	**7.7**	**6.4**
	08/23/11	28.07	15.80	12.27	**280**	<0.50	<0.50	<0.50	<0.50	**360**	--
	02/07/12	28.07	16.45	11.62	<50	<0.50	<0.50	<0.50	1.6	**190**	--
	08/09/12	28.07	15.22	12.85	<50	<0.50	<0.50	<0.50	<1.0	**13**	--

Table 2
Historical Groundater 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)
706 Harrison Street											
MW-6	12/16/94	29.10	17.74	11.36	--	--	--	--	--	--	--
	12/29/94	29.10	17.40	11.70	--	--	--	--	--	--	--
	07/19/96	29.10	16.60	12.50	<50	<0.5	<0.5	<0.5	<0.5	--	--
	01/27/97	29.10	14.88	14.22	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	06/18/97	29.10	16.73	12.37	51	**22**	<0.5	<0.5	<0.5	--	<5.0
	09/18/97	29.10	17.24	11.86	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	10/12/97	29.10	16.56	12.54	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	02/18/98	29.10	12.93	16.17	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	12/05/98	29.10	14.35	14.75	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	08/18/98	29.10	15.94	13.16	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	11/24/98	29.10	16.46	12.64	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	04/02/99	29.10	18.25	10.85	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	05/18/99	29.10	15.73	13.37	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	08/27/99	29.10	15.64	13.46	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	11/18/99	29.10	17.04	12.06	--	--	--	--	--	--	--
	02/29/00	29.10	14.55	14.55	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	05/25/00	29.10	15.86	13.24	--	--	--	--	--	--	--
	09/08/00	29.10	16.80	12.30	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	09/11/00	29.10	16.60	12.50	--	--	--	--	--	--	--
	01/29/01	29.10	17.00	12.10	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	04/16/01	29.10	17.15	11.95	--	--	--	--	--	--	--
	08/14/01	29.10	17.30	11.80	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	10/22/01	29.10	17.13	11.97	--	--	--	--	--	--	--
	01/02/02	29.10	16.57	12.53	70	**37**	<0.5	<0.5	<0.5	--	<5.0
	10/05/02	29.10	15.25	13.85	--	--	--	--	--	--	--
	08/07/02	29.10	15.79	13.31	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	02/10/02	29.10	16.38	12.72	--	--	--	--	--	--	--
	01/23/03	29.10	16.03	13.07	<50	**21**	<0.5	<0.5	<0.5	--	<5.0
	04/29/03	29.10	14.19	14.91	--	--	--	--	--	--	--
	07/18/03	26.13	15.47	10.66	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	09/10/03	26.13	14.73	11.40	--	--	--	--	--	--	--
	01/28/04	26.13	14.05	12.08	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	07/04/04	26.13	14.41	11.72	--	--	--	--	--		--
	07/23/04	26.13	15.15	10.98	**3300**	**1300**	<5.0	**52**	9.7		<50
	12/10/04	26.13	17.29	8.84	--	--	--	--	--		--
	02/14/05	26.13	14.60	11.53	**350**	**160**	<0.5	<0.5	<0.5	2	<25
	04/27/05	26.13	14.10	12.03	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
	07/19/05	26.13	15.18	10.95	**110**	**15**	<0.5	0.62	<0.5	1.7	<5.0
	10/18/05	26.13	15.65	10.48	<50	<0.5	<0.5	<0.5	<0.5	0.87	<5.0
	01/23/06	26.13	14.02	12.11	<50	<0.5	<0.5	<0.5	<0.5	0.5	<5.0
	12/04/06	26.13	12.66	13.47	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
	10/07/06	26.13	14.64	11.49	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
	10/16/06	26.13	16.50	9.63	--	--	--	--	--		--
	01/26/07	26.13	16.83	9.30	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
	04/18/07	26.13	16.72	9.41	--	--	--	--	--		--
	02/08/07	26.13	17.13	9.00	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
	10/23/07	26.13	17.71	8.42	--	--	--	--	--		--
	01/30/08	26.13	16.54	9.59	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
	04/18/08	26.13	17.02	9.11	--	--	--	--	--		--
	07/28/08	26.13	17.50	8.63	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
	05/12/08	26.13	17.89	8.24	--	--	--	--	--		--
	01/26/09	26.13	17.61	8.52	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
	03/08/09	29.13	17.24	11.89	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
	01/25/10	29.13	16.72	12.41	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
	03/08/10	29.13	16.80	12.33	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
	02/17/11	29.13	16.73	12.40	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
	08/23/11	29.13	16.97	12.16	<50	<0.50	<0.50	<0.50	<1.0	**89**	--
	02/07/12	29.13	17.51	11.62	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
	08/09/12	29.13	16.41	12.72	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--

Table 2
Historical Groundater 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)
706 Harrison Street											
MW-7	12/16/94	29.67	17.07	12.60	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
	12/29/94	29.67	17.65	12.02	--	--	--	--	--	--	--
	07/19/96	29.67	16.44	13.23	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	01/27/97	29.67	15.09	14.58	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	06/18/97	29.67	16.59	13.08	73	<0.5	1	<0.5	<0.5	--	<5.0
	09/18/97	29.67	17.06	12.61	94	<0.5	<0.5	<0.5	<0.5	--	<5.0
	10/12/97	29.67	16.58	13.09	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	02/18/98	29.67	12.60	17.07	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	12/05/98	29.67	14.81	14.86	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	08/18/98	29.67	15.67	14.00	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	11/24/98	29.67	16.30	13.37	**200**	<0.5	<0.5	<0.5	<0.5	--	<5.0
	04/02/99	29.67	15.99	13.68	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	05/18/99	29.67	15.42	14.25	**200**	<0.5	<0.5	<0.5	<0.5	--	<5.0
	08/27/99	29.67	16.35	13.32	**140**	<0.5	<0.5	<0.5	<0.5	--	<5.0
	11/18/99	29.67	16.81	12.86	--	--	--	--	--	--	--
	02/29/00	29.67	14.16	15.51	**100**	<0.5	<0.5	<0.5	<0.5	--	<5.0
	05/25/00	29.67	15.54	14.13	--	--	--	--	--	--	--
	09/08/00	29.67	16.56	13.11	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	09/11/00	29.67	16.45	13.22	--	--	--	--	--	--	--
	01/29/01	29.67	16.92	12.75	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	04/16/01	29.67	17.03	12.64	--	--	--	--	--	--	--
	08/14/01	29.67	17.27	12.40	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	10/22/01	29.67	16.95	12.72	--	--	--	--	--	--	--
	01/02/02	29.67	16.14	13.53	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	10/05/02	29.67	15.30	14.37	--	--	--	--	--	--	--
	08/07/02	29.67	15.73	13.94	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	02/10/02	29.67	16.24	13.43	--	--	--	--	--	--	--
	01/23/03	29.67	15.70	13.97	<50	**23**	<0.5	<0.5	<0.5	--	<5.0
	04/29/03	29.67	12.68	16.99	--	--	--	--	--	--	--
	07/18/03	26.70	15.19	11.51	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	09/10/03	26.70	14.45	12.25	--	--	--	--	--	--	--
	01/28/04	26.70	13.88	12.82	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	07/04/04	26.70	15.71	10.99	--	--	--	--	--	--	--
	07/23/04	26.70	14.85	11.85	<50	<0.5	<0.5	<0.5	<0.5	**120**	**130**
	12/10/04	26.70	16.90	9.80	--	--	--	--	--	--	--
	02/14/05	26.70	14.42	12.28	<50	<0.5	<0.5	<0.5	<0.5	**200**	**190**
	04/27/05	26.70	13.75	12.95	<50	<0.5	<0.5	<0.5	<0.5	1	<5.0
	07/19/05	26.70	14.91	11.79	<50	<0.5	<0.5	<0.5	<0.5	**66**	**65**
	10/18/05	26.70	15.40	11.30	<50	<0.5	<0.5	<0.5	<0.5	**15**	**12**
	01/23/06	26.70	13.99	12.71	<50	<0.5	<0.5	<0.5	<0.5	2.2	<5.0
	12/04/06	26.70	12.32	14.38	<50	<0.5	<0.5	<0.5	<0.5	2	<5.0
	10/07/06	26.70	14.31	12.39	<50	<0.5	<0.5	<0.5	<0.5	1.5	<5.0
	10/16/06	26.70	16.23	10.47	--	--	--	--	--	--	--
	01/26/07	26.70	16.61	10.09	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
	04/18/07	26.70	16.54	10.16	--	--	--	--	--	--	--
	02/08/07	26.70	16.93	9.77	<50	<0.5	<0.5	<0.5	<0.5	2	<5.0
	10/23/07	26.70	17.36	9.34	--	--	--	--	--	--	--
	01/30/08	26.70	16.36	10.34	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
	04/18/08	26.70	16.85	9.85	--	--	--	--	--	--	--
	07/28/08	26.70	17.43	9.27	<50	<0.5	<0.5	<0.5	<0.5	1.1	<5.0
	05/12/08	26.70	17.91	8.79	--	--	--	--	--	--	--
	01/26/09	26.70	17.65	9.05	<50	<0.5	<0.5	<0.5	<0.5	0.96	<5.0
	03/08/09	29.70	17.17	12.53	<50	<0.5	<0.5	<0.5	<0.5	0.87	<5.0
	01/25/10	29.70	16.65	13.05	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
	03/08/10	29.70	16.74	12.96	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
	02/17/11	29.70	16.69	13.01	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
	08/23/11	29.70	16.79	12.91	<50	<0.50	<0.50	<0.50	<1.0	**89**	--
	02/07/12	29.70	17.40	12.30	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
	08/09/12	29.70	16.38	13.32	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--

Table 2
Historical Groundater 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)
706 Harrison Street											
VW-3	06/03/03	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	03/25/03	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
VW-4	06/03/03	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	03/25/03	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
726 Harrison Street											
MW-1	07/03/97	NA	NA	NA	**18000**	**2700**	**350**	**450**	**900**	**--**	**7400**
	12/15/98	31.95	17.32	14.63	**18000**	**1500**	**270**	**260**	**560**	**--**	**14000**
	04/03/99	31.95	15.52	16.43	**44000**	**2800**	**400**	**440**	**960**	**--**	**43000**
	06/17/99	31.95	16.90	15.05	**33000**	**2200**	**250**	**460**	**660**	**--**	**25000**
	08/27/99	31.95	17.39	14.56	**6000**	**1000**	**97**	**190**	**230**	**16000**	**14000**
	09/12/99	31.95	18.03	13.92	**15000**	**1500**	**160**	**220**	**420**	**--**	**17000**
	07/03/00	31.95	15.11	16.84	**9300**	**1500**	**210**	**66**	**530**	**--**	**12000**
	07/06/00	31.95	16.66	15.29	**26000**	**1700**	<250	**360**	**580**	**--**	**30000**
	11/10/00	31.95	18.08	13.87	**13000**	**1600**	<100	**140**	**160**	**--**	**19000**
	01/18/01	31.95	17.96	13.99	**14000**	**450**	<100	**110**	**230**	**--**	**9600**
	05/04/01	31.95	16.35	15.60	**38000**	**2200**	**180**	**290**	**590**	**--**	**35000**
	07/17/01	31.95	16.94	15.01	**35000**	**1800**	<100	**300**	**170**	**--**	**35000**
	10/05/01	28.98	17.35	11.63	**17000**	**1500**	**210**	**420**	**790**	**--**	**27000**
	01/18/02	28.98	15.40	13.58	**18000**	**1500**	**120**	**160**	**220**	**--**	**22000**
	11/04/02	28.98	15.76	13.22	**41000**	**2700**	**210**	**340**	**380**	**--**	**30000**
	08/07/02	28.98	16.17	12.81	**36000**	**2800**	**140**	**360**	**300**	**--**	**31000**
	10/09/02	28.98	16.72	12.26	**30000**	**1700**	**310**	<100	<100	**--**	**19000**
	01/29/03	28.98	16.26	12.72	**26000**	**2400**	<100	**310**	**520**	**--**	**20000**
	11/04/03	28.98	16.56	12.42	**22000**	**1700**	<100	**270**	**580**	**--**	**16000**
	07/18/03	28.98	16.42	12.56	**40000**	**3200**	**290**	**480**	**830**	**--**	**39000**
	10/09/03	28.98	16.88	12.10	**54000**	**3300**	<130	**350**	**310**	**--**	**49000**
	01/28/04	28.98	16.10	12.88	**26000**	**3000**	**310**	**420**	**800**	**--**	**31000**
	07/04/04	28.98	15.43	13.55	**33000**	**2800**	**130**	**310**	**310**	**--**	**39000**
	07/23/04	28.98	16.41	12.57	**56000**	**4500**	<250	**390**	<500	**--**	**53000**
	10/12/04	28.98	17.73	11.25	**25000**	**1400**	<250	<250	<500	**--**	**25000**
	01/29/05	28.98	15.02	13.96	**24000**	**1600**	<100	**160**	<200	**--**	**19000**
	04/28/05	28.98	14.99	13.99	**10000**	**2000**	<100	**160**	**100**	**--**	**34000**
	07/19/05	28.98	16.36	12.62	**37000**	**2100**	**83**	**210**	**230**	**--**	**28000**
	10/18/05	28.98	17.82	11.16	**37000**	**1300**	<250	<250	<250	**--**	**23000**
	01/23/06	28.98	15.80	13.18	**23000**	**780**	<100	**160**	**260**	**--**	**11000**
	12/04/06	28.98	13.24	15.74	**11000**	**1500**	**87**	**360**	**670**	**--**	**17000**
	10/07/06	28.98	15.64	13.34	**72000**	**4700**	<250	**350**	<500	**--**	**66000**
	10/16/06	28.98	17.51	11.47	**26000**	**1600**	<250	**330**	<500	**--**	**22000**
	01/26/07	28.98	18.36	10.62	**7200**	**1500**	<70	**140**	**96**	**--**	**34000**
	04/18/07	28.98	17.79	11.19	**5400**	**1100**	<50	**200**	**120**	**--**	**21000**
	02/08/07	28.98	18.20	10.78	**6600**	**1500**	**64**	**240**	**190**	**--**	**32000**
	10/23/07	28.98	18.75	10.23	**5900**	**1300**	**52**	**200**	**180**	**--**	**28000**
	01/30/08	28.98	17.90	11.08	**2700**	**300**	21	**64**	**90**	**--**	**5200**
	04/18/08	28.98	18.21	10.77	**3800**	**930**	**41**	**110**	**130**	**--**	**15000**
	07/28/08	28.98	18.85	10.13	**6000**	**900**	**52**	**140**	**160**	**--**	**10000**
	10/29/08	28.98	19.24	9.74	**7300**	**1700**	**74**	**140**	**220**	**--**	**17000**
	01/26/09	28.98	19.17	9.81	**4900**	**720**	**48**	**140**	**180**	**--**	**6300**
	03/08/09	31.98	18.62	13.36	**4000**	**870**	**44**	**110**	**120**	**--**	**13000**
	01/25/10	31.98	18.26	13.72	**3200**	**360**	26	**82**	**86**	**--**	**3000**
	03/08/10	31.98	18.13	13.85	**3800**	**560**	27	**97**	**92**	**--**	**8600**
	02/17/11	31.98	18.15	13.83	**6000**	**1100**	**51**	**110**	**110**	**--**	**11000**
	08/23/11	31.98	18.60	13.38	**8200**	**290**	36	**66**	**79**	**4700**	**--**
	02/07/12	31.98	18.77	13.21	**370**	46	1.7	4.2	4.5	**3800**	**--**
	08/09/12	31.98	17.82	14.16	**6600**	**760**	27	**58**	**60**	**6700**	--

