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April 18, 2014

Mr. Jerry Wickham
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

RE: Remedial Action 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) 790-6463.

Sincerely,

Timothy Bishop
Union Oil of California – Project Manager

Attachment
Remedial Action Plan

ARCADIS
Infrastructure · Water · Environment · Buildings

Imagine the result

Chevron Environmental Management Company

Remedial Action Plan

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

April 18, 2014

ARCADIS

Tyler Sale
Environmental Engineer II

Katherine Brandt
Project Manager

David Lay
Professional Geologist

Remedial Action Plan

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

Prepared for:
Chevron Environmental
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Our Ref.:
B0047339.2012

Date:
April 18, 2014

ARCADIS

Table of Contents

Tables

Figures

Appendices

1. Introduction

On behalf of Chevron Environmental Management Company's affiliate, Union Oil Company of California (Union Oil), ARCADIS U.S., Inc. (ARCADIS) prepared this Remedial Action Plan (RAP) to address petroleum hydrocarbon impacted groundwater in a co-mingled plume at 706, 726, and 800 Harrison Street in Oakland, California (site). A co-mingled plume application was accepted by the co-mingled plume case board (Co-mingled plume Case #0068) and a letter of commitment for enrollment into the co-mingled plume fund is expected by June 30, 2014. Figure 1 illustrates the general area of the site and Figure 2 presents a layout of the three properties.

This RAP was prepared as requested by the Alameda County Department of Environmental Health (ACEH) in a letter dated December 2, 2013 (Appendix A). This RAP presents relevant background information, a summary of pilot test activities completed to evaluate potential remedial action alternatives, and a detailed design basis for the selected remedial action (air sparge [AS]/soil vapor extraction [SVE]).

1.1 Objectives

Union Oil's primary objective for this project is remedial implementation at the site in accordance with ACEH requirements to obtain a low-threat closure determination in accordance with the Low-Threat Underground Storage Tank Case Closure Policy (Low-Threat Closure Policy [SWRCB 2012]).

1.2 Report Organization

Following this introduction, the remaining sections of this report include:

- Description of site background information (Section 2).
- Design basis, including pilot test results (Section 3).
- Discussion of the cleanup approach (Section 4).
- Discussion of the permitting and regulatory involvement (Section 5).
- Remedy implementation process (Section 6).

2. Site Background

This section describes the site's physical setting, regional and local geology, project history, and mass distribution in the subsurface at the site.

2.1 Site and Surrounding Area

The site consists of three properties located in a mixed commercial and residential area at 706, 726, and 800 Harrison Street, in 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, pump islands, and a station building. The USTs and associated piping were removed in January 1991 (Cambria Environmental Technology, Inc. 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 one building. Former facilities at the 726 Harrison Street Property included three 4,000-gallon USTs, one 8,000-gallon fuel UST, one steel 1,000-gallon waste oil UST, product line piping, pump islands, and a station building. The USTs and associated piping were removed in October 1995 (Aqua Science Engineers, Inc. 2001).

The property located at 800 Harrison Street is an active 76 Station (Union Oil) 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 Regional Geology

The site is underlain by Holocene and Pleistocene-age eolian sand deposits referred to as the Merrit Sand. This sand typically consists of fine-grained, well-sorted, well-drained eolian sand, inter-fingering with Holocene Bay Mud. Merrit Sand reaches a maximum depth of approximately 50 feet below ground surface (bgs) across all three properties (Stantec 2009).

2.3 Local 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 and fine-grained sands extending to approximately 30 feet 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 and silty sands are present (Stantec 2009). Visual inspections of soil during the investigations are consistent with Merritt Sand (Stantec 2009). Geologic cross-section locations are shown on Figure 3. A generalized cross-section depicting subsurface materials for all three properties is provided on Figure 4. Property-specific cross-sections for 800 Harrison Street, 726 Harrison Street, and 706 Harrison Street are provided on Figures 5, 6, and 7, respectively.

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 first semiannual groundwater monitoring and sampling event in February 2014, average depth-to-water measurements were approximately 18.92 (706 Harrison Street), 21.17 (726 Harrison Street), and 19.85 (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. A February 2014 groundwater elevation contour map is provided on Figure 8.

The predominant groundwater gradient observed across all three properties is south-southeast, 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.

2.4 Project History

This section summarizes previous pilot studies and remedial actions at the site. Excavations were completed to remove petroleum-impacted soil during UST removal activities at 706 and 726 Harrison Street. Previous pilot tests include SVE at 800 Harrison Street, AS at 726 Harrison Street, and AS/SVE at 706 Harrison Street. An AS/SVE system operated at 706 Harrison Street from May 1998 through February 2001. The SVE portion was shut down in 2001, while the AS system continued to inject air to increase oxygen

concentrations to enhance aerobic biodegradation. The AS system was subsequently shut down in 2003. No active remediation was performed at the three properties from 2003 to 2011. Groundwater monitoring at all three properties continued during this period. The three sites were classified as a co-mingled plume in 2011. During September 2013, ARCADIS conducted a multiphase extraction (MPE) pilot test and an AS/SVE pilot test on the site. Details of site history, previous remedial actions, and pilot studies conducted at all three properties are provided in Appendix B.

2.5 Mass Distribution in the Subsurface

2.5.1 Dissolved in Groundwater

Isoconcentration contour maps for total petroleum hydrocarbons quantified as total purgeable petroleum hydrocarbons (TPPH), benzene, and methyl tert-butyl ether (MTBE) for the February 6, 2014 sampling event are presented on Figures 9, 10, and 11, respectively. Well construction details and historical groundwater analytical data for all three properties are provided in Tables 1 and 2, respectively. Hydrographs depicting groundwater concentration and groundwater elevation are provided in Appendix C. Groundwater monitoring results from the first semiannual 2014 monitoring event at each property are discussed below.

2.5.1.1 706 Harrison Street

The maximum dissolved concentration of TPPH (5,200 micrograms per liter [µg/L]), benzene (1,400 µg/L), toluene (5,200 µg/L), ethylbenzene (1,300 µg/L), total xylenes (5,000 µg/L), and MTBE (3,000 µg/L) were detected in the samples collected from MW-2. Ethylene dibromide (EDB), ethylene dichloride (EDC), and ethanol were not detected above the laboratory reporting limits in any of the wells sampled. Maximum concentrations of the monitored natural attenuation (MNA) parameters were detected in samples collected from MW-2: methane (6.5 milligrams per liter [mg/L]), alkalinity as calcium carbonate (490 mg/L), and nonvolatile organic carbon (20 mg/L). The maximum concentration of nitrate as NO_3 (33 mg/L) was detected in MW-3. The maximum concentration of sulfate (51 mg/L) was detected in samples collected from MW-5. Nitrite as NO_2 was not detected above laboratory reporting limits.

2.5.1.2 726 Harrison Street

The maximum dissolved concentrations of TPPH (3,400 µg/L), benzene (1,900 µg/L), and toluene (150 µg/L) were detected in the samples collected from MW-5. The maximum dissolved concentrations of ethylbenzene (400 µg/L), total xylenes (250 µg/L), and MTBE

(10,000 µg/L) were detected in the samples collected from MW-1. EDB, EDC, and ethanol were not detected above the laboratory reporting limits in any of the wells sampled. Maximum concentrations of the MNA parameters were detected in samples collected from MW-5: methane (11 mg/L) and alkalinity as calcium carbonate (430 mg/L). Maximum concentrations of nitrate as NO_3 (38 mg/L) and sulfate (38 mg/L) were detected in MW-2. The maximum concentration of nonvolatile organic carbon (51 mg/L) was detected in samples collected from MW-1. Nitrite as NO_2 was not detected above laboratory reporting limits.

2.5.1.3 800 Harrison Street

The maximum dissolved concentration of TPPH (1,400 µg/L) was detected in the samples collected from MW-5. The maximum dissolved concentrations of benzene (66 µg/L), toluene (10 µg/L), ethylbenzene (2.5 µg/L), and total xylenes (17 µg/L) were detected in the samples collected from MW-7. The maximum dissolved concentration of MTBE (760 µg/L) was detected in the samples collected from MW-3. EDB, EDC, and ethanol were not detected above the laboratory reporting limits in any of the wells sampled. The maximum concentration for dissolved iron was detected in samples from MW-3 at 2,600 µg/L. Samples collected from MW-1 were analyzed for additional metals and had detected concentrations of dissolved zinc (14 µg/L) and dissolved iron (56 µg/L). Semivolatile organic compounds were analyzed for in the samples collected from MW-1 and were not detected above the laboratory limits for all analytes. Dissolved cadmium, chromium, lead, and nickel were below reporting limits in MW-1. Maximum concentrations of the MNA parameters were detected in samples collected from MW-3: methane (8.7 mg/L), alkalinity as calcium carbonate (420 mg/L), and nonvolatile organic carbon (5.1 mg/L). Maximum concentrations of nitrate as NO_3 (6.4 mg/L) and sulfate (110 mg/L) were detected in MW-2.

2.5.2 Sorbed to Soil Matrix

Various excavations have been performed at each property to address petroleum hydrocarbons in the soil. Soil impacts are generally at the water table or in the saturated zone on the properties located at 706 and 726 Harrison Street. A site assessment performed on June 20 through 24, 2011 consisted of collecting 20 soil samples from six locations across 706, 726, and 800 Harrison Street. BTEX, EDB, and 1,2-dichloroethane were not detected in any of the samples. Total petroleum hydrocarbons as gasoline (TPH-g) was detected above the environmental screening limit (ESL) of 83 milligrams per kilogram (mg/kg) in two of the samples. TPH-g exceedances were found in samples collected from GP-2 (1,000 mg/kg at 14 feet bgs and 3,200 mg/kg at 17 feet bgs). MTBE was detected above the ESL in two of the samples. MTBE exceedances were found in samples collected from GP-2 (0.028 mg/kg at 14 feet bgs and 0.060 mg/kg at 17 feet bgs).

Soil isopleth contour maps for benzene, MTBE, and TPPH at various depths are provided in Appendix D. The soil impacts are generally at the water table or in the saturated zone on the properties located at 706 and 726 Harrison Street. Soil boring details and historical soil analytical results are presented in Tables 2 and 3, respectively.

2.6 Summary

Benzene and MTBE have been detected in groundwater samples at concentrations greater than the Low-Threat Closure Policy (SWRCB 2012) Groundwater-Specific Criteria 2 and 4. The AS/SVE remediation system detailed in this RAP will target benzene and MTBE groundwater concentrations to achieve closure under the Low-Threat Closure Policy (SWRCB 2012). The monitoring wells with benzene and MTBE concentrations exceeding Groundwater-Specific Criteria are located at 706 and 726 Harrison Street. Groundwater analytical concentrations of benzene and MTBE are significantly lower at 800 Harrison Street in relation to the other two properties in the co-mingled plume. The remedial design presented in this RAP targets dissolved-phase mass in groundwater at 706 and 726 Harrison Street.

3. Basis of Design

The basis of design for the full-scale remedy proposed in this RAP is generated from results of MPE and AS/SVE pilot tests conducted during September 2013. The MPE pilot test was conducted on September 10 and 11, 2013 and the AS/SVE pilot test was conducted on September 12, 2013. Data from the AS/SVE pilot study have been used to estimate achievable extraction and injection influences, along with assessing the viability of relying upon AS/SVE to treat hydrocarbon-impacted soil. Additional consideration has been given to remedy effectiveness, constructability, integration with existing site infrastructure, and compliance with applicable ACEH regulations. Collectively, this information has been used to develop design configuration, extraction/injection operations, and monitoring criteria, which will govern the implementation of this remedy. This section summarizes existing AS/SVE systems, recent pilot testing efforts, and design basis considerations.

3.1 Former Air Sparge/Soil Vapor Extraction System

The former AS/SVE system located at 706 Harrison Street was operated from May 1998 through February 2001. The SVE portion was shut down in 2001, while the AS system continued to inject air to increase oxygen concentrations to enhance aerobic biodegradation. The AS system was subsequently shut down in 2003. The former AS/SVE major system components were removed from the site. Remaining system infrastructure includes the AS manifold and electrical meter. The former AS/SVE system remediation wells were not destroyed following system shutdown.

The remaining AS/SVE system components from historical operations include AS/SVE remediation wells, an above-ground AS manifold, and the system electrical meter. The AS manifold and electrical meter will be removed prior to proposed AS/SVE system installation. The existing remediation well network at 706 Harrison Street includes three AS wells (SP-3, SP-4, SP-5) dual-nested with three SVE wells (VW-3, VW-4, VW-5). These wells were installed following over-excavation and UST removal in the early 1990s. The 1-inch-diameter AS wells are installed to approximately 30 feet bgs with a 1-foot screen interval. The 2-inch-diameter SVE wells are installed to approximately 18 feet bgs with a 10-foot screen interval.

The existing AS and SVE wells located at 706 Harrison Street are currently covered by concrete. These AS and SVE wells will be uncovered and inspected during new remediation well installation to evaluate well casing integrity and functionality, as discussed in Section 4.1.2.

3.2 Multiphase Extraction Pilot Test

The MPE pilot test results were reported in the Multi-Phase Extraction and AS/SVE Pilot Test Summary Report (ARCADIS 2013). This section summarizes the MPE pilot test activities, results, and conclusions.

An MPE pilot test was conducted on pilot test well MPE-1 on September 10 and 11, 2013. Pilot testing consisted of two operational phases on MPE-1. Phase 1 was a pump test to determine dewatering capabilities in the well casing screen interval and expose soil in the smear zone for remediation through vapor extraction. A 3-hour pump test was performed on MPE-1 prior to initiating vacuum application and subsequent MPE operation. Once sufficient dewatering was observed in MPE-1, Phase 2 was initiated and vacuum was applied to the wellhead to determine optimal vacuum and flow rate operational parameters. The MPE pilot test operated under a 5-day pilot test exemption from air permitting with the Bay Area Air Quality Management District (BAAQMD).

3.2.1 Phase 1: Pump Test Results

On September 10, 2013, the pump test portion of the MPE pilot test was initiated on MPE-1. The maximum extraction rate applied was 3.5 gallons per minute (gpm) (maximum capacity of submersible pump) in an attempt to dewater MPE-1 to completely expose the screen interval. Groundwater was extracted at 3.5 gpm for approximately 2 hours and a maximum depth to water of 25.60 feet below top of casing (BTOC) was observed from PZ-1 pressure transducer data. This depth to water measurement correlates to a maximum water level drawdown of 6.23 feet in PZ-1 and a total exposed screen interval in MPE-1 of 10.60 feet. Water-level drawdown data from pressure transducers installed in the MPE pilot test monitoring network indicated maximum drawdown levels in MW-5, MW-4, and MP-1 of 2.87, 1.70, and 1.25 feet BTOC, respectively.

3.2.2 Phase 2: Multiphase Extraction Pilot Test Results

Phase 2 was initiated immediately following the completion of Phase 1. The initial wellhead vacuum at MPE-1 was 10 inches of water column (inH_2O) and subsequent vacuum steps of approximately 25, 40, and 60 inH_2O were applied to MPE-1 during Phase 2 startup. Wellhead vacuum was sustained at approximately 60 inH_2O throughout Phase 2. A maximum vacuum of 61.2 inH_2O was observed, with a flow rate of 11.2 standard cubic feet per minute (scfm) during Phase 2. The maximum observed photo ionization detector (PID) reading during the pilot test was 382 parts per million (ppm). Maximum induced wellhead vacuums at MW-5, MW-4, and MP-1 during Phase 2 were 9.83, 1.84, and 0.23 inH_2O, respectively. The average groundwater extraction flow rate from MPE-1 during Phase 2 was

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

3.2.3 Mass Removal Estimates

To assess dissolved-phase mass removal, samples of influent water to the on-site storage tank were collected. To characterize the vapor-phase stream, samples were collected in SUMMA® canisters from the influent vapor stream before treatment by the oxidizer. The samples were submitted to a California Department of Health Services approved analytical laboratory for analyses. One vapor sample was collected from the effluent of the treatment system to confirm destruction efficiency of the catalytic oxidizer.

Dissolved mass removal rates for benzene, MTBE, and TPH-g during MPE operation ranged from approximately 2.98 to 3.50, 13.34 to 18.39, and 29.57 to 32.04 pounds per day (lbs/day), respectively. The estimated cumulative dissolved mass removed for benzene, MTBE, and TPH-g during 26 hours of MPE operation was 3.31, 19.35, and 36.02 pounds.

Vapor mass removal rates for TPH-g and BTEX during MPE operation ranged from approximately 0.71 to 5 and 0.006 to 0.063 lbs/day, respectively. The estimated cumulative mass removed for total BTEX, MTBE, and TPH-g during 23 hours of MPE Phase 2 operation was 3.31, 19.35, and 36.02 pounds, respectively.

3.3 Air Sparge/Soil Vapor Extraction Pilot Test

The AS/SVE pilot test results were reported in the Multi-Phase Extraction and AS/SVE Pilot Test Summary Report (ARCADIS 2013). This section summarizes the AS/SVE pilot test activities, results, and conclusions.

A combined AS/SVE pilot test was conducted on September 12, 2013 to determine if sufficient air delivery to groundwater was possible through AS. The AS pilot test was conducted on AS-1, which is located at 726 Harrison Street (installed in August 2001). AS-1 is a 2-inch-diameter well, installed to a total depth of approximately 30 feet with a 1-foot screen interval. An air compressor capable of at least approximately 20 actual cubic feet per minute (acfm) at a pressure of 40 pounds per square inch (psi) was used for AS pilot testing. A 20-horsepower rotary claw vacuum pump was used for the SVE pilot testing.

SVE data collected during MPE pilot testing was used to evaluate the effectiveness of SVE application in the subsurface. SVE was operated during AS pilot test activities to capture vapors from the vadose zone. A 1-day AS/SVE pilot test operated under the 5-day pilot test exemption from the BAAQMD. Vacuum was applied to existing extraction well EW-1 (approximately 8 feet from AS-1) and VE-3 (6.5 feet from AS-1, installed in June 2013) to capture vapors from the vadose zone during AS pilot testing. Soil vapor was extracted from EW-1 and VE-3 at a maximum of approximately 75 inH_2O and 12.5 scfm, respectively. The injection pressure during the pilot test ranged from 1 to 6 psi, with a flow rate of approximately 1 to 7.1 scfm. Measureable flow was observed at a sustained injection pressure of 6 psi.

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

4. Cleanup Approach

Based on site characterization results and pilot test findings, AS/SVE has been selected as the most appropriate technology to treat hydrocarbon impacts at the site. Petroleum hydrocarbon impacted soil will be treated through SVE application, while groundwater treatment will be accomplished through AS system operation.

4.1 Proposed Air Sparge/Soil Vapor Extraction System

An AS/SVE system has been designed based on site characterization and pilot test results. The proposed AS/SVE remediation system consists of 16 AS wells (13 new wells and three existing wells) and six SVE wells (two new wells and four existing wells). A Busch 1502 rotary claw blower, powered by a 20-horsepower (hp) totally enclosed, fan-cooled (TEFC) motor, capable of extraction air flows of 300 scfm at a vacuum of 7.87 inches of mercury will be used for the SVE system. A Busch model 1102 BP rotary claw compressor system, powered by a 10-hp TEFC motor, capable of delivering approximately 70 scfm of injection air at a discharge pressure of 23.5 psi will be used on site. The oxidizer will be an Intellishare ECO-300 catalytic oxidizer with a maximum air flow capacity of 300 scfm. Additional information is provided in the subsections that follow. AS/SVE system major equipment components specifications are provided in Appendix E.

AS treatment will consist of continuously cycled (i.e., pulsed) AS wells operating in four zones. A system performance monitoring program will be used to evaluate treatment

effectiveness for the AS/SVE system. Additionally, each AS/SVE remediation well location will be periodically monitored and adjusted to optimize treatment conditions and ensure that emissions remain within permit-required thresholds for the site. The AS/SVE remediation system described in the RAP is intended as an adaptable and effective remedial approach to address both dissolved and residual-/adsorbed-phase contaminant mass in the shallow water-bearing zone at the site.

4.2 Air Sparge/Soil Vapor Extraction System Components

The AS system will be used to volatilize and enhance biodegradation of hydrocarbon constituents in shallow groundwater at the site. The AS system will also be operated in a manner to facilitate bulk water movement in the capillary fringe, thereby desorbing mass from smear zone soil and dissolving it into the aqueous phase where it can be treated via AS. The SVE system will be used to volatilize any residual hydrocarbon constituents that are adsorbed to capillary fringe and overlying vadose zone soil. SVE will also capture vapors emitted during AS operation and promote secondary treatment of soil via enhanced biodegradation through the transfer/recharge of oxygen to subsurface pore spaces near the groundwater surface and within contaminant smear zones. Periodic performance monitoring will be conducted to quantify contaminant mass removal rates and qualitatively assess system effectiveness. This information will be used to identify opportunities to optimize the system cycling schedule and streamline operations and maintenance (O&M) costs. The system will be operated until asymptotic mass removal rates have been achieved, or until corresponding groundwater cleanup objectives have been met.

4.2.1 Soil Vapor Extraction Well Configuration and Network

The proposed SVE system uses four existing SVE wells (VW-3, VW-4, VW-5, and VE-3) and two new SVE wells (VE-4 and VE-5); approximate well locations are shown on Figure C-2 of Appendix E. A centralized manifold will be located in the treatment enclosure and each SVE well will have a dedicated pipe run (i.e., lateral). Instrumentation and controls to facilitate performance monitoring and wellfield optimization functions for each well will be located at the manifold. The proposed treatment enclosure location and new pipe run locations are shown on Figure 12. Details for the SVE manifold configuration, trenching details, and wellhead connections are presented on the system design drawings included with Appendix E.

4.2.2 Air Sparge Well Configuration and Network

The proposed AS well configuration consists of three existing AS wells (SP-3, SP-4, and SP-5) and 13 new AS wells (AS-2 through AS-14). Approximate well locations are depicted on Figure C-2 of Appendix E. A centralized manifold will be located in the treatment enclosure and each AS well will have a dedicated pipe run (i.e., lateral). The AS manifold will include flow control valves for individual well performance optimization and balancing pulsed air delivery among the various zones and phases of operation. Instrumentation and controls to facilitate performance monitoring and well field optimization functions for each well will be located at the manifold. Details for the AS manifold configuration, trenching details, and wellhead connections are presented on the system design drawings included with Appendix E.

During AS/SVE well installation, existing remediation wells VW-3/SP-3, VW-4/SP-4, and VW-5/SP-5 will be evaluated to determine if it is feasible for each well to be incorporated into the AS/SVE remediation system. Well casing integrity and functionality will be assessed for each existing remediation well. These wells were last used in 2003 and their current condition is not known. Due to potential infrastructure degradation and system operational limitations, only components that will support the operational function of the final remedy design will be used. If existing remediation well VW-5/SP-5 is inoperable, one additional AS well will be installed near VW-5/SP5. Replacement wells will not be installed if existing remediation wells VW-3/SP-3 or VW-4/SP-4 are inoperable; proposed wells AS-10 through AS-14 will adequately address the portion of the site covered by existing wells VW-3/SP-3 and VW-4/SP-4.

4.2.3 Soil Vapor Extraction Well Installation

Two new SVE wells will be installed at the site: VE-4 will be installed at 726 Harrison Street and VE-5 will be installed at 706 Harrison Street. SVE well installation will be performed using hollow-stem augers. Both new SVE wells will be installed to a total boring depth of approximately 15 feet bgs. The wells will be completed with a 2-inch-diameter Schedule 80 polyvinyl chloride (PVC) well casing with a 0.020-inch slot screen extending from approximately 5 to 15 feet bgs. The new SVE wells 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. Relevant ARCADIS SOPs are included in Appendix F.

Drilling augers and sampling tools will be decontaminated after drilling in accordance with ARCADIS' Field Equipment Decontamination SOP (Appendix F). Soil cuttings and decontamination water will be collected in labeled drums and temporarily stored on site

pending results of characterization sampling. Waste profile forms will be prepared and the soil and purge water will be transported for off-site disposal in accordance with applicable regulations. Approximate well locations and SVE well construction details are provided on Figures C-2 and C-4 of Appendix E, respectively. Well construction details, completions, with below-grade piping connections will adhere to the design requirements specified in Appendix E.

4.2.4 Air Sparge Well Installation

Thirteen new AS wells will be installed on site. AS-2 through AS-6 will be installed at 726 Harrison Street and AS-7 through AS-14 will be installed at 706 Harrison Street. AS soil borings will be advanced to a depth below the water table with a target depth for setting the bottom of the AS well screen at of the top of the clay lens (approximately 30 feet bgs). During well installation, the soil from each borehole will be continuously logged by a geologist to locate the target depth for each AS well screen.

Each well will be completed with a 2-inch-diameter Schedule 80 PVC well casing with a 0.010-inch slot 1-foot screen interval. Each AS well will be constructed with a 3-foot sump at the bottom of the well casing. The new AS wells will be installed and constructed according to ARCADIS' Well Installation SOP (Appendix F) and completed with a locking, flush-mount, 12-inch-diameter traffic-rated well box. Approximate well locations and AS well construction details are provided on Figures C-2 and C-5 of Appendix E, respectively. Well construction details, completions, with below-grade piping connections will adhere to the design requirements specified in Appendix E.

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

4.2.5 Air Sparge/Soil Vapor Extraction System Startup

Once the AS/SVE system has been installed, it will be inspected, started up, and tested to verify that the operation meets or exceeds performance design criteria, including equipment operating performance, system control functionality, measurement accuracy, compliance with applicable permits, and safety. Performance design criteria will be detailed in a site-specific performance monitoring plan

AS system startup will include balancing individual well pressures and flows during their respective zoned operation. AS pressures will typically range from 10 to 12 psi and will be adjusted, as appropriate, to flow rates of approximately 10 scfm per well. During startup, the system will be set up to sustain target wellhead pressures during the pulse interval, which is important to achieve AS break-through in the formation and deliver injected air distribution over the estimated AS radius of influence (ROI).

Individual SVE wells will be optimized and balanced at a target wellhead vacuum of 110 inH_2O to achieve a flow of approximately 40 scfm per well. The effective target ROI for the SVE wells is 30 feet. The SVE well network is designed to effectively capture residual soil contaminant mass and recover VOCs generated during AS operations. The treatment system has been designed to accommodate a flow rate up to 300 acfm at a vacuum of 7.5inHg to allow flexibility if it becomes apparent during performance monitoring that higher vacuum and flow are appropriate.

Vacuum, flow, and extracted vapor VOC concentrations will be measured periodically throughout startup testing activities. Data from each well will be used to assess individual wellhead extraction characteristics and to identify areas of the site with higher mass removal rates. The relative distribution of mass removal rates will factor into AS and SVE optimization efforts. System SVE data will also be collected and monitored to estimate emission attenuation rates.