Table 2
Historical Groundater 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)
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
	03/04/99	32.40	16.11	16.29	--	--	--	--	--	--	--
	06/17/99	32.40	17.72	14.68	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0
	08/27/99	NA	NA	NA	--	--	--	--	--	--	--
	12/09/99	NA	NA	NA	--	--	--	--	--	--	--
	03/07/00	NA	NA	NA	--	--	--	--	--	--	--
	06/07/00	32.40	17.67	14.73	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	10/11/00	32.40	18.91	13.49	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	01/18/01	32.40	18.66	13.74	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	04/05/01	32.40	16.97	15.43	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	07/17/01	32.40	17.54	14.86	NA	NA	NA	NA	NA	NA	NA
	10/05/01	29.44	17.98	11.46	NA	NA	NA	NA	NA	NA	NA
	01/18/02	29.44	15.87	13.57	NA	NA	NA	NA	NA	NA	NA
	04/11/02	29.44	16.36	13.08	NA	NA	NA	NA	NA	NA	NA
	07/18/02	29.44	16.72	12.72	NA	NA	NA	NA	NA	NA	NA
	10/09/02	29.44	17.33	12.11	NA	NA	NA	NA	NA	NA	NA
	01/29/03	29.44	16.82	12.62	NA	NA	NA	NA	NA	NA	NA
	04/11/03	29.44	17.15	12.29	NA	NA	NA	NA	NA	NA	NA
	07/18/03	29.44	17.05	12.39	NA	NA	NA	NA	NA	NA	NA
	10/09/03	29.44	17.52	11.92	NA	NA	NA	NA	NA	NA	NA
	01/28/04	29.44	16.70	12.74	NA	NA	NA	NA	NA	NA	NA
	04/07/04	29.44	16.02	13.42	NA	NA	NA	NA	NA	NA	NA
	07/23/04	--	--	--	--	--	--	--	--	--	--
	10/12/04	29.44	17.31	12.13	NA	NA	NA	NA	NA	NA	NA
	01/29/05	29.44	15.46	13.98	NA	NA	NA	NA	NA	NA	NA
	04/28/05	29.44	15.79	13.65	NA	NA	NA	NA	NA	NA	NA
	07/19/05	29.44	17.25	12.19	NA	NA	NA	NA	NA	NA	NA
	10/18/05	29.44	17.72	11.72	NA	NA	NA	NA	NA	NA	NA
	01/23/06	29.44	15.65	13.79	NA	NA	NA	NA	NA	NA	NA
	04/12/06	29.44	12.33	17.11	NA	NA	NA	NA	NA	NA	NA
	07/10/06	29.44	16.58	12.86	<50	<0.50	<0.50	<0.50	<1.0	--	4.5
	10/16/06	29.44	18.33	11.11	<50	<0.50	<0.50	<0.50	<1.0	--	<0.5
	01/26/07	29.44	19.21	10.23	<50	0.55	1	<0.50	1.4	--	0.97
	04/18/07	29.44	18.58	10.86	<50	**1.5**	2.6	0.93	3.2	--	0.64
	08/02/07	29.44	19.02	10.42	<50	<0.50	<0.50	<0.50	<0.50	--	2.2
	10/23/07	--	--	--	--	--	--	--	--	--	--
	01/30/08	29.44	18.63	10.81	<50	<0.50	<0.50	<0.50	<0.50	--	**300**
	04/18/08	29.44	19.04	10.40	<50	<0.50	<0.50	<0.50	<0.50	--	**40**
	07/28/08	--	--	--	--	--	--	--	--	--	--
	10/29/08	29.44	20.01	9.43	<50	<0.50	<0.50	<0.50	<0.50	--	**300**
	01/26/09	29.44	19.84	9.60	<50	<0.50	<0.50	<0.50	<0.50	--	**120**
	08/03/09	32.44	19.39	13.05	<50	<0.50	<0.50	<0.50	<0.50	--	1
	01/25/10	32.44	18.67	13.77	<50	<0.50	<0.50	<0.50	<0.50	--	**12**
	03/08/10	32.44	18.84	13.60	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50
	02/17/11	32.44	18.82	13.62	<50	<0.50	<0.50	<0.50	<0.50	--	**5.2**
	08/23/11	32.44	19.38	13.06	<50	<0.50	<0.50	<0.50	<1.0	0.37	--
	02/07/12	32.44	19.52	12.92	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
	08/09/12	32.44	18.55	13.89	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-3	12/15/98	31.61	17.26	14.35	**6500**	<50	**50**	**60**	**502**	--	**3900**
	03/04/99	31.61	15.47	16.14	**2800**	<25	<25	<25	<25	--	**1600**
	06/17/99	31.61	16.92	14.69	**1000**	<10	<10	<10	<10	--	**1400**
	08/27/99	31.61	17.40	14.21	**230**	<0.5	0.51	0.50	1	**1600**	**1500**
	12/09/99	31.61	18.01	13.60	**870**	<0.5	<0.5	<0.5	<0.5	--	**2100**
	03/07/00	31.61	16.15	15.46	**150**	**4**	<0.5	<0.5	<0.5	--	**830**
	06/07/00	31.61	16.85	14.76	**140**	<0.5	<0.5	<0.5	<0.5	--	**1100**
	10/11/00	31.61	18.07	13.54	**620**	<5.0	<5.0	<5.0	<5.0	--	**1500**
	01/18/01	31.61	17.89	13.72	**1200**	<5.0	<5.0	<5.0	<5.0	--	**1000**
	04/05/01	31.61	16.21	15.40	**1700**	<5.0	<5.0	<5.0	<5.0	--	**1900**
	07/17/01	31.61	16.90	14.71	**1400**	<10	<10	<10	<10	--	**1700**
	10/05/01	28.64	17.32	11.32	<1000	<10	<10	<10	<10	--	**1700**

Table 2
Historical Groundater 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)
726 Harrison Street											
MW-3 cont'd	01/18/02	28.64	15.35	13.29	**1600**	**26**	20	16	**54**	--	**2100**
	04/11/02	28.64	15.82	12.82	**2600**	**21**	16	<10	**21**	--	**2300**
	07/18/02	28.64	16.15	12.49	**2800**	<10	<10	<10	<10	--	**3800**
	10/09/02	28.64	16.67	11.97	**6000**	<50	<50	<50	<50	--	**4900**
	01/29/03	28.64	16.19	12.45	**1800**	<10	<10	<10	<10	--	**2300**
	04/11/03	28.64	16.49	12.15	**2900**	<25	<25	<25	<25	--	**3100**
	07/18/03	28.64	16.42	12.22	**3400**	<10	<10	<10	<10	--	**3200**
	10/09/03	28.64	16.80	11.84	**2300**	<10	<10	<10	<10	--	**2700**
	01/28/04	28.64	15.94	12.70	**1700**	<10	<10	<10	<10	--	**2900**
	04/07/04	28.64	15.28	13.36	**2700**	<10	<10	<10	<20	--	**3600**
	07/23/04	28.64	16.15	12.49	**4200**	<25	<25	<25	<50	--	**4900**
	10/12/04	28.64	16.63	12.01	**5000**	<50	<50	<50	<100	--	**5900**
	01/29/05	28.64	16.15	12.49	<1000	<10	<10	<10	<20	--	**3100**
	04/28/05	28.64	14.94	13.70	<200	<2.0	<2.0	<2.0	<2.0	--	**1300**
	07/19/05	28.64	16.25	12.39	**4400**	<20	<20	<20	<40	--	**3000**
	10/18/05	28.64	16.76	11.88	**18000**	<50	<50	<50	<50	--	**6800**
	01/23/06	28.64	15.81	12.83	**17000**	<100	<100	<100	<200	--	**7000**
	04/12/06	28.64	13.22	15.42	<200	<2.0	<2.0	<2.0	<2.0	--	**7800**
	07/10/06	28.64	15.49	13.15	**11000**	<100	<100	<100	<200	--	**12000**
	10/16/06	28.64	17.46	11.18	<10000	<100	<100	<100	<100	--	**17000**
	01/26/07	28.64	18.02	10.62	<200	<2.0	<2.0	<2.0	<2.0	--	**4000**
	04/18/07	28.64	17.75	10.89	<900	<9.0	<9.0	<9.0	<9.0	--	**11000**
	08/02/07	28.64	18.38	10.26	**110**	<0.80	<0.80	<0.80	2	--	**410**
	10/23/07	28.64	19.61	9.03	< 80	<0.80	<0.80	<0.80	<0.80	--	**480**
	01/30/08	28.64	17.65	10.99	< 80	<0.80	<0.80	<0.80	<0.80	--	**430**
	04/18/08	28.64	18.08	10.56	<50	<0.50	<0.50	<0.50	<0.50	--	**350**
	07/28/08	28.64	18.77	9.87	61	<0.50	<0.50	<0.50	<0.50	--	**140**
	10/29/08	28.64	19.14	9.50	**120**	<0.50	<0.50	<0.50	<0.50	--	**640**
	01/26/09	28.64	19.06	9.58	**210**	**1.9**	<1.5	<1.5	<1.5	--	**1300**
	08/03/09	31.64	18.51	13.13	<250	<2.5	<2.5	<2.5	<2.5	--	**1600**
	01/25/10	31.64	18.02	13.62	87	<0.50	<0.50	<0.50	<0.50	--	**300**
	03/08/10	31.64	18.06	13.58	92	<0.50	<0.50	<0.50	<0.50	--	**32**
	02/17/11	31.64	18.03	13.61	<50	<0.50	<0.50	<0.50	<0.50	--	**25**
	08/23/11	31.64	18.56	13.08	60	<0.50	<0.50	<0.50	<0.50	**9.1**	--
	02/07/12	31.64	18.71	12.93	25	<0.50	<0.50	<0.50	<1.0	**2.1**	--
	08/09/12	31.64	17.74	13.90	39	<0.50	<0.50	<0.50	<1.0	**9.2**	--
MW-4	12/15/98	32.53	17.59	14.94	**880**	**3**	<0.5	<0.5	<0.5	--	**950**
	03/04/99	32.53	15.88	16.65	**3800**	<25	<25	<25	<25	--	**3700**
	06/17/99	32.53	17.14	15.39	**2700**	<25	<25	<25	<25	--	**2700**
	08/27/99	32.53	17.65	14.88	**440**	**4.7**	1.1	0.58	1.3	**1700**	**1600**
	12/09/99	32.53	18.28	14.25	**1100**	<2.5	<2.5	<2.5	<2.5	--	**1700**
	03/07/00	32.53	15.41	17.12	<250	<2.5	<2.5	<2.5	<2.5	--	**1700**
	06/07/00	32.53	17.09	15.44	**530**	**8.8**	<2.5	<2.5	<2.5	--	**440**
	10/11/00	32.53	18.33	14.20	**700**	**3.9**	<2.5	<2.5	<2.5	--	**680**
	01/18/01	32.53	18.23	14.30	**2000**	<2.5	<2.5	<2.5	<2.5	--	**780**
	04/05/01	32.53	16.69	15.84	**810**	<2.5	<2.5	<2.5	<2.5	--	**620**
	07/17/01	32.53	17.32	15.21	**880**	<2.5	<2.5	<2.5	<2.5	--	**570**
	10/05/01	29.58	17.71	11.87	**550**	<2.5	<2.5	<2.5	<2.5	--	**710**
	01/18/02	29.58	15.85	13.73	**960**	<5.0	<5.0	<5.0	<5.0	--	**1300**
	04/11/02	29.58	16.14	13.44	**1100**	<5.0	<5.0	<5.0	<5.0	--	**550**
	07/18/02	29.58	16.56	13.02	**1200**	<5.0	<5.0	<5.0	<5.0	--	**890**
	10/09/02	29.58	17.09	12.49	**1300**	<5.0	<5.0	<5.0	<5.0	--	**880**
	01/29/03	29.58	16.65	12.93	**530**	<1.0	<1.0	<1.0	<1.0	--	**190**
	04/11/03	29.58	16.93	12.65	**690**	<2.5	<2.5	<2.5	<2.5	--	**310**
	07/18/03	29.58	16.78	12.80	**1600**	<10	<10	<10	<10	--	**1300**
	10/09/03	29.58	17.26	12.32	**1500**	<10	<10	<10	<10	--	**1400**
	01/28/04	29.58	16.38	13.20	**1200**	<10	<10	<10	<10	--	**1900**
	04/07/04	29.58	15.64	13.94	**1900**	<10	<10	<10	<20	--	**2200**
	07/23/04	29.58	16.58	13.00	**1800**	<10	<10	<10	<20	--	**1600**

Table 2
Historical Groundater 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)
726 Harrison Street											
MW-4 cont'd	10/12/04	--	--	--	--	--	--	--	--	--	--
	01/29/05	29.58	14.90	14.68	<1300	<13	<13	<13	<25	--	**3900**
	04/28/05	29.58	15.18	14.40	**510**	<1.5	<1.5	<1.5	<1.5	--	**510**
	07/19/05	29.58	16.48	13.10	**5400**	<50	<50	<50	<100	--	**2700**
	10/18/05	29.58	16.99	12.59	**10000**	<50	<50	<50	<50	--	**9000**
	01/23/06	29.58	15.09	14.49	**10000**	<100	<100	<100	<200	--	**8300**
	04/12/06	29.58	13.49	16.09	**1900**	<10	<10	<10	<20	--	**2200**
	07/10/06	29.58	14.99	14.59	**750**	**5.4**	<5.0	<5.0	<10	--	**790**
	10/16/06	29.58	17.29	12.29	**2400**	<10	<10	<10	<10	--	**2200**
	01/26/07	29.58	18.17	11.41	**250**	<1.5	<1.5	<1.5	<1.5	--	**7000**
	04/18/07	29.58	18.06	11.52	<400	<4.0	<4.0	<4.0	<4.0	--	**2300**
	02/08/07	29.58	18.45	11.13	**400**	<4.0	<4.0	<4.0	<4.0	--	**4500**
	10/23/07	29.58	18.99	10.59	<500	<5.0	<5.0	<5.0	<5.0	--	**3400**
	01/30/08	29.58	18.14	11.44	**580**	**89**	1.5	< 0.90	2.5	--	**500**
	04/18/08	29.58	18.49	11.09	**660**	**13**	0.58	0.51	0.94	--	**180**
	07/28/08	29.58	19.15	10.43	**520**	**19**	0.97	1.4	2.6	--	**71**
	10/29/08	29.58	19.53	10.05	**480**	**38**	1.8	4.5	4.3	--	**420**
	01/26/09	29.58	19.52	10.06	**470**	**51**	2.2	4.2	5.2	--	**180**
	08/03/09	32.56	18.91	13.65	**320**	**62**	<0.5	0.59	<0.5	--	**120**
	01/25/10	32.56	18.51	14.05	**820**	**110**	1.9	1.3	5.5	--	**8.8**
	03/08/10	32.56	18.45	14.11	**500**	**8.6**	0.84	<0.50	1.4	--	**43**
	02/17/11	32.56	18.46	14.10	**440**	**4.9**	<0.50	<0.50	0.87	--	**40**
	08/23/11	32.56	18.88	13.68	**630**	**36**	1.3	0.69	3.6	**32**	--
	02/07/12	32.56	19.09	13.47	**210**	<0.50	<0.50	<0.50	<1.0	**17**	--
	08/09/12	32.56	18.16	14.40	**280**	**2**	<0.50	<0.50	<1.0	**21**	--
MW-5	08/29/01	29.06	17.42	11.64	**14000**	**1300**	**470**	**230**	**800**	--	**14000**
	01/18/02	29.06	15.68	13.38	**24000**	**3200**	**1300**	**390**	**1500**	--	**5700**
	04/11/02	29.06	16.17	12.89	**23000**	**2700**	**980**	**38**	**950**	--	**4300**
	07/08/02	29.06	16.51	12.55	**19000**	**3300**	25	**360**	**1100**	--	**2100**
	10/09/02	29.06	17.10	11.96	**24000**	**2800**	**990**	**360**	**820**	--	**2400**
	01/29/03	29.06	16.58	12.48	**17000**	**2100**	**1400**	**380**	**1400**	--	<250
	04/11/03	29.06	16.87	12.19	**26000**	**2900**	**2200**	**590**	**2200**	--	**630**
	07/18/03	29.06	16.77	12.29	**26000**	**3500**	**1700**	**480**	**1300**	--	**1300**
	10/09/03	29.06	17.21	11.85	**27000**	**3800**	**1900**	**510**	**1700**	--	**1200**
	01/28/04	29.06	16.34	12.72	**29000**	**4800**	**2900**	**770**	**2300**	--	**3300**
	04/07/04	29.06	15.38	13.68	**23000**	**4400**	**2700**	**720**	**2200**	--	**1700**
	07/23/04	29.06	16.55	12.51	**29000**	**5200**	**2200**	**810**	**1400**	--	**2200**
	10/12/04	29.06	17.02	12.04	**26000**	**4300**	**2000**	**670**	**1300**	--	**2200**
	01/29/05	29.06	15.23	13.83	NA	NA	NA	NA	NA	--	NA
	04/28/05	29.06	15.41	13.65	NA	NA	NA	NA	NA	--	NA
	07/19/05	29.06	16.79	12.27	NA	NA	NA	NA	NA	--	NA
	10/18/05	29.06	17.28	11.78	NA	NA	NA	NA	NA	--	NA
	01/23/06	29.06	15.28	13.78	**21000**	**1800**	**1200**	**270**	**820**	--	**13000**
	04/12/06	29.06	13.66	15.40	NA	NA	NA	NA	NA	--	NA
	07/10/06	29.06	16.14	12.92	**45000**	**3700**	**2600**	**650**	**1800**	--	**23000**
	10/16/06	29.06	19.33	9.73	**66000**	**4200**	**3300**	**800**	**2100**	--	**35000**
	01/26/07	29.06	18.94	10.12	**30000**	**3200**	**2600**	**610**	**2400**	--	**38000**
	04/18/07	29.06	18.21	10.85	**30000**	**4300**	**3300**	**800**	**2600**	--	**27000**
	08/02/07	29.06	19.00	10.06	**26000**	**3700**	**2800**	**690**	**1900**	--	**32000**
	10/23/07	29.06	19.15	9.91	**34000**	**4400**	**3700**	**860**	**3200**	--	**34000**
	01/30/08	29.06	18.21	10.85	**28000**	**3900**	**2800**	**750**	**2300**	--	**26000**
	04/18/08	29.06	18.61	10.45	**30000**	**4300**	**3200**	**810**	**2000**	--	**32000**
	07/28/08	29.06	19.23	9.83	**34000**	**3700**	**3000**	**740**	**2900**	--	**28000**
	10/29/08	29.06	19.62	9.44	**29000**	**3300**	**2900**	**680**	**2800**	--	**27000**
	01/26/09	29.06	19.51	9.55	**19000**	**2100**	**1500**	**410**	**1500**	--	**18000**
	03/08/09	32.06	19.00	13.06	**28000**	**3500**	**2800**	**630**	**2600**	--	**28000**
	01/25/10	32.06	18.43	13.63	**12000**	**1400**	**750**	**270**	**900**	--	**7500**
	03/08/10	32.06	18.50	13.56	**24000**	**3300**	**2200**	**620**	**1700**	--	**26000**
	02/17/11	32.06	18.47	13.59	**27000**	**3500**	**1900**	**630**	**2200**	--	**24000**
	08/23/11	32.06	19.02	13.04	**19000**	**1100**	**400**	**190**	**390**	**14000**	--
	02/07/12	32.06	19.16	12.90	**19000**	**890**	**410**	**360**	**990**	**17000**	--
	08/09/12	32.06	18.24	13.82	**16000**	**1400**	**580**	**470**	**960**	**16000**	--