Collectively, data from all AS and SVE wells will be used to develop system performance curves. Information gathered during startup will also be used to establish a baseline for subsequent treatment system performance evaluations.

4.2.6 Air Sparge/Soil Vapor Extraction System Optimization

System performance data will primarily be used to verify that the system is performing properly. A comprehensive system performance evaluation will be performed semiannually to assess treatment progress toward meeting cleanup objectives. The semiannual evaluation will consider all data collected to date; estimate mass removal of TPPH, benzene

and MTBE; and ultimately determine if AS/SVE is achieving cleanup objectives in a timely and cost-effective manner. Data collected monthly will be evaluated and used to optimize system operational parameters during subsequent O&M events to maintain optimal system performance.

4.2.7 Operations and Maintenance

ARCADIS will prepare an O&M manual for all AS/SVE treatment equipment. In addition to detailing system operating instructions, the O&M manual will outline equipment maintenance requirements. The level of detail will be sufficient for ensuring proper and efficient treatment throughout the project. The O&M manual will include a system maintenance schedule, detailing manufacturer recommended mechanical and electrical maintenance requirements based on equipment hours of operation and will document equipment make, model, troubleshooting, and manufacturer contact information for all treatment system components.

5. Remedy Implementation

Upon approval of this RAP from the ACEH, Chevron will proceed with implementing the final remedy. The following tasks are anticipated in order to implement this RAP:

- Design modifications based on feedback from the ACEH.
- Apply for and obtain construction and system operation permits as required.
- Develop detailed scopes of work for subcontractor procurement.
- Equipment procurement, contracting, and construction scheduling.
- Remove any existing AS/SVE system components that will not be incorporated into the final design.
- Utility surveying and locates in advance of well installation.
- Install AS and SVE wells.
- Complete installation of AS/SVE treatment enclosure.
- Install new AS/SVE piping and complete connections.

- System startup testing and optimization.
- Commence monthly and quarterly monitoring programs.

This section discusses the remedy implementation expectations.

5.1 Permitting and Utility Locates

Prior to initiation of on-site construction activities, permits will be obtained as required for building and electrical upgrades. ARCADIS personnel will mark all AS and SVE well locations to identify utilities in those areas. Utility locates will be performed on site before commencing drilling or intrusive excavation activities. A geophysical survey using a combination of ground-penetrating radar and electromagnetic utility locating equipment, metal detectors, utility locators, and conductivity meters will be performed to screen designated areas for utilities, buried metallic objects, and anomalies. Following well installation, well permits will be filed with the ACEH, as necessary.

5.1.1 Well Installation Permits

Prior to commencing well installations, all applicable well permits will be obtained from the Alameda County Public Works Agency.

5.1.2 Air Permit

An air permit will be procured from the BAAQMD for the duration of AS/SVE system operation. An SVE emissions evaluation will be performed immediately after AS/SVE system startup to confirm catalytic oxidizer destruction efficiency and air permit compliance. Air emissions monitoring will be performed monthly for one quarter after startup to verify anticipated declines in SVE mass removal rates. If the monitoring identifies point source emissions in excess of allowable thresholds, modification to system operations to maintain emission rates below the threshold will be performed or supplemental emission control measures will be used.

5.1.3 Building Permit

A building permit will be obtained from the City of Oakland for the AS/SVE treatment enclosure.

5.2 Surveying

Following AS/SVE well, conveyance piping and treatment enclosure installation, a licensed surveyor will perform an as-built survey of the major remediation system components. The survey will include measurement and identification of the following in both northing/easting and global positioning system (GPS) coordinates:

- Location of remediation equipment and treatment enclosure
- AS/SVE well locations
- Transect locations of SVE and AS pipe runs
- Locations of existing site utilities.

Results of the survey will be used to develop a revised site map and will be included in subsequent documentation of remediation activities, as appropriate.

5.3 Monitoring

The semiannual groundwater monitoring program will continue during 2014 at all three properties comprising the site.

5.4 Waste and Disposal

Construction waste that is characterized as nonhazardous material will be disposed of off site at an appropriate local landfill. Soil boring cuttings from installation of AS/SVE wells will be staged in drums until drilling completion. Soil cuttings will be sampled and analyzed for constituents of concern and any supplemental waste profiling tests required by the designated landfill. Investigation-derived waste handling will adhere to the ARCADIS SOP provided in Appendix F. Following characterization, soil cuttings will be transported for off-site disposal in accordance with applicable regulations.

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. 2013. Multi-Phase Extraction and Air Sparge/Soil Vapor Extraction Pilot Test Summary Report. October 9.

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.

State Water Quality Control Board. 2012. Low-Threat Underground Storage Tank Closure Policy. August 17, 2012.

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
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
MP-1	08/21/13	34.16	30.0	30.0	6.0	1.0	15.0-30.0	0.020	#2/12	15.0-30.0	14.0-30.0	11.0-14.0	25.0	NA	NA	Onsite	Active
MPE-1	08/21/13	34.36	40.0	33.0	12.0	4.0	15.0-30.0	0.020	#2/12	15.0-30.0	14.0-33.0	11.0-14.0	26.0	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	No. 3	44.0-49.0	42.5-49.0	40.5-42.5	25.0	28.35	NA	Onsite	Active
PZ-1	06/20/13	34.36	40.0	30.0	12.0	1.0	15.0-30.0	0.020	#2/12	15.0-30.0	14.0-33.0	11.0-14.0	26.0	NA	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
VE-3	08/21/13	34.42	16.0	15.0	8.0	2.0	5.0-15.0	0.020	#2/12	5.0-15.0	4.0-16.0	2.0-4.0	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

Abbreviations:

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
706 Harrison Street											
MW-1	08/13/93	29.15	17.40	11.75	**20000**	**8500**	**640**	**280**	**440**	--	--
MW-1	12/14/93	29.15	17.27	11.88	**17000**	**9200**	**1200**	**4400**	**540**	--	--
MW-1	04/15/94	29.15	17.00	12.15	**9500**	**3600**	**530**	**160**	**280**	--	--
MW-1	12/29/94	29.15	16.40	12.75	--	--	--	--	--	--	--
MW-1	07/19/96	29.15	15.83	13.32	**17000**	**5200**	**1100**	**330**	**530**	--	--
MW-1	01/27/97	29.15	13.58	15.57	**30000**	**9800**	**1300**	**790**	**880**	--	**400**
MW-1	06/18/97	29.15	16.11	13.04	**19000**	**5600**	**1400**	**510**	**770**	**800**	**1200**
MW-1	09/18/97	29.15	16.62	12.53	**48000**	**18000**	**4400**	**1000**	**1700**	--	<640
MW-1	10/12/97	29.15	15.93	13.22	**22000**	**4900**	**1300**	**580**	**650**	**260**	**460**
MW-1	02/18/98	29.15	11.56	17.59	**16000**	**5000**	**750**	**400**	**780**	--	**1800**
MW-1	12/05/98	29.15	13.53	15.62	**19000**	**4600**	**810**	**450**	**770**	--	**5500**
MW-1	08/18/98	29.15	15.19	13.96	**12000**	**3600**	**1300**	**300**	**570**	**3700**	**5100**
MW-1	11/24/98	29.15	15.67	13.48	**13000**	**3600**	**890**	**330**	**380**	--	**6100**
MW-1	04/02/99	29.15	15.31	13.84	**20000**	**5900**	**830**	**450**	**500**	--	**4900**
MW-1	05/18/99	29.15	14.95	14.20	**23000**	**7000**	**1600**	**520**	**830**	--	**6100**
MW-1	08/27/99	29.15	15.84	13.31	**19000**	**5800**	**1700**	**410**	**710**	**2100**	**1800**
MW-1	11/18/99	29.15	16.39	12.76	**20000**	**4900**	**630**	**410**	**580**	**3600**	**4900**
MW-1	02/29/00	29.15	13.43	15.72	**12000**	**2800**	24	**290**	**170**	**3400**	**3100**
MW-1	05/25/00	29.15	15.08	14.07	**12000**	**2200**	**120**	**330**	**260**	**12000**	**9100**
MW-1	09/08/00	29.15	16.09	13.06	**13000**	**2500**	**44**	**310**	**140**	--	**16000**
MW-1	09/11/00	29.15	15.90	13.25	**11000**	**2500**	**140**	**380**	**150**	**12000**	**11000**
MW-1	01/29/01	29.15	16.05	13.10	**9600**	**3100**	**100**	**77**	**200**	**2400**	**2600**
MW-1	04/16/01	29.15	16.90	12.25	**3300**	**1200**	4.4	2.7	**28**	**940**	**900**
MW-1	08/14/01	29.15	17.13	12.02	**2000**	**500**	3.4	24	7.8	**53**	**68**
MW-1	10/22/01	29.15	16.11	13.04	**220**	**83**	0.63	2.8	<0.5	**5.7**	<10
MW-1	01/02/02	29.15	16.93	12.22	**640**	**220**	1.7	4.7	0.57	--	<10
MW-1	10/05/02	29.15	15.09	14.06	**230**	**26**	0.97	<0.5	<0.5	--	<5.0
MW-1	08/07/02	29.15	15.20	13.95	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
MW-1	02/10/02	29.15	15.70	13.45	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-1	01/23/03	29.15	15.09	14.06	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-1	04/29/03	29.15	13.02	16.13	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-1	07/18/03	26.17	14.50	11.67	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-1	09/10/03	26.17	13.81	12.36	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-1	01/28/04	26.17	13.09	13.08	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-1	07/04/04	26.17	14.97	11.20	**180**	**60**	0.56	1.9	<0.5	--	<5.0
MW-1	07/23/04	26.17	14.15	12.02	**130**	**36**	<0.5	0.65	<0.5	--	<5.0
MW-1	12/10/04	26.17	16.30	9.87	<50	**2.5**	1.5	<0.5	0.86	--	<5.0
MW-1	02/14/05	26.17	13.85	12.32	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-1	04/27/05	26.17	13.35	12.82	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-1	07/19/05	26.17	14.68	11.49	**4500**	**1400**	6.5	**160**	**58**	--	**630**
MW-1	10/18/05	26.17	15.15	11.02	**1700**	**340**	<5.0	28	<5.0	**7200**	**8000**
MW-1	01/23/06	26.17	13.27	12.90	**3100**	**790**	6.5	**79**	**32**	**5100**	**4200**
MW-1	12/04/06	26.17	12.33	13.84	**7200**	**2600**	**110**	**350**	**320**	**4000**	**5600**
MW-1	10/07/06	26.17	14.93	11.24	**2700**	**550**	4.2	**77**	**47**	**8300**	**5500**
MW-1	10/16/06	26.17	16.51	9.66	**2000**	**470**	6.4	**38**	13	**6400**	**6300**
MW-1	01/26/07	26.17	16.87	9.30	**3300**	**600**	36	**34**	**27**	**5900**	**6200**
MW-1	04/18/07	26.17	16.77	9.40	**5400**	**1400**	**170**	**210**	**350**	**4700**	**3600**
MW-1	02/08/07	26.17	17.21	8.96	**6100**	**1200**	**130**	**140**	**240**	**5400**	**5300**
MW-1	10/23/07	26.17	17.67	8.50	**2600**	**740**	**53**	**60**	**110**	**6900**	**5800**
MW-1	01/30/08	26.17	16.66	9.51	**1900**	**380**	2.6	15	**20**	**2800**	**2400**
MW-1	04/18/08	26.17	17.14	9.03	**1500**	**320**	4.5	13	**25**	**2900**	**2900**
MW-1	07/28/08	26.17	17.70	8.47	**1100**	**240**	3.6	6.9	15	**1800**	**1600**
MW-1	12/05/08	26.17	18.22	7.95	**1000**	**150**	2.1	4.1	15	**140**	**150**
MW-1	01/26/09	26.17	17.84	8.33	**540**	**120**	1.4	1.6	3.0	**79**	**82**
MW-1	03/08/09	29.17	17.45	11.72	**290**	**94**	2.8	3.4	6.7	**20**	**25**
MW-1	01/25/10	29.17	16.72	12.45	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
MW-1	03/08/10	29.17	16.90	12.27	**6200**	**1200**	**340**	**110**	**500**	**350**	**580**
MW-1	02/17/11	29.17	16.81	12.36	<50	**1.6**	<0.5	<0.5	<0.5	**60**	**65**
MW-1	08/23/11	29.17	17.02	12.15	**4800**	**720**	**140**	**84**	**230**	**810**	--
MW-1	02/07/12	29.17	17.33	11.84	**8900**	**1000**	**260**	**230**	**610**	**420**	--
MW-1	08/09/12	29.17	16.58	12.59	**2200**	**850**	**110**	**42**	**120**	**84**	--
MW-1	02/27/13	29.17	17.03	12.14	**--**	**--**	**--**	**--**	**--**	**--**	--
MW-1	08/15/13	29.17	17.89	11.28	**5800**	**840**	**100**	**93**	**160**	**790**	--
MW-1	02/06/14	29.17	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
706 Harrison Street											
MW-2	08/13/93	30.51	17.05	13.46	**34000**	**6800**	**10000**	**740**	**3900**	--	--
MW-2	12/14/93	18.80	18.28	12:23	**16000**	**3200**	**4200**	**500**	**1700**	--	--
MW-2	04/15/94	30.51	18.10	12.41	**23000**	**2500**	**4200**	**470**	**1800**	--	--
MW-2	12/29/94	30.51	17.40	13.11	--	--	--	--	--	--	--
MW-2	07/19/96	30.51	16.72	13.79	**90000**	**7300**	**14000**	**1600**	**7300**	--	--
MW-2	01/27/97	30.51	14.89	15.62	**63000**	**7100**	**13000**	**1600**	**7100**	--	**500**
MW-2	06/18/97	30.51	17.12	13.39	**52000**	**5100**	**10000**	**1400**	**6000**	--	<200
MW-2	09/18/97	30.51	17.63	12.88	**110000**	**9400**	**23000**	**2600**	**13000**	--	<890
MW-2	10/12/97	30.51	16.98	13.53	**39000**	**2600**	**5300**	**940**	**3900**	**320**	**780**
MW-2	02/18/98	30.51	12.61	17.90	**85000**	**9000**	**19000**	**2300**	**11000**	--	**2400**
MW-2	12/05/98	30.51	14.45	16.06	**110000**	**9500**	**21000**	**2500**	**12000**	--	<1200
MW-2	08/18/98	30.51	16.14	14.37	**64000**	**6000**	**13000**	**1700**	**7800**	**1300**	**2000**
MW-2	11/24/98	30.51	16.70	13.81	**78000**	**5300**	**14000**	**2300**	**11000**	--	<2000
MW-2	04/02/99	30.51	18.39	12.12	**66000**	**5800**	**16000**	**2600**	**12000**	--	**3000**
MW-2	05/18/99	30.51	15.90	14.61	**78000**	**6700**	**17000**	**2400**	**10000**	--	**4300**
MW-2	08/27/99	30.51	16.79	13.72	**91000**	**7400**	**17000**	**2300**	**11000**	**1000**	**1200**
MW-2	11/18/99	30.51	17.32	13.19	**180000**	**7000**	**20000**	**3300**	**16000**	**1700**	<6000
MW-2	02/29/00	30.51	14.37	16.14	**86000**	**5500**	**13000**	**2000**	**9500**	**4700**	**3500**
MW-2	05/25/00	30.51	16.01	14.50	**110000**	**6300**	**14000**	**2400**	**10000**	**6500**	**7500**
MW-2	09/08/00	30.51	17.02	13.49	**77000**	**5000**	**13000**	**2000**	**8600**	--	**5900**
MW-2	09/11/00	30.51	17.00	13.51	**70000**	**4800**	**12000**	**1900**	**8000**	**8300**	**9400**
MW-2	01/29/01	30.51	18.31	12.20	**110000**	**8200**	**21000**	**2800**	**13000**	**1900**	**2500**
MW-2	04/16/01	30.51	18.59	11.92	**97000**	**7400**	**15000**	**2500**	**12000**	<50	<3000
MW-2	08/14/01	30.51	18.74	11.77	**97000**	**6200**	**14000**	**2400**	**13000**	<50	<250
MW-2	10/22/01	30.51	18.27	12.24	**71000**	**5900**	**15000**	**2400**	**12000**	**150**	<1400
MW-2	01/02/02	30.51	18.05	12.46	**1400**	**11**	**88**	**44**	**210**	--	<5.0
MW-2	10/05/02	30.51	17.15	13.36	**97000**	**4500**	**15000**	**2500**	**12000**	--	<3000
MW-2	08/07/02	30.51	15.30	15.21	**42000**	**2100**	**6500**	**2200**	**8800**	**65**	<1000
MW-2	02/10/02	30.51	15.89	14.62	**70000**	**1700**	**5700**	**1900**	**8300**	--	<1700
MW-2	01/23/03	30.51	17.51	13.00	**40000**	**1900**	**7800**	**1200**	**5600**	--	<1000
MW-2	04/29/03	30.51	15.31	15.20	**82000**	**2500**	**11000**	**2200**	**9400**	--	<2000
MW-2	07/18/03	27.53	16.84	10.69	**57000**	**2100**	**8700**	**2200**	**10000**	<50	--
MW-2	09/10/03	27.53	16.05	11.48	**49000**	**1800**	**7000**	**1700**	**7600**	**26**	<1500
MW-2	01/28/04	27.53	15.39	12.14	**550**	**21**	33	3.0	**61**	--	<100
MW-2	07/04/04	27.53	16.01	11.52	**41000**	**2500**	**11000**	**1900**	**8000**	--	<2000
MW-2	07/23/04	27.53	15.30	12.23	**81000**	**2000**	**12000**	**2500**	**12000**	--	<2000
MW-2	12/10/04	27.53	17.87	9.66	**75000**	**2600**	**13000**	**2300**	**11000**	--	<1300
MW-2	02/14/05	27.53	14.80	12.73	**75000**	**2600**	**12000**	**2400**	**10000**	--	<1800
MW-2	04/27/05	27.53	14.63	12.90	**61000**	**2800**	**11000**	**1600**	**7000**	--	<2700
MW-2	07/19/05	27.53	15.60	11.93	**90000**	**3700**	**14000**	**2600**	**10000**	--	<7000
MW-2	10/18/05	27.53	16.08	11.45	**77000**	**3300**	**14000**	**2400**	**11000**	**6400**	**7900**
MW-2	01/23/06	27.53	14.20	13.33	**54000**	**1600**	**8000**	**1600**	**6700**	**7000**	**6600**
MW-2	12/04/06	27.53	12.51	15.02	**43000**	**1800**	**7800**	**1300**	**5200**	**4900**	**6400**
MW-2	10/07/06	27.53	14.76	12.77	**86000**	**2800**	**11000**	**2100**	**9600**	**400**	<6500
MW-2	10/16/06	27.53	16.74	10.79	**110000**	**3600**	**16000**	**2400**	**12000**	**2700**	<6000
MW-2	01/26/07	27.53	17.10	10.43	**120000**	**3900**	**16000**	**2300**	**10000**	**3000**	<5000
MW-2	04/18/07	27.53	17.02	10.51	**100000**	**3500**	**18000**	**2500**	**12000**	**3400**	**5200**
MW-2	02/08/07	27.53	17.47	10.06	**61000**	**2700**	**11000**	**1800**	**7600**	**4600**	**6400**
MW-2	10/23/07	27.53	17.94	9.59	**56000**	**3100**	**13000**	**1800**	**8100**	--	**4500**
MW-2	01/30/08	27.53	16.99	10.54	**52000**	**2700**	**11000**	**1700**	**7300**	--	**5300**
MW-2	04/18/08	27.53	17.41	10.12	**64000**	**3400**	**13000**	**1800**	**8100**	--	<4000
MW-2	07/28/08	27.53	17.99	9.54	**51000**	**2000**	**6200**	**1300**	**2700**	**1500**	<2600
MW-2	05/12/08	27.53	18.56	8.97	**74000**	**2200**	**12000**	**1700**	**7500**	**1900**	**2500**
MW-2	01/26/09	27.53	18.20	9.33	**90000**	**2800**	**14000**	**NA**	**9500**	**1600**	<3500
MW-2	03/08/09	30.53	17.74	12.79	**67000**	**2900**	**12000**	**1800**	**8200**	**1900**	<3500
MW-2	01/25/10	30.53	17.10	13.43	**46000**	**1400**	**6200**	**1100**	**5800**	**1500**	<3500
MW-2	03/08/10	30.53	17.24	13.29	**79000**	**3300**	**14000**	**2000**	**10000**	**2300**	<6000
MW-2	01/17/11	30.53	17.35	13.18	**76000**	**3400**	**15000**	**2300**	**11000**	**1400**	<3500
MW-2	08/23/11	30.53	17.23	13.30	**17000**	**940**	**1900**	**740**	**3600**	**1500**	--
MW-2	02/07/12	30.53	17.90	12.63	**36000**	**1100**	**3600**	**990**	**4200**	**1600**	--
MW-2	08/09/12	30.53	16.90	13.63	**5100**	**810**	**1800**	**440**	**1900**	**4100**	--
MW-2	02/27/13	30.53	17.36	13.17	**45000**	**1700**	**2500**	**1200**	**4900**	**2700**	--
MW-2	08/15/13	30.53	18.20	12.33	**1500**	**1200**	**5600**	**820**	**4400**	**1700**	--
MW-2	02/06/14	30.53	20.20	10.33	**5200**	**1400**	**5200**	**1300**	**5000**	**3000**	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
706 Harrison Street											
MW-3	08/13/93	29.77	17.05	12.72	<50	<0.50	<0.50	<0.50	<1.5	--	--
MW-3	12/14/93	29.77	17.70	12.07	<50	<0.50	<0.50	<0.50	<1.5	--	--
MW-3	04/15/94	29.77	17.40	12.37	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-3	12/29/94	29.77	16.80	12.97	--	--	--	--	--	--	--
MW-3	07/19/96	29.77	16.28	13.49	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-3	01/27/97	29.77	13.83	15.94	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	06/18/97	29.77	16.53	13.24	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	09/18/97	29.77	17.07	12.70	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	10/12/97	29.77	16.15	13.62	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	02/18/98	29.77	11.80	17.97	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	12/05/98	29.77	13.85	15.92	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	08/18/98	29.77	15.57	14.20	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	11/24/98	29.77	16.04	13.73	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	04/02/99	29.77	17.80	11.97	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	05/18/99	29.77	15.29	14.48	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	08/27/99	29.77	16.15	13.62	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	11/18/99	29.77	16.77	13.00	--	--	--	--	--	--	--
MW-3	02/29/00	29.77	13.71	16.06	<50	**2**	<0.5	<0.5	<0.5	--	<5.0
MW-3	05/25/00	29.77	15.46	14.31	--	--	--	--	--	--	--
MW-3	09/08/00	29.77	16.46	13.31	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	09/11/00	29.77	16.25	13.52	--	--	--	--	--	--	--
MW-3	01/29/01	29.77	16.52	13.25	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	04/16/01	29.77	16.95	12.82	--	--	--	--	--	--	--
MW-3	08/14/01	29.77	17.11	12.66	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	10/22/01	29.77	16.50	13.27	--	--	--	--	--	--	--
MW-3	01/02/02	29.77	16.90	12.87	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	10/05/02	29.77	15.03	14.74	--	--	--	--	--	--	--
MW-3	08/07/02	29.77	14.45	15.32	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	02/10/02	29.77	15.03	14.74	--	--	--	--	--	--	--
MW-3	01/23/03	29.77	15.48	14.29	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	04/29/03	29.77	12.49	17.28	--	--	--	--	--	--	--
MW-3	07/18/03	26.79	14.80	11.99	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	09/10/03	26.79	14.13	12.66	--	--	--	--	--	--	--
MW-3	01/28/04	26.79	13.47	13.32	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	07/04/04	26.79	15.41	11.38	--	--	--	--	--	--	--
MW-3	07/23/04	26.79	14.54	12.25	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	12/10/04	26.79	16.58	10.21	--	--	--	--	--	--	--
MW-3	02/14/05	26.79	14.19	12.60	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	04/27/05	26.79	13.68	13.11	--	--	--	--	--	--	--
MW-3	07/19/05	26.79	15.15	11.64	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-3	10/18/05	26.79	15.60	11.19	--	--	--	--	--	--	--
MW-3	01/23/06	26.79	13.65	13.14	<50	<0.5	<0.5	<0.5	<0.5	**260**	**270**
MW-3	12/04/06	26.79	11.94	14.85	--	--	--	--	--	--	--
MW-3	10/07/06	26.79	14.48	12.31	<50	<0.5	<0.5	<0.5	<0.5	**1600**	**1100**
MW-3	10/16/06	26.79	16.19	10.60	--	--	--	--	--	--	--
MW-3	01/26/07	26.79	16.56	10.23	<50	<0.5	<0.5	<0.5	<0.5	**3400**	**2500**
MW-3	04/18/07	26.79	16.45	10.34	--	--	--	--	--	--	--
MW-3	02/08/07	26.79	16.92	9.87	<100	<1.0	<1.0	<1.0	<1.0	**3500**	**3300**
MW-3	10/23/07	26.79	17.42	9.37	--	--	--	--	--	--	--
MW-3	01/30/08	26.79	16.45	10.34	<250	<2.5	<2.5	<2.5	<2.5	**10000**	**8400**
MW-3	04/18/08	26.79	16.87	9.92	--	--	--	--	--	--	--
MW-3	07/28/08	26.79	17.41	9.38	<250	<2.5	<2.5	<2.5	<25	**6900**	**6400**
MW-3	05/12/08	26.79	17.89	8.90	--	--	--	--	--	--	--
MW-3	01/26/09	26.79	17.50	9.29	<50	<0.5	<0.5	<0.5	<0.5	**3800**	**3400**
MW-3	03/08/09	29.79	17.18	12.61	<50	<0.5	<0.5	<0.5	<0.5	**3100**	**2900**
MW-3	01/25/10	29.79	16.39	13.40	**300**	<1.7	2.5	<1.7	<1.7	**4500**	**4600**
MW-3	03/08/10	29.79	16.61	13.18	<50	<0.5	<0.5	<0.5	<0.5	**1500**	**1200**
MW-3	02/17/11	29.79	16.60	13.19	<50	<0.5	<0.5	<0.5	<0.5	**79**	**55**
MW-3	08/23/11	29.79	16.65	13.14	**310**	0.53	2.4	2.6	10	**200**	--
MW-3	02/07/12	29.79	17.23	12.56	<50	<0.50	<0.50	<0.50	<1.0	**110**	--
MW-3	08/09/12	29.79	16.32	13.47	<50	<0.50	<0.50	<0.50	<1.0	0.8	--
MW-3	02/27/13	29.79	16.75	13.04	<50	<0.50	<0.50	<0.50	<1.0	1.2	--
MW-3	08/15/13	29.79	17.60	12.19	86	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-3	02/06/14	29.79	18.36	11.43	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
706 Harrison Street											
MW-4	12/16/94	31.18	18.10	13.08	**2500**	**32**	6.5	4.5	17	--	--
MW-4	12/29/94	31.18	17.95	13.23	--	--	--	--	--	--	--
MW-4	07/19/96	31.18	17.38	13.80	**3300**	**520**	39	**67**	**60**	--	--
MW-4	01/27/97	31.18	15.25	15.93	**4500**	**860**	**55**	**100**	**91**	--	**1100**
MW-4	06/18/97	31.18	17.61	13.57	**2700**	**700**	**52**	**81**	**76**	**2300**	**2200**
MW-4	09/18/97	31.18	18.01	13.17	**3900**	**760**	38	**56**	**64**	--	<170
MW-4	10/12/97	31.18	17.45	13.73	**12000**	**1800**	**120**	**210**	**210**	**2600**	**2900**
MW-4	02/18/98	31.18	13.09	18.09	**1700**	**210**	8.0	6.7	16	--	**200**
MW-4	12/05/98	31.18	14.78	16.40	**2100**	**300**	15	**36**	**34**	--	**920**
MW-4	08/18/98	31.18	16.59	14.59	**4700**	**1000**	**130**	**110**	**150**	**4900**	**5200**
MW-4	11/24/98	31.18	17.18	14.00	**3000**	**810**	**44**	**76**	**94**	--	**4800**
MW-4	04/02/99	31.18	18.90	12.28	**2800**	**770**	**50**	**69**	**69**	--	**3100**
MW-4	05/18/99	31.18	16.30	14.88	**4000**	**780**	**57**	7.7	**79**	--	**4800**
MW-4	08/27/99	31.18	17.21	13.97	**4100**	**870**	**51**	**74**	**99**	**4100**	**3300**
MW-4	11/18/99	31.18	17.77	13.41	**3000**	**760**	**43**	**67**	**65**	**5400**	**5100**
MW-4	02/29/00	31.18	14.85	16.33	**4600**	**1000**	**64**	**94**	**170**	**4600**	**4100**
MW-4	05/25/00	31.18	16.45	14.73	**2600**	**540**	39	**59**	**41**	**5300**	**3500**
MW-4	09/08/00	31.18	17.47	13.71	**4400**	**930**	**66**	**98**	**79**	--	**9400**
MW-4	09/11/00	31.18	17.45	13.73	**4200**	**630**	34	**54**	**44**	**9400**	**7800**
MW-4	01/29/01	31.18	18.90	12.28	**3100**	**710**	34	**66**	**51**	**8000**	**9400**
MW-4	04/16/01	31.18	19.17	12.01	**160**	**1.2**	1.3	<0.5	12	**20**	**22**
MW-4	08/14/01	31.18	19.20	11.98	**1700**	**190**	11	**35**	13	**250**	**300**
MW-4	10/22/01	31.18	18.95	12.23	**1100**	**120**	3.7	29	7.9	**16**	<25
MW-4	01/02/02	31.18	19.05	12.13	**2600**	**25**	**43**	21	**280**	--	<5.0
MW-4	10/05/02	31.18	17.69	13.49	**490**	**3.5**	2.0	2.1	2.2	--	<5.0
MW-4	08/07/02	31.18	15.75	15.43	**170**	0.51	0.62	1.6	1.2	2.0	<5.0
MW-4	02/10/02	31.18	16.30	14.88	**240**	**1.7**	2.0	2.2	0.88	--	<5.0
MW-4	01/23/03	31.18	17.74	13.44	<50	0.52	4.1	<0.5	1.9	--	<5.0
MW-4	04/29/03	31.18	15.47	15.71	**1,300**	**75**	4.8	21	7.3	**120**	**130**
MW-4	07/18/03	28.20	17.08	11.12	<50	<0.5	<0.5	<0.5	<0.5	0.74	--
MW-4	09/10/03	28.20	16.25	11.95	**210**	**4.7**	0.57	1.6	1.1	**10**	<10
MW-4	01/28/04	28.20	15.65	12.55	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-4	07/04/04	28.20	16.49	11.71	--	--	--	--	--	--	--
MW-4	12/04/04	--	--	--	**770**	**56**	3.2	7.0	6.5	**160**	**120**
MW-4	07/23/04	28.20	15.86	12.34	**1100**	**130**	11	17	17	**800**	**790**
MW-4	12/10/04	28.20	18.05	10.15	**150**	0.86	<0.5	<0.5	0.97	--	<10
MW-4	02/14/05	28.20	15.30	12.90	**1500**	**200**	16	**30**	**31**	**550**	**420**
MW-4	04/27/05	28.20	14.20	14.00	**3000**	**520**	**100**	27	**86**	**480**	**600**
MW-4	07/19/05	28.20	16.08	12.12	**1800**	**310**	16	**36**	**25**	**1100**	**1000**
MW-4	10/18/05	28.20	16.55	11.65	**2500**	**450**	28	**47**	**51**	**4500**	**3800**
MW-4	01/23/06	28.20	14.66	13.54	**1300**	**170**	13	14	14	**3300**	**2500**
MW-4	12/04/06	28.20	12.92	15.28	**940**	**150**	12	7.6	12	**3300**	**3400**
MW-4	10/07/06	28.20	15.38	12.82	**1700**	**260**	14	26	**20**	**5900**	**4300**
MW-4	10/16/06	28.20	17.21	10.99	**3200**	**440**	26	**34**	**63**	**7500**	**7800**
MW-4	01/26/07	28.20	17.58	10.62	**2000**	**290**	20	28	**42**	**8300**	**8300**
MW-4	04/18/07	28.20	17.46	10.74	**2300**	**350**	28	**38**	**42**	**7800**	**5900**
MW-4	02/08/07	28.20	17.95	10.25	**3600**	**480**	33	**47**	**72**	**9000**	**7500**
MW-4	10/23/07	28.20	18.41	9.79	**1700**	**280**	13	27	**25**	**8800**	**7000**
MW-4	01/30/08	28.20	17.49	10.71	**1300**	**130**	5	13	12	**8200**	**6500**
MW-4	04/18/08	28.20	17.90	10.30	**2300**	**240**	14	25	**27**	**6400**	**6900**
MW-4	07/28/08	28.20	18.49	9.71	**3400**	**390**	**100**	**33**	**100**	**5000**	**4600**
MW-4	05/12/08	28.20	19.07	9.13	**2400**	**310**	30	**41**	**67**	**1700**	**2100**
MW-4	01/26/09	28.20	18.71	9.49	**1600**	**180**	14	21	**33**	**1200**	**1300**
MW-4	03/08/09	31.20	18.23	12.97	**2300**	**370**	39	**37**	**89**	**1600**	**1700**
MW-4	01/25/10	31.20	17.64	13.56	**690**	**77**	7.4	8.6	**20**	**280**	**240**
MW-4	03/08/10	31.20	17.72	13.48	**1600**	**190**	17	23	**44**	**990**	**770**
MW-4	07/17/11	31.20	17.69	13.51	**3400**	**620**	25	**52**	**100**	**1300**	**1900**
MW-4	08/23/11	31.20	17.71	13.49	**1800**	**98**	11	14	**26**	**260**	--
MW-4	02/07/12	31.20	18.43	12.77	**1800**	**140**	15	21	**32**	**430**	--
MW-4	08/09/12	31.20	--	--	--	--	--	--	--	--	--
MW-4	02/27/13	31.20	--	--	--	--	--	--	--	--	--
MW-4	08/15/13	31.20	18.70	12.50	**1100**	**620**	38	**62**	**67**	**1200**	--
MW-4	02/06/14	31.20	20.68	10.52	**620**	**850**	29	**54**	**62**	**600**	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
706 Harrison Street											
MW-5	12/16/94	28.04	16.07	11.97	<50	**1.1**	<0.5	<0.5	2.4	--	--
MW-5	12/29/94	28.04	16.10	11.94	--	--	--	--	--	--	--
MW-5	07/19/96	28.04	15.49	12.55	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-5	01/27/97	28.04	13.60	14.44	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	06/18/97	28.04	15.55	12.49	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	09/18/97	28.04	16.16	11.88	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	10/12/97	28.04	15.41	12.63	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	02/18/98	28.04	10.93	17.11	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	12/05/98	28.04	13.25	14.79	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	08/18/98	28.04	14.75	13.29	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	11/24/98	28.04	15.15	12.89	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	04/02/99	28.04	14.61	13.43	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	05/18/99	28.04	14.15	13.89	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	08/27/99	28.04	15.43	12.61	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	11/18/99	28.04	15.97	12.07	--	--	--	--	--	--	--
MW-5	02/29/00	28.04	13.16	14.88	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	05/25/00	28.04	14.72	13.32	--	--	--	--	--	--	--
MW-5	09/08/00	28.04	15.68	12.36	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	09/11/00	28.04	15.39	12.65	--	--	--	--	--	--	--
MW-5	01/29/01	28.04	15.97	12.07	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	04/16/01	28.04	16.24	11.80	--	--	--	--	--	--	--
MW-5	08/14/01	28.04	17.39	10.65	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	10/22/01	28.04	15.90	12.14	--	--	--	--	--	--	--
MW-5	01/02/02	28.04	16.55	11.49	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	10/05/02	28.04	15.12	12.92	--	--	--	--	--	--	--
MW-5	08/07/02	28.04	15.92	12.12	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	02/10/02	28.04	16.42	11.62	--	--	--	--	--	--	--
MW-5	01/23/03	28.04	14.90	13.14	<50	**20**	<0.5	<0.5	<0.5	--	<5.0
MW-5	04/29/03	28.04	12.05	15.99	--	--	--	--	--	--	--
MW-5	07/18/03	25.07	14.28	10.79	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	09/10/03	25.07	13.36	11.71	--	--	--	--	--	--	--
MW-5	01/28/04	25.07	12.68	12.39	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	07/04/04	25.07	14.71	10.36	--	--	--	--	--	--	--
MW-5	07/23/04	25.07	13.49	11.58	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	12/10/04	25.07	15.88	9.19	--	--	--	--	--	--	--
MW-5	02/14/05	25.07	13.22	11.85	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	04/27/05	25.07	13.40	11.67	--	--	--	--	--	--	--
MW-5	07/19/05	25.07	14.21	10.86	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	10/18/05	25.07	14.79	10.28	--	--	--	--	--	--	--
MW-5	01/23/06	25.07	13.12	11.95	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-5	12/04/06	25.07	11.39	13.68	--	--	--	--	--	--	--
MW-5	10/07/06	25.07	14.40	10.67	<50	<0.5	<0.5	<0.5	<0.5	--	**25**
MW-5	10/16/06	25.07	15.44	9.63	--	--	--	--	--	--	--
MW-5	01/26/07	25.07	15.76	9.31	<50	<0.5	<0.5	<0.5	<0.5	--	**490**
MW-5	04/18/07	25.07	15.61	9.46	--	--	--	--	--	--	--
MW-5	02/08/07	25.07	16.04	9.03	<50	<0.5	<0.5	<0.5	<0.5	**760**	**660**
MW-5	10/23/07	25.07	16.89	8.18	--	--	--	--	--	--	--
MW-5	01/30/08	25.07	15.61	9.46	<50	<0.5	<0.5	<0.5	<0.5	**280**	**250**
MW-5	04/18/08	25.07	15.99	9.08	--	--	--	--	--	--	--
MW-5	07/28/08	25.07	16.45	8.62	<50	<0.5	<0.5	<0.5	<0.5	**670**	**640**
MW-5	05/12/08	25.07	16.94	8.13	--	--	--	--	--	--	--
MW-5	01/26/09	25.07	16.54	8.53	<50	<0.5	<0.5	<0.5	<0.5	**3700**	**3500**
MW-5	03/08/09	28.07	16.23	11.84	<50	<0.5	<0.5	<0.5	<0.5	**1400**	**1300**
MW-5	01/25/10	28.07	15.58	12.49	<50	<0.5	<0.5	<0.5	<0.5	**1400**	**1300**
MW-5	03/08/10	28.07	15.55	12.52	<50	<0.5	<0.5	<0.5	<0.5	**450**	**400**
MW-5	02/17/11	28.07	15.56	12.51	<50	<0.5	<0.5	<0.5	<0.5	**7.7**	**6.4**
MW-5	08/23/11	28.07	15.80	12.27	**280**	<0.50	<0.50	<0.50	<0.50	**360**	--
MW-5	02/07/12	28.07	16.45	11.62	<50	<0.50	<0.50	<0.50	1.6	**190**	--
MW-5	08/09/12	28.07	15.22	12.85	<50	<0.50	<0.50	<0.50	<1.0	**13**	--
MW-5	02/27/13	28.07	15.68	12.39	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-5	08/15/13	28.07	16.55	11.52	<50	<0.50	<0.50	<0.50	<1.0	0.72	--
MW-5	02/06/14	28.07	17.37	10.70	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
706 Harrison Street											
MW-6	12/16/94	29.10	17.74	11.36	--	--	--	--	--	--	--
MW-6	12/29/94	29.10	17.40	11.70	--	--	--	--	--	--	--
MW-6	07/19/96	29.10	16.60	12.50	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-6	01/27/97	29.10	14.88	14.22	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-6	06/18/97	29.10	16.73	12.37	51	**22**	<0.5	<0.5	<0.5	--	<5.0
MW-6	09/18/97	29.10	17.24	11.86	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-6	10/12/97	29.10	16.56	12.54	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-6	02/18/98	29.10	12.93	16.17	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-6	12/05/98	29.10	14.35	14.75	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-6	08/18/98	29.10	15.94	13.16	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-6	11/24/98	29.10	16.46	12.64	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-6	04/02/99	29.10	18.25	10.85	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-6	05/18/99	29.10	15.73	13.37	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-6	08/27/99	29.10	15.64	13.46	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-6	11/18/99	29.10	17.04	12.06	--	--	--	--	--	--	--
MW-6	02/29/00	29.10	14.55	14.55	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-6	05/25/00	29.10	15.86	13.24	--	--	--	--	--	--	--
MW-6	09/08/00	29.10	16.80	12.30	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-6	09/11/00	29.10	16.60	12.50	--	--	--	--	--	--	--
MW-6	01/29/01	29.10	17.00	12.10	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-6	04/16/01	29.10	17.15	11.95	--	--	--	--	--	--	--
MW-6	08/14/01	29.10	17.30	11.80	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-6	10/22/01	29.10	17.13	11.97	--	--	--	--	--	--	--
MW-6	01/02/02	29.10	16.57	12.53	70	**37**	<0.5	<0.5	<0.5	--	<5.0
MW-6	10/05/02	29.10	15.25	13.85	--	--	--	--	--	--	--
MW-6	08/07/02	29.10	15.79	13.31	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-6	02/10/02	29.10	16.38	12.72	--	--	--	--	--	--	--
MW-6	01/23/03	29.10	16.03	13.07	<50	**21**	<0.5	<0.5	<0.5	--	<5.0
MW-6	04/29/03	29.10	14.19	14.91	--	--	--	--	--	--	--
MW-6	07/18/03	26.13	15.47	10.66	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-6	09/10/03	26.13	14.73	11.40	--	--	--	--	--	--	--
MW-6	01/28/04	26.13	14.05	12.08	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-6	07/04/04	26.13	14.41	11.72	--	--	--	--	--	--	--
MW-6	07/23/04	26.13	15.15	10.98	**3300**	**1300**	<5.0	**52**	9.7		<50
MW-6	12/10/04	26.13	17.29	8.84	--	--	--	--	--		--
MW-6	02/14/05	26.13	14.60	11.53	**350**	**160**	<0.5	<0.5	<0.5	2	<25
MW-6	04/27/05	26.13	14.10	12.03	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
MW-6	07/19/05	26.13	15.18	10.95	**110**	**15**	<0.5	0.62	<0.5	1.7	<5.0
MW-6	10/18/05	26.13	15.65	10.48	<50	<0.5	<0.5	<0.5	<0.5	0.87	<5.0
MW-6	01/23/06	26.13	14.02	12.11	<50	<0.5	<0.5	<0.5	<0.5	0.5	<5.0
MW-6	12/04/06	26.13	12.66	13.47	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
MW-6	10/07/06	26.13	14.64	11.49	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
MW-6	10/16/06	26.13	16.50	9.63	--	--	--	--	--		--
MW-6	01/26/07	26.13	16.83	9.30	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
MW-6	04/18/07	26.13	16.72	9.41	--	--	--	--	--		--