Table 2
Historical Groundater 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)
726 Harrison Street											
MW-6	08/23/11	32.04	28.35	3.69	**500**	<0.50	<0.50	<0.50	<1.0	**740**	--
	02/07/12	32.04	26.53	5.51	**410**	<0.50	<0.50	<0.50	<1.0	**970**	--
	08/09/12	32.04	28.27	3.77	**830**	<0.50	<0.50	<0.50	<1.0	**970**	--
800 Harrison Street											
MW-1	06/05/91	34.94	--	--	ND	ND	ND	ND	ND	--	--
	09/30/91	34.94	--	--	ND	ND	ND	ND	ND	--	--
	12/30/91	34.94	--	--	ND	ND	ND	ND	ND	--	--
	04/02/92	34.94	--	--	ND	ND	ND	ND	ND	--	--
	06/30/92	34.94	--	--	ND	ND	ND	ND	ND	--	--
	09/15/92	34.94	--	--	76	**1**	ND	ND	ND	--	--
	12/21/92	34.94	21.17	13.77	95	0.69	ND	ND	1	--	--
	04/28/93	34.94	--	--	**920**	**3.1**	2.3	1.2	9.7	--	--
	07/23/93	34.94	20.13	14.81	ND	0.5	0.66	ND	ND	--	--
	10/05/93	34.69	20.30	14.39	92	**1.5**	ND	ND	0.72	--	--
	01/03/94	34.69	20.52	14.17	ND	ND	ND	ND	ND	--	--
	04/02/94	34.69	20.16	14.53	ND	ND	ND	ND	ND	--	--
	07/05/94	34.69	19.27	15.42	**250**	**4.8**	13	1.2	7.3	--	--
	10/06/94	34.69	20.87	13.82	**540**	**1.4**	ND	0.66	11	--	--
	01/02/95	34.69	19.67	15.02	**140**	ND	ND	ND	ND	--	--
	04/03/95	34.69	17.61	17.08	**580**	**3.6**	0.8	ND	4	--	--
	07/14/95	34.69	18.58	16.11	**260**	**2.1**	ND	ND	1.2	--	--
	10/10/95	34.69	19.60	15.09	**220**	**2**	ND	25	5.6	--	**29**
	01/03/96	34.69	19.69	15.00	**190**	**2.4**	ND	0.71	1.2	--	--
	04/10/96	34.69	17.65	17.04	**540**	**8.9**	1.7	1.5	7.4	--	**50**
	07/09/96	34.69	18.52	16.17	**490**	**3**	1.4	1.3	2.5	--	**150**
	01/24/97	34.69	17.72	16.97	**760**	**27**	0.89	5.2	10	--	**510**
	07/23/97	34.69	19.42	15.27	ND	ND	ND	ND	ND	--	**550**
	01/26/98	34.69	17.46	17.23	**1800**	ND	ND	ND	ND	--	**4800**
	07/03/98	34.69	18.61	16.08	ND	ND	ND	ND	ND	--	**1800**
	01/14/99	34.69	18.92	15.77	83	ND	ND	ND	ND	--	**230**
	07/15/99	34.69	17.84	16.85	**110**	ND	ND	ND	1	--	**290**
	01/07/00	34.69	19.13	15.56	ND	ND	ND	ND	ND	--	**260**
	07/19/00	34.69	20.27	14.42	ND	ND	ND	ND	ND	--	**648**
	01/02/01	34.69	20.04	14.65	ND	ND	ND	ND	ND	--	**119**
	05/23/01	34.69	18.27	16.42	84	ND	ND	ND	ND	--	**760**
	07/30/01	34.69	18.56	16.13	<50	<0.50	<0.50	<0.50	<0.50	--	**350**
	10/15/01	34.69	18.72	15.97	96	<0.50	<0.50	<0.50	<0.50	--	**160**
	01/14/02	34.69	16.78	17.91	**450**	<2.5	<2.5	<2.5	3.3	--	**4100**
	04/15/02	34.69	17.35	17.34	<1000	<10	<10	<10	<10	--	**10000**
	07/15/02	34.69	17.63	17.06	**2100**	<10	<10	<10	<20	**2100**	--
	01/18/03	34.69	17.04	17.65	<25000	<250	<250	<250	<500	**29000**	--
	07/11/03	34.69	17.91	16.78	**4000**	<25	<25	<25	<50	**6300**	--
	02/04/04	34.69	17.98	16.71	**8000**	<50	<50	<50	<100	**8500**	--
	08/11/04	34.69	17.84	16.85	**1100**	<10	<10	<10	<20	**1500**	--
	03/31/05	34.69	15.71	18.98	<2000	<0.50	<0.50	0.54	2.2	**4900**	--
	09/30/05	34.69	17.65	17.04	**190**	<0.50	<0.50	<0.50	<1.0	**160**	--
	03/27/06	34.69	15.03	19.66	**760**	<0.50	<0.50	<0.50	<1.0	**1000**	--
	09/27/06	34.69	18.45	16.24	**170**	<0.50	<0.50	<0.50	0.61	**73**	--
	03/27/07	34.69	18.84	15.85	**120**	<0.50	<0.50	<0.50	<0.50	**99**	--
	09/28/07	34.69	19.73	14.96	68	<0.50	<0.50	<0.50	<0.50	**15**	--
	03/26/08	34.69	19.32	15.37	**200**	<0.50	<0.50	<0.50	1	**47**	--
	07/28/08	34.69	20.15	14.54	<50	<0.50	<0.50	<0.50	<1.0	**8.7**	--
	01/26/09	34.69	20.74	13.95	<50	<0.50	<0.50	<0.50	<1.0	**5.2**	--
	08/03/09	34.72	20.10	14.62	76	<0.50	<0.50	<0.50	<1.0	**12**	--
	01/25/10	34.72	19.78	14.94	<50	<0.50	<0.50	<0.50	<1.0	**14**	--
	08/03/10	34.72	19.47	15.25	**210**	<0.50	<0.50	<0.50	<1.0	**37**	--
	02/17/11	34.72	19.50	15.22	**150**	<0.50	<0.50	<0.50	<1.0	**17**	--
	08/03/11	34.72	18.96	15.76	**230**	<0.50	<0.50	<0.50	<1.0	**44**	--
	02/07/12	34.72	20.00	14.72	97	<0.50	<0.50	<0.50	<1.0	**8.6**	--
	08/09/12	34.72	19.14	15.58	**140**	<0.50	<0.50	<0.50	<1.0	**18**	--

Table 2
Historical Groundater 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)
800 Harrison Street											
MW-2	06/05/91	34.97	--	--	49	ND	ND	ND	ND	--	--
	09/30/91	34.97	--	--	**130**	**18**	0.53	14	9.6	--	--
	12/30/91	34.97	--	--	91	**16**	0.89	11	1.9	--	--
	04/02/92	34.97	--	--	88	**12**	0.32	6.3	7.2	--	--
	06/30/92	34.97	--	--	76	**9.3**	0.76	4.8	6.9	--	--
	09/15/92	34.97	--	--	**1300**	**91**	5.7	**80**	**110**	--	--
	12/21/92	34.97	20.85	14.12	**960**	**97**	3.2	**74**	**96**	--	--
	04/28/93	34.97	--	--	**1300**	**76**	1.9	**130**	**87**	--	--
	07/23/93	34.97	19.81	15.16	66	**1.8**	ND	2.5	2	--	--
	10/05/93	34.72	19.95	14.77	**120**	**12**	ND	2.1	12	--	--
	01/03/94	34.72	20.21	14.51	**260**	**25**	ND	5.5	**26**	--	--
	04/02/94	34.72	19.88	14.84	ND	0.65	ND	ND	0.99	--	--
	07/05/94	34.72	19.07	15.65	**160**	**16**	ND	0.73	10	--	--
	10/06/94	34.72	20.55	14.17	**170**	**15**	ND	1.4	11	--	--
	01/02/95	34.72	19.25	15.47	**190**	**27**	ND	0.95	11	--	--
	04/03/95	34.72	17.49	17.23	**2400**	**65**	6.6	19	**63**	--	--
	07/14/95	34.72	18.30	16.42	**750**	**270**	ND	ND	13	--	--
	10/10/95	34.72	19.25	15.47	50	**1.6**	ND	ND	ND	--	**200**
	01/03/96	34.72	19.40	15.32	ND	ND	ND	ND	ND	--	--
	04/10/96	34.72	17.35	17.37	**300**	**42**	ND	2.4	9	--	**620**
	07/09/96	34.72	18.22	16.50	**760**	**230**	ND	1.3	2.4	--	**1500**
	01/24/97	34.72	17.59	17.13	**2900**	**400**	**350**	**190**	**720**	--	**1300**
	07/23/97	34.72	19.13	15.59	ND	ND	ND	ND	ND	--	**65**
	01/26/98	34.72	17.12	17.60	ND	ND	ND	ND	0.58	--	**13**
	07/03/98	34.72	18.20	16.52	**140**	**26**	ND	0.95	5	--	**330**
	01/14/99	34.72	18.56	16.16	ND	0.54	ND	ND	ND	--	**350**
	07/15/99	34.72	17.39	17.33	ND	0.88	ND	ND	ND	--	**39**
	01/07/00	34.72	18.78	15.94	ND	ND	ND	ND	ND	--	**24**
	07/19/00	34.72	19.68	15.04	ND	**1.45**	ND	ND	ND	--	**117**
	01/02/01	34.72	19.73	14.99	ND	ND	ND	ND	ND	--	**11.4**
	05/23/01	34.72	18.16	16.56	ND	ND	ND	ND	ND	--	**33**
	07/30/01	34.72	18.34	16.38	<50	<0.50	<0.50	<0.50	<0.50	--	**67**
	10/15/01	34.72	18.52	16.20	<50	<0.50	<0.50	<0.50	<0.50	--	**31**
	01/14/02	34.72	16.72	18.00	<50	<0.50	<0.50	<0.50	0.56	--	**11**
	04/15/02	34.72	17.26	17.46	<50	<0.50	<0.50	<0.50	<0.50	--	**110**
	07/15/02	34.72	17.46	17.26	**270**	**21**	<0.50	3.8	4	**73**	--
	01/18/03	34.72	16.93	17.79	<50	<0.50	<0.50	<0.50	<1.0	**22**	--
	07/11/03	34.72	17.68	17.04	**130**	**3**	<0.50	<0.50	<1.0	**89**	--
	02/04/04	34.72	17.36	17.36	61	**2.9**	<0.50	<0.50	<1.0	**22**	--
	08/11/04	34.72	17.61	17.11	**140**	<0.50	0.6	<0.50	<1.0	**94**	--
	03/31/05	34.72	15.56	19.16	<50	<0.50	<0.50	<0.50	<1.0	**14**	--
	09/30/05	34.72	17.31	17.41	<50	<0.50	<0.50	<0.50	<1.0	**9.1**	--
	03/27/06	34.72	14.91	19.81	<50	<0.50	<0.50	<0.50	<1.0	2.7	--
	09/27/06	34.72	18.15	16.57	<50	<0.50	<0.50	<0.50	<0.50	**7.7**	--
	03/27/07	34.72	18.57	16.15	<50	<0.50	<0.50	<0.50	<0.50	1.4	--
	09/28/07	34.72	18.38	16.34	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--
	03/26/08	34.72	19.06	15.66	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
	07/28/08	34.72	19.90	14.82	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
	01/26/09	34.72	20.50	14.22	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
	08/03/09	34.74	19.92	14.82	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
	01/25/10	34.74	19.70	15.04	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
	08/03/10	34.74	19.26	15.48	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
	02/17/11	34.74	19.32	15.42	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
	08/03/11	34.74	18.74	16.00	77	**6.7**	<0.50	<0.50	<1.0	**14**	--
	02/07/12	34.74	19.77	14.97	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
	08/09/12	34.74	18.89	15.85	<50	<0.50	<0.50	<0.50	<1.0	4.7	--