MW-6	02/08/07	26.13	17.13	9.00	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
MW-6	10/23/07	26.13	17.71	8.42	--	--	--	--	--		--
MW-6	01/30/08	26.13	16.54	9.59	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
MW-6	04/18/08	26.13	17.02	9.11	--	--	--	--	--		--
MW-6	07/28/08	26.13	17.50	8.63	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
MW-6	05/12/08	26.13	17.89	8.24	--	--	--	--	--		--
MW-6	01/26/09	26.13	17.61	8.52	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
MW-6	03/08/09	29.13	17.24	11.89	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
MW-6	01/25/10	29.13	16.72	12.41	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
MW-6	03/08/10	29.13	16.80	12.33	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
MW-6	02/17/11	29.13	16.73	12.40	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
MW-6	08/23/11	29.13	16.97	12.16	<50	<0.50	<0.50	<0.50	<1.0	**89**	--
MW-6	02/07/12	29.13	17.51	11.62	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-6	08/09/12	29.13	16.41	12.72	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-6	02/27/13	29.13	16.93	12.20	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-6	08/15/13	29.13	17.78	11.35	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-6	02/06/14	29.13	18.48	10.65	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
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
MW-7	12/29/94	29.67	17.65	12.02	--	--	--	--	--	--	--
MW-7	07/19/96	29.67	16.44	13.23	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-7	01/27/97	29.67	15.09	14.58	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-7	06/18/97	29.67	16.59	13.08	73	<0.5	1	<0.5	<0.5	--	<5.0
MW-7	09/18/97	29.67	17.06	12.61	94	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-7	10/12/97	29.67	16.58	13.09	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-7	02/18/98	29.67	12.60	17.07	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-7	12/05/98	29.67	14.81	14.86	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-7	08/18/98	29.67	15.67	14.00	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-7	11/24/98	29.67	16.30	13.37	**200**	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-7	04/02/99	29.67	15.99	13.68	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-7	05/18/99	29.67	15.42	14.25	**200**	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-7	08/27/99	29.67	16.35	13.32	**140**	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-7	11/18/99	29.67	16.81	12.86	--	--	--	--	--	--	--
MW-7	02/29/00	29.67	14.16	15.51	**100**	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-7	05/25/00	29.67	15.54	14.13	--	--	--	--	--	--	--
MW-7	09/08/00	29.67	16.56	13.11	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-7	09/11/00	29.67	16.45	13.22	--	--	--	--	--	--	--
MW-7	01/29/01	29.67	16.92	12.75	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-7	04/16/01	29.67	17.03	12.64	--	--	--	--	--	--	--
MW-7	08/14/01	29.67	17.27	12.40	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-7	10/22/01	29.67	16.95	12.72	--	--	--	--	--	--	--
MW-7	01/02/02	29.67	16.14	13.53	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-7	10/05/02	29.67	15.30	14.37	--	--	--	--	--	--	--
MW-7	08/07/02	29.67	15.73	13.94	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-7	02/10/02	29.67	16.24	13.43	--	--	--	--	--	--	--
MW-7	01/23/03	29.67	15.70	13.97	<50	**23**	<0.5	<0.5	<0.5	--	<5.0
MW-7	04/29/03	29.67	12.68	16.99	--	--	--	--	--	--	--
MW-7	07/18/03	26.70	15.19	11.51	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-7	09/10/03	26.70	14.45	12.25	--	--	--	--	--	--	--
MW-7	01/28/04	26.70	13.88	12.82	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-7	07/04/04	26.70	15.71	10.99	--	--	--	--	--	--	--
MW-7	07/23/04	26.70	14.85	11.85	<50	<0.5	<0.5	<0.5	<0.5	**120**	**130**
MW-7	12/10/04	26.70	16.90	9.80	--	--	--	--	--	--	--
MW-7	02/14/05	26.70	14.42	12.28	<50	<0.5	<0.5	<0.5	<0.5	**200**	**190**
MW-7	04/27/05	26.70	13.75	12.95	<50	<0.5	<0.5	<0.5	<0.5	1	<5.0
MW-7	07/19/05	26.70	14.91	11.79	<50	<0.5	<0.5	<0.5	<0.5	**66**	**65**
MW-7	10/18/05	26.70	15.40	11.30	<50	<0.5	<0.5	<0.5	<0.5	**15**	**12**
MW-7	01/23/06	26.70	13.99	12.71	<50	<0.5	<0.5	<0.5	<0.5	2.2	<5.0
MW-7	12/04/06	26.70	12.32	14.38	<50	<0.5	<0.5	<0.5	<0.5	2	<5.0
MW-7	10/07/06	26.70	14.31	12.39	<50	<0.5	<0.5	<0.5	<0.5	1.5	<5.0
MW-7	10/16/06	26.70	16.23	10.47	--	--	--	--	--	--	--
MW-7	01/26/07	26.70	16.61	10.09	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
MW-7	04/18/07	26.70	16.54	10.16	--	--	--	--	--	--	--
MW-7	02/08/07	26.70	16.93	9.77	<50	<0.5	<0.5	<0.5	<0.5	2	<5.0
MW-7	10/23/07	26.70	17.36	9.34	--	--	--	--	--	--	--
MW-7	01/30/08	26.70	16.36	10.34	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
MW-7	04/18/08	26.70	16.85	9.85	--	--	--	--	--	--	--
MW-7	07/28/08	26.70	17.43	9.27	<50	<0.5	<0.5	<0.5	<0.5	1.1	<5.0
MW-7	05/12/08	26.70	17.91	8.79	--	--	--	--	--	--	--
MW-7	01/26/09	26.70	17.65	9.05	<50	<0.5	<0.5	<0.5	<0.5	0.96	<5.0
MW-7	03/08/09	29.70	17.17	12.53	<50	<0.5	<0.5	<0.5	<0.5	0.87	<5.0
MW-7	01/25/10	29.70	16.65	13.05	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
MW-7	03/08/10	29.70	16.74	12.96	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
MW-7	02/17/11	29.70	16.69	13.01	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5.0
MW-7	08/23/11	29.70	16.79	12.91	<50	<0.50	<0.50	<0.50	<1.0	**89**	--
MW-7	02/07/12	29.70	17.40	12.30	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-7	08/09/12	29.70	16.38	13.32	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-7	02/27/13	29.70	16.83	12.87	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-7	08/15/13	29.70	17.67	12.03	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-7	02/06/14	29.70	18.42	11.28	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
706 Harrison Street											
VW-3	06/03/03	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
VW-3	03/25/03	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
706 Harrison Street											
VW-4	06/03/03	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
VW-4	03/25/03	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
726 Harrison Street											
AS-1	08/15/13	34.50	18.17	16.33	**--**	**--**	**--**	**--**	**--**	**--**	**--**
726 Harrison Street											
EW-1	02/27/13	*--	18.17	*--	**960**	**180**	6.0	3.6	12	**170**	**--**
EW-1	08/15/13	34.37	18.98	15.39	**290**	**67**	1.7	1.3	3.3	**57**	**--**
EW-1	02/06/14	34.37	19.69	14.68	**640**	**68**	1.2	7.9	7	**180**	**--**
726 Harrison Street											
MP-1	08/15/13	34.16	19.03	15.13	<50	<0.50	<0.50	<0.50	<1.0	2.4	**--**
MP-1	02/06/14	34.16	21.07	13.09	<50	<0.50	<0.50	<0.50	<1.0	1.8	**--**
726 Harrison Street											
MPE-1	08/15/13	34.36	19.24	15.12	**820**	**110**	23	17	**45**	**610**	**--**
MPE-1	02/06/14	34.36	20.00	14.36	**460**	**93**	24	13	**29**	**410**	**--**
726 Harrison Street											
MW-1	07/03/97	NA	NA	NA	**18000**	**2700**	**350**	**450**	**900**	**--**	**7400**
MW-1	12/15/98	31.95	17.32	14.63	**18000**	**1500**	**270**	**260**	**560**	**--**	**14000**
MW-1	04/03/99	31.95	15.52	16.43	**44000**	**2800**	**400**	**440**	**960**	**--**	**43000**
MW-1	06/17/99	31.95	16.90	15.05	**33000**	**2200**	**250**	**460**	**660**	**--**	**25000**
MW-1	08/27/99	31.95	17.39	14.56	**6000**	**1000**	**97**	**190**	**230**	**16000**	**14000**
MW-1	09/12/99	31.95	18.03	13.92	**15000**	**1500**	**160**	**220**	**420**	**--**	**17000**
MW-1	07/03/00	31.95	15.11	16.84	**9300**	**1500**	**210**	**66**	**530**	**--**	**12000**
MW-1	07/06/00	31.95	16.66	15.29	**26000**	**1700**	<250	**360**	**580**	**--**	**30000**
MW-1	11/10/00	31.95	18.08	13.87	**13000**	**1600**	<100	**140**	**160**	**--**	**19000**
MW-1	01/18/01	31.95	17.96	13.99	**14000**	**450**	<100	**110**	**230**	**--**	**9600**
MW-1	05/04/01	31.95	16.35	15.60	**38000**	**2200**	**180**	**290**	**590**	**--**	**35000**
MW-1	07/17/01	31.95	16.94	15.01	**35000**	**1800**	<100	**300**	**170**	**--**	**35000**
MW-1	05/01/10	28.98	17.35	11.63	**17000**	**1500**	**210**	**420**	**790**	**--**	**27000**
MW-1	01/18/02	28.98	15.40	13.58	**18000**	**1500**	**120**	**160**	**220**	**--**	**22000**
MW-1	11/04/02	28.98	15.76	13.22	**41000**	**2700**	**210**	**340**	**380**	**--**	**30000**
MW-1	08/07/02	28.98	16.17	12.81	**36000**	**2800**	**140**	**360**	**300**	**--**	**31000**
MW-1	09/02/10	28.98	16.72	12.26	**30000**	**1700**	**310**	<100	<100	**--**	**19000**
MW-1	01/29/03	28.98	16.26	12.72	**26000**	**2400**	<100	**310**	**520**	**--**	**20000**
MW-1	11/04/03	28.98	16.56	12.42	**22000**	**1700**	<100	**270**	**580**	**--**	**16000**
MW-1	07/18/03	28.98	16.42	12.56	**40000**	**3200**	**290**	**480**	**830**	**--**	**39000**
MW-1	09/03/10	28.98	16.88	12.10	**54000**	**3300**	<130	**350**	**310**	**--**	**49000**
MW-1	01/28/04	28.98	16.10	12.88	**26000**	**3000**	**310**	**420**	**800**	**--**	**31000**
MW-1	07/04/04	28.98	15.43	13.55	**33000**	**2800**	**130**	**310**	**310**	**--**	**39000**
MW-1	07/23/04	28.98	16.41	12.57	**56000**	**4500**	<250	**390**	<500	**--**	**53000**
MW-1	12/04/10	28.98	17.73	11.25	**25000**	**1400**	<250	<250	<500	**--**	**25000**
MW-1	01/29/05	28.98	15.02	13.96	**24000**	**1600**	<100	**160**	<200	**--**	**19000**
MW-1	04/28/05	28.98	14.99	13.99	**10000**	**2000**	<100	**160**	**100**	**--**	**34000**
MW-1	07/19/05	28.98	16.36	12.62	**37000**	**2100**	**83**	**210**	**230**	**--**	**28000**
MW-1	10/18/05	28.98	17.82	11.16	**37000**	**1300**	<250	<250	<250	**--**	**23000**
MW-1	01/23/06	28.98	15.80	13.18	**23000**	**780**	<100	**160**	**260**	**--**	**11000**
MW-1	12/04/06	28.98	13.24	15.74	**11000**	**1500**	**87**	**360**	**670**	**--**	**17000**
MW-1	10/07/06	28.98	15.64	13.34	**72000**	**4700**	<250	**350**	<500	**--**	**66000**
MW-1	10/16/06	28.98	17.51	11.47	**26000**	**1600**	<250	**330**	<500	**--**	**22000**
MW-1	01/26/07	28.98	18.36	10.62	**7200**	**1500**	<70	**140**	**96**	**--**	**34000**
MW-1	04/18/07	28.98	17.79	11.19	**5400**	**1100**	<50	**200**	**120**	**--**	**21000**
MW-1	02/08/07	28.98	18.20	10.78	**6600**	**1500**	**64**	**240**	**190**	**--**	**32000**
MW-1	10/23/07	28.98	18.75	10.23	**5900**	**1300**	**52**	**200**	**180**	**--**	**28000**
MW-1	01/30/08	28.98	17.90	11.08	**2700**	**300**	21	**64**	**90**	**--**	**5200**
MW-1	04/18/08	28.98	18.21	10.77	**3800**	**930**	**41**	**110**	**130**	**--**	**15000**
MW-1	07/28/08	28.98	18.85	10.13	**6000**	**900**	**52**	**140**	**160**	**--**	**10000**
MW-1	10/29/08	28.98	19.24	9.74	**7300**	**1700**	**74**	**140**	**220**	**--**	**17000**
MW-1	01/26/09	28.98	19.17	9.81	**4900**	**720**	**48**	**140**	**180**	**--**	**6300**
MW-1	03/08/09	31.98	18.62	13.36	**4000**	**870**	**44**	**110**	**120**	**--**	**13000**
MW-1	01/25/10	31.98	18.26	13.72	**3200**	**360**	26	**82**	**86**	**--**	**3000**
MW-1	03/08/10	31.98	18.13	13.85	**3800**	**560**	27	**97**	**92**	**--**	**8600**
MW-1	02/17/11	31.98	18.15	13.83	**6000**	**1100**	**51**	**110**	**110**	**--**	**11000**
MW-1	08/23/11	31.98	18.60	13.38	**8200**	**290**	36	**66**	**79**	**4700**	**--**
MW-1	02/07/12	31.98	18.77	13.21	**370**	46	1.7	4.2	4.5	**3800**	**--**
MW-1	08/09/12	31.98	17.82	14.16	**6600**	**760**	27	**58**	**60**	**6700**	--
MW-1	02/27/13	31.98	18.21	13.77	**3000**	**480**	26	**52**	**56**	**2600**	--
MW-1	08/15/13	34.45	19.03	15.42	**7200**	**820**	**50**	**65**	**99**	**7300**	--
MW-1	02/06/14	34.45	19.87	14.58	**2600**	**1800**	**86**	**400**	**250**	**10000**	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
726 Harrison Street											
MW-2	12/15/98	32.40	18.03	14.37	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0
MW-2	03/04/99	32.40	16.11	16.29	--	--	--	--	--	--	--
MW-2	06/17/99	32.40	17.72	14.68	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0
MW-2	08/27/99	NA	NA	NA	--	--	--	--	--	--	--
MW-2	12/09/99	NA	NA	NA	--	--	--	--	--	--	--
MW-2	03/07/00	NA	NA	NA	--	--	--	--	--	--	--
MW-2	06/07/00	32.40	17.67	14.73	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-2	10/11/00	32.40	18.91	13.49	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-2	01/18/01	32.40	18.66	13.74	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-2	04/05/01	32.40	16.97	15.43	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
MW-2	07/17/01	32.40	17.54	14.86	NA	NA	NA	NA	NA	NA	NA
MW-2	10/05/01	29.44	17.98	11.46	NA	NA	NA	NA	NA	NA	NA
MW-2	01/18/02	29.44	15.87	13.57	NA	NA	NA	NA	NA	NA	NA
MW-2	04/11/02	29.44	16.36	13.08	NA	NA	NA	NA	NA	NA	NA
MW-2	07/18/02	29.44	16.72	12.72	NA	NA	NA	NA	NA	NA	NA
MW-2	10/09/02	29.44	17.33	12.11	NA	NA	NA	NA	NA	NA	NA
MW-2	01/29/03	29.44	16.82	12.62	NA	NA	NA	NA	NA	NA	NA
MW-2	04/11/03	29.44	17.15	12.29	NA	NA	NA	NA	NA	NA	NA
MW-2	07/18/03	29.44	17.05	12.39	NA	NA	NA	NA	NA	NA	NA
MW-2	10/09/03	29.44	17.52	11.92	NA	NA	NA	NA	NA	NA	NA
MW-2	01/28/04	29.44	16.70	12.74	NA	NA	NA	NA	NA	NA	NA
MW-2	04/07/04	29.44	16.02	13.42	NA	NA	NA	NA	NA	NA	NA
MW-2	07/23/04	--	--	--	--	--	--	--	--	--	--
MW-2	10/12/04	29.44	17.31	12.13	NA	NA	NA	NA	NA	NA	NA
MW-2	01/29/05	29.44	15.46	13.98	NA	NA	NA	NA	NA	NA	NA
MW-2	04/28/05	29.44	15.79	13.65	NA	NA	NA	NA	NA	NA	NA
MW-2	07/19/05	29.44	17.25	12.19	NA	NA	NA	NA	NA	NA	NA
MW-2	10/18/05	29.44	17.72	11.72	NA	NA	NA	NA	NA	NA	NA
MW-2	01/23/06	29.44	15.65	13.79	NA	NA	NA	NA	NA	NA	NA
MW-2	04/12/06	29.44	12.33	17.11	NA	NA	NA	NA	NA	NA	NA
MW-2	07/10/06	29.44	16.58	12.86	<50	<0.50	<0.50	<0.50	<1.0	--	4.5
MW-2	10/16/06	29.44	18.33	11.11	<50	<0.50	<0.50	<0.50	<1.0	--	<0.5
MW-2	01/26/07	29.44	19.21	10.23	<50	0.55	1	<0.50	1.4	--	0.97
MW-2	04/18/07	29.44	18.58	10.86	<50	**1.5**	2.6	0.93	3.2	--	0.64
MW-2	08/02/07	29.44	19.02	10.42	<50	<0.50	<0.50	<0.50	<0.50	--	2.2
MW-2	10/23/07	--	--	--	--	--	--	--	--	--	--
MW-2	01/30/08	29.44	18.63	10.81	<50	<0.50	<0.50	<0.50	<0.50	--	**300**
MW-2	04/18/08	29.44	19.04	10.40	<50	<0.50	<0.50	<0.50	<0.50	--	**40**
MW-2	07/28/08	--	--	--	--	--	--	--	--	--	--
MW-2	10/29/08	29.44	20.01	9.43	<50	<0.50	<0.50	<0.50	<0.50	--	**300**
MW-2	01/26/09	29.44	19.84	9.60	<50	<0.50	<0.50	<0.50	<0.50	--	**120**
MW-2	08/03/09	32.44	19.39	13.05	<50	<0.50	<0.50	<0.50	<0.50	--	1
MW-2	01/25/10	32.44	18.67	13.77	<50	<0.50	<0.50	<0.50	<0.50	--	**12**
MW-2	03/08/10	32.44	18.84	13.60	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50
MW-2	02/17/11	32.44	18.82	13.62	<50	<0.50	<0.50	<0.50	<0.50	--	**5.2**
MW-2	08/23/11	32.44	19.38	13.06	<50	<0.50	<0.50	<0.50	<1.0	0.37	--
MW-2	02/07/12	32.44	19.52	12.92	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-2	08/09/12	32.44	18.55	13.89	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-2	02/27/13	32.44	18.95	13.49	<50	<0.50	<0.50	<0.50	<1.0	1.7	--
MW-2	08/15/13	34.91	19.77	15.14	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-2	02/06/14	34.91	21.20	13.71	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
726 Harrison Street											
MW-3	12/15/98	31.61	17.26	14.35	**6500**	<50	**50**	**60**	**502**	--	**3900**
MW-3	03/04/99	31.61	15.47	16.14	**2800**	<25	<25	<25	<25	--	**1600**
MW-3	06/17/99	31.61	16.92	14.69	**1000**	<10	<10	<10	<10	--	**1400**
MW-3	08/27/99	31.61	17.40	14.21	**230**	<0.5	0.51	0.50	1	**1600**	**1500**
MW-3	12/09/99	31.61	18.01	13.60	**870**	<0.5	<0.5	<0.5	<0.5	--	**2100**
MW-3	03/07/00	31.61	16.15	15.46	**150**	**4**	<0.5	<0.5	<0.5	--	**830**
MW-3	06/07/00	31.61	16.85	14.76	**140**	<0.5	<0.5	<0.5	<0.5	--	**1100**
MW-3	10/11/00	31.61	18.07	13.54	**620**	<5.0	<5.0	<5.0	<5.0	--	**1500**
MW-3	01/18/01	31.61	17.89	13.72	**1200**	<5.0	<5.0	<5.0	<5.0	--	**1000**
MW-3	04/05/01	31.61	16.21	15.40	**1700**	<5.0	<5.0	<5.0	<5.0	--	**1900**
MW-3	07/17/01	31.61	16.90	14.71	**1400**	<10	<10	<10	<10	--	**1700**
MW-3	10/05/01	28.64	17.32	11.32	<1000	<10	<10	<10	<10	--	**1700**
MW-3	01/18/02	28.64	15.35	13.29	**1600**	**26**	20	16	**54**	--	**2100**
MW-3	04/11/02	28.64	15.82	12.82	**2600**	**21**	16	<10	**21**	--	**2300**
MW-3	07/18/02	28.64	16.15	12.49	**2800**	<10	<10	<10	<10	--	**3800**
MW-3	10/09/02	28.64	16.67	11.97	**6000**	<50	<50	<50	<50	--	**4900**
MW-3	01/29/03	28.64	16.19	12.45	**1800**	<10	<10	<10	<10	--	**2300**
MW-3	04/11/03	28.64	16.49	12.15	**2900**	<25	<25	<25	<25	--	**3100**
MW-3	07/18/03	28.64	16.42	12.22	**3400**	<10	<10	<10	<10	--	**3200**
MW-3	10/09/03	28.64	16.80	11.84	**2300**	<10	<10	<10	<10	--	**2700**
MW-3	01/28/04	28.64	15.94	12.70	**1700**	<10	<10	<10	<10	--	**2900**
MW-3	04/07/04	28.64	15.28	13.36	**2700**	<10	<10	<10	<20	--	**3600**
MW-3	07/23/04	28.64	16.15	12.49	**4200**	<25	<25	<25	<50	--	**4900**
MW-3	10/12/04	28.64	16.63	12.01	**5000**	<50	<50	<50	<100	--	**5900**
MW-3	01/29/05	28.64	16.15	12.49	<1000	<10	<10	<10	<20	--	**3100**
MW-3	04/28/05	28.64	14.94	13.70	<200	<2.0	<2.0	<2.0	<2.0	--	**1300**
MW-3	07/19/05	28.64	16.25	12.39	**4400**	<20	<20	<20	<40	--	**3000**
MW-3	10/18/05	28.64	16.76	11.88	**18000**	<50	<50	<50	<50	--	**6800**
MW-3	01/23/06	28.64	15.81	12.83	**17000**	<100	<100	<100	<200	--	**7000**
MW-3	04/12/06	28.64	13.22	15.42	<200	<2.0	<2.0	<2.0	<2.0	--	**7800**
MW-3	07/10/06	28.64	15.49	13.15	**11000**	<100	<100	<100	<200	--	**12000**
MW-3	10/16/06	28.64	17.46	11.18	<10000	<100	<100	<100	<100	--	**17000**
MW-3	01/26/07	28.64	18.02	10.62	<200	<2.0	<2.0	<2.0	<2.0	--	**4000**
MW-3	04/18/07	28.64	17.75	10.89	<900	<9.0	<9.0	<9.0	<9.0	--	**11000**
MW-3	08/02/07	28.64	18.38	10.26	**110**	<0.80	<0.80	<0.80	2	--	**410**
MW-3	10/23/07	28.64	19.61	9.03	< 80	<0.80	<0.80	<0.80	<0.80	--	**480**
MW-3	01/30/08	28.64	17.65	10.99	< 80	<0.80	<0.80	<0.80	<0.80	--	**430**
MW-3	04/18/08	28.64	18.08	10.56	<50	<0.50	<0.50	<0.50	<0.50	--	**350**
MW-3	07/28/08	28.64	18.77	9.87	61	<0.50	<0.50	<0.50	<0.50	--	**140**
MW-3	10/29/08	28.64	19.14	9.50	**120**	<0.50	<0.50	<0.50	<0.50	--	**640**
MW-3	01/26/09	28.64	19.06	9.58	**210**	**1.9**	<1.5	<1.5	<1.5	--	**1300**
MW-3	08/03/09	31.64	18.51	13.13	<250	<2.5	<2.5	<2.5	<2.5	--	**1600**
MW-3	01/25/10	31.64	18.02	13.62	87	<0.50	<0.50	<0.50	<0.50	--	**300**
MW-3	03/08/10	31.64	18.06	13.58	92	<0.50	<0.50	<0.50	<0.50	--	**32**
MW-3	02/17/11	31.64	18.03	13.61	<50	<0.50	<0.50	<0.50	<0.50	--	**25**
MW-3	08/23/11	31.64	18.56	13.08	60	<0.50	<0.50	<0.50	<0.50	**9.1**	--
MW-3	02/07/12	31.64	18.71	12.93	25	<0.50	<0.50	<0.50	<1.0	**2.1**	--
MW-3	08/09/12	31.64	17.74	13.90	39	<0.50	<0.50	<0.50	<1.0	**9.2**	--
MW-3	02/27/13	31.64	18.12	13.52	<50	<0.50	<0.50	<0.50	<1.0	2.8	--
MW-3	08/15/13	34.12	18.95	15.17	<50	<0.50	<0.50	<0.50	<1.0	1.1	--
MW-3	02/06/14	34.12	19.70	14.42	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
726 Harrison Street											
MW-4	12/15/98	32.53	17.59	14.94	**880**	**3**	<0.5	<0.5	<0.5	--	**950**
MW-4	03/04/99	32.53	15.88	16.65	**3800**	<25	<25	<25	<25	--	**3700**
MW-4	06/17/99	32.53	17.14	15.39	**2700**	<25	<25	<25	<25	--	**2700**
MW-4	08/27/99	32.53	17.65	14.88	**440**	**4.7**	1.1	0.58	1.3	**1700**	**1600**
MW-4	12/09/99	32.53	18.28	14.25	**1100**	<2.5	<2.5	<2.5	<2.5	--	**1700**
MW-4	03/07/00	32.53	15.41	17.12	<250	<2.5	<2.5	<2.5	<2.5	--	**1700**
MW-4	06/07/00	32.53	17.09	15.44	**530**	**8.8**	<2.5	<2.5	<2.5	--	**440**
MW-4	10/11/00	32.53	18.33	14.20	**700**	**3.9**	<2.5	<2.5	<2.5	--	**680**
MW-4	01/18/01	32.53	18.23	14.30	**2000**	<2.5	<2.5	<2.5	<2.5	--	**780**
MW-4	04/05/01	32.53	16.69	15.84	**810**	<2.5	<2.5	<2.5	<2.5	--	**620**
MW-4	07/17/01	32.53	17.32	15.21	**880**	<2.5	<2.5	<2.5	<2.5	--	**570**
MW-4	10/05/01	29.58	17.71	11.87	**550**	<2.5	<2.5	<2.5	<2.5	--	**710**
MW-4	01/18/02	29.58	15.85	13.73	**960**	<5.0	<5.0	<5.0	<5.0	--	**1300**
MW-4	04/11/02	29.58	16.14	13.44	**1100**	<5.0	<5.0	<5.0	<5.0	--	**550**
MW-4	07/18/02	29.58	16.56	13.02	**1200**	<5.0	<5.0	<5.0	<5.0	--	**890**
MW-4	10/09/02	29.58	17.09	12.49	**1300**	<5.0	<5.0	<5.0	<5.0	--	**880**
MW-4	01/29/03	29.58	16.65	12.93	**530**	<1.0	<1.0	<1.0	<1.0	--	**190**
MW-4	04/11/03	29.58	16.93	12.65	**690**	<2.5	<2.5	<2.5	<2.5	--	**310**
MW-4	07/18/03	29.58	16.78	12.80	**1600**	<10	<10	<10	<10	--	**1300**
MW-4	10/09/03	29.58	17.26	12.32	**1500**	<10	<10	<10	<10	--	**1400**
MW-4	01/28/04	29.58	16.38	13.20	**1200**	<10	<10	<10	<10	--	**1900**
MW-4	04/07/04	29.58	15.64	13.94	**1900**	<10	<10	<10	<20	--	**2200**
MW-4	07/23/04	29.58	16.58	13.00	**1800**	<10	<10	<10	<20	--	**1600**
MW-4	10/12/04	--	--	--	--	--	--	--	--	--	--
MW-4	01/29/05	29.58	14.90	14.68	<1300	<13	<13	<13	<25	--	**3900**
MW-4	04/28/05	29.58	15.18	14.40	**510**	<1.5	<1.5	<1.5	<1.5	--	**510**
MW-4	07/19/05	29.58	16.48	13.10	**5400**	<50	<50	<50	<100	--	**2700**
MW-4	10/18/05	29.58	16.99	12.59	**10000**	<50	<50	<50	<50	--	**9000**
MW-4	01/23/06	29.58	15.09	14.49	**10000**	<100	<100	<100	<200	--	**8300**
MW-4	04/12/06	29.58	13.49	16.09	**1900**	<10	<10	<10	<20	--	**2200**
MW-4	07/10/06	29.58	14.99	14.59	**750**	**5.4**	<5.0	<5.0	<10	--	**790**
MW-4	10/16/06	29.58	17.29	12.29	**2400**	<10	<10	<10	<10	--	**2200**
MW-4	01/26/07	29.58	18.17	11.41	**250**	<1.5	<1.5	<1.5	<1.5	--	**7000**
MW-4	04/18/07	29.58	18.06	11.52	<400	<4.0	<4.0	<4.0	<4.0	--	**2300**
MW-4	02/08/07	29.58	18.45	11.13	**400**	<4.0	<4.0	<4.0	<4.0	--	**4500**
MW-4	10/23/07	29.58	18.99	10.59	<500	<5.0	<5.0	<5.0	<5.0	--	**3400**
MW-4	01/30/08	29.58	18.14	11.44	**580**	**89**	1.5	< 0.90	2.5	--	**500**
MW-4	04/18/08	29.58	18.49	11.09	**660**	**13**	0.58	0.51	0.94	--	**180**
MW-4	07/28/08	29.58	19.15	10.43	**520**	**19**	0.97	1.4	2.6	--	**71**
MW-4	10/29/08	29.58	19.53	10.05	**480**	**38**	1.8	4.5	4.3	--	**420**
MW-4	01/26/09	29.58	19.52	10.06	**470**	**51**	2.2	4.2	5.2	--	**180**
MW-4	08/03/09	32.56	18.91	13.65	**320**	**62**	<0.5	0.59	<0.5	--	**120**
MW-4	01/25/10	32.56	18.51	14.05	**820**	**110**	1.9	1.3	5.5	--	**8.8**
MW-4	03/08/10	32.56	18.45	14.11	**500**	**8.6**	0.84	<0.50	1.4	--	**43**
MW-4	02/17/11	32.56	18.46	14.10	**440**	**4.9**	<0.50	<0.50	0.87	--	**40**
MW-4	08/23/11	32.56	18.88	13.68	**630**	**36**	1.3	0.69	3.6	**32**	--
MW-4	02/07/12	32.56	19.09	13.47	**210**	<0.50	<0.50	<0.50	<1.0	**17**	--
MW-4	08/09/12	32.56	18.16	14.40	**280**	**2**	<0.50	<0.50	<1.0	**21**	--
MW-4	02/27/13	32.56	18.50	14.06	**170**	**1.8**	<0.50	<0.50	<1.0	**22**	--
MW-4	08/15/13	35.05	19.34	15.71	98	<0.50	<0.50	<0.50	<1.0	**25**	--
MW-4	02/06/14	35.05	20.09	14.96	<50	<0.50	<0.50	<0.50	<1.0	**9.4**	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
726 Harrison Street											
MW-5	08/29/01	29.06	17.42	11.64	**14000**	**1300**	**470**	**230**	**800**	--	**14000**
MW-5	01/18/02	29.06	15.68	13.38	**24000**	**3200**	**1300**	**390**	**1500**	--	**5700**
MW-5	04/11/02	29.06	16.17	12.89	**23000**	**2700**	**980**	**38**	**950**	--	**4300**
MW-5	07/08/02	29.06	16.51	12.55	**19000**	**3300**	25	**360**	**1100**	--	**2100**
MW-5	10/09/02	29.06	17.10	11.96	**24000**	**2800**	**990**	**360**	**820**	--	**2400**
MW-5	01/29/03	29.06	16.58	12.48	**17000**	**2100**	**1400**	**380**	**1400**	--	<250
MW-5	04/11/03	29.06	16.87	12.19	**26000**	**2900**	**2200**	**590**	**2200**	--	**630**
MW-5	07/18/03	29.06	16.77	12.29	**26000**	**3500**	**1700**	**480**	**1300**	--	**1300**
MW-5	10/09/03	29.06	17.21	11.85	**27000**	**3800**	**1900**	**510**	**1700**	--	**1200**
MW-5	01/28/04	29.06	16.34	12.72	**29000**	**4800**	**2900**	**770**	**2300**	--	**3300**
MW-5	04/07/04	29.06	15.38	13.68	**23000**	**4400**	**2700**	**720**	**2200**	--	**1700**
MW-5	07/23/04	29.06	16.55	12.51	**29000**	**5200**	**2200**	**810**	**1400**	--	**2200**
MW-5	10/12/04	29.06	17.02	12.04	**26000**	**4300**	**2000**	**670**	**1300**	--	**2200**
MW-5	01/29/05	29.06	15.23	13.83	NA	NA	NA	NA	NA	--	NA
MW-5	04/28/05	29.06	15.41	13.65	NA	NA	NA	NA	NA	--	NA
MW-5	07/19/05	29.06	16.79	12.27	NA	NA	NA	NA	NA	--	NA
MW-5	10/18/05	29.06	17.28	11.78	NA	NA	NA	NA	NA	--	NA
MW-5	01/23/06	29.06	15.28	13.78	**21000**	**1800**	**1200**	**270**	**820**	--	**13000**
MW-5	04/12/06	29.06	13.66	15.40	NA	NA	NA	NA	NA	--	NA
MW-5	07/10/06	29.06	16.14	12.92	**45000**	**3700**	**2600**	**650**	**1800**	--	**23000**
MW-5	10/16/06	29.06	19.33	9.73	**66000**	**4200**	**3300**	**800**	**2100**	--	**35000**
MW-5	01/26/07	29.06	18.94	10.12	**30000**	**3200**	**2600**	**610**	**2400**	--	**38000**
MW-5	04/18/07	29.06	18.21	10.85	**30000**	**4300**	**3300**	**800**	**2600**	--	**27000**
MW-5	08/02/07	29.06	19.00	10.06	**26000**	**3700**	**2800**	**690**	**1900**	--	**32000**
MW-5	10/23/07	29.06	19.15	9.91	**34000**	**4400**	**3700**	**860**	**3200**	--	**34000**
MW-5	01/30/08	29.06	18.21	10.85	**28000**	**3900**	**2800**	**750**	**2300**	--	**26000**
MW-5	04/18/08	29.06	18.61	10.45	**30000**	**4300**	**3200**	**810**	**2000**	--	**32000**
MW-5	07/28/08	29.06	19.23	9.83	**34000**	**3700**	**3000**	**740**	**2900**	--	**28000**
MW-5	10/29/08	29.06	19.62	9.44	**29000**	**3300**	**2900**	**680**	**2800**	--	**27000**
MW-5	01/26/09	29.06	19.51	9.55	**19000**	**2100**	**1500**	**410**	**1500**	--	**18000**
MW-5	03/08/09	32.06	19.00	13.06	**28000**	**3500**	**2800**	**630**	**2600**	--	**28000**
MW-5	01/25/10	32.06	18.43	13.63	**12000**	**1400**	**750**	**270**	**900**	--	**7500**
MW-5	03/08/10	32.06	18.50	13.56	**24000**	**3300**	**2200**	**620**	**1700**	--	**26000**
MW-5	02/17/11	32.06	18.47	13.59	**27000**	**3500**	**1900**	**630**	**2200**	--	**24000**
MW-5	08/23/11	32.06	19.02	13.04	**19000**	**1100**	**400**	**190**	**390**	**14000**	--
MW-5	02/07/12	32.06	19.16	12.90	**19000**	**890**	**410**	**360**	**990**	**17000**	--
MW-5	08/09/12	32.06	18.24	13.82	**16000**	**1400**	**580**	**470**	**960**	**16000**	--
MW-5	02/27/13	32.06	--	--	**--**	**--**	**--**	**--**	**--**	**--**	--
MW-5	08/15/13	32.06	19.40	12.66	**8000**	**1900**	**590**	**390**	**1100**	**20000**	--
MW-5	02/06/14	34.76	21.45	13.31	**3400**	**1900**	**150**	**240**	**220**	**7600**	--
726 Harrison Street											
MW-6	08/23/11	32.04	28.35	3.69	**500**	<0.50	<0.50	<0.50	<1.0	**740**	--
MW-6	02/07/12	32.04	26.53	5.51	**410**	<0.50	<0.50	<0.50	<1.0	**970**	--
MW-6	08/09/12	32.04	28.27	3.77	**830**	<0.50	<0.50	<0.50	<1.0	**970**	--
MW-6	02/27/13	32.04	26.48	5.56	<50	<0.50	<0.50	<0.50	<1.0	**970**	--
MW-6	08/15/13	34.53	28.85	5.68	58	<0.50	<0.50	<0.50	<1.0	**1000**	--
MW-6	02/06/14	34.53	27.50	7.03	<50	<0.50	<0.50	<0.50	<1.0	**1100**	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
800 Harrison Street											
MW-1	06/05/91	34.94	--	--	ND	ND	ND	ND	ND	--	--
MW-1	09/30/91	34.94	--	--	ND	ND	ND	ND	ND	--	--
MW-1	12/30/91	34.94	--	--	ND	ND	ND	ND	ND	--	--
MW-1	04/02/92	34.94	--	--	ND	ND	ND	ND	ND	--	--
MW-1	06/30/92	34.94	--	--	ND	ND	ND	ND	ND	--	--
MW-1	09/15/92	34.94	--	--	76	**1**	ND	ND	ND	--	--
MW-1	12/21/92	34.94	21.17	13.77	95	0.69	ND	ND	1	--	--
MW-1	04/28/93	34.94	--	--	**920**	**3.1**	2.3	1.2	9.7	--	--
MW-1	07/23/93	34.94	20.13	14.81	ND	0.5	0.66	ND	ND	--	--
MW-1	10/05/93	34.69	20.30	14.39	92	**1.5**	ND	ND	0.72	--	--
MW-1	01/03/94	34.69	20.52	14.17	ND	ND	ND	ND	ND	--	--
MW-1	04/02/94	34.69	20.16	14.53	ND	ND	ND	ND	ND	--	--
MW-1	07/05/94	34.69	19.27	15.42	**250**	**4.8**	13	1.2	7.3	--	--
MW-1	10/06/94	34.69	20.87	13.82	**540**	**1.4**	ND	0.66	11	--	--
MW-1	01/02/95	34.69	19.67	15.02	**140**	ND	ND	ND	ND	--	--
MW-1	04/03/95	34.69	17.61	17.08	**580**	**3.6**	0.8	ND	4	--	--
MW-1	07/14/95	34.69	18.58	16.11	**260**	**2.1**	ND	ND	1.2	--	--
MW-1	10/10/95	34.69	19.60	15.09	**220**	**2**	ND	25	5.6	--	**29**
MW-1	01/03/96	34.69	19.69	15.00	**190**	**2.4**	ND	0.71	1.2	--	--
MW-1	04/10/96	34.69	17.65	17.04	**540**	**8.9**	1.7	1.5	7.4	--	**50**
MW-1	07/09/96	34.69	18.52	16.17	**490**	**3**	1.4	1.3	2.5	--	**150**
MW-1	01/24/97	34.69	17.72	16.97	**760**	**27**	0.89	5.2	10	--	**510**
MW-1	07/23/97	34.69	19.42	15.27	ND	ND	ND	ND	ND	--	**550**
MW-1	01/26/98	34.69	17.46	17.23	**1800**	ND	ND	ND	ND	--	**4800**
MW-1	07/03/98	34.69	18.61	16.08	ND	ND	ND	ND	ND	--	**1800**
MW-1	01/14/99	34.69	18.92	15.77	83	ND	ND	ND	ND	--	**230**
MW-1	07/15/99	34.69	17.84	16.85	**110**	ND	ND	ND	1	--	**290**
MW-1	01/07/00	34.69	19.13	15.56	ND	ND	ND	ND	ND	--	**260**
MW-1	07/19/00	34.69	20.27	14.42	ND	ND	ND	ND	ND	--	**648**
MW-1	01/02/01	34.69	20.04	14.65	ND	ND	ND	ND	ND	--	**119**
MW-1	05/23/01	34.69	18.27	16.42	84	ND	ND	ND	ND	--	**760**
MW-1	07/30/01	34.69	18.56	16.13	<50	<0.50	<0.50	<0.50	<0.50	--	**350**
MW-1	10/15/01	34.69	18.72	15.97	96	<0.50	<0.50	<0.50	<0.50	--	**160**
MW-1	01/14/02	34.69	16.78	17.91	**450**	<2.5	<2.5	<2.5	3.3	--	**4100**
MW-1	04/15/02	34.69	17.35	17.34	<1000	<10	<10	<10	<10	--	**10000**
MW-1	07/15/02	34.69	17.63	17.06	**2100**	<10	<10	<10	<20	**2100**	--
MW-1	01/18/03	34.69	17.04	17.65	<25000	<250	<250	<250	<500	**29000**	--
MW-1	07/11/03	34.69	17.91	16.78	**4000**	<25	<25	<25	<50	**6300**	--
MW-1	02/04/04	34.69	17.98	16.71	**8000**	<50	<50	<50	<100	**8500**	--
MW-1	08/11/04	34.69	17.84	16.85	**1100**	<10	<10	<10	<20	**1500**	--
MW-1	03/31/05	34.69	15.71	18.98	<2000	<0.50	<0.50	0.54	2.2	**4900**	--
MW-1	09/30/05	34.69	17.65	17.04	**190**	<0.50	<0.50	<0.50	<1.0	**160**	--
MW-1	03/27/06	34.69	15.03	19.66	**760**	<0.50	<0.50	<0.50	<1.0	**1000**	--
MW-1	09/27/06	34.69	18.45	16.24	**170**	<0.50	<0.50	<0.50	0.61	**73**	--
MW-1	03/27/07	34.69	18.84	15.85	**120**	<0.50	<0.50	<0.50	<0.50	**99**	--
MW-1	09/28/07	34.69	19.73	14.96	68	<0.50	<0.50	<0.50	<0.50	**15**	--
MW-1	03/26/08	34.69	19.32	15.37	**200**	<0.50	<0.50	<0.50	1	**47**	--
MW-1	07/28/08	34.69	20.15	14.54	<50	<0.50	<0.50	<0.50	<1.0	**8.7**	--
MW-1	01/26/09	34.69	20.74	13.95	<50	<0.50	<0.50	<0.50	<1.0	**5.2**	--
MW-1	08/03/09	34.72	20.10	14.62	76	<0.50	<0.50	<0.50	<1.0	**12**	--
MW-1	01/25/10	34.72	19.78	14.94	<50	<0.50	<0.50	<0.50	<1.0	**14**	--
MW-1	08/03/10	34.72	19.47	15.25	**210**	<0.50	<0.50	<0.50	<1.0	**37**	--
MW-1	02/17/11	34.72	19.50	15.22	**150**	<0.50	<0.50	<0.50	<1.0	**17**	--
MW-1	08/03/11	34.72	18.96	15.76	**230**	<0.50	<0.50	<0.50	<1.0	**44**	--
MW-1	02/07/12	34.72	20.00	14.72	97	<0.50	<0.50	<0.50	<1.0	**8.6**	--
MW-1	08/09/12	34.72	19.14	15.58	**140**	<0.50	<0.50	<0.50	<1.0	**18**	--
MW-1	02/27/13	34.72	19.41	15.31	50	<0.50	<0.50	<0.50	<1.0	**6.7**	--
MW-1	08/15/13	34.72	20.20	14.52	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-1	02/06/14	34.72	21.09	13.63	<50	<0.50	<0.50	<0.50	<1.0	1.6	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
800 Harrison Street											
MW-2	06/05/91	34.97	--	--	49	ND	ND	ND	ND	--	--
MW-2	09/30/91	34.97	--	--	**130**	**18**	0.53	14	9.6	--	--
MW-2	12/30/91	34.97	--	--	91	**16**	0.89	11	1.9	--	--
MW-2	04/02/92	34.97	--	--	88	**12**	0.32	6.3	7.2	--	--
MW-2	06/30/92	34.97	--	--	76	**9.3**	0.76	4.8	6.9	--	--
MW-2	09/15/92	34.97	--	--	**1300**	**91**	5.7	**80**	**110**	--	--
MW-2	12/21/92	34.97	20.85	14.12	**960**	**97**	3.2	**74**	**96**	--	--
MW-2	04/28/93	34.97	--	--	**1300**	**76**	1.9	**130**	**87**	--	--
MW-2	07/23/93	34.97	19.81	15.16	66	**1.8**	ND	2.5	2	--	--
MW-2	10/05/93	34.72	19.95	14.77	**120**	**12**	ND	2.1	12	--	--
MW-2	01/03/94	34.72	20.21	14.51	**260**	**25**	ND	5.5	**26**	--	--
MW-2	04/02/94	34.72	19.88	14.84	ND	0.65	ND	ND	0.99	--	--
MW-2	07/05/94	34.72	19.07	15.65	**160**	**16**	ND	0.73	10	--	--
MW-2	10/06/94	34.72	20.55	14.17	**170**	**15**	ND	1.4	11	--	--
MW-2	01/02/95	34.72	19.25	15.47	**190**	**27**	ND	0.95	11	--	--
MW-2	04/03/95	34.72	17.49	17.23	**2400**	**65**	6.6	19	**63**	--	--
MW-2	07/14/95	34.72	18.30	16.42	**750**	**270**	ND	ND	13	--	--
MW-2	10/10/95	34.72	19.25	15.47	50	**1.6**	ND	ND	ND	--	**200**
MW-2	01/03/96	34.72	19.40	15.32	ND	ND	ND	ND	ND	--	--
MW-2	04/10/96	34.72	17.35	17.37	**300**	**42**	ND	2.4	9	--	**620**
MW-2	07/09/96	34.72	18.22	16.50	**760**	**230**	ND	1.3	2.4	--	**1500**
MW-2	01/24/97	34.72	17.59	17.13	**2900**	**400**	**350**	**190**	**720**	--	**1300**
MW-2	07/23/97	34.72	19.13	15.59	ND	ND	ND	ND	ND	--	**65**
MW-2	01/26/98	34.72	17.12	17.60	ND	ND	ND	ND	0.58	--	**13**
MW-2	07/03/98	34.72	18.20	16.52	**140**	**26**	ND	0.95	5	--	**330**
MW-2	01/14/99	34.72	18.56	16.16	ND	0.54	ND	ND	ND	--	**350**
MW-2	07/15/99	34.72	17.39	17.33	ND	0.88	ND	ND	ND	--	**39**
MW-2	01/07/00	34.72	18.78	15.94	ND	ND	ND	ND	ND	--	**24**
MW-2	07/19/00	34.72	19.68	15.04	ND	**1.45**	ND	ND	ND	--	**117**
MW-2	01/02/01	34.72	19.73	14.99	ND	ND	ND	ND	ND	--	**11.4**
MW-2	05/23/01	34.72	18.16	16.56	ND	ND	ND	ND	ND	--	**33**
MW-2	07/30/01	34.72	18.34	16.38	<50	<0.50	<0.50	<0.50	<0.50	--	**67**
MW-2	10/15/01	34.72	18.52	16.20	<50	<0.50	<0.50	<0.50	<0.50	--	**31**
MW-2	01/14/02	34.72	16.72	18.00	<50	<0.50	<0.50	<0.50	0.56	--	**11**
MW-2	04/15/02	34.72	17.26	17.46	<50	<0.50	<0.50	<0.50	<0.50	--	**110**
MW-2	07/15/02	34.72	17.46	17.26	**270**	**21**	<0.50	3.8	4	**73**	--
MW-2	01/18/03	34.72	16.93	17.79	<50	<0.50	<0.50	<0.50	<1.0	**22**	--
MW-2	07/11/03	34.72	17.68	17.04	**130**	**3**	<0.50	<0.50	<1.0	**89**	--
MW-2	02/04/04	34.72	17.36	17.36	61	**2.9**	<0.50	<0.50	<1.0	**22**	--
MW-2	08/11/04	34.72	17.61	17.11	**140**	<0.50	0.6	<0.50	<1.0	**94**	--
MW-2	03/31/05	34.72	15.56	19.16	<50	<0.50	<0.50	<0.50	<1.0	**14**	--
MW-2	09/30/05	34.72	17.31	17.41	<50	<0.50	<0.50	<0.50	<1.0	**9.1**	--
MW-2	03/27/06	34.72	14.91	19.81	<50	<0.50	<0.50	<0.50	<1.0	2.7	--
MW-2	09/27/06	34.72	18.15	16.57	<50	<0.50	<0.50	<0.50	<0.50	**7.7**	--
MW-2	03/27/07	34.72	18.57	16.15	<50	<0.50	<0.50	<0.50	<0.50	1.4	--
MW-2	09/28/07	34.72	18.38	16.34	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--
MW-2	03/26/08	34.72	19.06	15.66	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-2	07/28/08	34.72	19.90	14.82	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-2	01/26/09	34.72	20.50	14.22	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-2	08/03/09	34.74	19.92	14.82	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-2	01/25/10	34.74	19.70	15.04	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-2	08/03/10	34.74	19.26	15.48	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-2	02/17/11	34.74	19.32	15.42	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-2	08/03/11	34.74	18.74	16.00	77	**6.7**	<0.50	<0.50	<1.0	**14**	--
MW-2	02/07/12	34.74	19.77	14.97	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-2	08/09/12	34.74	18.89	15.85	<50	<0.50	<0.50	<0.50	<1.0	4.7	--
MW-2	02/27/13	34.74	19.16	15.58	<50	<0.50	<0.50	<0.50	<1.0	**9.6**	--
MW-2	08/15/13	34.74	19.99	14.75	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-2	02/06/14	34.74	20.82	13.92	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
800 Harrison Street											
MW-3	06/05/91	33.39	--	--	**5800**	**1200**	**40**	**140**	**97**	--	--
MW-3	09/30/91	33.39	--	--	**6800**	**1400**	**130**	**290**	**240**	--	--
MW-3	12/30/91	33.39	--	--	**7200**	**2100**	**690**	**410**	**550**	--	--
MW-3	04/02/92	33.39	--	--	**8000**	**1400**	**200**	**300**	**310**	--	--
MW-3	06/30/92	33.39	--	--	**8900**	**1900**	**210**	**430**	**550**	--	--
MW-3	09/15/92	33.39	--	--	**10000**	**1900**	**330**	**400**	**580**	--	--
MW-3	12/21/92	33.39	20.02	13.37	**8500**	**1500**	**150**	**310**	**330**	--	--
MW-3	04/28/93	33.39	--	--	**2600**	**220**	7.6	**41**	**27**	--	--
MW-3	07/23/93	33.39	19.00	14.39	**4400**	**660**	26	**160**	**82**	--	--
MW-3	10/05/93	33.14	19.20	13.94	**9200**	**720**	**88**	**140**	**140**	--	--
MW-3	01/03/94	33.14	19.40	13.74	**4900**	**830**	**100**	**170**	**150**	--	--
MW-3	04/02/94	33.14	19.01	14.13	**6000**	**800**	30	**140**	**110**	--	--
MW-3	07/05/94	33.14	18.14	15.00	**25000**	ND	ND	ND	ND	--	--
MW-3	10/06/94	33.14	19.73	13.41	**49000**	**1300**	**200**	**280**	**300**	--	--
MW-3	01/02/95	33.14	18.36	14.78	**480**	**1.6**	ND	1.4	ND	--	--
MW-3	04/03/95	33.14	16.38	16.76	**8100**	**65**	ND	ND	ND	--	--
MW-3	07/14/95	33.14	17.49	15.65	ND	**1300**	ND	ND	ND	--	--
MW-3	10/10/95	33.14	18.50	14.64	**3100**	**1400**	36	**50**	**53**	--	**190000**
MW-3	01/03/96	33.14	18.54	14.60	ND	**2300**	**110**	**150**	**140**	--	--
MW-3	07/09/96	33.14	17.43	15.71	ND	**2000**	ND	**150**	**160**	--	**140000**
MW-3	01/24/97	33.14	16.57	16.57	**540**	**8**	ND	11	9.9	--	**45**
MW-3	07/23/97	33.14	18.38	14.76	**7400**	**1900**	**180**	**140**	**340**	--	**45000**
MW-3	01/26/98	33.14	16.22	16.92	**250**	**2.2**	1.9	0.87	1.9	--	4
MW-3	07/03/98	33.14	17.46	15.68	**230**	**1.8**	2.5	1.5	3.4	--	**6.3**
MW-3	01/14/99	33.14	17.73	15.41	**400**	**8.2**	2.7	0.9	5.9	--	**140**
MW-3	07/15/99	33.14	16.58	16.56	**290**	**3.3**	3.6	1.7	2.5	--	**13**
MW-3	01/07/00	33.14	17.84	15.30	ND	**890**	**91**	**100**	**480**	--	**20000**
MW-3	07/19/00	33.14	18.92	14.22	**354**	**3.87**	2.61	0.646	ND	--	**13.7**
MW-3	01/02/01	33.14	19.07	14.07	**464**	ND	3.69	3.91	ND	--	**21.1**
MW-3	05/23/01	33.14	17.12	16.02	**420**	**7.6**	3.1	3	5.1	--	**1900**
MW-3	07/30/01	33.14	17.38	15.76	**290**	**4.6**	4.1	<0.50	3.4	--	**23**
MW-3	10/15/01	33.14	17.61	15.53	**400**	<0.50	<0.50	<0.50	<0.50	--	**13**
MW-3	01/14/02	33.14	15.53	17.61	**130**	0.5	0.61	1.1	<0.50	--	**9.9**
MW-3	04/15/02	33.14	16.12	17.02	**280**	**9.9**	1.6	3.3	6.8	--	**1400**
MW-3	07/15/02	33.14	16.48	16.66	64	<0.50	<0.50	<0.50	<1.0	--	**33**
MW-3	01/18/03	33.14	15.81	17.33	**420**	0.54	<0.50	<0.50	<1.0	--	**130**
MW-3	07/11/03	33.14	16.74	16.40	**300**	**2.3**	<0.50	<0.50	<1.0	**31**	--
MW-3	02/04/04	33.14	16.15	16.99	**130**	**7.9**	<0.50	<0.50	<1.0	**63**	--
MW-3	08/11/04	33.14	16.64	16.50	<20000	<200	<200	<200	<400	**20000**	--
MW-3	03/31/05	33.14	14.53	18.61	<20000	**330**	<200	<200	<400	**78000**	--
MW-3	09/30/05	33.14	16.55	16.59	**12000**	**360**	**40**	<25	**50**	**20000**	--
MW-3	03/27/06	33.14	13.66	19.48	**10000**	**150**	<25	**53**	**99**	**15000**	--
MW-3	09/27/06	33.14	17.40	15.74	<12000	<120	<120	<120	<120	**12000**	--
MW-3	03/27/07	33.14	17.55	15.59	**8700**	**180**	<12	**60**	**57**	**8900**	--
MW-3	09/28/07	33.14	18.59	14.55	**9000**	**55**	<50	<50	<50	**11000**	--
MW-3	03/26/08	33.14	18.19	14.95	**450**	**13**	1.3	0.84	1.4	**7200**	--
MW-3	07/28/08	33.14	19.00	14.14	**8300**	<50	<50	<50	<100	**13000**	--
MW-3	01/26/09	33.14	19.54	13.60	**8800**	**27**	<12	<12	<25	**13000**	--
MW-3	08/03/09	33.18	18.90	14.28	**9300**	**56**	<50	<50	<100	**8000**	--
MW-3	01/25/10	33.18	18.54	14.64	**4900**	**79**	7.3	5.4	13	**8100**	--
MW-3	08/03/10	33.18	18.35	14.83	**2500**	**30**	<12	<12	<25	**4600**	--
MW-3	02/17/11	33.18	18.30	14.88	**3800**	**11**	<5.0	<5.0	<10	**4700**	--
MW-3	08/03/11	33.18	17.87	15.31	**2600**	**9.7**	0.8	3.1	1.4	**2000**	--
MW-3	02/07/12	33.18	18.88	14.30	**1800**	**6.7**	<1.0	1.9	<2.0	**1600**	--
MW-3	08/09/12	33.18	18.02	15.16	**1400**	**1.8**	<0.50	1.5	<1.0	**370**	--
MW-3	02/27/13	33.18	18.36	14.82	**1600**	**4.4**	0.69	2.8	<1.0	**820**	--
MW-3	08/15/13	33.18	19.17	14.01	**410**	**4.0**	<0.50	1.4	<1.0	**340**	--
MW-3	02/06/14	33.18	19.96	13.22	**1,300**	**7.9**	0.87	1.7	5.2	**760**	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
800 Harrison Street											
MW-4	10/19/92	--	--	--	**480**	0.51	2.1	2.8	6.8	--	--
MW-4	12/21/92	33.12	19.73	13.39	**220**	ND	ND	0.97	0.74	--	--
MW-4	04/28/93	33.12	--	--	ND	ND	ND	ND	ND	--	--
MW-4	07/23/93	33.12	18.72	14.40	85	ND	ND	ND	ND	--	--
MW-4	10/05/93	32.71	18.74	13.97	**130**	ND	ND	ND	ND	--	--
MW-4	01/03/94	32.71	18.93	13.78	**210**	ND	ND	0.76	1.6	--	--
MW-4	04/02/94	32.71	18.53	14.18	89	ND	ND	ND	ND	--	--
MW-4	07/05/94	32.71	17.67	15.04	**190**	ND	ND	ND	ND	--	--
MW-4	10/06/94	32.71	19.25	13.46	**170**	0.85	ND	ND	0.74	--	--
MW-4	01/02/95	32.71	17.75	14.96	ND	ND	ND	ND	ND	--	--
MW-4	04/03/95	32.71	15.87	16.84	98	ND	ND	ND	ND	--	--
MW-4	07/14/95	32.71	17.01	15.70	ND	ND	ND	ND	ND	--	--
MW-4	10/10/95	32.71	18.03	14.68	ND	ND	ND	ND	ND	--	**120**
MW-4	01/03/96	32.71	18.05	14.66	ND	ND	ND	ND	ND	--	--
MW-4	04/10/96	32.71	16.00	16.71	ND	ND	ND	ND	ND	--	**240**
MW-4	07/09/96	32.71	16.96	15.75	ND	ND	ND	ND	ND	--	**480**
MW-4	01/24/97	32.71	16.04	16.67	ND	ND	ND	ND	ND	--	**270**
MW-4	07/23/97	32.71	17.87	14.84	ND	ND	ND	ND	ND	--	**460**
MW-4	01/26/98	32.71	16.05	16.66	ND	ND	ND	ND	ND	--	**17**
MW-4	07/03/98	32.71	16.95	15.76	ND	ND	ND	ND	ND	--	3.8
MW-4	01/14/99	32.71	17.34	15.37	ND	ND	ND	ND	ND	--	**4600**
MW-4	07/15/99	32.71	16.36	16.35	ND	ND	ND	ND	ND	--	ND
MW-4	01/07/00	32.71	17.81	14.90	ND	ND	ND	ND	ND	--	**450**
MW-4	07/19/00	32.71	18.94	13.77	ND	ND	ND	ND	ND	--	ND
MW-4	01/02/01	32.71	18.85	13.86	ND	ND	ND	ND	ND	--	ND
MW-4	05/23/01	32.71	16.82	15.89	ND	ND	ND	ND	ND	--	ND
MW-4	07/30/01	32.71	16.88	15.83	<50	<0.50	<0.50	<0.50	<0.50	--	4.9
MW-4	10/15/01	32.71	17.08	15.63	<50	<0.50	<0.50	<0.50	<0.50	--	<5.0
MW-4	01/14/02	32.71	14.97	17.74	<50	<0.50	<0.50	<0.50	<0.50	--	**30**
MW-4	04/15/02	32.71	15.48	17.23	<50	<0.50	<0.50	<0.50	<0.50	--	**180**
MW-4	07/15/02	32.71	15.90	16.81	<50	<0.50	<0.50	<0.50	<1.0	--	**50**
MW-4	01/18/03	32.71	15.39	17.32	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0
MW-4	07/11/03	32.71	16.17	16.54	**200**	<0.50	<0.50	<0.50	<1.0	**52**	--
MW-4	02/04/04	32.71	16.12	16.59	**1300**	<10	<10	<10	<20	**1700**	--
MW-4	08/11/04	32.71	16.16	16.55	<5000	<50	<50	<50	<100	**6400**	--
MW-4	03/31/05	32.71	14.15	18.56	<1300	<0.50	<0.50	<0.50	<1.0	**1600**	--
MW-4	09/30/05	32.71	16.91	15.80	**900**	<0.50	<0.50	<0.50	<1.0	**3800**	--
MW-4	03/27/06	32.71	13.94	18.77	**870**	<0.50	<0.50	<0.50	<1.0	**2000**	--
MW-4	09/27/06	32.71	16.91	15.80	<1000	<10	<10	<10	<10	**1600**	--
MW-4	03/27/07	32.71	17.15	15.56	**1500**	<2.5	<2.5	<2.5	<2.5	**1700**	--
MW-4	09/28/07	32.71	18.13	14.58	**590**	<5.0	<5.0	<5.0	<5.0	**1400**	--
MW-4	03/26/08	32.71	17.66	15.05	**390**	<0.50	<0.50	<0.50	<1.0	**1400**	--
MW-4	07/28/08	32.71	18.34	14.37	**480**	<1.0	<1.0	<1.0	<2.0	**950**	--
MW-4	01/26/09	32.71	18.80	13.91	**500**	<0.50	<0.50	<0.50	<1.0	**830**	--
MW-4	08/03/09	32.72	18.43	14.29	**640**	<5.0	6.6	<5.0	<10	**570**	--
MW-4	01/25/10	32.72	18.02	14.70	**190**	<0.50	<0.50	<0.50	<1.0	**400**	--
MW-4	08/03/10	32.72	17.83	14.89	58	<0.50	<0.50	<0.50	<1.0	**110**	--
MW-4	02/17/11	32.72	17.85	14.87	<50	<0.50	<0.50	<0.50	<1.0	**12**	--
MW-4	08/03/11	32.72	17.36	40725.28	<50	<0.50	<0.50	<0.50	<1.0	**12**	--
MW-4	02/07/12	32.72	18.38	14.34	<50	<0.50	<0.50	<0.50	<1.0	1.5	--
MW-4	08/09/12	32.72	17.55	15.17	<50	<0.50	<0.50	<0.50	<1.0	1.3	--
MW-4	02/27/13	32.72	17.83	14.89	<50	<0.50	<0.50	<0.50	<1.0	1.1	--
MW-4	08/15/13	32.72	18.70	14.02	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-4	02/06/14	32.72	19.48	13.24	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
800 Harrison Street											
MW-5	10/19/92	--	--	--	**2700**	**61**	5	**100**	**61**	--	--
MW-5	12/21/92	33.25	19.75	13.50	**1700**	**51**	4.7	**83**	**34**	--	--
MW-5	04/28/93	33.25	--	--	**6700**	**200**	**190**	**250**	**430**	--	--
MW-5	07/23/93	33.25	18.74	14.51	**2000**	**122**	8	**68**	**47**	--	--
MW-5	10/05/93	32.95	18.83	14.12	**1700**	**70**	6.2	**54**	**40**	--	--
MW-5	01/03/94	32.95	19.05	13.90	**1500**	**44**	ND	**42**	**46**	--	--
MW-5	04/02/94	32.95	18.68	14.27	**1800**	**46**	5.1	**38**	**35**	--	--
MW-5	07/05/94	32.95	17.90	15.05	**2200**	**97**	8.4	**37**	**36**	--	--
MW-5	10/06/94	32.95	19.37	13.58	**1600**	**79**	5.7	28	**22**	--	--
MW-5	01/02/95	32.95	17.92	15.03	**1700**	**50**	8.6	**30**	**28**	--	--
MW-5	04/03/95	32.95	16.15	16.80	**5400**	**190**	**240**	**170**	**420**	--	--
MW-5	07/14/95	32.95	17.18	15.77	**3800**	**210**	**100**	**130**	**190**	--	--
MW-5	10/10/95	32.95	18.15	14.80	**1300**	**92**	14	15	**39**	--	**1100**
MW-5	01/03/96	32.95	18.20	14.75	**630**	**53**	4.4	8.3	13	--	--
MW-5	04/10/96	32.95	16.05	16.90	**500**	**25**	18	7	**20**	--	**640**
MW-5	07/09/96	32.95	17.11	15.84	**1000**	**44**	20	10	**34**	--	**150**
MW-5	01/24/97	32.95	16.36	16.59	**4000**	**190**	**400**	**160**	**430**	--	**600**
MW-5	07/23/97	32.95	18.08	14.87	**1700**	**200**	23	18	**45**	--	**2500**
MW-5	01/26/98	32.95	16.27	16.68	ND	ND	ND	ND	ND	--	ND
MW-5	07/03/98	32.95	17.27	15.68	ND	ND	ND	ND	ND	--	ND
MW-5	01/14/99	32.95	17.55	15.40	**330**	**61**	4.1	2.2	2.9	--	**560**
MW-5	07/15/99	32.95	16.41	16.54	**1100**	**170**	ND	ND	**27**	--	**660**
MW-5	01/07/00	32.95	17.85	15.10	**1000**	**180**	6.3	ND	14	--	**430**
MW-5	07/19/00	32.95	18.87	14.08	**2980**	**289**	**57.3**	**65.3**	**43.4**	--	**976**
MW-5	01/02/01	32.95	18.47	14.48	**1150**	**87.2**	17.8	7.97	9.32	--	**368**
MW-5	05/23/01	32.95	17.38	15.57	**840**	**42**	10	13	7.1	--	**130**
MW-5	07/30/01	32.95	17.12	15.83	**1900**	**82**	24	6.9	13	--	**370**
MW-5	10/15/01	32.95	17.33	15.62	**26000**	**390**	**230**	**58**	**1300**	--	<500
MW-5	01/14/02	32.95	15.33	17.62	<50	<0.50	<0.50	<0.50	<0.50	--	<2.5
MW-5	04/15/02	32.95	15.89	17.06	**310**	**20**	6.7	11	7.7	--	**77**
MW-5	07/15/02	32.95	16.21	16.74	**1500**	**40**	22	**60**	**28**	--	**170**
MW-5	01/18/03	32.95	15.68	17.27	<50	0.75	<0.50	<0.50	<1.0	--	**81**
MW-5	07/11/03	32.95	16.29	16.66	<50	<0.50	<0.50	<0.50	<1.0	3.6	--
MW-5	02/04/04	32.95	16.08	16.87	82	**16**	1.6	0.65	<1.0	**16**	--
MW-5	08/11/04	32.95	16.38	16.57	**900**	**81**	14	2.8	11	**120**	--
MW-5	03/31/05	32.95	14.30	18.65	**5000**	**160**	**84**	**65**	**72**	**140**	--
MW-5	09/30/05	32.95	16.19	16.76	**1200**	**26**	5.8	2.4	9.2	**38**	--
MW-5	03/27/06	32.95	13.90	19.05	**1100**	**13**	12	4.7	16	**8.8**	--
MW-5	09/27/06	32.95	17.06	15.89	**1300**	**20**	11	2.3	15	**21**	--
MW-5	03/27/07	32.95	17.43	15.52	**960**	**15**	7.8	2.2	11	**14**	--
MW-5	09/28/07	32.95	18.25	14.70	**1300**	**13**	6	2.3	15	**8.4**	--
MW-5	03/26/08	32.95	17.82	15.13	**1200**	**7.6**	3.3	1.8	11	2.7	--
MW-5	07/28/08	32.95	18.70	14.25	**2000**	**12**	4.9	3.2	17	<0.50	--
MW-5	01/26/09	32.95	19.25	13.70	**1400**	**7.4**	3.3	2.5	11	3.3	--
MW-5	08/03/09	32.98	18.62	14.36	**1500**	**17**	9	3.5	**22**	**7.3**	--
MW-5	01/25/10	32.98	18.34	14.64	**1600**	**7.6**	3.6	2.4	15	1.7	--
MW-5	08/03/10	32.98	18.07	14.91	**2200**	**32**	32	10	**48**	**10**	--
MW-5	02/17/11	32.98	18.05	14.93	**1800**	**33**	7.4	<0.50	11	**15**	--
MW-5	08/03/11	32.98	17.57	15.41	**2500**	**58**	23	12	**34**	**40**	--
MW-5	02/07/12	32.98	18.59	14.39	**1600**	**58**	11	3.0	**25**	**10**	--
MW-5	08/09/12	32.98	17.73	15.25	**1900**	**81**	18	10	**22**	**19**	--
MW-5	02/27/13	32.98	17.98	15.00	**1300**	**58**	11	2.4	13	**8.0**	--
MW-5	08/15/13	32.98	18.88	14.10	50	**24**	6.1	2.0	9.2	**6.7**	--
MW-5	02/06/14	32.98	19.63	13.35	1,400	**13**	7.4	2.3	13	**1.8**	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
800 Harrison Street											
MW-6	10/19/92	--	--	--	**3900**	**420**	12	**60**	**28**	--	--
MW-6	12/21/92	32.42	19.17	13.25	**2300**	**370**	11	**39**	15	--	--
MW-6	04/28/93	32.42	--	--	**1200**	**54**	1.5	11	5.3	--	--
MW-6	07/23/93	32.42	18.17	14.25	**580**	**19**	0.99	3.4	2.7	--	--
MW-6	10/05/93	32.16	18.35	13.81	**1400**	**34**	ND	5.3	7.3	--	--
MW-6	01/03/94	32.16	18.54	13.62	**1400**	**57**	ND	8.5	11	--	--
MW-6	04/02/94	32.16	18.15	14.01	**5300**	ND	ND	ND	ND	--	--
MW-6	07/05/94	32.16	17.25	14.91	ND	ND	ND	ND	ND	--	--
MW-6	10/06/94	32.16	18.85	13.31	**11000**	ND	ND	ND	ND	--	--
MW-6	01/02/95	32.16	17.51	14.65	**550**	**18**	0.92	2	1.8	--	--
MW-6	04/03/95	32.16	15.48	16.68	**6600**	ND	ND	ND	ND	--	--
MW-6	07/14/95	32.16	16.63	15.53	ND	ND	ND	ND	ND	--	--
MW-6	10/10/95	32.16	17.68	14.48	ND	**81**	ND	ND	ND	--	**75000**
MW-6	01/03/96	32.16	17.66	14.50	70	**9.9**	0.58	ND	0.81	--	--
MW-6	04/10/96	32.16	15.56	16.60	**300**	**258**	4.7	0.94	2.7	--	**53000**
MW-6	07/09/96	32.16	16.59	15.57	**1800**	**410**	ND	12	ND	--	**76000**
MW-6	01/24/97	32.16	15.69	16.47	ND	0.8	ND	ND	ND	--	**390**
MW-6	07/23/97	32.16	17.53	14.63	**5700**	**1100**	**240**	**240**	**700**	--	**16000**
MW-6	01/26/98	32.16	15.44	16.72	ND	ND	ND	ND	ND	--	ND
MW-6	07/03/98	32.16	16.58	15.58	ND	ND	ND	ND	ND	--	ND
MW-6	01/14/99	32.16	17.02	15.14	ND	ND	ND	ND	ND	--	**14**
MW-6	07/15/99	32.16	15.95	16.21	ND	ND	ND	ND	ND	--	2.8
MW-6	01/07/00	32.16	16.96	15.20	78	**24**	ND	0.66	17	--	**280**
MW-6	07/19/00	32.16	18.04	14.12	ND	ND	1.32	ND	0.974	--	ND
MW-6	01/02/01	32.16	18.10	14.06	ND	ND	ND	ND	ND	--	ND
MW-6	05/23/01	32.16	16.42	15.74	ND	ND	ND	ND	ND	--	ND
MW-6	07/30/01	32.16	16.49	15.67	<50	<0.50	<0.50	<0.50	<0.50	--	<2.5
MW-6	10/15/01	32.16	16.67	15.49	<50	<0.50	0.62	<0.50	<0.50	--	<5.0
MW-6	01/14/02	32.16	14.60	17.56	<50	<0.50	<0.50	<0.50	<0.50	--	<2.5
MW-6	04/15/02	32.16	15.07	17.09	<50	<0.50	<0.50	<0.50	0.73	--	<5.0
MW-6	07/15/02	32.16	15.56	16.60	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50
MW-6	01/18/03	32.16	15.80	16.36	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0
MW-6	07/11/03	32.16	15.74	16.42	<50	<0.50	<0.50	<0.50	<1.0	<2.0	--
MW-6	02/04/04	32.16	15.49	16.67	<50	**2.6**	<0.50	<0.50	<1.0	2.4	--
MW-6	08/11/04	32.16	15.81	16.35	**7900**	**95**	<50	<50	<100	**9100**	--
MW-6	03/31/05	32.16	13.70	18.46	<5000	**2.5**	<0.50	<0.50	<1.0	**7600**	--
MW-6	09/30/05	32.16	15.48	16.68	**4300**	**140**	37	28	**41**	**5800**	--
MW-6	03/27/06	32.16	13.02	19.14	**7200**	**34**	0.66	0.96	18	**9900**	--
MW-6	09/27/06	32.16	16.56	15.60	**1800**	<12	<12	<12	<12	**3300**	--
MW-6	03/27/07	32.16	16.73	15.43	**1600**	**2.8**	<2.5	<2.5	<2.5	**1800**	--
MW-6	09/28/07	32.16	17.75	14.41	**830**	<5.0	<5.0	<5.0	<5.0	**1600**	--
MW-6	03/26/08	32.16	17.31	14.85	**940**	**45**	5.9	2	5.3	**1300**	--
MW-6	07/28/08	32.16	18.50	13.66	**500**	<1.0	<1.0	<1.0	<2.0	**750**	--
MW-6	01/26/09	32.16	18.46	13.70	**570**	<0.50	<0.50	<0.50	<1.0	**500**	--
MW-6	08/03/09	32.19	18.01	14.18	**800**	<5.0	<5.0	<5.0	<10	**690**	--
MW-6	01/25/10	32.19	17.64	14.55	**410**	**4.8**	0.63	<0.50	1.4	**390**	--
MW-6	08/03/10	32.19	17.48	14.71	**480**	**2**	<0.50	<0.50	<1.0	**520**	--
MW-6	02/17/11	32.19	17.48	14.71	**290**	<0.50	<0.50	<0.50	<1.0	**130**	--
MW-6	08/03/11	32.19	17.02	15.17	**330**	<0.50	<0.50	<0.50	<1.0	**89**	--
MW-6	02/07/12	32.19	18.02	14.17	**450**	<0.50	<0.50	<0.50	<1.0	**29**	--
MW-6	08/09/12	32.19	17.17	15.02	**180**	<0.50	<0.50	<0.50	<1.0	**10**	--
MW-6	02/27/13	32.19	17.48	14.71	77	<0.50	<0.50	<0.50	<1.0	2.4	--
MW-6	08/15/13	32.19	18.35	13.84	<50	<0.50	<0.50	<0.50	<1.0	0.82	--
MW-6	02/06/14	32.19	19.10	13.09	150	<0.50	<0.50	<0.50	<1.0	0.81	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
800 Harrison Street											
MW-7	10/19/92	--	--	--	--	--	--	--	--	--	--
MW-7	04/28/93	32.49	--	--	**110**	**2.8**	1.3	1.4	1.7	--	--
MW-7	07/23/93	32.49	18.60	13.89	**790**	**23**	3.3	28	5.4	--	--
MW-7	10/05/93	32.20	18.76	13.44	**360**	**10**	1.2	0.91	0.99	--	--
MW-7	01/03/94	32.20	18.91	13.29	ND	0.93	ND	0.75	1.9	--	--
MW-7	04/02/94	32.20	18.50	13.70	**360**	**2**	ND	ND	0.8	--	--
MW-7	07/05/94	32.20	17.52	14.68	ND	ND	ND	ND	ND	--	--
MW-7	10/06/94	32.20	19.25	12.95	**340**	**5.6**	0.85	ND	1.2	--	--
MW-7	01/02/95	32.20	17.67	14.53	ND	ND	ND	ND	ND	--	--
MW-7	04/03/95	32.20	15.81	16.39	**570**	**24**	ND	3.4	5.8	--	--
MW-7	07/14/95	32.20	17.05	15.15	ND	**14**	ND	ND	ND	--	--
MW-7	10/10/95	32.20	18.08	14.12	**740**	**170**	ND	ND	ND	--	**13000**
MW-7	01/03/96	32.20	18.02	14.18	**360**	**16**	1.3	2.7	1.4	--	--
MW-7	04/10/96	32.20	15.81	16.39	**120**	**4.1**	1.5	ND	0.88	--	**3200**
MW-7	07/09/96	32.20	16.99	15.21	ND	ND	ND	ND	ND	--	**3400**
MW-7	01/24/97	32.20	16.08	16.12	ND	**16**	ND	ND	ND	--	**6600**
MW-7	07/23/97	32.20	17.99	14.21	ND	**16**	ND	ND	0.62	--	**10000**
MW-7	01/26/98	32.20	15.56	16.64	ND	ND	ND	ND	0.56	--	ND
MW-7	07/03/98	32.20	17.04	15.16	ND	ND	ND	ND	ND	--	ND
MW-7	01/14/99	32.20	--	--	--	--	--	--	--	--	--
MW-7	07/15/99	32.20	15.72	16.48	ND	ND	ND	ND	ND	--	**290**
MW-7	01/07/00	32.20	16.80	15.40	ND	**7.7**	ND	ND	4.4	--	**98**
MW-7	07/19/00	32.20	17.88	14.32	ND	ND	1.27	ND	0.979	--	ND
MW-7	01/02/01	32.20	17.97	14.23	ND	ND	ND	ND	ND	--	ND
MW-7	05/23/01	32.20	16.81	15.39	ND	ND	ND	ND	ND	--	ND
MW-7	07/30/01	32.20	16.79	15.41	<50	<0.50	<0.50	<0.50	<0.50	--	<2.5
MW-7	10/15/01	32.20	16.98	15.22	<50	<0.50	0.58	<0.50	<0.50	--	<5.0
MW-7	01/14/02	32.20	14.85	17.35	<50	<0.50	<0.50	<0.50	<0.50	--	<2.5
MW-7	04/15/02	32.20	15.29	16.91	<50	<0.50	<0.50	<0.50	0.7	--	<5.0
MW-7	07/15/02	32.20	15.92	16.28	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50
MW-7	01/18/03	32.20	15.11	17.09	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0
MW-7	07/11/03	32.20	15.89	16.31	<50	<0.50	<0.50	<0.50	<1.0	**19**	--
MW-7	02/04/04	32.20	15.90	16.30	<50	**3.6**	<0.50	<0.50	<1.0	**3.2**	--
MW-7	08/11/04	32.20	16.12	16.08	<5000	**120**	<50	<50	<100	**5100**	--
MW-7	03/31/05	32.20	13.99	18.21	<5000	**190**	<50	<50	<100	**8400**	--
MW-7	09/30/05	32.20	15.93	16.27	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-7	03/27/06	32.20	13.40	18.80	**2500**	**160**	10	11	**26**	**5600**	--
MW-7	09/27/06	32.20	16.96	15.24	**2800**	**180**	<12	15	**44**	**4200**	--
MW-7	03/27/07	32.20	17.30	14.90	**920**	**66**	2.9	3.4	4.5	**970**	--
MW-7	09/28/07	32.20	18.10	14.10	**4000**	**440**	15	17	**59**	**3300**	--
MW-7	03/26/08	32.20	17.64	14.56	**390**	**39**	3.3	0.85	7.5	**96**	--
MW-7	07/28/08	32.20	18.50	13.70	64	**3.3**	<0.50	<0.50	<1.0	**8.7**	--
MW-7	01/26/09	32.20	18.90	13.30	80	**7.9**	0.58	<0.50	<1.0	**10**	--
MW-7	08/03/09	32.22	18.29	13.93	**2100**	**220**	14	10	**31**	**750**	--
MW-7	01/25/10	32.22	17.49	14.73	**490**	**25**	3.5	0.54	6.9	**16**	--
MW-7	08/03/10	32.22	17.84	14.38	**240**	**45**	1.8	1.2	1.7	**290**	--
MW-7	02/17/11	32.22	17.83	14.39	**370**	**53**	2	<0.50	2.1	**12**	--
MW-7	08/03/11	32.22	17.42	14.80	**390**	**20**	1.8	<0.50	1.6	**27**	--
MW-7	02/07/12	32.22	18.40	13.82	**310**	**25**	2	<0.50	3.2	**9.0**	--
MW-7	08/09/12	32.22	17.53	14.69	**280**	**11**	1.2	<0.50	<1.0	**24**	--
MW-7	02/27/13	32.22	17.85	14.37	<50	<0.50	<0.50	<0.50	<1.0	3.8	--
MW-7	08/15/13	32.22	18.70	13.52	95	**11**	1.3	<0.50	<1.0	**5.0**	--
MW-7	02/06/14	32.22	19.45	12.77	790	**66**	10	2.5	17	**47.0**	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
800 Harrison Street											
MW-8	04/28/93	32.33	--	--	**450**	**18**	1.8	1.8	1.4	--	--
MW-8	07/23/93	32.33	18.45	13.88	**260**	**5.1**	ND	0.6	ND	--	--
MW-8	10/05/93	32.00	18.57	13.43	**120**	**1.7**	ND	ND	ND	--	--
MW-8	01/03/94	32.00	18.73	13.27	ND	ND	ND	ND	ND	--	**51**
MW-8	04/02/94	32.00	18.30	13.70	**150**	**1.2**	ND	ND	ND	--	--
MW-8	07/05/94	32.00	17.41	14.59	**730**	**17**	ND	1.6	ND	--	--
MW-8	10/06/94	32.00	18.98	13.02	**140**	ND	ND	ND	ND	--	--
MW-8	01/02/95	32.00	17.58	14.42	**440**	**18**	0.72	2	1.8	--	--
MW-8	04/03/95	32.00	15.54	16.46	**960**	**11**	ND	ND	ND	--	--
MW-8	07/14/95	32.00	16.81	15.19	**280**	**4.2**	2.6	1.1	3.3	--	--
MW-8	10/10/95	32.00	17.85	14.15	**110**	**1.3**	0.62	0.67	ND	--	**170**
MW-8	01/03/96	32.00	17.82	14.18	63	ND	0.51	ND	1.8	--	--
MW-8	04/10/96	32.00	15.70	16.30	ND	**1.1**	0.61	ND	ND	--	**60**
MW-8	07/09/96	32.00	16.78	15.22	72	**1**	ND	ND	ND	--	**140**
MW-8	01/24/97	32.00	15.79	16.21	ND	ND	ND	ND	ND	--	**76**
MW-8	07/23/97	32.00	17.69	14.31	ND	ND	ND	ND	ND	--	**270**
MW-8	01/26/98	32.00	15.50	16.50	ND	ND	ND	ND	0.76	--	2.9
MW-8	07/03/98	32.00	16.80	15.20	ND	ND	ND	ND	ND	--	ND
MW-8	01/14/99	32.00	17.13	14.87	ND	ND	ND	ND	ND	--	**11**
MW-8	07/15/99	32.00	15.85	16.15	ND	ND	ND	ND	ND	--	ND
MW-8	01/07/00	32.00	16.94	15.06	ND	ND	ND	ND	ND	--	**11**
MW-8	07/19/00	32.00	18.06	13.94	ND	ND	2.99	0.521	ND	--	ND
MW-8	01/02/01	32.00	18.12	13.88	ND	ND	ND	ND	ND	--	ND
MW-8	05/23/01	32.00	16.96	15.04	ND	ND	ND	ND	ND	--	ND
MW-8	07/30/01	32.00	16.52	15.48	<50	<0.50	<0.50	<0.50	<0.50	--	2.7
MW-8	10/15/01	32.00	16.72	15.28	<50	<0.50	0.65	<0.50	<0.50	--	<5.0
MW-8	01/14/02	32.00	14.53	17.47	<50	<0.50	<0.50	<0.50	<0.50	--	<2.5
MW-8	04/15/02	32.00	14.96	17.04	<50	<0.50	<0.50	<0.50	<0.50	--	<5.0
MW-8	07/15/02	32.00	15.60	16.40	<50	<0.50	<0.50	<0.50	<1.0	--	**11**
MW-8	01/18/03	32.00	14.78	17.22	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0
MW-8	02/04/04	32.00	15.65	16.35	52	**2.3**	<0.50	<0.50	<1.0	2.4	--
MW-8	08/11/04	32.00	15.86	16.14	**350**	<2.5	<2.5	<2.5	<5.0	**310**	--
MW-8	03/31/05	32.00	13.73	18.27	<2000	<0.50	<0.50	<0.50	<1.0	**2100**	--
MW-8	09/30/05	32.00	15.94	16.06	**1200**	<0.50	0.5	<0.50	<1.0	**6900**	--
MW-8	03/27/06	32.00	13.13	18.87	**460**	<0.50	<0.50	<0.50	<1.0	**820**	--
MW-8	09/27/06	32.00	16.75	15.25	**520**	<5.0	<5.0	<5.0	8.2	**870**	--
MW-8	03/27/07	32.00	16.87	15.13	**1400**	<0.50	<0.50	<0.50	<0.50	**3600**	--
MW-8	09/28/07	32.00	17.91	14.09	**280**	<2.5	<2.5	<2.5	<2.5	**670**	--
MW-8	03/26/08	32.00	17.45	14.55	**110**	<0.50	<0.50	<0.50	<1.0	**210**	--
MW-8	07/28/08	32.00	18.50	13.50	<50	<0.50	<0.50	<0.50	<1.0	**11**	--
MW-8	01/26/09	32.00	18.65	13.35	<50	<0.50	<0.50	<0.50	<1.0	**22**	--
MW-8	08/03/09	32.03	18.11	13.92	67	<0.50	<0.50	<0.50	<1.0	**64**	--
MW-8	01/25/10	32.03	17.67	14.36	<50	<0.50	<0.50	<0.50	<1.0	**10**	--
MW-8	08/03/10	32.03	17.58	14.45	<50	<0.50	<0.50	<0.50	<1.0	**10**	--
MW-8	02/17/11	32.03	17.53	14.50	<50	<0.50	<0.50	<0.50	<1.0	2.5	--
MW-8	08/03/11	32.03	17.18	14.85	<50	<0.50	<0.50	<0.50	<1.0	1.6	--
MW-8	02/07/12	32.03	18.15	13.88	<50	<0.50	<0.50	<0.50	<1.0	0.75	--
MW-8	08/09/12	32.03	17.29	14.74	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-8	02/27/13	32.03	17.58	14.45	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-8	08/15/13	32.03	18.46	13.57	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-8	02/06/14	32.03	19.24	12.79	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
Tier 1 ESLs for Groundwater (Residential)					**100**	**1**	**40**	**30**	**20**	**5**	**5**
Tier 1 ESLs for Groundwater (Commercial/Industrial)					**500**	**46**	**130**	**43**	**100**	**1,800**	**1,800**