Table 2
Historical Groundater 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)
800 Harrison Street											
MW-3	06/05/91	33.39	--	--	**5800**	**1200**	**40**	**140**	**97**	--	--
	09/30/91	33.39	--	--	**6800**	**1400**	**130**	**290**	**240**	--	--
	12/30/91	33.39	--	--	**7200**	**2100**	**690**	**410**	**550**	--	--
	04/02/92	33.39	--	--	**8000**	**1400**	**200**	**300**	**310**	--	--
	06/30/92	33.39	--	--	**8900**	**1900**	**210**	**430**	**550**	--	--
	09/15/92	33.39	--	--	**10000**	**1900**	**330**	**400**	**580**	--	--
	12/21/92	33.39	20.02	13.37	**8500**	**1500**	**150**	**310**	**330**	--	--
	04/28/93	33.39	--	--	**2600**	**220**	7.6	**41**	**27**	--	--
	07/23/93	33.39	19.00	14.39	**4400**	**660**	26	**160**	**82**	--	--
	10/05/93	33.14	19.20	13.94	**9200**	**720**	**88**	**140**	**140**	--	--
	01/03/94	33.14	19.40	13.74	**4900**	**830**	**100**	**170**	**150**	--	--
	04/02/94	33.14	19.01	14.13	**6000**	**800**	30	**140**	**110**	--	--
	07/05/94	33.14	18.14	15.00	**25000**	ND	ND	ND	ND	--	--
	10/06/94	33.14	19.73	13.41	**49000**	**1300**	**200**	**280**	**300**	--	--
	01/02/95	33.14	18.36	14.78	**480**	**1.6**	ND	1.4	ND	--	--
	04/03/95	33.14	16.38	16.76	**8100**	**65**	ND	ND	ND	--	--
	07/14/95	33.14	17.49	15.65	ND	**1300**	ND	ND	ND	--	--
	10/10/95	33.14	18.50	14.64	**3100**	**1400**	36	**50**	**53**	--	**190000**
	01/03/96	33.14	18.54	14.60	ND	**2300**	**110**	**150**	**140**	--	--
	07/09/96	33.14	17.43	15.71	ND	**2000**	ND	**150**	**160**	--	**140000**
	01/24/97	33.14	16.57	16.57	**540**	**8**	ND	11	9.9	--	**45**
	07/23/97	33.14	18.38	14.76	**7400**	**1900**	**180**	**140**	**340**	--	**45000**
	01/26/98	33.14	16.22	16.92	**250**	**2.2**	1.9	0.87	1.9	--	4
	07/03/98	33.14	17.46	15.68	**230**	**1.8**	2.5	1.5	3.4	--	**6.3**
	01/14/99	33.14	17.73	15.41	**400**	**8.2**	2.7	0.9	5.9	--	**140**
	07/15/99	33.14	16.58	16.56	**290**	**3.3**	3.6	1.7	2.5	--	**13**
	01/07/00	33.14	17.84	15.30	ND	**890**	**91**	**100**	**480**	--	**20000**
	07/19/00	33.14	18.92	14.22	**354**	**3.87**	2.61	0.646	ND	--	**13.7**
	01/02/01	33.14	19.07	14.07	**464**	ND	3.69	3.91	ND	--	**21.1**
	05/23/01	33.14	17.12	16.02	**420**	**7.6**	3.1	3	5.1	--	**1900**
	07/30/01	33.14	17.38	15.76	**290**	**4.6**	4.1	<0.50	3.4	--	**23**
	10/15/01	33.14	17.61	15.53	**400**	<0.50	<0.50	<0.50	<0.50	--	**13**
	01/14/02	33.14	15.53	17.61	**130**	0.5	0.61	1.1	<0.50	--	**9.9**
	04/15/02	33.14	16.12	17.02	**280**	**9.9**	1.6	3.3	6.8	--	**1400**
	07/15/02	33.14	16.48	16.66	64	<0.50	<0.50	<0.50	<1.0	--	**33**
	01/18/03	33.14	15.81	17.33	**420**	0.54	<0.50	<0.50	<1.0	--	**130**
	07/11/03	33.14	16.74	16.40	**300**	**2.3**	<0.50	<0.50	<1.0	**31**	--
	02/04/04	33.14	16.15	16.99	**130**	**7.9**	<0.50	<0.50	<1.0	**63**	--
	08/11/04	33.14	16.64	16.50	<20000	<200	<200	<200	<400	**20000**	--
	03/31/05	33.14	14.53	18.61	<20000	**330**	<200	<200	<400	**78000**	--
	09/30/05	33.14	16.55	16.59	**12000**	**360**	**40**	<25	**50**	**20000**	--
	03/27/06	33.14	13.66	19.48	**10000**	**150**	<25	**53**	**99**	**15000**	--
	09/27/06	33.14	17.40	15.74	<12000	<120	<120	<120	<120	**12000**	--
	03/27/07	33.14	17.55	15.59	**8700**	**180**	<12	**60**	**57**	**8900**	--
	09/28/07	33.14	18.59	14.55	**9000**	**55**	<50	<50	<50	**11000**	--
	03/26/08	33.14	18.19	14.95	**450**	**13**	1.3	0.84	1.4	**7200**	--
	07/28/08	33.14	19.00	14.14	**8300**	<50	<50	<50	<100	**13000**	--
	01/26/09	33.14	19.54	13.60	**8800**	**27**	<12	<12	<25	**13000**	--
	08/03/09	33.18	18.90	14.28	**9300**	**56**	<50	<50	<100	**8000**	--
	01/25/10	33.18	18.54	14.64	**4900**	**79**	7.3	5.4	13	**8100**	--
	08/03/10	33.18	18.35	14.83	**2500**	**30**	<12	<12	<25	**4600**	--
	02/17/11	33.18	18.30	14.88	**3800**	**11**	<5.0	<5.0	<10	**4700**	--
	08/03/11	33.18	17.87	15.31	**2600**	**9.7**	0.8	3.1	1.4	**2000**	--
	02/07/12	33.18	18.88	14.30	**1800**	**6.7**	<1.0	1.9	<2.0	**1600**	--
	08/09/12	33.18	18.02	15.16	**1400**	**1.8**	<0.50	1.5	<1.0	**370**	--

Table 2
Historical Groundater 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)
800 Harrison Street											
MW-4	10/19/92	--	--	--	**480**	0.51	2.1	2.8	6.8	--	--
	12/21/92	33.12	19.73	13.39	**220**	ND	ND	0.97	0.74	--	--
	04/28/93	33.12	--	--	ND	ND	ND	ND	ND	--	--
	07/23/93	33.12	18.72	14.40	85	ND	ND	ND	ND	--	--
	10/05/93	32.71	18.74	13.97	**130**	ND	ND	ND	ND	--	--
	01/03/94	32.71	18.93	13.78	**210**	ND	ND	0.76	1.6	--	--
	04/02/94	32.71	18.53	14.18	89	ND	ND	ND	ND	--	--
	07/05/94	32.71	17.67	15.04	**190**	ND	ND	ND	ND	--	--
	10/06/94	32.71	19.25	13.46	**170**	0.85	ND	ND	0.74	--	--
	01/02/95	32.71	17.75	14.96	ND	ND	ND	ND	ND	--	--
	04/03/95	32.71	15.87	16.84	98	ND	ND	ND	ND	--	--
	07/14/95	32.71	17.01	15.70	ND	ND	ND	ND	ND	--	--
	10/10/95	32.71	18.03	14.68	ND	ND	ND	ND	ND	--	**120**
	01/03/96	32.71	18.05	14.66	ND	ND	ND	ND	ND	--	--
	04/10/96	32.71	16.00	16.71	ND	ND	ND	ND	ND	--	**240**
	07/09/96	32.71	16.96	15.75	ND	ND	ND	ND	ND	--	**480**
	01/24/97	32.71	16.04	16.67	ND	ND	ND	ND	ND	--	**270**
	07/23/97	32.71	17.87	14.84	ND	ND	ND	ND	ND	--	**460**
	01/26/98	32.71	16.05	16.66	ND	ND	ND	ND	ND	--	**17**
	07/03/98	32.71	16.95	15.76	ND	ND	ND	ND	ND	--	3.8
	01/14/99	32.71	17.34	15.37	ND	ND	ND	ND	ND	--	**4600**
	07/15/99	32.71	16.36	16.35	ND	ND	ND	ND	ND	--	ND
	01/07/00	32.71	17.81	14.90	ND	ND	ND	ND	ND	--	**450**
	07/19/00	32.71	18.94	13.77	ND	ND	ND	ND	ND	--	ND
	01/02/01	32.71	18.85	13.86	ND	ND	ND	ND	ND	--	ND
	05/23/01	32.71	16.82	15.89	ND	ND	ND	ND	ND	--	ND
	07/30/01	32.71	16.88	15.83	<50	<0.50	<0.50	<0.50	<0.50	--	4.9
	10/15/01	32.71	17.08	15.63	<50	<0.50	<0.50	<0.50	<0.50	--	<5.0
	01/14/02	32.71	14.97	17.74	<50	<0.50	<0.50	<0.50	<0.50	--	**30**
	04/15/02	32.71	15.48	17.23	<50	<0.50	<0.50	<0.50	<0.50	--	**180**
	07/15/02	32.71	15.90	16.81	<50	<0.50	<0.50	<0.50	<1.0	--	**50**
	01/18/03	32.71	15.39	17.32	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0
	07/11/03	32.71	16.17	16.54	**200**	<0.50	<0.50	<0.50	<1.0	**52**	--
	02/04/04	32.71	16.12	16.59	**1300**	<10	<10	<10	<20	**1700**	--
	08/11/04	32.71	16.16	16.55	<5000	<50	<50	<50	<100	**6400**	--
	03/31/05	32.71	14.15	18.56	<1300	<0.50	<0.50	<0.50	<1.0	**1600**	--
	09/30/05	32.71	16.91	15.80	**900**	<0.50	<0.50	<0.50	<1.0	**3800**	--
	03/27/06	32.71	13.94	18.77	**870**	<0.50	<0.50	<0.50	<1.0	**2000**	--
	09/27/06	32.71	16.91	15.80	<1000	<10	<10	<10	<10	**1600**	--
	03/27/07	32.71	17.15	15.56	**1500**	<2.5	<2.5	<2.5	<2.5	**1700**	--
	09/28/07	32.71	18.13	14.58	**590**	<5.0	<5.0	<5.0	<5.0	**1400**	--
	03/26/08	32.71	17.66	15.05	**390**	<0.50	<0.50	<0.50	<1.0	**1400**	--
	07/28/08	32.71	18.34	14.37	**480**	<1.0	<1.0	<1.0	<2.0	**950**	--
	01/26/09	32.71	18.80	13.91	**500**	<0.50	<0.50	<0.50	<1.0	**830**	--
	08/03/09	32.72	18.43	14.29	**640**	<5.0	6.6	<5.0	<10	**570**	--
	01/25/10	32.72	18.02	14.70	**190**	<0.50	<0.50	<0.50	<1.0	**400**	--
	08/03/10	32.72	17.83	14.89	58	<0.50	<0.50	<0.50	<1.0	**110**	--
	02/17/11	32.72	17.85	14.87	<50	<0.50	<0.50	<0.50	<1.0	**12**	--
	08/03/11	32.72	17.36	40725.28	<50	<0.50	<0.50	<0.50	<1.0	**12**	--
	02/07/12	32.72	18.38	14.34	<50	<0.50	<0.50	<0.50	<1.0	1.5	--
	08/09/12	32.72	17.55	15.17	<50	<0.50	<0.50	<0.50	<1.0	1.3	--
MW-5	10/19/92	--	--	--	**2700**	**61**	5	**100**	**61**	--	--
	12/21/92	33.25	19.75	13.50	**1700**	**51**	4.7	**83**	**34**	--	--
	04/28/93	33.25	--	--	**6700**	**200**	**190**	**250**	**430**	--	--
	07/23/93	33.25	18.74	14.51	**2000**	**122**	8	**68**	**47**	--	--
	10/05/93	32.95	18.83	14.12	**1700**	**70**	6.2	**54**	**40**	--	--
	01/03/94	32.95	19.05	13.90	**1500**	**44**	ND	**42**	**46**	--	--
	04/02/94	32.95	18.68	14.27	**1800**	**46**	5.1	**38**	**35**	--	--

Table 2
Historical Groundater 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)
800 Harrison Street											
MW-5 cont'd	07/05/94	32.95	17.90	15.05	**2200**	**97**	8.4	**37**	**36**	--	--
	10/06/94	32.95	19.37	13.58	**1600**	**79**	5.7	28	**22**	--	--
	01/02/95	32.95	17.92	15.03	**1700**	**50**	8.6	**30**	**28**	--	--
	04/03/95	32.95	16.15	16.80	**5400**	**190**	**240**	**170**	**420**	--	--
	07/14/95	32.95	17.18	15.77	**3800**	**210**	**100**	**130**	**190**	--	--
	10/10/95	32.95	18.15	14.80	**1300**	**92**	14	15	**39**	--	**1100**
	01/03/96	32.95	18.20	14.75	**630**	**53**	4.4	8.3	13	--	--
	04/10/96	32.95	16.05	16.90	**500**	**25**	18	7	**20**	--	**640**
	07/09/96	32.95	17.11	15.84	**1000**	**44**	20	10	**34**	--	**150**
	01/24/97	32.95	16.36	16.59	**4000**	**190**	**400**	**160**	**430**	--	**600**
	07/23/97	32.95	18.08	14.87	**1700**	**200**	23	18	**45**	--	**2500**
	01/26/98	32.95	16.27	16.68	ND	ND	ND	ND	ND	--	ND
	07/03/98	32.95	17.27	15.68	ND	ND	ND	ND	ND	--	ND
	01/14/99	32.95	17.55	15.40	**330**	**61**	4.1	2.2	2.9	--	**560**
	07/15/99	32.95	16.41	16.54	**1100**	**170**	ND	ND	**27**	--	**660**
	01/07/00	32.95	17.85	15.10	**1000**	**180**	6.3	ND	14	--	**430**
	07/19/00	32.95	18.87	14.08	**2980**	**289**	**57.3**	**65.3**	**43.4**	--	**976**
	01/02/01	32.95	18.47	14.48	**1150**	**87.2**	17.8	7.97	9.32	--	**368**
	05/23/01	32.95	17.38	15.57	**840**	**42**	10	13	7.1	--	**130**
	07/30/01	32.95	17.12	15.83	**1900**	**82**	24	6.9	13	--	**370**
	10/15/01	32.95	17.33	15.62	**26000**	**390**	**230**	**58**	**1300**	--	<500
	01/14/02	32.95	15.33	17.62	<50	<0.50	<0.50	<0.50	<0.50	--	<2.5
	04/15/02	32.95	15.89	17.06	**310**	**20**	6.7	11	7.7	--	**77**
	07/15/02	32.95	16.21	16.74	**1500**	**40**	22	**60**	**28**	--	**170**
	01/18/03	32.95	15.68	17.27	<50	0.75	<0.50	<0.50	<1.0	--	**81**
	07/11/03	32.95	16.29	16.66	<50	<0.50	<0.50	<0.50	<1.0	3.6	--
	02/04/04	32.95	16.08	16.87	82	**16**	1.6	0.65	<1.0	**16**	--
	08/11/04	32.95	16.38	16.57	**900**	**81**	14	2.8	11	**120**	--
	03/31/05	32.95	14.30	18.65	**5000**	**160**	**84**	**65**	**72**	**140**	--
	09/30/05	32.95	16.19	16.76	**1200**	**26**	5.8	2.4	9.2	**38**	--
	03/27/06	32.95	13.90	19.05	**1100**	**13**	12	4.7	16	**8.8**	--
	09/27/06	32.95	17.06	15.89	**1300**	**20**	11	2.3	15	**21**	--
	03/27/07	32.95	17.43	15.52	**960**	**15**	7.8	2.2	11	**14**	--
	09/28/07	32.95	18.25	14.70	**1300**	**13**	6	2.3	15	**8.4**	--
	03/26/08	32.95	17.82	15.13	**1200**	**7.6**	3.3	1.8	11	2.7	--
	07/28/08	32.95	18.70	14.25	**2000**	**12**	4.9	3.2	17	<0.50	--
	01/26/09	32.95	19.25	13.70	**1400**	**7.4**	3.3	2.5	11	3.3	--
	08/03/09	32.98	18.62	14.36	**1500**	**17**	9	3.5	**22**	**7.3**	--
	01/25/10	32.98	18.34	14.64	**1600**	**7.6**	3.6	2.4	15	1.7	--
	08/03/10	32.98	18.07	14.91	**2200**	**32**	32	10	**48**	**10**	--
	02/17/11	32.98	18.05	14.93	**1800**	**33**	7.4	<0.50	11	**15**	--
	08/03/11	32.98	17.57	15.41	**2500**	**58**	23	12	**34**	**40**	--
	02/07/12	32.98	18.59	14.39	**1600**	**58**	11	3.0	**25**	**10**	--
	08/09/12	32.98	17.73	15.25	**1900**	**81**	18	10	**22**	**19**	--
MW-6	10/19/92	--	--	--	**3900**	**420**	12	**60**	**28**	--	--
	12/21/92	32.42	19.17	13.25	**2300**	**370**	11	**39**	15	--	--
	04/28/93	32.42	--	--	**1200**	**54**	1.5	11	5.3	--	--
	07/23/93	32.42	18.17	14.25	**580**	**19**	0.99	3.4	2.7	--	--
	10/05/93	32.16	18.35	13.81	**1400**	**34**	ND	5.3	7.3	--	--
	01/03/94	32.16	18.54	13.62	**1400**	**57**	ND	8.5	11	--	--
	04/02/94	32.16	18.15	14.01	**5300**	ND	ND	ND	ND	--	--
	07/05/94	32.16	17.25	14.91	ND	ND	ND	ND	ND	--	--
	10/06/94	32.16	18.85	13.31	**11000**	ND	ND	ND	ND	--	--
	01/02/95	32.16	17.51	14.65	**550**	**18**	0.92	2	1.8	--	--
	04/03/95	32.16	15.48	16.68	**6600**	ND	ND	ND	ND	--	--
	07/14/95	32.16	16.63	15.53	ND	ND	ND	ND	ND	--	--
	10/10/95	32.16	17.68	14.48	ND	**81**	ND	ND	ND	--	**75000**
	01/03/96	32.16	17.66	14.50	70	**9.9**	0.58	ND	0.81	--	--
	04/10/96	32.16	15.56	16.60	**300**	**258**	4.7	0.94	2.7	--	**53000**

Table 2
Historical Groundater 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)
800 Harrison Street											
MW-6 cont'd	07/09/96	32.16	16.59	15.57	**1800**	**410**	ND	12	ND	--	**76000**
	01/24/97	32.16	15.69	16.47	ND	0.8	ND	ND	ND	--	**390**
	07/23/97	32.16	17.53	14.63	**5700**	**1100**	**240**	**240**	**700**	--	**16000**
	01/26/98	32.16	15.44	16.72	ND	ND	ND	ND	ND	--	ND
	07/03/98	32.16	16.58	15.58	ND	ND	ND	ND	ND	--	ND
	01/14/99	32.16	17.02	15.14	ND	ND	ND	ND	ND	--	**14**
	07/15/99	32.16	15.95	16.21	ND	ND	ND	ND	ND	--	2.8
	01/07/00	32.16	16.96	15.20	78	**24**	ND	0.66	17	--	**280**
	07/19/00	32.16	18.04	14.12	ND	ND	1.32	ND	0.974	--	ND
	01/02/01	32.16	18.10	14.06	ND	ND	ND	ND	ND	--	ND
	05/23/01	32.16	16.42	15.74	ND	ND	ND	ND	ND	--	ND
	07/30/01	32.16	16.49	15.67	<50	<0.50	<0.50	<0.50	<0.50	--	<2.5
	10/15/01	32.16	16.67	15.49	<50	<0.50	0.62	<0.50	<0.50	--	<5.0
	01/14/02	32.16	14.60	17.56	<50	<0.50	<0.50	<0.50	<0.50	--	<2.5
	04/15/02	32.16	15.07	17.09	<50	<0.50	<0.50	<0.50	0.73	--	<5.0
	07/15/02	32.16	15.56	16.60	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50
	01/18/03	32.16	15.80	16.36	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0
	07/11/03	32.16	15.74	16.42	<50	<0.50	<0.50	<0.50	<1.0	<2.0	--
	02/04/04	32.16	15.49	16.67	<50	**2.6**	<0.50	<0.50	<1.0	2.4	--
	08/11/04	32.16	15.81	16.35	**7900**	**95**	<50	<50	<100	**9100**	--
	03/31/05	32.16	13.70	18.46	<5000	**2.5**	<0.50	<0.50	<1.0	**7600**	--
	09/30/05	32.16	15.48	16.68	**4300**	**140**	37	28	**41**	**5800**	--
	03/27/06	32.16	13.02	19.14	**7200**	**34**	0.66	0.96	18	**9900**	--
	09/27/06	32.16	16.56	15.60	**1800**	<12	<12	<12	<12	**3300**	--
	03/27/07	32.16	16.73	15.43	**1600**	**2.8**	<2.5	<2.5	<2.5	**1800**	--
	09/28/07	32.16	17.75	14.41	**830**	<5.0	<5.0	<5.0	<5.0	**1600**	--
	03/26/08	32.16	17.31	14.85	**940**	**45**	5.9	2	5.3	**1300**	--
	07/28/08	32.16	18.50	13.66	**500**	<1.0	<1.0	<1.0	<2.0	**750**	--
	01/26/09	32.16	18.46	13.70	**570**	<0.50	<0.50	<0.50	<1.0	**500**	--
	08/03/09	32.19	18.01	14.18	**800**	<5.0	<5.0	<5.0	<10	**690**	--
	01/25/10	32.19	17.64	14.55	**410**	**4.8**	0.63	<0.50	1.4	**390**	--
	08/03/10	32.19	17.48	14.71	**480**	**2**	<0.50	<0.50	<1.0	**520**	--
	02/17/11	32.19	17.48	14.71	**290**	<0.50	<0.50	<0.50	<1.0	**130**	--
	08/03/11	32.19	17.02	15.17	**330**	<0.50	<0.50	<0.50	<1.0	**89**	--
	02/07/12	32.19	18.02	14.17	**450**	<0.50	<0.50	<0.50	<1.0	**29**	--
	08/09/12	32.19	17.17	15.02	**180**	<0.50	<0.50	<0.50	<1.0	**10**	--
MW-7	10/19/92	--	--	--	--	--	--	--	--	--	--
	04/28/93	32.49	--	--	**110**	**2.8**	1.3	1.4	1.7	--	--
	07/23/93	32.49	18.60	13.89	**790**	**23**	3.3	28	5.4	--	--
	10/05/93	32.20	18.76	13.44	**360**	**10**	1.2	0.91	0.99	--	--
	01/03/94	32.20	18.91	13.29	ND	0.93	ND	0.75	1.9	--	--
	04/02/94	32.20	18.50	13.70	**360**	**2**	ND	ND	0.8	--	--
	07/05/94	32.20	17.52	14.68	ND	ND	ND	ND	ND	--	--
	10/06/94	32.20	19.25	12.95	**340**	**5.6**	0.85	ND	1.2	--	--
	01/02/95	32.20	17.67	14.53	ND	ND	ND	ND	ND	--	--
	04/03/95	32.20	15.81	16.39	**570**	**24**	ND	3.4	5.8	--	--
	07/14/95	32.20	17.05	15.15	ND	**14**	ND	ND	ND	--	--
	10/10/95	32.20	18.08	14.12	**740**	**170**	ND	ND	ND	--	**13000**
	01/03/96	32.20	18.02	14.18	**360**	**16**	1.3	2.7	1.4	--	--
	04/10/96	32.20	15.81	16.39	**120**	**4.1**	1.5	ND	0.88	--	**3200**
	07/09/96	32.20	16.99	15.21	ND	ND	ND	ND	ND	--	**3400**
	01/24/97	32.20	16.08	16.12	ND	**16**	ND	ND	ND	--	**6600**
	07/23/97	32.20	17.99	14.21	ND	**16**	ND	ND	0.62	--	**10000**
	01/26/98	32.20	15.56	16.64	ND	ND	ND	ND	0.56	--	ND
	07/03/98	32.20	17.04	15.16	ND	ND	ND	ND	ND	--	ND
	01/14/99	32.20	--	--	--	--	--	--	--	--	--
	07/15/99	32.20	15.72	16.48	ND	ND	ND	ND	ND	--	**290**
	01/07/00	32.20	16.80	15.40	ND	**7.7**	ND	ND	4.4	--	**98**
	07/19/00	32.20	17.88	14.32	ND	ND	1.27	ND	0.979	--	ND

Table 2
Historical Groundater 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)
800 Harrison Street											
MW-7 cont'd	01/02/01	32.20	17.97	14.23	ND	ND	ND	ND	ND	--	ND
	05/23/01	32.20	16.81	15.39	ND	ND	ND	ND	ND	--	ND
	07/30/01	32.20	16.79	15.41	<50	<0.50	<0.50	<0.50	<0.50	--	<2.5
	10/15/01	32.20	16.98	15.22	<50	<0.50	0.58	<0.50	<0.50	--	<5.0
	01/14/02	32.20	14.85	17.35	<50	<0.50	<0.50	<0.50	<0.50	--	<2.5
	04/15/02	32.20	15.29	16.91	<50	<0.50	<0.50	<0.50	0.7	--	<5.0
	07/15/02	32.20	15.92	16.28	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50
	01/18/03	32.20	15.11	17.09	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0
	07/11/03	32.20	15.89	16.31	<50	<0.50	<0.50	<0.50	<1.0	**19**	--
	02/04/04	32.20	15.90	16.30	<50	**3.6**	<0.50	<0.50	<1.0	**3.2**	--
	08/11/04	32.20	16.12	16.08	<5000	**120**	<50	<50	<100	**5100**	--
	03/31/05	32.20	13.99	18.21	<5000	**190**	<50	<50	<100	**8400**	--
	09/30/05	32.20	15.93	16.27	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
	03/27/06	32.20	13.40	18.80	**2500**	**160**	10	11	**26**	**5600**	--
	09/27/06	32.20	16.96	15.24	**2800**	**180**	<12	15	**44**	**4200**	--
	03/27/07	32.20	17.30	14.90	**920**	**66**	2.9	3.4	4.5	**970**	--
	09/28/07	32.20	18.10	14.10	**4000**	**440**	15	17	**59**	**3300**	--
	03/26/08	32.20	17.64	14.56	**390**	**39**	3.3	0.85	7.5	**96**	--
	07/28/08	32.20	18.50	13.70	64	**3.3**	<0.50	<0.50	<1.0	**8.7**	--
	01/26/09	32.20	18.90	13.30	80	**7.9**	0.58	<0.50	<1.0	**10**	--
	08/03/09	32.22	18.29	13.93	**2100**	**220**	14	10	**31**	**750**	--
	01/25/10	32.22	17.49	14.73	**490**	**25**	3.5	0.54	6.9	**16**	--
	08/03/10	32.22	17.84	14.38	**240**	**45**	1.8	1.2	1.7	**290**	--
	02/17/11	32.22	17.83	14.39	**370**	**53**	2	<0.50	2.1	**12**	--
	08/03/11	32.22	17.42	14.80	**390**	**20**	1.8	<0.50	1.6	**27**	--
	02/07/12	32.22	18.40	13.82	**310**	**25**	2	<0.50	3.2	**9.0**	--
	08/09/12	32.22	17.53	14.69	**280**	**11**	1.2	<0.50	<1.0	**24**	--
MW-8	04/28/93	32.33	--	--	**450**	**18**	1.8	1.8	1.4	--	--
	07/23/93	32.33	18.45	13.88	**260**	**5.1**	ND	0.6	ND	--	--
	10/05/93	32.00	18.57	13.43	**120**	**1.7**	ND	ND	ND	--	--
	01/03/94	32.00	18.73	13.27	ND	ND	ND	ND	ND	--	**51**
	04/02/94	32.00	18.30	13.70	**150**	**1.2**	ND	ND	ND	--	--
	07/05/94	32.00	17.41	14.59	**730**	**17**	ND	1.6	ND	--	--
	10/06/94	32.00	18.98	13.02	**140**	ND	ND	ND	ND	--	--
	01/02/95	32.00	17.58	14.42	**440**	**18**	0.72	2	1.8	--	--
	04/03/95	32.00	15.54	16.46	**960**	**11**	ND	ND	ND	--	--
	07/14/95	32.00	16.81	15.19	**280**	**4.2**	2.6	1.1	3.3	--	--
	10/10/95	32.00	17.85	14.15	**110**	**1.3**	0.62	0.67	ND	--	**170**
	01/03/96	32.00	17.82	14.18	63	ND	0.51	ND	1.8	--	--
	04/10/96	32.00	15.70	16.30	ND	**1.1**	0.61	ND	ND	--	**60**
	07/09/96	32.00	16.78	15.22	72	**1**	ND	ND	ND	--	**140**
	01/24/97	32.00	15.79	16.21	ND	ND	ND	ND	ND	--	**76**
	07/23/97	32.00	17.69	14.31	ND	ND	ND	ND	ND	--	**270**
	01/26/98	32.00	15.50	16.50	ND	ND	ND	ND	0.76	--	2.9
	07/03/98	32.00	16.80	15.20	ND	ND	ND	ND	ND	--	ND
	01/14/99	32.00	17.13	14.87	ND	ND	ND	ND	ND	--	**11**
	07/15/99	32.00	15.85	16.15	ND	ND	ND	ND	ND	--	ND
	01/07/00	32.00	16.94	15.06	ND	ND	ND	ND	ND	--	**11**
	07/19/00	32.00	18.06	13.94	ND	ND	2.99	0.521	ND	--	ND
	01/02/01	32.00	18.12	13.88	ND	ND	ND	ND	ND	--	ND
	05/23/01	32.00	16.96	15.04	ND	ND	ND	ND	ND	--	ND
	07/30/01	32.00	16.52	15.48	<50	<0.50	<0.50	<0.50	<0.50	--	2.7
	10/15/01	32.00	16.72	15.28	<50	<0.50	0.65	<0.50	<0.50	--	<5.0
	01/14/02	32.00	14.53	17.47	<50	<0.50	<0.50	<0.50	<0.50	--	<2.5
	04/15/02	32.00	14.96	17.04	<50	<0.50	<0.50	<0.50	<0.50	--	<5.0
	07/15/02	32.00	15.60	16.40	<50	<0.50	<0.50	<0.50	<1.0	--	**11**
	01/18/03	32.00	14.78	17.22	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0
	02/04/04	32.00	15.65	16.35	52	**2.3**	<0.50	<0.50	<1.0	2.4	--
	08/11/04	32.00	15.86	16.14	**350**	<2.5	<2.5	<2.5	<5.0	**310**	--
	03/31/05	32.00	13.73	18.27	<2000	<0.50	<0.50	<0.50	<1.0	**2100**	--

Table 2
Historical Groundater 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)
800 Harrison Street											
MW-8 cont'd	09/30/05	32.00	15.94	16.06	**1200**	<0.50	0.5	<0.50	<1.0	**6900**	--
	03/27/06	32.00	13.13	18.87	**460**	<0.50	<0.50	<0.50	<1.0	**820**	--
	09/27/06	32.00	16.75	15.25	**520**	<5.0	<5.0	<5.0	8.2	**870**	--
	03/27/07	32.00	16.87	15.13	**1400**	<0.50	<0.50	<0.50	<0.50	**3600**	--
	09/28/07	32.00	17.91	14.09	**280**	<2.5	<2.5	<2.5	<2.5	**670**	--
	03/26/08	32.00	17.45	14.55	**110**	<0.50	<0.50	<0.50	<1.0	**210**	--
	07/28/08	32.00	18.50	13.50	<50	<0.50	<0.50	<0.50	<1.0	**11**	--
	01/26/09	32.00	18.65	13.35	<50	<0.50	<0.50	<0.50	<1.0	**22**	--
	08/03/09	32.03	18.11	13.92	67	<0.50	<0.50	<0.50	<1.0	**64**	--
	01/25/10	32.03	17.67	14.36	<50	<0.50	<0.50	<0.50	<1.0	**10**	--
	08/03/10	32.03	17.58	14.45	<50	<0.50	<0.50	<0.50	<1.0	**10**	--
	02/17/11	32.03	17.53	14.50	<50	<0.50	<0.50	<0.50	<1.0	2.5	--
	08/03/11	32.03	17.18	14.85	<50	<0.50	<0.50	<0.50	<1.0	1.6	--
	02/07/12	32.03	18.15	13.88	<50	<0.50	<0.50	<0.50	<1.0	0.75	--
	08/09/12	32.03	17.29	14.74	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
ESLs for Residential Groundwater					**100**	**1**	**40**	**30**	**20**	**5**	**5**

Explanation

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), Deep Soils (>3meters below ground surface), Groundwater is a Current or Potential Source of Drinking Water, CRWQCB-SFBR, Table C, November 2007

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

Explanation

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
726 Harrison Street															
AS-1	NA	6.0	NA	NA	740	NA	NA	<0.25	<0.25	**3.5**	**5.1**	<0.25	NA	NA	NA
BH-A	NA	11.5	NA	NA	<1.0	NA	NA	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA	NA
BH-B	NA	15.0	NA	NA	360	NA	NA	**0.55**	**5.0**	**3.4**	**23**	**0.064**	NA	NA	NA
BH-C	NA	10.0	NA	NA	<1.0	NA	NA	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA	NA
EW-1	NA	10.0	NA	NA	2,300	NA	NA	**0.33**	0.27	**16**	**26**	<0.25	NA	NA	NA
GP-3	06/20/11	7.0	<0.20	NA	NA	NA	NA	<0.0050	<0.0050	<0.0050	<0.010	0.00087 J	<0.0050	<0.0050	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)
	06/20/11	10.0	<0.20	NA	NA	NA	NA	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	NA
	06/20/11	15.0	<0.20	NA	NA	NA	NA	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	NA
MW-1	NA	14.5	NA	NA	<1.0	NA	NA	0.011	<0.005	<0.005	<0.005	<0.05	NA	NA	NA
	NA	19.5	NA	NA	650	NA	NA	**1.2**	<0.05	2.2	**2.8**	<0.05	NA	NA	NA
MW-2	NA	16.0	NA	NA	<1.0	NA	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA
MW-3	NA	16.0	NA	NA	<1.0	NA	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA
MW-4	NA	16.0	NA	NA	<1.0	NA	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA
MW-5	NA	14.0	NA	NA	<1.0	NA	NA	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA	NA
MW-6	06/20/11	6.5	<0.20	NA	NA	NA	NA	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	NA
	06/20/11	11.0	<0.20	NA	NA	NA	NA	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	NA
	06/20/11	16.0	0.12 J	NA	NA	NA	NA	<0.0050	<0.0050	<0.0050	<0.010	0.0092	<0.0050	<0.0050	NA
VE-1	NA	9.0	NA	NA	<1.0	NA	NA	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA	NA
VE-2	NA	14.0	NA	NA	<1.0	NA	NA	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA	NA
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

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)
	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
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

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)
	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**	**-**	**-**	-

Explanation

bgs	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

ARCADIS

Figures

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

0 2000' 4000'

Approximate Scale: 1 in. = 2000 ft.