Abbreviations:

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

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

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

Abbreviations:

ft MSL Feet relative to mean sea level
ft bgs Feet below ground surface
NA Not available

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

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

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

Sample Name	Sample Date	Sample Depth (ft bgs)	LUFT GC/MS					EPA 8260B							
			TPPH (mg/kg)	TPH-d (mg/kg)	TPH-g (mg/kg)	TPH-mo (mg/kg)	TOG (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	EDB (mg/kg)	1,2-DCA (mg/kg)	Lead (mg/kg)
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
	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
MP-1	06/20/13	5.0	<0.16	NA	NA	NA	NA	<0.0040	<0.0040	<0.0040	<0.0080	<0.0040	<0.0040	<0.0040	NA
	06/20/13	10.0	<0.14	NA	NA	NA	NA	<0.0036	<0.0036	<0.0036	<0.0072	<0.0036	<0.0036	<0.0036	NA
	06/20/13	15.0	<0.14	NA	NA	NA	NA	<0.0036	<0.0036	<0.0036	<0.0072	<0.0036	<0.0036	<0.0036	NA
	06/20/13	20.0	<0.15	NA	NA	NA	NA	<0.0038	<0.0038	<0.0038	<0.0076	<0.0038	<0.0038	<0.0038	NA
	06/20/13	22.0	<0.18	NA	NA	NA	NA	<0.0045	<0.0045	<0.0045	<0.0090	<0.0045	<0.0045	<0.0045	NA
	06/20/13	25.0	<0.14	NA	NA	NA	NA	<0.0035	<0.0035	<0.0035	<0.0070	<0.0035	<0.0035	<0.0035	NA
	06/20/13	30.0	<0.14	NA	NA	NA	NA	<0.0034	<0.0034	<0.0034	<0.0068	<0.0034	<0.0034	<0.0034	NA
MPE-1	06/20/13	5.0	<0.16	NA	NA	NA	NA	<0.0040	<0.0040	<0.0040	<0.0080	<0.0040	<0.0040	<0.0040	NA
	06/20/13	15.0	<0.14	NA	NA	NA	NA	<0.0036	<0.0036	<0.0036	<0.0071	<0.0036	<0.0036	<0.0036	NA
	06/20/13	20.0	0.40	NA	NA	NA	NA	<0.0038	<0.0038	<0.0038	<0.0076	0.0072	<0.0038	<0.0038	NA
	06/20/13	22.0	**670**	NA	NA	NA	NA	**0.73**	1.4	3.0	**10**	1.3	<0.17	<0.17	NA
	06/20/13	25.0	3.9	NA	NA	NA	NA	**0.087**	0.029	0.029	0.048	0.28	<0.0038	<0.0038	NA
	06/20/13	28.0	1.1	NA	NA	NA	NA	0.041	0.0044	<0.0037	0.012	0.013	<0.0037	<0.0037	NA
	06/20/13	30.0	<0.16	NA	NA	NA	NA	<0.0040	<0.0040	<0.0040	<0.0081	<0.0040	<0.0040	<0.0040	NA
	06/20/13	35.0	<4.0	NA	NA	NA	NA	<0.099	<0.099	<0.099	<0.20	<0.099	<0.099	<0.099	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
VE-3	06/21/13	5.0	<0.18	NA	NA	NA	NA	<0.0044	<0.0044	<0.0044	<0.088	<0.0044	<0.0044	<0.0044	NA
	06/21/13	9.0	**1,300**	NA	NA	NA	NA	<0.094	<0.094	**3.9**	1.5	<0.094	<0.094	<0.094	NA
	06/21/13	10.0	**350**	NA	NA	NA	NA	<0.12	<0.12	1.8	1.9	<0.12	<0.12	<0.12	NA
	06/21/13	15.0	**4,700**	NA	NA	NA	NA	**0.72**	<0.093	**7.4**	**13**	<0.093	<0.093	<0.093	NA
	06/21/13	16.0	**2,900**	NA	NA	NA	NA	**0.54**	<0.098	**7.6**	**13**	<0.098	<0.098	<0.098	NA