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

SITE LOCATION MAP

ARCADIS

FIGURE 1

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENVCAD\B0047339\2012\000021Q12\DWG\G47339N01.dwg LAYOUT: 1 SAVED: 3/9/2012 1:32 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 3/9/2012 1:32 PM BY: HARRIS, JESSICA
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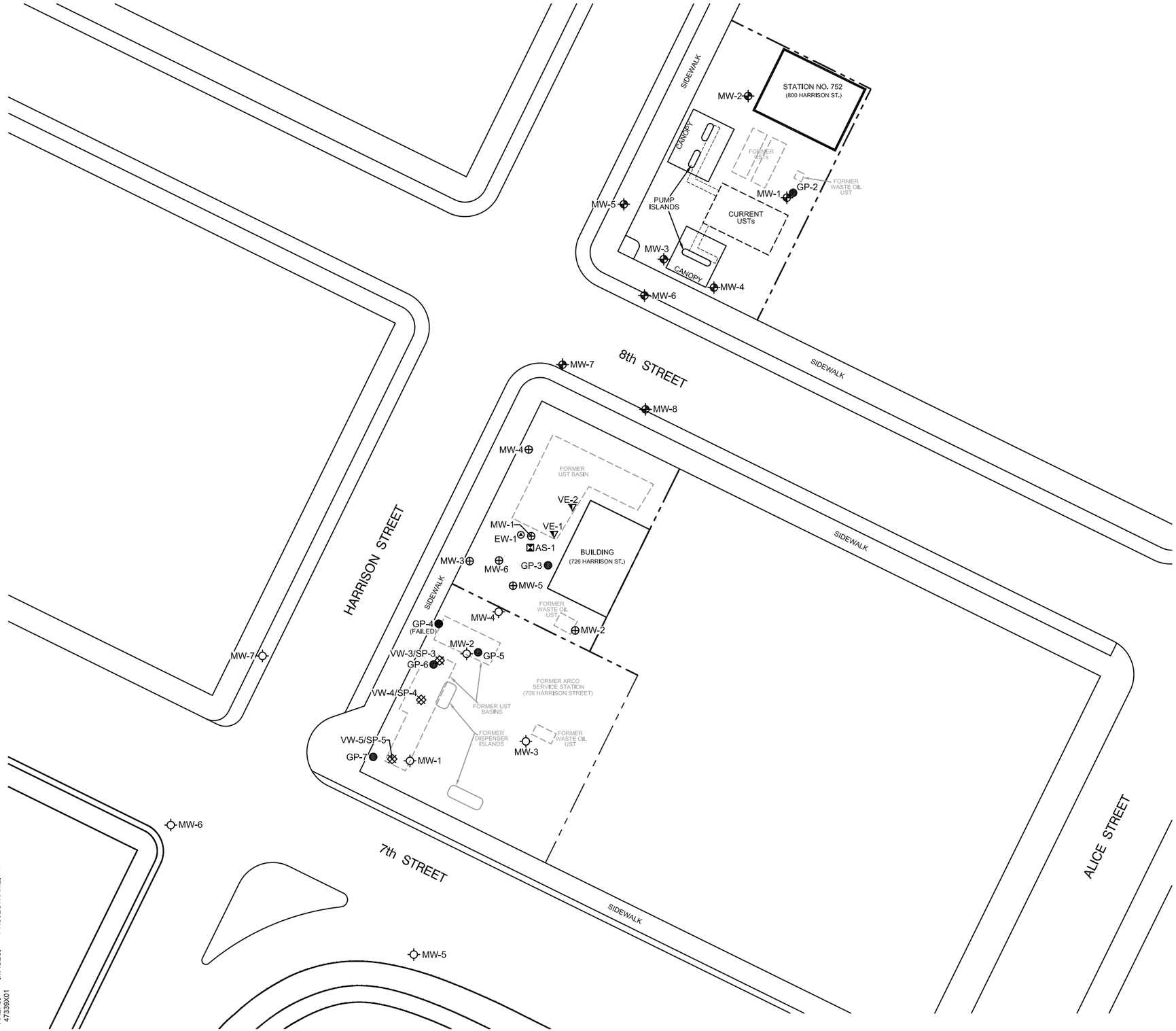
Oakland West.jpg



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)
- VE-1 DESTROYED WELL (YEE)
- GP-2 GEOPROBE™ (JUNE 2011)

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.

0 50' 100'

GRAPHIC SCALE

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

SITE PLAN

ARCADIS

FIGURE 2

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENVCAD\B0047339\2012\000021\Q12\DWG\47339B01.dwg LAYOUT: 2 SAVED: 3/9/2012 1:34 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 3/9/2012 1:34 PM BY: HARRIS, JESSICA
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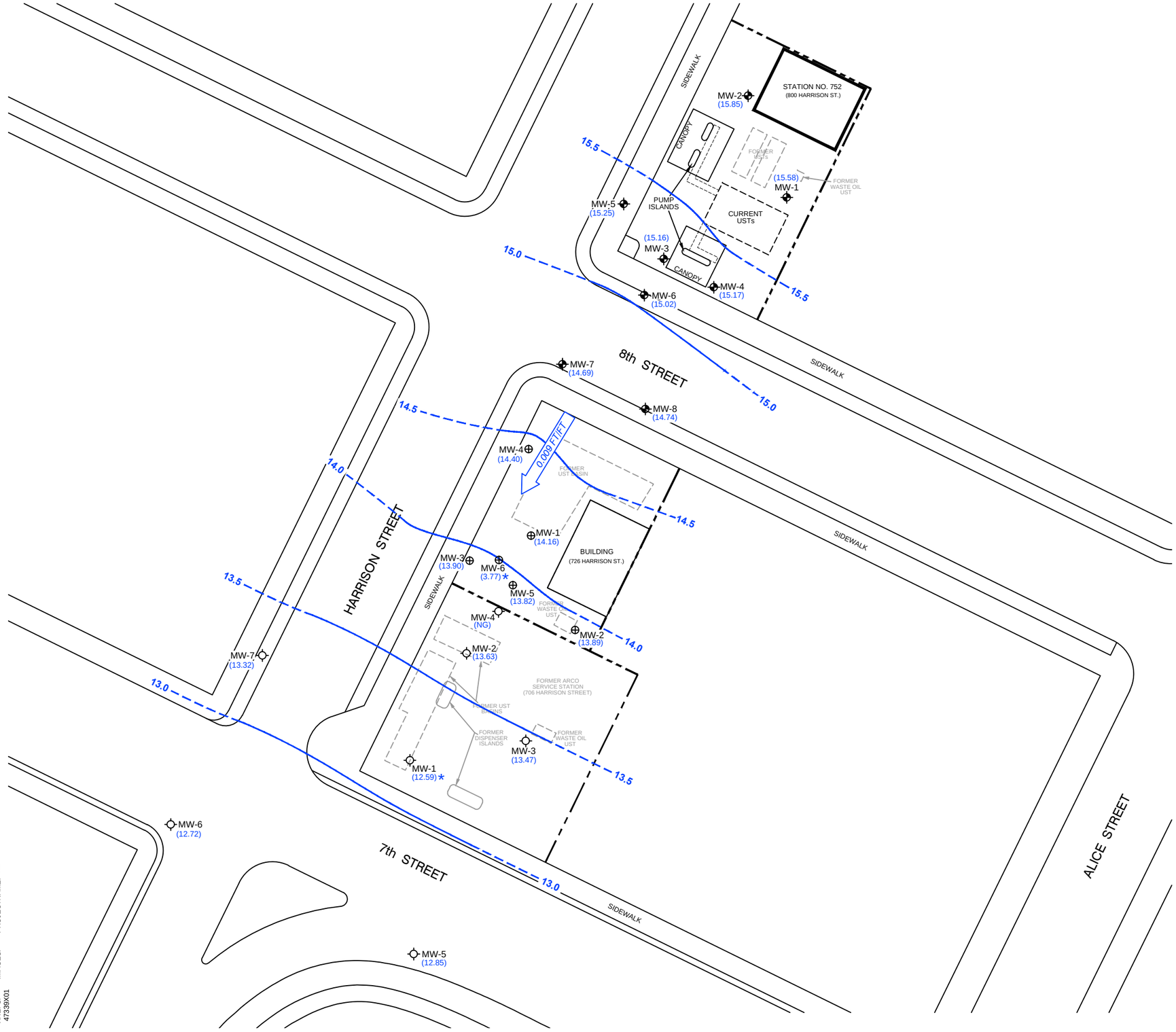

LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 ⊕ GROUNDWATER MONITORING WELL (UNOCAL SITE)
- MW-1 ⊕ GROUNDWATER MONITORING WELL (YEE SITE)
- MW-1 ⊖ GROUNDWATER MONITORING WELL (GIN SITE)
- (15.02) GROUNDWATER ELEVATION CONTOUR IN FEET RELATIVE TO MEAN SEA LEVEL (FT MSL)
- 15.0 GROUNDWATER ELEVATION CONTOUR (FT MSL; DASHED WHERE INFERRED)
- 0.009 FT/FT APPROXIMATE GROUNDWATER FLOW DIRECTION AND GRADIENT (FOOT PER FOOT)
- (NG) NOT GAUGED
- * 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-1, MW-2 AND MW-4 ON THE GIN SITE ARE NOT USED IN THE GROUNDWATER CONTOURS DUE TO EXCAVATION WORK IN THE AREA.
4. MW-6 IS NOT USED IN THE GROUNDWATER CONTOURS BECAUSE IT IS LOCATED IN A LOWER WATER BEARING ZONE.

0 50' 100'

GRAPHIC SCALE

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

GROUNDWATER ELEVATION CONTOUR MAP AUGUST 9, 2012

ARCADIS

FIGURE 3

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
G:\ENVCAD\Petaluma\ACTIB\00473392012000081Pilot Test WP\DWG\47339W01.dwg LAYOUT: 3 SAVED: 10/2/2012 12:48 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 1/21/2013 6:39 AM BY: HARRIS, JESSICA
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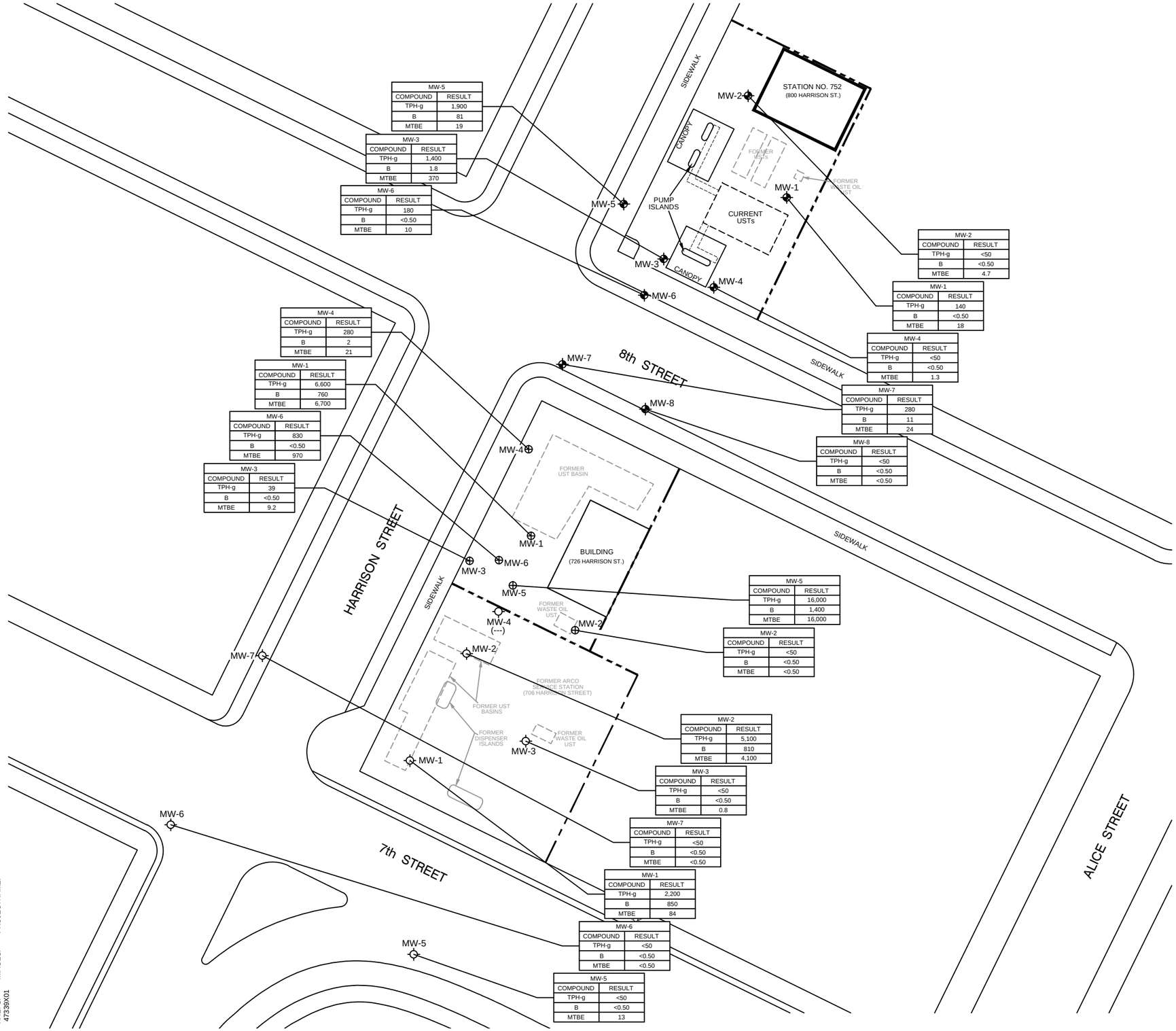


LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 ⊕ GROUNDWATER MONITORING WELL (UNOCAL SITE)
- MW-1 ⊕ GROUNDWATER MONITORING WELL (YEE SITE)
- MW-1 ○ GROUNDWATER MONITORING WELL (GIN SITE)

CHEMICAL ANALYTICAL RESULTS:

ANALYTES

MW-1	
COMPOUND	RESULT
TPH-g	2,200
B	850
MTBE	84

WELL/BORING ID

CONCENTRATIONS IN MICROGRAM PER LITER (µg/L)

ANALYTES:

- TPH-g — TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
- B — BENZENE
- MTBE — METHYL TERTIARY BUTYL ETHER

(---) NOT ANALYZED

< NOT DETECTED AT CONCENTRATION THRESHOLD AS SHOWN

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.

0 50’ 100’

GRAPHIC SCALE

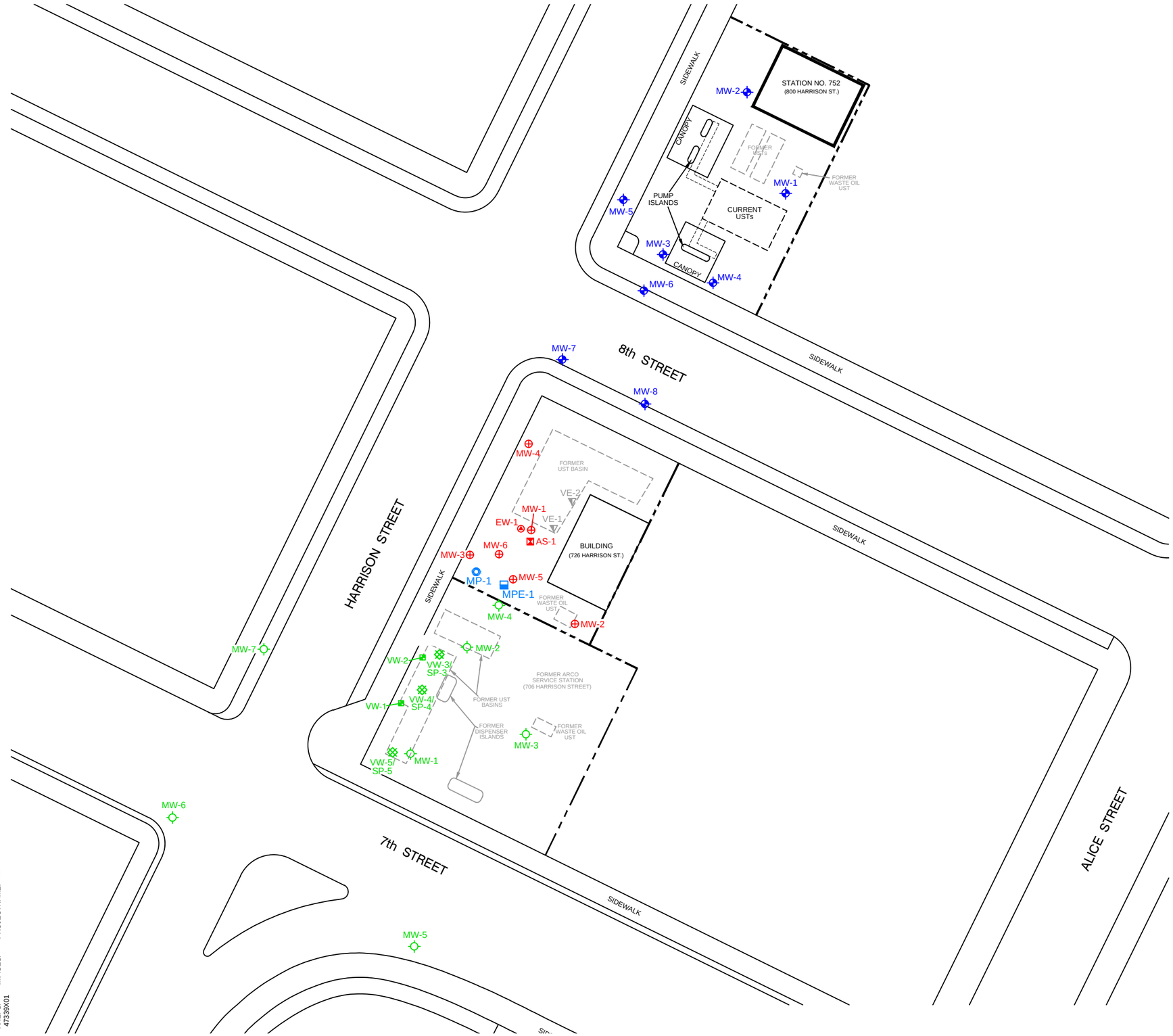
UNION OIL OF CALIFORNIA
STATION NO. 0752/YEE/GIN COMMINGLED
706/726/800 HARRISON STREET
OAKLAND, CALIFORNIA

GROUNDWATER HYDROCARBON CONCENTRATION MAP AUGUST 9, 2012

ARCADIS

FIGURE 4

CITY: PETALUMA, CA DV/GROUP: ENV DB: J. HARRIS
G:\ENVCAD\Petaluma\ACTIB\0047339\2012\00008\Pilot Test WP\DWG\47339C04.dwg LAYOUT: 4 SAVED: 2/7/2013 12:10 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 2/7/2013 12:52 PM BY: HARRIS, JESSICA
XREFS: IMAGES: PROJECTNAME: ---
47339X01



LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 GROUNDWATER MONITORING WELL (UNOCAL)
- MW-1 GROUNDWATER MONITORING WELL (YEE)
- MW-1 GROUNDWATER MONITORING WELL (GIN)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- VE-1 DESTROYED WELL (YEE)
- VW-1 SOIL VAPOR EXTRACTION WELL (GIN)
- VW-3/SP-3 SOIL VAPOR/SPARGE WELL (UNABLE TO LOCATE) (GIN)
- MPE-1 PROPOSED MULTI-PHASE EXTRACTION PILOT TEST WELL
- MP-1 PROPOSED PILOT TEST MONITORING POINT

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.

0 50' 100'
GRAPHIC SCALE

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

PROPOSED PILOT TEST WELL LOCATIONS

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FIGURE 5

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
G:\ENVCAD\Petaluma\ACTIB\00473392012000008\Pilot Test WP\DWG\47339P01.dwg LAYOUT: 5 SAVED: 1/21/2013 6:55 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP2 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 2/7/2013 11:44 AM BY: HARRIS, JESSICA
XREFS: IMAGES: PROJECTNAME: ---
47339X01

Appendix **A**

ARCADIS Standard Operating Procedures

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
ALEX BRISCOE, Director

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

December 10, 2012

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: Case File Review 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 documents entitled, "*Feasibility Study, 800, 726, and 706 Harrison Street, Oakland, California*," dated October 23, 2012 (FS) and "*Third Quarter 2012 Semiannual Status Summary Report, 800, 726, and 706 Harrison Street, Oakland, California*," dated October 3, 2012 (Monitoring Report). Both reports were prepared on your behalf by ARCADIS. The FS Report summarizes site conditions and evaluates five remedial alternatives for the commingled plume sites.

Based on a comparative analysis of the five remedial alternatives, the FS recommends pilot studies to evaluate two of the remedial alternatives, air sparging/soil vapor extraction (AS/SVE) and multi-phase extraction (MPE). Data collected during the pilot studies will be used to select the best remedial alternative for the site. The proposal to prepare a Work Plan for the pilot studies is acceptable. We request that you submit a Work Plan for pilot studies of AS/SVE and MPE no later than February 19, 2013.

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:

- **February 19, 2013** – Pilot Study Work Plan
  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

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

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@craworld.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.

ARCADIS

Appendix **B**

East Bay Municipal Utility District
Special Discharge Permit Standard
Terms and Conditions

ARCADIS
Infrastructure, environment, buildings

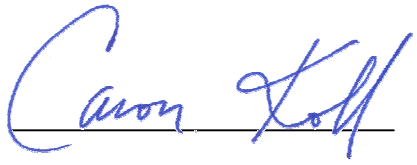
Imagine the result

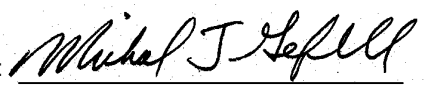
Soil Drilling and Sample Collection

Rev. #: 2

Rev Date: March 8, 2011

Approval Signatures

Prepared by:  Date: 03/08/2011

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

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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: Liz 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 includes 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 posses 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
- ¾ -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 0S-220W. March 1991.

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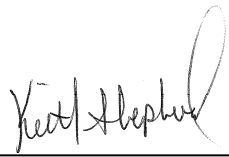
Field Equipment Decontamination

Rev. #: 3

Rev Date: April 26, 2010

Approval Signatures

Prepared by:  Date: 4/26/2010

Keith Shepherd

Reviewed by:  Date: 4/26/2010

Richard Murphy (Technical Expert)

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) – Isoprophyl 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.

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Standard Groundwater Sampling for Monitoring Wells

Rev. #: 1

Rev Date: July 16, 2008

Approval Signatures

Prepared by: Sonya A Cadle Date: 7/16/08

Reviewed by: 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 lighting is present, discontinue sampling until 30 minutes have passed after the last occurrence of thunder or lighting.

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 contaminates 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.

ARCADIS

Appendix **C**

East Bay Municipal Utility District
Special Discharge Permit Standard
Terms and Conditions

SPECIAL DISCHARGE PERMIT
STANDARD TERMS AND CONDITIONS

Table of Contents

SPECIAL DISCHARGE PERMIT
STANDARD TERMS AND CONDITIONS

INTRODUCTION

This document contains criteria, general stipulations, reporting requirements, and sampling requirements pertaining to Special Discharge Permits issued by the District. Special Discharge Permits are issued pursuant to East Bay Municipal Utility District (EBMUD) Wastewater Control Ordinance (Ordinance 311) and may waive certain Ordinance 311 requirements or prohibitions.

Issuance of a Special Discharge Permit is subject to preliminary, source, and administrative criteria described in Section A of this document. Special Discharge Permit Standard Terms and Conditions are enforceable terms and conditions of Special Discharge Permits.
Special Discharge Permits may include rates and charges for discharge volume, wastewater strength, system capacity, and monitoring. These rates are established by EBMUD resolution.

SECTION A. SPECIAL DISCHARGE CRITERIA

The District established the following three sets of criteria under the Special Discharge Permit Program. Wastewater proposed for discharge must meet Preliminary, Source, and Administrative Criteria prior to the issuance of a Special Discharge Permit.

I. Preliminary Criteria

a) Reasonable and cost effective means of recycling and reuse of the wastewater are unavailable. The applicant shall investigate and document alternatives for wastewater recycling and reuse.
b) Wastewater is not suitable for discharge to the storm sewer. The applicant shall provide documentation regarding alternative disposal methods.
c) Wastewater is generated within the EBMUD SD-1 wastewater service area. The applicant shall determine if the location is within the service area.
d) The side sewer through which the wastewater is discharged has been identified. Upon District approval of the discharge location, the applicant may be required to provide documentation demonstrating that the applicable public agency authorized its use.
e) Known and potential pollutants present in the wastewater are characterized. The applicant shall submit both a complete certified laboratory analytical report, and a summary of the results.
f) Treatment technology or Best Management Practices (BMPs) have been identified which will result in achieving compliance with the wastewater discharge limits. Depending on the source of the wastewater, the applicant may be required to demonstrate that pollutant concentrations will not exceed Ordinance 311 Wastewater Discharge Limits. Any treatment employed must be a proven and conventional technology.

II. Source Criteria

The following describes the source criteria for Special Discharge Wastewater requiring special regulation (Ordinance 311, Title IV, Section I, a, 4 and 5).

a) *Boiler and/or Cooling Tower Maintenance* – Wastewater generated by nonroutine system flushing or discharge of spent boiler/cooling water.
b) *Construction Dewatering* – Groundwater or stormwater generated from trenching or excavation operations.
c) *Infrastructure Maintenance* – Any wastewater generated by nonroutine cleaning or maintenance activities. This may include wastewater generated during line flushing and equipment cleaning.
d) *Monitoring Well Groundwater* – Groundwater collected from monitoring wells for the purpose of characterization, study, or review.
e) *Nonroutine Tank Cleaning* – Wastewater originating from cleaning or descaling of product, process, or waste storage tanks.
f) *Other Sources* – Wastewater generated from other temporary sources may require a Special Discharge Permit.
g) *Sewage Spill* – Wastewater generated from the clean up of any uncontrolled sewage spill. This may include collected raw sewage from a sewer line backup and/or clean-up water posing a potential environmental/public health concern.
h) *Spill* – An accidental discharge of a substance that may pose an environmental or public health concern.
i) *Spill Cleanup* – Wastewater generated from the clean up of spilled product or process wastes (excluding sewage) at a facility not otherwise required to have a wastewater discharge permit.
j) *Sump Discharge/Flooded Basement* – Wastewater generated during a single event and collected into sumps, basements, and loading docks, etc. not connected to the sanitary sewer.
k) *Surface Cleaning* – Any wastewater generated from flat surface cleaning activities that is not suitable for discharge to the storm sewer and is not regulated by other wastewater controls.
l) *Treated Bilge Water* – Wastewater collected in the bilge of a ship that has subsequently been treated for pollutants that may be present.

III. Administrative Criteria

Ordinance 311 applies to all discharges within SD-1 Service Area. Unless specifically waived by the Special Discharge Permit, the following wastewater criteria apply. Waivers of Ordinance 311 are granted by the authority of Ordinance No. 311, Title I, Section 6.

a) The wastewater must not contain storm water, drainage water, or groundwater (Ordinance 311, Title I, Section 5). Special Discharge Permits issued for Construction Dewatering, Sump Discharge/Flooded Basement, and Monitoring Well Groundwater may waive this prohibition.

b) The wastewater must not originate from an unpolluted source (Ordinance 311, Title II, Section 2, c). Wastewater that meets requirements for discharge to storm sewers or receiving waters of the State will not be considered for a Special Discharge Permit.

c) The wastewater must be discharged through a side sewer (Ordinance 311, Title II, Section 2, d). The discharge of wastewater directly into a manhole or other opening in the community sewer system is prohibited, except for sewer construction and maintenance by public agencies. Special Discharge Permits may authorize direct discharge into a manhole or other opening if alternative means of discharge are unavailable.

d) The wastewater does not pose significant concerns under this Special Discharge Permit Program. The District will determine if the wastewater poses a significant concern based on the information provided in the Special Discharge Permit Application.

SECTION B. GENERAL PROVISIONS

I. Duty to Comply

Special Discharge Permit Holders shall comply with Ordinance 311, Special Discharge Permit Terms and Conditions, and this document.

II. Terms and Conditions of Special Discharge Permit

A Special Discharge Permit is issued for discharges only from the location and specific wastewater source described therein. Applications for a Special Discharge Permit shall be submitted to EBMUD a minimum of ten working days prior to the date of the discharge. No discharge shall proceed prior to issuance of the Special Discharge Permit, completion of any required site inspections, and approval by EBMUD staff. Issuance of a Special Discharge Permit does not exempt or preclude a facility from being issued an EBMUD Discharge Minimization or Pollution Prevention Permit.

III. Disposal of Hazardous Waste

The Special Discharge Permit Holder shall handle and dispose of hazardous waste in accordance with all local, state, and federal laws and regulations.

IV. Dilution Prohibition

The Special Discharge Permit Holder shall not in any way dilute the wastewater discharge as a substitute for treatment to achieve compliance with the Special Discharge Permit Terms and Conditions.

V. Bypass of Treatment Facilities

The Special Discharge Permit Holder shall not bypass treatment facilities unless:

a) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage. (Severe property damage means substantial physical damage to property, damage to the treatment facilities that causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production).

b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventative maintenance.

c) The Special Discharge Permit Holder submitted advance notice of the need for a bypass to the District. If the Special Discharge Permit Holder knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.

The Special Discharge Permit Holder shall notify the District of an unanticipated bypass within 24 hours. The Special Discharge Permit Holder shall also submit a written report explaining the circumstances of the bypass.

VI. Calibration and Maintenance of Equipment

The Special Discharge Permit Holder shall calibrate, inspect, and maintain all flow measuring, discharge sampling, monitoring, and pretreatment equipment to ensure the equipment accuracy and reliability.