Table 4
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Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

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

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800, 726, and 706 Harrison Street, Oakland, California

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

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

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

Abbreviations:

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

Table 5
Analytical Groundwater Data Summary - Biogeochemical Parameters
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Sample Name	Sample Date	Methane (mg/L)	Alkalinity as CaCO3 (mg/L)	Nitrate as NO3 (mg/L)	Nitrite as NO2 (mg/L)	Sulfate (mg/L)	Non-Volatile Organic Carbon (mg/L)	Comments
706 Harrison Street								
MW-1	8/9/2012	0.28	250	<0.44	<0.17	51	7.3	A01
MW-1	2/6/2014	--	--	--	--	--	--	Parked Car
MW-2	8/9/2012	6.8	500	<0.44	<0.17	<1.0	15	A01, S01
MW-2	2/6/2014	6.5	490	<0.44	<0.17	<1.0	20	A01
MW-3	8/9/2012	<0.0010	130	43	<0.17	61	1.4	
MW-3	2/6/2014	0.0072	110	33	<0.17	37	1.7	
MW-4	8/9/2012	--	--	--	--	--	--	
MW-4	2/6/2014	2.1	440	<0.44	<0.17	9.8	12	A01
MW-5	8/9/2012	<0.0010	150	19	<0.17	49	2.0	
MW-5	2/6/2014	0.0023	160	15	<0.17	51	2.8	
MW-6	8/9/2012	0.0082	140	<0.44	<0.17	27	1.9	
MW-6	2/6/2014	0.0017	150	<0.44	<0.17	38	2.7	
MW-7	8/9/2012	0.0045	230	<0.44	<0.17	49	3.0	
MW-7	2/6/2014	0.03	220	<0.44	<0.17	38	3.6	
726 Harrison Street								
EW-1	2/6/2014	1.20	230	<0.44	<0.17	12	5.00	A01
MW-1	8/9/2012	1.4	290	<0.44	<0.17	16	5.8	
MW-1	2/6/2014	6.30	370	<0.44	<0.17	<1.0	33.00	A01
MW-2	8/9/2012	0.0012	100	66	<0.17	33	0.94	
MW-2	2/6/2014	0.0058	150	38.0	<0.17	38	1.90	
MW-3	8/9/2012	0.0	150	0.6	<0.17	18	1.4	
MW-3	2/6/2014	0.0062	140	<0.44	<0.17	18	1.70	
MW-4	8/9/2012	0.5	320	<0.44	<0.17	13	3.8	
MW-4	2/6/2014	2.40	310	<0.44	<0.17	17	4.00	
MW-5	8/9/2012	4.9	570	<0.44	<0.17	4.6	21	
MW-5	2/6/2014	11.0	430	<0.44	<0.17	<1.0	11.00	A01
MW-6	8/9/2012	0.0048	190	10.0	<0.17	27	0.64	
MW-6	2/6/2014	0.0019	170	3.9	<0.17	24	0.91	

Table 5
Analytical Groundwater Data Summary - Biogeochemical Parameters
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Sample Name	Sample Date	Methane (mg/L)	Alkalinity as CaCO3 (mg/L)	Nitrate as NO3 (mg/L)	Nitrite as NO2 (mg/L)	Sulfate (mg/L)	Non-Volatile Organic Carbon (mg/L)	Comments
800 Harrison Street								
MW-1	8/9/2012	0.026	69	1.9	<0.17	10	1.6	
MW-1	2/6/2014	0.01	34	1.6	<0.17	7.9	1.10	
MW-2	8/9/2012	0.076	190	19	0.38	130	1.4	
MW-2	2/6/2014	0.0	110	6	<0.17	110.0	0.7	
MW-3	8/9/2012	6.3	290	<0.44	<0.17	3.5	2.9	A01, S01
MW-3	2/6/2014	8.7	420	<0.44	<0.17	4.6	5.1	
MW-4	8/9/2012	0.031	98	4.3	<0.17	22	0.90	
MW-4	2/6/2014	0.0053	81	3.1	<0.17	17	1.3	
MW-5	8/9/2012	2.9	140	<0.44	<0.17	2.5	1.7	A01
MW-5	2/6/2014	3.3	190	<0.44	<0.17	<1.0	2.4	
MW-6	8/9/2012	0.18	130	<0.44	<0.17	16	1.0	A01
MW-6	2/6/2014	1.8	170	<0.44	<0.17	26	2.90	
MW-7	8/9/2012	0.43	180	<0.44	<0.17	17	2.7	A01
MW-7	2/6/2014	1.3	74	<0.44	<0.17	4.3	1.8	
MW-8	8/9/2012	0.0041	130	1.3	<0.17	37	1.6	
MW-8	2/6/2014	0.0035	180	<0.44	<0.17	20	1.5	

Explanation

--	Not analyzed or not sampled
<	Not Detected
mg/l	Milligrams per liter
CaCO3	Calcium carbonate
NO3	Nitrate
NO2	Nitrogen dioxide
EDC	1,2-Dichloroethane (ethylene dichloride)
A01	PQL's and MDL's are raised due to sample dilution.
PQL	Practical quantitation limit
MDL	Method detection limit
S01	Sample result is not within the quantitation range of the method

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

LEGEND

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

NOTE:

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

0 50' 100'

GRAPHIC SCALE

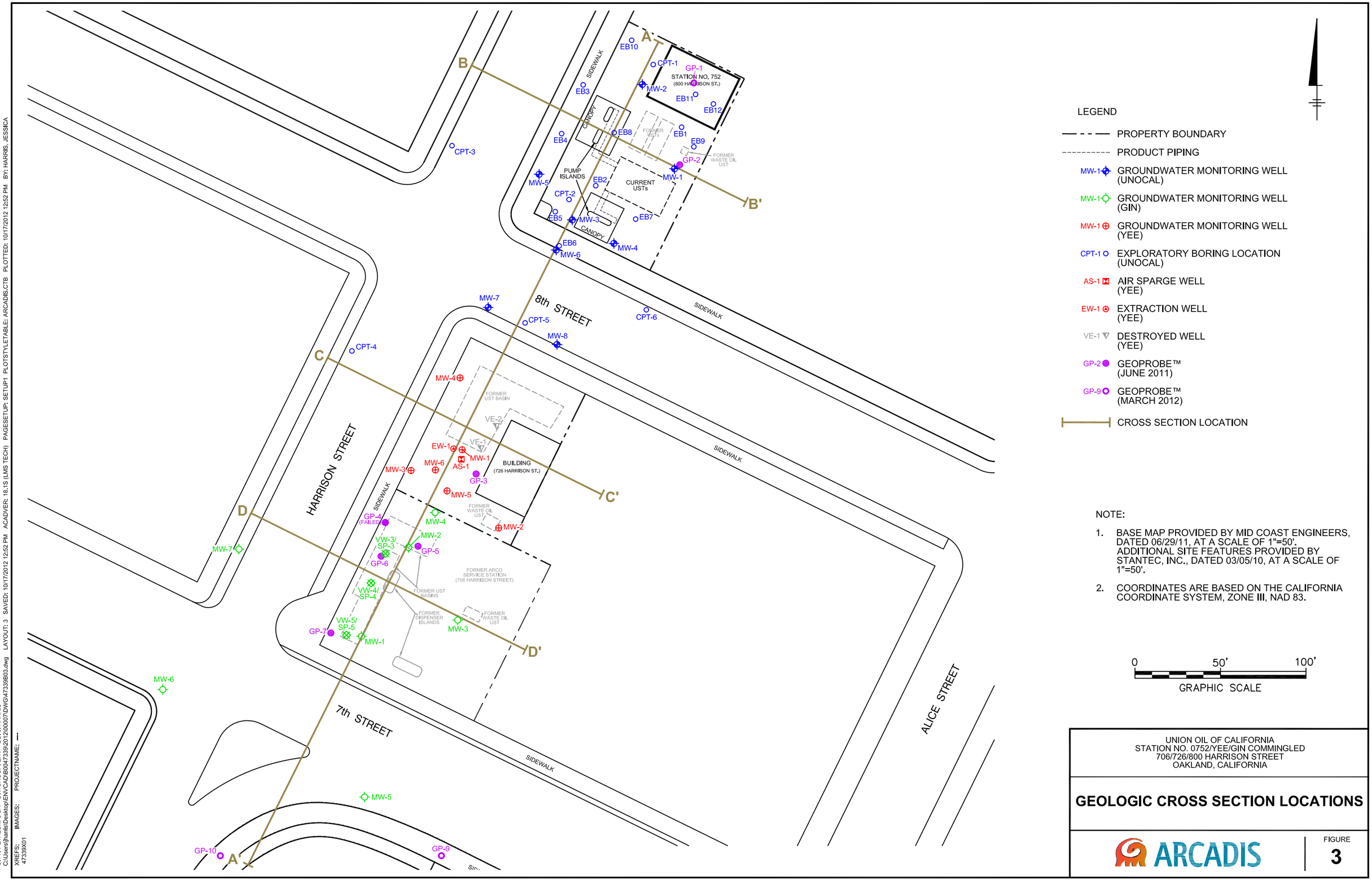
UNION OIL OF CALIFORNIA
STATION NO. 0752/YEE/GIN COMMINGLED
706/726/800 HARRISON STREET
OAKLAND, CALIFORNIA

SITE PLAN

ARCADIS

FIGURE 2

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
G:\ENVCAD\Lakewood-COVACT\B00473392\20134733901B01.dwg LAYOUT: 2 SAVED: 10/2/2013 11:22 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: ARCADIS-DEN.CTB PLOTTED: 10/2/2013 4:16 PM BY: HOEFER, MATTHEW
XREFS: IMAGES: PROJECTNAME: ---
47339X01



LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 GROUNDWATER MONITORING WELL (UNOCAL)
- MW-1 GROUNDWATER MONITORING WELL (GIN)
- MW-1 GROUNDWATER MONITORING WELL (YEE)
- CPT-1 EXPLORATORY BORING LOCATION (UNOCAL)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- VE-1 DESTROYED WELL (YEE)
- GP-2 GEOPROBE™ (JUNE 2011)
- GP-9 GEOPROBE™ (MARCH 2012)
- CROSS SECTION LOCATION

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

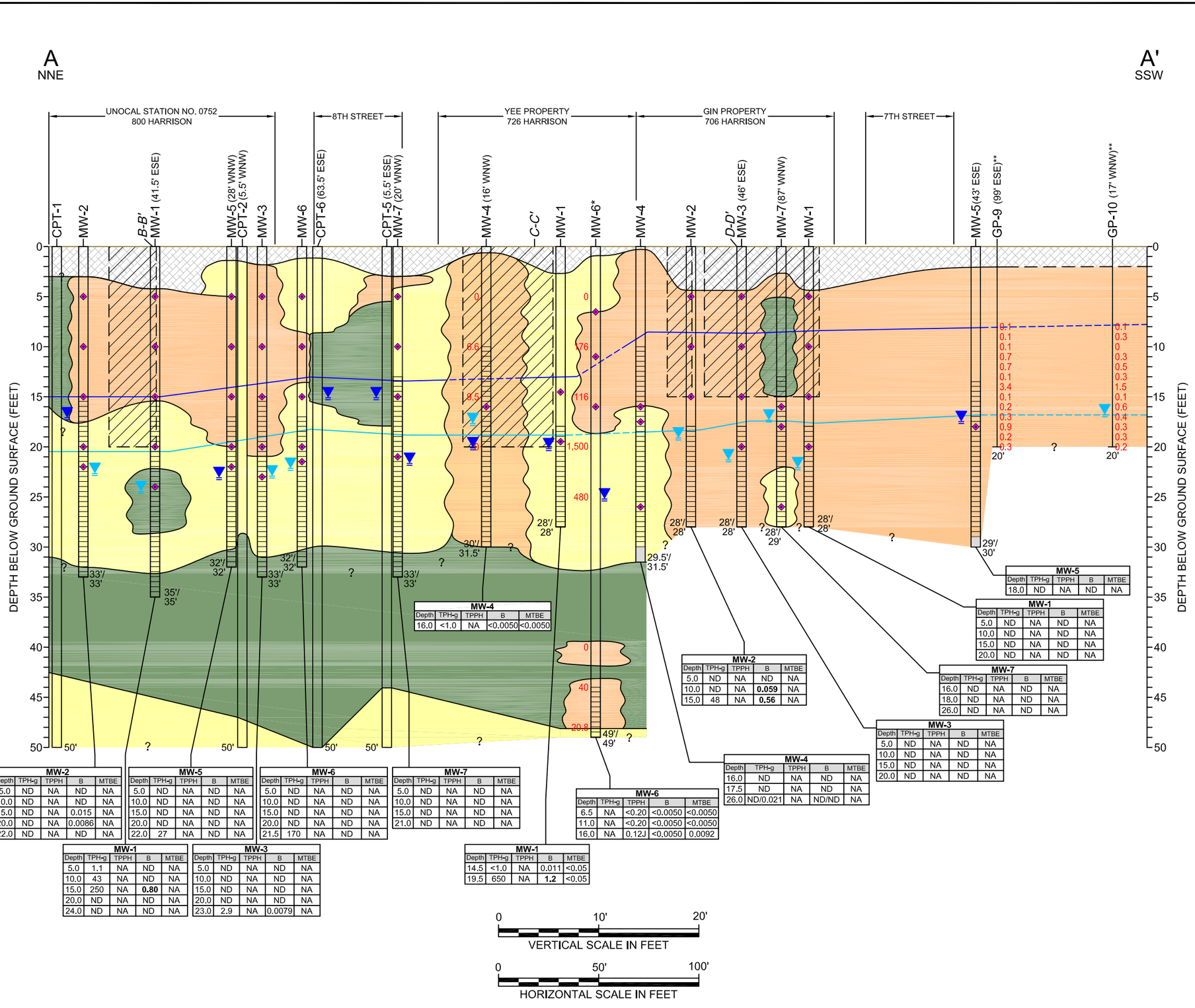
UNION OIL OF CALIFORNIA
STATION NO. 0752/YEE/GIN COMMINGLED
706/726/800 HARRISON STREET
OAKLAND, CALIFORNIA

GEOLOGIC CROSS SECTION LOCATIONS

ARCADIS

FIGURE 3

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
LD: PM: TM: LYR: ON=*;OFF=*REF* PIC:
PLOTSCALE: 1:1 PLOTTED: 10/17/2012 12:52 PM BY: HARRIS, JESSICA
XREFS: IMAGES: PROJECTNAME: ---
C:\Users\jharris\Desktop\ENVCAD\B0047339\2012\00007\DWG\47339B03.dwg LAYOUT: 3 SAVED: 10/17/2012 12:52 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB
47339X01



LEGEND

- MW-5 (28' WNW) — WELL ID (PROJECTED DISTANCE AND DIRECTION FROM CROSS SECTION)
- GROUND SURFACE
- LITHOLOGIC CONTACT (DASHED WHERE INFERRED)
- FIRST WATER
- STATIC WATER
- SOIL SAMPLE LOCATION
- SCREEN INTERVAL
- SUMP
- 32'/32' — WELL DEPTH/TOTAL BORING DEPTH (FEET BELOW GROUND SURFACE)
- HISTORICAL HIGH GROUNDWATER ELEVATION (DASHED WHERE INTERPRETED)
- HISTORICAL LOW GROUNDWATER ELEVATION (DASHED WHERE INTERPRETED)
- ** DEEP WELL NOT USED IN HISTORICAL HIGH OR LOW GROUNDWATER ELEVATION
- * SOIL BORING

LITHOLOGY

- FILL MATERIAL
- PERMEABLE SOIL TYPES (SP, SW)
- MEDIUM PERMEABLE SOIL TYPES (SC, SM)
- LOW PERMEABLE SOIL TYPES (CL, ML)
- EXCAVATION AREA

ANALYTICAL RESULTS

- 0.1 — PID READING (ppmv)
- PID — PHOTOIONIZATION DETECTOR
- TPH-g — TOTAL PETROLEUM HYDROCARBONS AS GASOLINE (mg/kg)
- TPPH — TOTAL PURGEABLE PETROLEUM HYDROCARBONS (mg/kg)
- B — BENZENE (mg/kg)
- MTBE — METHYL TERTIARY BUTYL ETHER (mg/kg)
- ppmv — PARTS PER MILLION BY VOLUME
- mg/kg — MILLIGRAMS PER KILOGRAM
- NA — NOT ANALYZED
- ND — NON-DETECT
- ND/0.021 — CONCENTRATIONS COLLECTED AT MULTIPLE DEPTHS WITHIN TARGET RANGE
- < — LESS THAN STATED LABORATORY REPORTING LIMIT
- J — ESTIMATED VALUE
- **BOLD** — RESULT EXCEEDS THE FOLLOWING ENVIRONMENTAL SCREENING LEVELS (ESLs) FOR RESIDENTIAL SOIL:
  TPPH - 83 mg/kg
  BENZENE - 0.044 mg/kg
  MTBE - 0.023 mg/kg

UNION OIL OF CALIFORNIA
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OAKLAND, CALIFORNIA

GEOLOGIC CROSS SECTION A-A'

ARCADIS

FIGURE 4

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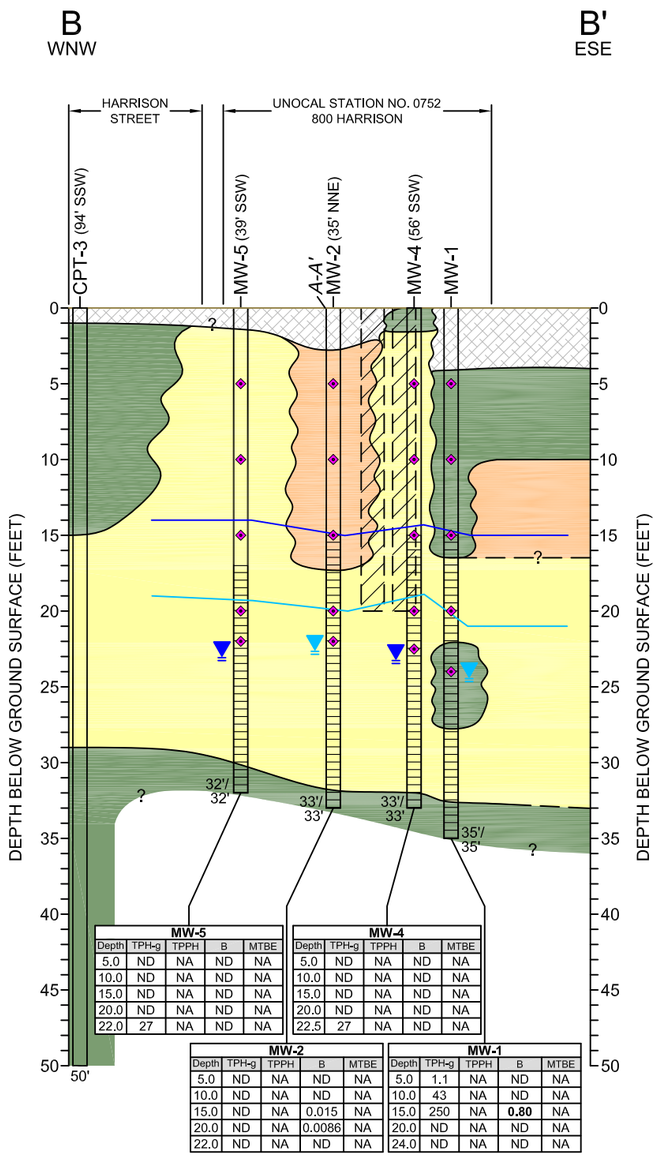


MW-5

Depth	TPH-g	TPPH	B	MTBE
5.0	ND	NA	ND	NA
10.0	ND	NA	ND	NA
15.0	ND	NA	ND	NA
20.0	ND	NA	ND	NA
22.0	27	NA	ND	NA

MW-4

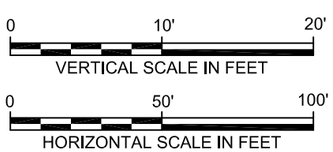
Depth	TPH-g	TPPH	B	MTBE
5.0	ND	NA	ND	NA
10.0	ND	NA	ND	NA
15.0	ND	NA	ND	NA
20.0	ND	NA	ND	NA
22.5	27	NA	ND	NA

MW-2

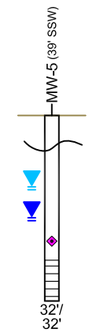
Depth	TPH-g	TPPH	B	MTBE
5.0	ND	NA	ND	NA
10.0	ND	NA	ND	NA
15.0	ND	NA	0.015	NA
20.0	ND	NA	0.0086	NA
22.0	ND	NA	ND	NA

MW-1

Depth	TPH-g	TPPH	B	MTBE
5.0	1.1	NA	ND	NA
10.0	43	NA	ND	NA
15.0	250	NA	**0.80**	NA
20.0	ND	NA	ND	NA
24.0	ND	NA	ND	NA



LEGEND



- WELL ID (PROJECTED DISTANCE AND DIRECTION FROM CROSS SECTION)
- GROUND SURFACE
- LITHOLOGIC CONTACT (DASHED WHERE INFERRED)
- FIRST WATER
- STATIC WATER
- SOIL SAMPLE LOCATION
- SCREEN INTERVAL
- WELL DEPTH/TOTAL BORING DEPTH (FEET BELOW GROUND SURFACE)
- HISTORICAL HIGH GROUNDWATER ELEVATION (DASHED WHERE INTERPRETED)
- HISTORICAL LOW GROUNDWATER ELEVATION (DASHED WHERE INTERPRETED)

LITHOLOGY

- FILL MATERIAL
- PERMEABLE SOIL TYPES (SP, SW)
- MEDIUM PERMEABLE SOIL TYPES (SC, SM)
- LOW PERMEABLE SOIL TYPES (CL, ML)
- EXCAVATION AREA

ANALYTICAL RESULTS

TPH-g	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE (mg/kg)
TPPH	TOTAL PURGEABLE PETROLEUM HYDROCARBONS (mg/kg)
B	BENZENE (mg/kg)
MTBE	METHYL TERTIARY BUTYL ETHER (mg/kg)
mg/kg	MILLIGRAMS PER KILOGRAM
NA	NOT ANALYZED
ND	NON-DETECT
<	LESS THAN STATED LABORATORY REPORTING LIMIT
BOLD	RESULT EXCEEDS THE FOLLOWING ENVIRONMENTAL SCREENING LEVELS (ESLs) FOR RESIDENTIAL SOIL: TPPH - 83 mg/kg BENZENE - 0.044 mg/kg MTBE - 0.023 mg/kg

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

GEOLOGIC CROSS SECTION B-B'

ARCADIS

FIGURE
5

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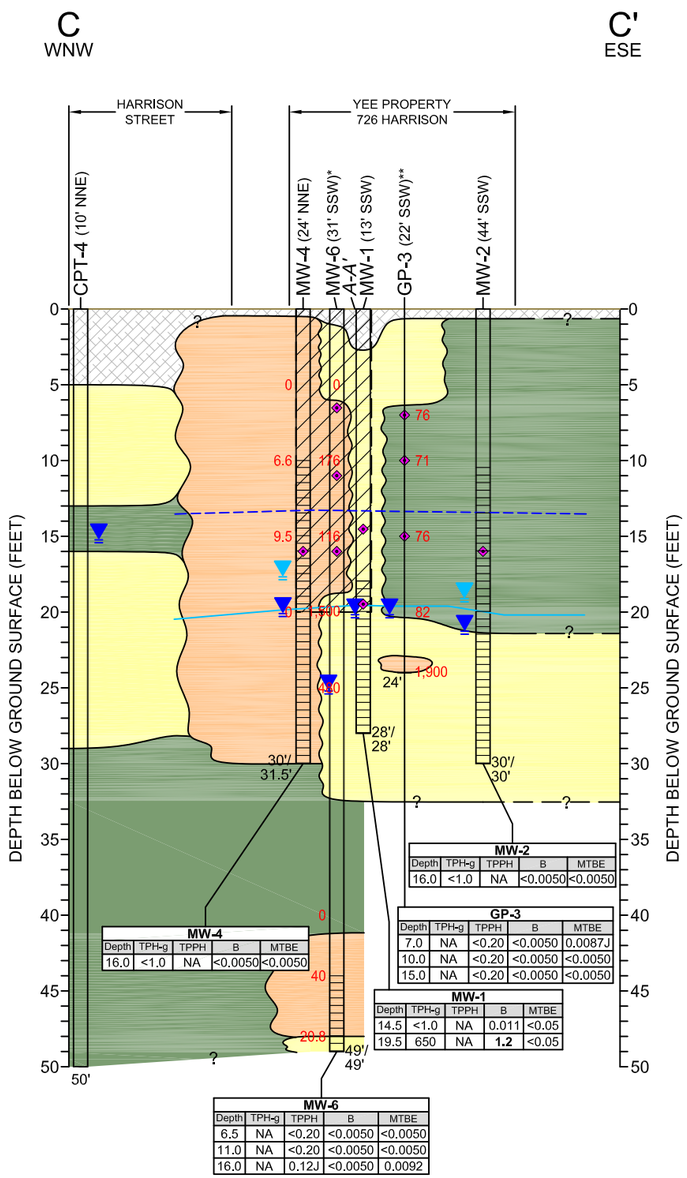