VII. Availability of Special Discharge Permit

A copy of the Special Discharge Permit shall be maintained by the Special Discharge Permit Holder and be available to both facility and EBMUD staff at all times.

VIII. Payment of Special Discharge Permit Fees and Charges
The applicant shall pay all Special Discharge Permit fees, monitoring and testing charges, and wastewater treatment/disposal charges.

IX. Special Discharge Permit Termination
The District may terminate the Special Discharge Permit for violation of the Special Discharge Permit Terms and Conditions or for violation of Ordinance 311 provisions.

X. Transfer of Special Discharge Permit Prohibition
The Special Discharge Permit Holder shall not assign or transfer the Special Discharge Permit.

XI. Severability
If any provision of the Special Discharge Permit, Ordinance 311, or the application thereof to any person or circumstance, is held invalid, the remainder of the Special Discharge Permit or Ordinance 311, or the application of such provision to other persons or circumstances, shall not be affected thereby.

XII. Property Rights
The issuance of the Special Discharge Permit does not convey to the Special Discharge Permit Holder any property rights of any sort or any exclusive privileges. Nor does such issuance authorize any injury to private property, any invasion of property rights, or any violation of federal, state or local laws.

SECTION C. REPORTING AND RECORD KEEPING

I. Spill/Slug Load or Slug Discharge Notification
Immediately upon discovering any spill or slug discharge to the sanitary sewer, the Special Discharge Permit Holder shall notify EBMUD Environmental Services Division at (510) 287-1651 during business hours or 1-866-403-2683 during non-business hours. The Special Discharge Permit Holder shall submit to the District within five days of the occurrence a formal written notification describing:

a) circumstances of the discharge
b) what was discharged
c) volume of the discharge
d) duration of the discharge including beginning and end times, and dates
e) corrective actions to prevent recurrence
f) if discharge violates the terms and conditions of the Special Discharge Permit

II. Twenty-Four Hour Violation Reporting

a) The Special Discharge Permit Holder shall notify the District within 24 hours of becoming aware of any of the following violations:
   1. discharges prohibited by Ordinance 311, Title II, except where authorized by the Special Discharge Permit
   2. exceedence of wastewater discharge limits as established in the Special Discharge Permit
   3. failure to perform any BMPs included in the Special Discharge Permit
   4. bypass of any part of a required pretreatment system

b) The Special Discharge Permit Holder shall submit a written report to the District within five days after becoming aware of the violation. The report shall include the following information:
   1. description of the violation, including the cause, date and time of the violation
   2. date and time the discharge was stopped
   3. measures taken to correct the violation
   4. measures taken to prevent future violations

   Prior to receiving District authorization to resume discharge, the Special Discharge Permit Holder may be required to demonstrate compliance with the Special Discharge Permit Terms and Conditions.

III. Changes in Quantity and Quality of Wastewater

The Special Discharge Permit Holder shall promptly notify the District in advance of any significant change to the quality or volume of the wastewater discharge or any deviation from the terms and conditions of the Special Discharge Permit; including immediate notification of any changes that affect the potential for a slug discharge.

IV. Hazardous Waste Notification

The Special Discharge Permit Holder shall submit to the District a written notification in accordance with 40 CFR 403.12(p) of any discharge, which, if otherwise disposed of, would be a hazardous waste under 40 CFR 261.

V. Signatory Requirements

The Permit Holder shall submit in accordance with the signatory requirements of 40 CFR 403.12 (l) all applications, self-monitoring reports, violation response reports, compliance reports, and other reports or documents required by the District.

VI. Retention of Records

a) The Special Discharge Permit Holder shall retain all of the following documents:
   1. all records used to complete the Special Discharge Permit Application
   2. copies of reports required by the Special Discharge Permit
   3. all records of monitoring information, including calibration and maintenance records, and original strip chart recordings of continuous monitoring instrumentation
   4. documentation of compliance with BMP requirements

b) The Special Discharge Permit Holder shall retain all reports and records for a period of at least three years from the date of the application, report, or monitoring event. The District may extend the document retention period. The Special Discharge Permit Holder shall provide all retained records and documents when requested by the District.

c) The Special Discharge Permit Holder shall retain and preserve all records pertaining to special orders or any other enforcement or litigation activities brought by the District until all enforcement activities have concluded and all periods of limitation with respect to any appeals have expired.

SECTION D. MONITORING AND SAMPLING

I. Representative Sampling

Samples and measurements taken, as required in the Special Discharge Permit or those submitted with the application, shall be representative of the volume and nature of the monitored discharge. The Special Discharge Permit may require that a sample be representative of certain discharge periods.

All data submitted in reports or applications shall be representative of conditions during the reporting period.

Analytical method detection limits shall be sufficient to determine compliance with the Special Discharge Permit Terms and Conditions.

II. Chain of Custody

a) The Special Discharge Permit Holder shall submit a Chain of Custody Record that documents the following for each sample:
   1. sampling location and facility name
   2. type of sample, i.e., grab or composite
   3. date, time or span of time the sample was collected
   4. number of containers and type, e.g., glass, plastic, vial, etc.

5. preservation techniques, e.g., ice, refrigeration at 4^{o}C, chemicals added, etc.
6. sample collector's name legibly written
7. sample identification number that corresponds to the sample identification number on the analytical report
8. printed name and signature of all persons handling the sample, and date and time the sample was relinquished and accepted

b) The Special Discharge Permit Holder shall ensure that a sample transported or handled by a courier, delivery service (public or private) or shipper shall include the company or individual's name and the method of packaging the sample, on the Chain of Custody Record.
c) The Special Discharge Permit Holder shall show all sample analyses performed in the field on the Chain of Custody Record, e.g. pH - field test.
d) The District may require resampling of the wastewater if an incomplete or incorrect Chain of Custody Record is submitted.

III. Sample Preservation and Analytical Methods

Unless the Special Discharge Permit requires otherwise, the Special Discharge Permit Holder shall use sampling methods, sample preservation, and analytical methods for each parameter in accordance with applicable sections of:
a) *EBMUD Table of Approved Test Methods* (Appendix A)
b) *Standard Methods of Water and Wastewater Analysis, edition used in the EBMUD Table of Approved Test Methods* (Appendix A)
c) EPA 40 CFR Part 136, *Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act, latest edition*

IV. Laboratory Report

The Special Discharge Permit requires that each sample analysis be performed by a laboratory certified by the State Department of Health Services for that analysis. The laboratory report for each sample shall include:
a) name and address of the laboratory performing the analyses
b) sample identification number that corresponds to the sample identification number on the Chain of Custody Record
c) analytical result(s)
d) date of sampling, the date the sample was received at the laboratory, and the date of analysis
e) *Standard Methods of Water and Wastewater Analysis* method or EPA method used for analysis
f) method detection limit
g) signature and title of an authorized representative of the laboratory, who reviewed the laboratory results

V. Additional Monitoring
If the Permit Holder monitors any pollutant at the appropriate sampling location (compliance point) more frequently than required by the Permit, using procedures and test methods specified in the Permit, the results of such monitoring shall be included in the subsequent self-monitoring report.

VI. Flow Measurements
The Special Discharge Permit Holder shall use appropriate flow measurement devices and methods when required by the District. Flow measurement devices and methods are subject to approval by the District.

VII. Tampering with Equipment
The Special Discharge Permit Holder shall not tamper with monitoring equipment or pretreatment units.

VIII. Access to Facilities
The District may inspect a facility to determine compliance with the Special Discharge Permit Terms and Conditions and Ordinance 311. The Special Discharge Permit Holder shall provide access for this purpose.

SECTION E. ENFORCEMENT AND PENALTIES

I. Violations of Special Discharge Permit Terms and Conditions
The Special Discharge Permit Holder shall be subject to District actions for failure to comply with the terms and conditions of the Special Discharge Permit. The actions may include violation follow-up inspections and fees, issuance of Cease and Desist Orders, Administrative Civil Liability penalties, and other actions as authorized by Ordinance 311, Title VI.

SECTION F. DEFINITIONS

BMPs – Best Management Practices (also known as Pollution Prevention Practices) are guidelines and procedures that focus on the reduction or elimination of pollutants or wastes at the source. BMPs can include a schedule of activities, prohibitions of practices, maintenance procedures, and other management practices to implement the prohibitions listed in the Ordinance 311, Title II, Section 2. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw materials storage.

Bypass – A bypass is a diversion of wastestreams from any portion of a pretreatment unit.

Chain of Custody – A Chain of Custody is a legal record of each person who had possession of a sample. A Chain of Custody record must be included with an analytical report.

Director – Director refers to the term "Manager", as defined in Ordinance 311, the Director of the District's Wastewater Department, or his/her designated representative.

Discharge Minimization Permit – A Discharge Minimization Permit is a permit regulating wastewater discharge to the sanitary sewer. Discharge Minimization Permits generally include monitoring and reporting requirements and District inspections.

District – District refers to East Bay Municipal Utility District (EBMUD). EBMUD is a publicly owned water district formed in 1923 under the Municipal Utility District Act of 1921.

Ordinance – EBMUD Ordinance 311 is the EBMUD ordinance that regulates the interception, treatment and disposal of wastewater and industrial wastes.

Hazardous Waste – Hazardous Wastes are listed and characterized under Section 3001 of the Resource Conservation and Recovery Act, as described in the Code of Federal Regulations (40 CFR Part 261) or as defined in California Health and Safety Code Section 25117.

Pollution Prevention Permits – Pollution Prevention Permits are permits issued to businesses in specific commercial categories. Pollution Prevention Permits are based on pollution prevention or waste minimization at sources, and the implementation of specific BMPs.

POTW – POTW refers to Publicly Owned Treatment Works, e.g., EBMUD SD-1

Pretreatment Program – A Pretreatment Program is administered by a POTW that meets the criteria established in EPA 40 CFR Part 403.8, 403.9 and 403.11.

Prohibition – Prohibition refers to prohibited discharges of wastewater as defined in EPA 40 CFR Part 403.5 or Ordinance 311, Title I, Section 5, and Title II, Section 2.

Regional Water Quality Control Board – The California Regional Water Quality Control Board, San Francisco Bay Region, is the approval authority for the District's Pretreatment Program.

Sample – Sample refers to a portion of wastewater that is representative of a larger volume of wastewater being discharged. The two types of samples are:

a) Grab - an individual sample collected in a short period of time not exceeding fifteen minutes

b) Composite - a sample consisting of a number of discrete aliquots combined into a single sample, representative of a period of time

SD-1 – SD-1 refers to EBMUD Special District No. 1, a district established to provide treatment of wastewater from the following East Bay Communities: Alameda, Albany, Berkeley, Emeryville, Oakland, Piedmont, and the Stege Sanitary District that includes the City of El Cerrito, the Richmond Annex, and the Kensington area. [Ref. MUD Act, Division 6, Chapter 8, Section 13451].

Slug Load or Slug Discharge – Any discharge at a flow rate or concentration, which could cause a violation of the prohibited discharge standards in the Ordinance 311, Title 2, Section 2. A Slug Discharge is any non-routine batch discharge that may cause problems to the POTW including interference [40 CFR 403.3(i)] or pass-through [40 CFR 403.3(n)], or that may result in the Special Discharge Permit Holder violating the General Prohibitions or Specific Prohibitions contained in 40 CFR 403.5.

Special Discharge Permit – A Special Discharge Permit is a mandatory permit issued for short term or unique discharges determined by the Director to require special regulations or source control (Ordinance 311, Title IV, Section 1a.).

Special Discharge Permit Holder – A Special Discharge Permit Holder is any individual, partnership, firm, association, corporation, or public agency issued a Special Discharge Permit.

Special Discharge Wastewater – Special Discharge Wastewater is wastewater described under Section A. Special Discharge Criteria, Paragraph II. Source Criteria.

Spill – A spill is an accidental discharge of a substance that may pose an environmental, public health, or wastewater quality concern.

Wastewater Discharge Limit – A wastewater discharge limit is the maximum concentration of a pollutant allowed to be discharged at any time, as determined from the analysis of a grab or composite sample.

APPENDIX -- EBMUD Table of Approved Test Methods

The District has approved the following test methods for wastewater analysis. These methods are generally used for District and self-monitoring. Other methods not listed in this table may be required. Refer to the self-monitoring section of your wastewater discharge permit for required specific test methods.

Deviations from Approved Test Methods:

(1) Equivalent EPA methods for water and wastewater may also be acceptable; however, the permit holder should contact their EBMUD Representative for approval. Also, any alternative methods should have detection limits that are lower than the corresponding wastewater strength limits listed in EBMUD's Ordinance No. 311, Title (2). In case listed analytical methods change and no longer approved, the permit holder should contact their EBMUD Representative for updated information regarding approved methods.

Parameter	Preservative	Maximum Hold Time	EPA Method	STD Methods1
Arsenic (Total)	HNO3 to pH<2 Cool to 4oC	6 months	206.5 200.7 200.8	3114 B 3120 B
Cadmium (Total)	HNO3 to pH<2 Cool to 4oC	6 months	200.7 200.8	3113 B 3120 B
CODF, using a Whatman 934AH Glass Microfiber filter, or equivalent	Preserve with H2SO4 to pH <2 Cool to 4oC	28 days	410.4 v2.0	5220 D
Chromium (Total)	HNO3 to pH<2 Cool to 4oC	6 months	200.7 200.8	3113 B 3120 B
Copper (Total)	HNO3 to pH<2 Cool to 4oC	6 months	200.7 200.8	3113 B 3120 B
Cyanide (Amenable)	NaOH to pH>12 Ascorbic acid if Cl2 present Cool to 4oC	14 days	NA	4500-CN G
Cyanide (Total)	NaOH to pH>12, ascorbic acid if Cl2 present Cool to 4oC	14 days	335.4	4500-CN B-E
Iron (Total)	HNO3 to pH<2 Cool to 4oC	6 months	200.7	3113 B 3120 B
Lead (Total)	HNO3 to pH<2 Cool to 4oC	6 months	200.7 200.8	3113 B 3120 B
Mercury (Total)	HNO3 to pH<2 Cool to 4oC	28 days	245.1 245.2 245.7	3112 B
Nickel (Total)	HNO3 to pH<2 Cool to 4oC	6 months	200.7 200.8	3113 B 3120 B
Oil & Grease (Total)	HCl or H2SO4 to pH<2	28 days	1664 HEM	

Parameter	Preservative	Maximum Hold Time	EPA Method	STD Methods1
Oil & Grease (HC)	Cool to 4oC		1664 HEM-SGT	
Phenolic Compounds	H2SO4 to pH<2 Cool to 4oC	28 days	420.1 420.4	5530-D
pH, Hydrogen Ion	None	Analyze Immediately	NA	4500-H+ B
Silver (Total)	HNO3 to pH<2 Cool to 4oC	6 months	200.7 200.8	3113 B 3120 B
Temperature (oC)	None	Analyze immediately	NA	2550 B
Total Suspended Solids TSS, filtered with Whatman 934 AH Glass Microfiber filter, or equivalent	Cool to 4oC	7 days	NA	2540D
Zinc (Total)	HNO3 to pH<2 Cool to 4oC	6 months	289.2 200.7 200.8	
Organochlorine Pesticides & Poly Chlorinated Biphenyls (PCBs)	Cool to 4oC	7 days until extraction; 40 days after extraction	608	6630B & C
Purgeable Organics (BTEX)	HCI to pH <2, add ascorbic acid if Cl2 is present. VOA vials, No headspace. Cool to 4oC	14 days	624[2] 8021 B 8260 B	
Semi-Volatile Organics (BNA's)	Cool to 4oC	7 days until extraction; 40 days after extraction	625	
Total Identifiable Chlorinated Hydrocarbon (Volatile Organics)	HCl to pH<2, add ascorbic acid if Cl2 is present. VOA vials, no headspace. Cool to 4oC	14 days	624 8260 B	

Notes

1 Standard Methods for the Examination of Water and Wastewater, American Water Works Association

2 EPA Method 624 table in 40CFR Part 136 does not list xylenes; however, EBMUD may accept xylenes detected by this method.