0 10' 20'
VERTICAL SCALE IN FEET

0 50' 100'
HORIZONTAL SCALE IN FEET

LEGEND

- WELL ID (PROJECTED DISTANCE AND DIRECTION FROM CROSS SECTION)
- GROUND SURFACE
- LITHOLOGIC CONTACT (DASHED WHERE INFERRED)
- FIRST WATER
- STATIC WATER
- SOIL SAMPLE LOCATION
- SCREEN INTERVAL
- WELL DEPTH/TOTAL BORING DEPTH (FEET BELOW GROUND SURFACE)
- HISTORICAL HIGH GROUNDWATER ELEVATION (DASHED WHERE INTERPRETED)
- HISTORICAL LOW GROUNDWATER ELEVATION (DASHED WHERE INTERPRETED)
- ** DEEP WELL NOT USED IN HISTORICAL HIGH OR LOW GROUNDWATER ELEVATION
- * SOIL BORING

LITHOLOGY

- FILL MATERIAL
- PERMEABLE SOIL TYPES (SP, SW)
- MEDIUM PERMEABLE SOIL TYPES (SC, SM)
- LOW PERMEABLE SOIL TYPES (CL, ML)
- EXCAVATION AREA

ANALYTICAL RESULTS

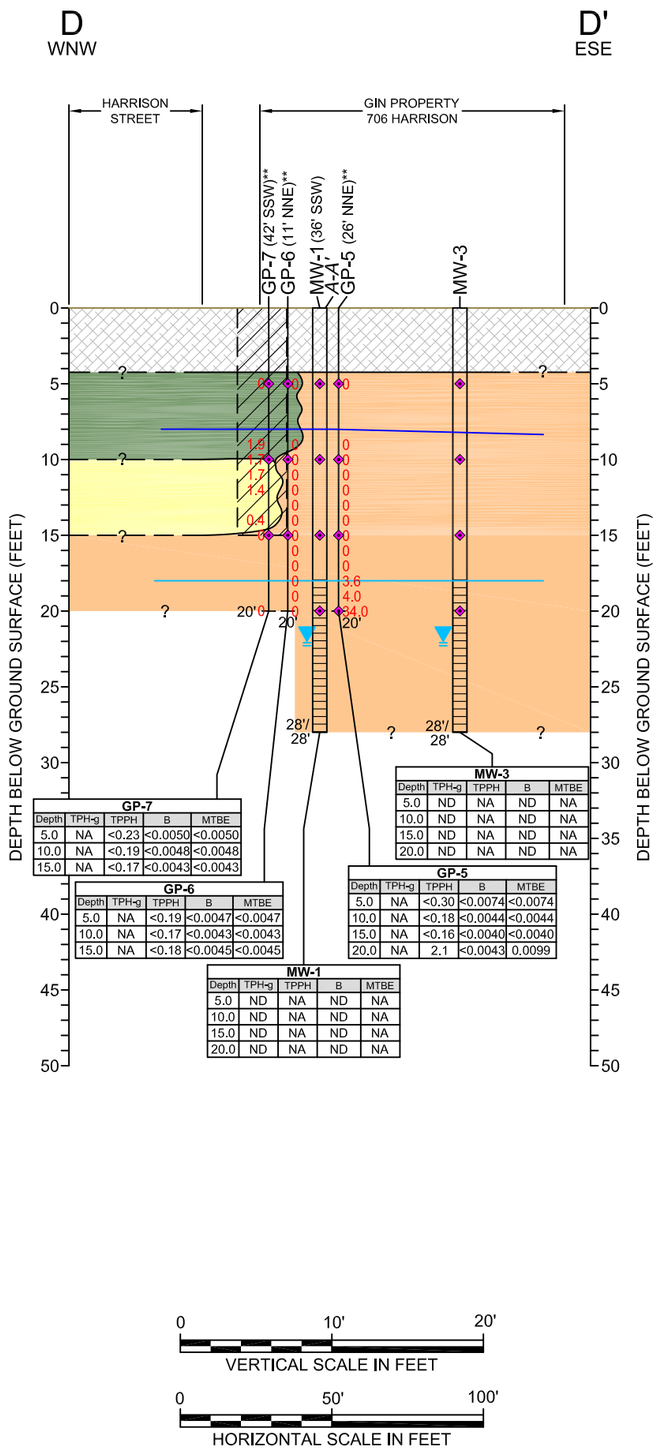
- 6.6 PID READING (ppmv)
- PID PHOTOIONIZATION DETECTOR
- TPH-g TOTAL PETROLEUM HYDROCARBONS AS GASOLINE (mg/kg)
- TPPH TOTAL PURGEABLE PETROLEUM HYDROCARBONS (mg/kg)
- B BENZENE (mg/kg)
- MTBE METHYL TERTIARY BUTYL ETHER (mg/kg)
- ppmv PARTS PER MILLION BY VOLUME
- mg/kg MILLIGRAMS PER KILOGRAM
- NA NOT ANALYZED
- ND NON-DETECT
- < LESS THAN STATED LABORATORY REPORTING LIMIT
- J ESTIMATED VALUE
- **BOLD** RESULT EXCEEDS THE FOLLOWING ENVIRONMENTAL SCREENING LEVELS (ESLs) FOR RESIDENTIAL SOIL:
  TPPH - 83 mg/kg
  BENZENE - 0.044 mg/kg
  MTBE - 0.023 mg/kg

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

GEOLOGIC CROSS SECTION C-C'

ARCADIS

FIGURE
6



LEGEND

- MW-1 (36' SSW) — WELL ID (PROJECTED DISTANCE AND DIRECTION FROM CROSS SECTION)
- GROUND SURFACE
- LITHOLOGIC CONTACT (DASHED WHERE INFERRED)
- FIRST WATER
- STATIC WATER
- SOIL SAMPLE LOCATION
- SCREEN INTERVAL
- 28'/ 28' — WELL DEPTH/TOTAL BORING DEPTH (FEET BELOW GROUND SURFACE)
- HISTORICAL HIGH GROUNDWATER ELEVATION (DASHED WHERE INTERPRETED)
- HISTORICAL LOW GROUNDWATER ELEVATION (DASHED WHERE INTERPRETED)
- ** DEEP WELL NOT USED IN HISTORICAL HIGH OR LOW GROUNDWATER ELEVATION

LITHOLOGY

- FILL MATERIAL
- PERMEABLE SOIL TYPES (SP, SW)
- MEDIUM PERMEABLE SOIL TYPES (SC, SM)
- LOW PERMEABLE SOIL TYPES (CL, ML)
- EXCAVATION AREA

ANALYTICAL RESULTS

0.1	PID READING (ppmv)
PID	PHOTOIONIZATION DETECTOR
TPH-g	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE (mg/kg)
TPPH	TOTAL PURGEABLE PETROLEUM HYDROCARBONS (mg/kg)
B	BENZENE (mg/kg)
MTBE	METHYL TERTIARY BUTYL ETHER (mg/kg)
ppmv	PARTS PER MILLION BY VOLUME
mg/kg	MILLIGRAMS PER KILOGRAM
NA	NOT ANALYZED
ND	NON-DETECT
<	LESS THAN STATED LABORATORY REPORTING LIMIT

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

GEOLOGIC CROSS SECTION D-D'

ARCADIS

FIGURE 7

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENVCAD\B0047339\2012\00007\DWG\47339V04.dwg LAYOUT: 7 SAVED: 10/12/2012 3:29 PM ACADVER: 18.1S (LMS TECH)
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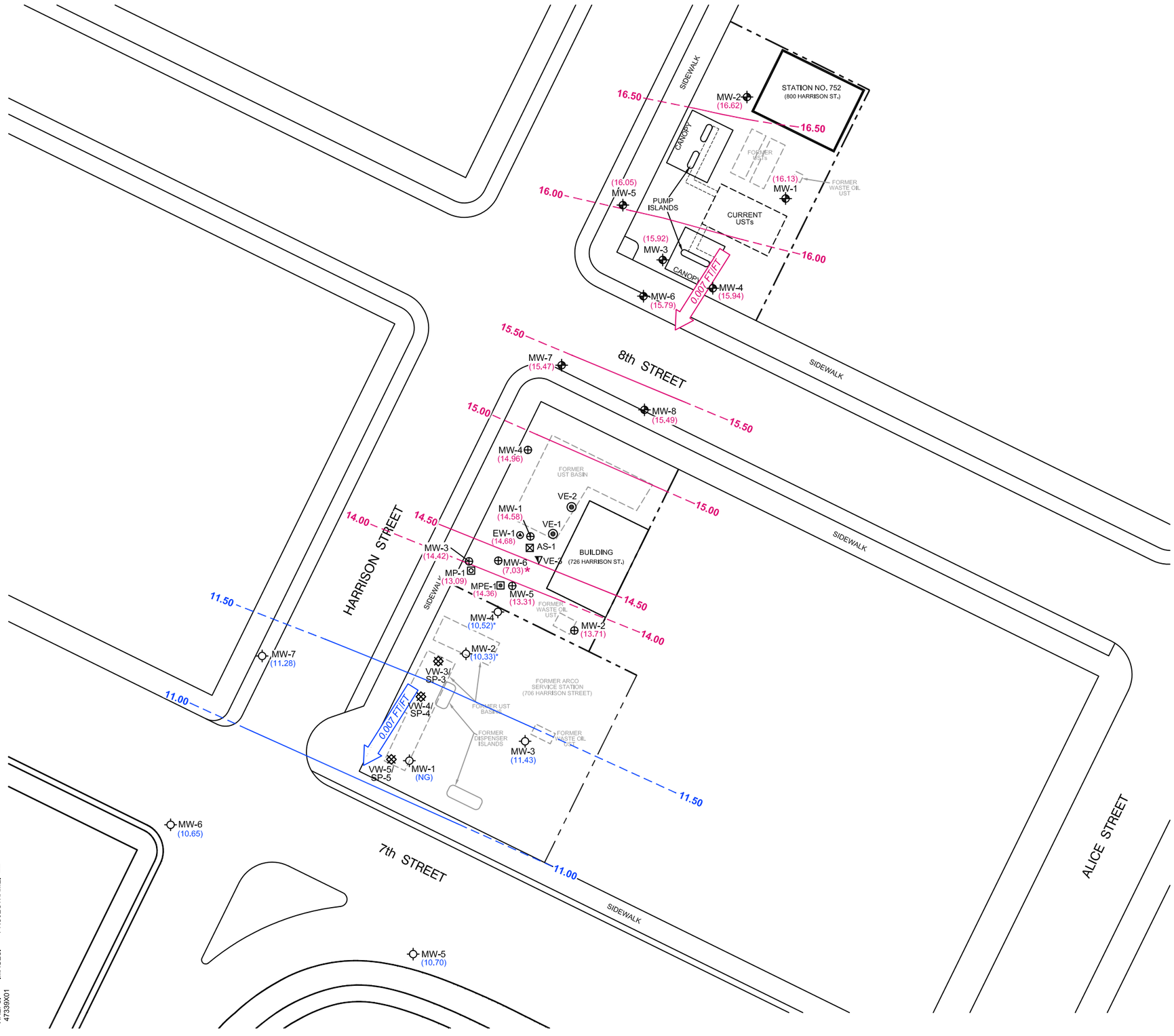

LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 GROUNDWATER MONITORING WELL (UNOCAL SITE)
- MW-1 GROUNDWATER MONITORING WELL (YEE SITE)
- EW-1 EXTRACTION WELL (YEE SITE)
- MW-1 GROUNDWATER MONITORING WELL (GIN SITE)
- VW-3/SP-3 SOIL VAPOR/SPARGE WELL (UNABLE TO LOCATE) (GIN SITE)
- MPE-1 MULTI-PHASE EXTRACTION PILOT TEST WELL (PZ-1 IS LOCATED IN THE SAME BOREHOLE) (YEE SITE)
- MP-1 PILOT TEST MONITORING POINT (YEE SITE)
- VE-1 VAPOR EXTRACTION WELL (YEE SITE)
- VE-3 PILOT TEST VAPOR EXTRACTION WELL (YEE SITE)
- AS-1 AIR SPARGE WELL (YEE SITE)
- (16.13) GROUNDWATER ELEVATION CONTOUR IN FEET RELATIVE TO MEAN SEA LEVEL (FT MSL)
- 15.00 GROUNDWATER ELEVATION CONTOUR (FT MSL; DASHED WHERE INFERRED)
- 0.007 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'. MUIR SURVEY COMPLETED A SURVEY ON 8/21/13.
2. COORDINATES ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, ZONE III, NAD 83.
3. MW-6 IS NOT USED IN THE GROUNDWATER CONTOURS BECAUSE IT IS LOCATED IN A LOWER WATER BEARING ZONE.
4. GROUNDWATER CONTOURS FOR 800/726 HARRISON STREET SEPARATE FROM 706 HARRISON STREET DUE TO SURVEYING DISCREPANCIES. 706 HARRISON TO BE RE-SURVEYED IN 2014.

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

ARCADIS

FIGURE 8

CITY: SAN RAFAEL, CA (PETALUMA) DIV/GROUP: ENVCAD DB: J. HARRIS, R. HUBATCH, J. HARRIS
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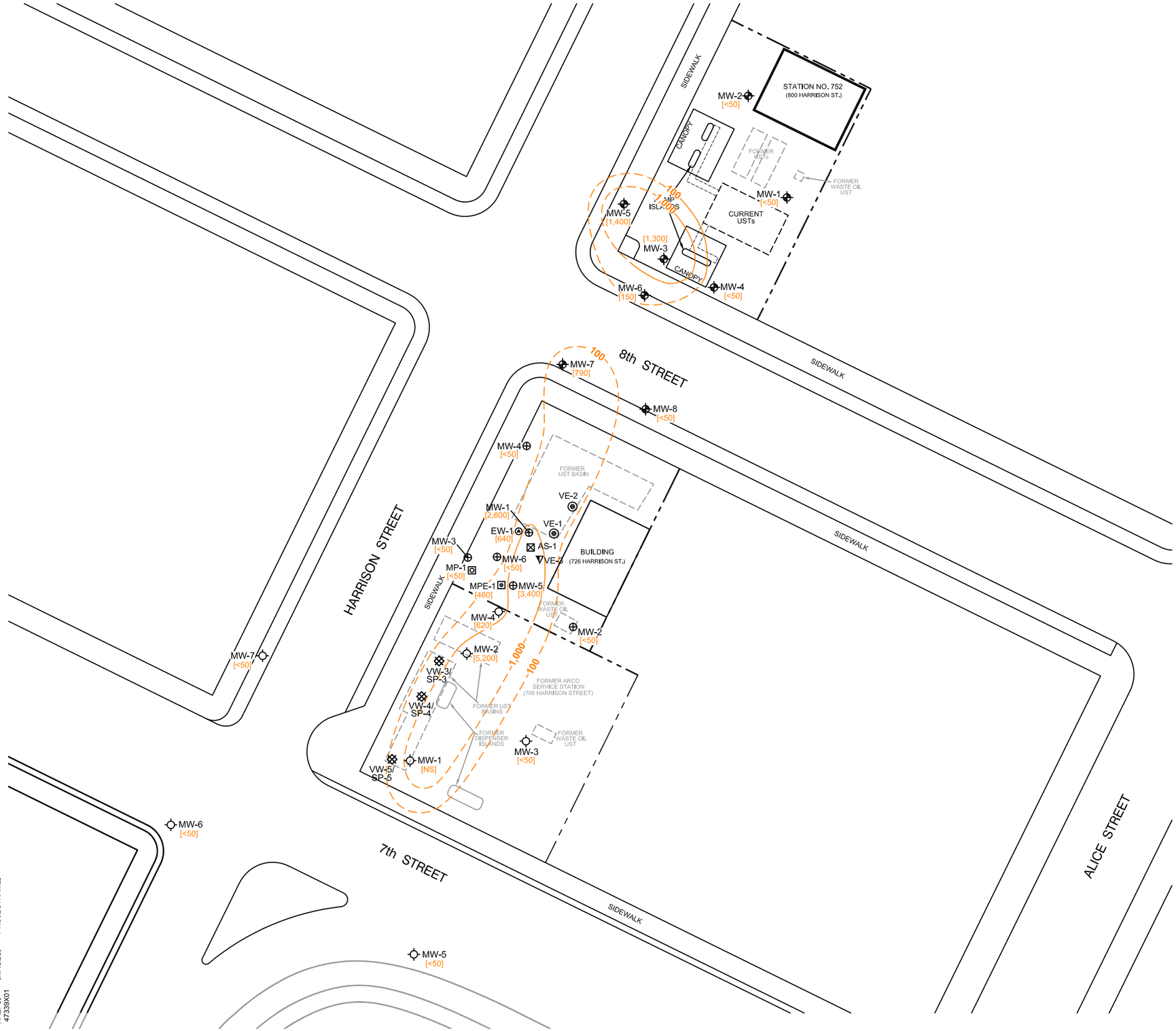
XREFS: 47339X01 IMAGES: PROJECTNAME: ---



LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 GROUNDWATER MONITORING WELL (UNOCAL SITE)
- MW-1 GROUNDWATER MONITORING WELL (YEE SITE)
- EW-1 EXTRACTION WELL (YEE SITE)
- MW-1 GROUNDWATER MONITORING WELL (GIN SITE)
- VW-3/SP-3 SOIL VAPOR/SPARGE WELL (UNABLE TO LOCATE) (GIN SITE)
- MPE-1 MULTI-PHASE EXTRACTION PILOT TEST WELL (PZ-1 IS LOCATED IN THE SAME BOREHOLE) (YEE SITE)
- MP-1 PILOT TEST MONITORING POINT (YEE SITE)
- VE-1 VAPOR EXTRACTION WELL (YEE SITE)
- VE-3 PILOT TEST VAPOR EXTRACTION WELL (YEE SITE)
- AS-1 AIR SPARGE WELL (YEE SITE)
- [150] TOTAL PURGEABLE PETROLEUM HYDROCARBONS (TPPH) CONCENTRATION IN MICROGRAMS PER LITER (µg/L)
- 100 TPPH ISOCONCENTRATION CONTOUR (µg/L; DASHED WHERE INFERRED)
- < DENOTES LESS THAN LABORATORY REPORTING LIMIT
- [NS] NOT SAMPLED

NOTES:

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

0 50' 100'

GRAPHIC SCALE

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

TPPH CONCENTRATION MAP

ARCADIS

FIGURE 9

CITY: SAN RAFAEL, CA (PETALUMA) DIV/GROUP: ENVCAD DB: J. HARRIS, M. HOEFER, J. HARRIS
C:\Users\jharris\Desktop\ENVCADIB0047339\2014000021\Q141DWG\47339C01.dwg LAYOUT: 4 SAVED: 4/7/2014 9:56 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP2 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 4/9/2014 8:01 AM BY: HARRIS, JESSICA
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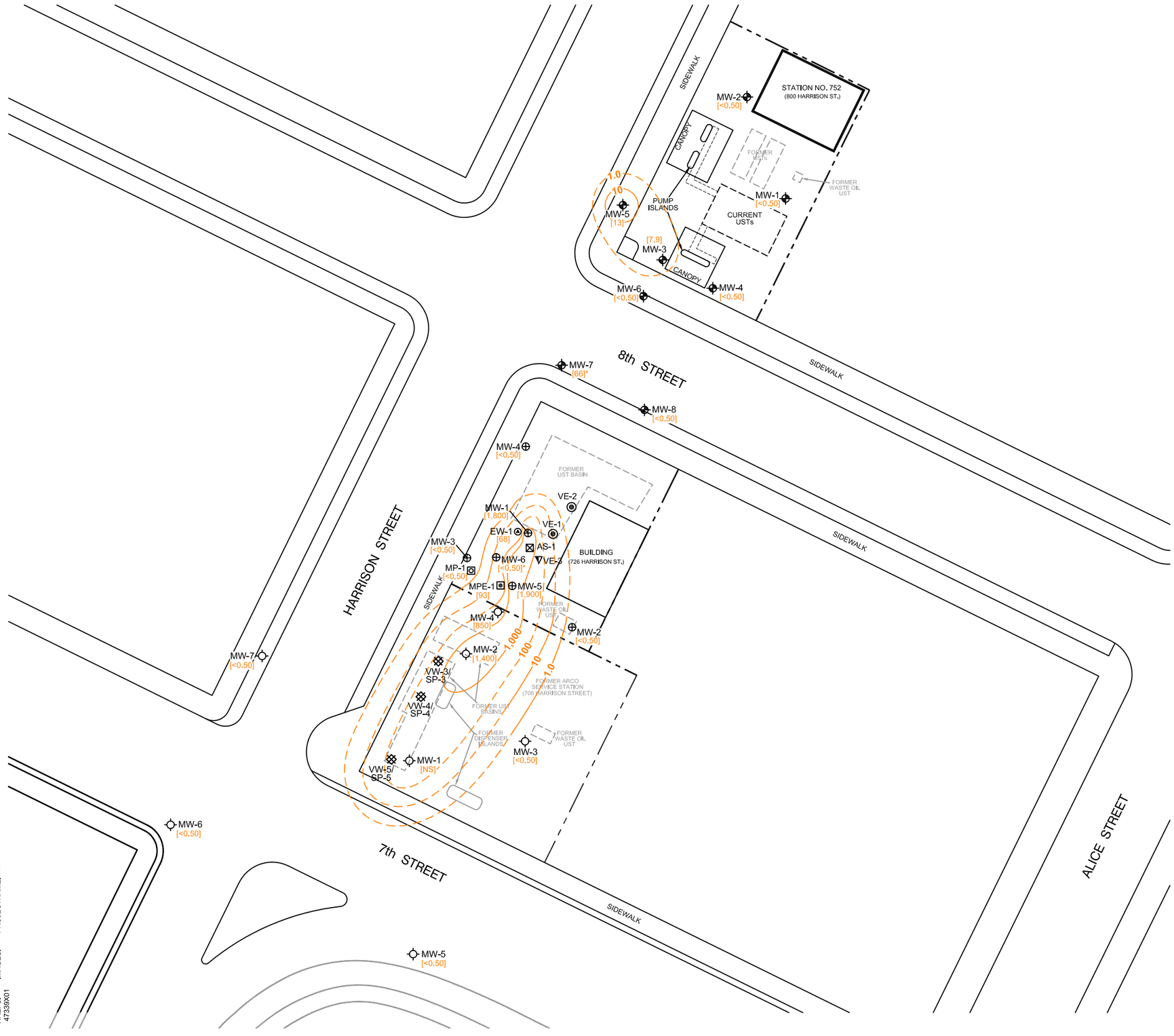

LEGEND

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

NOTES:

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

0 50' 100'

GRAPHIC SCALE

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

BENZENE CONCENTRATION MAP

ARCADIS

FIGURE
10

CITY: SAN RAFAEL, CA (PETALUMA) DIV/GROUP: ENVCAD DB: J. HARRIS, M. HOEFER, J. HARRIS
C:\Users\jharris\Desktop\ENVCAD\B0047339\2014000002\1Q14\DWG\47339C02.dwg LAYOUT: 5 SAVED: 4/7/2014 9:56 AM ACADVER: 18.1S (LMS TECH) PAGESETUP:
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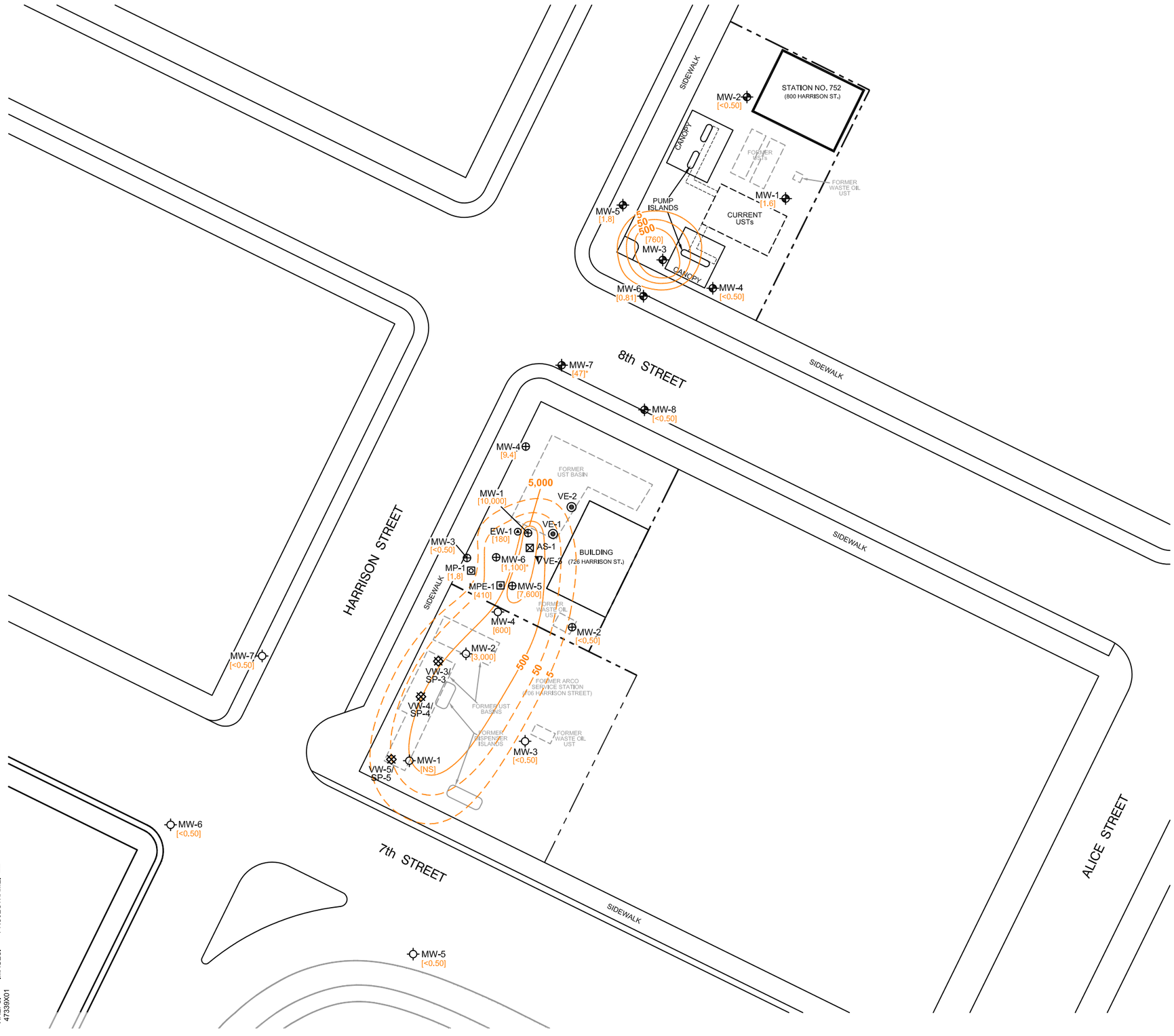


LEGEND

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

NOTES:

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

0 50' 100'
GRAPHIC SCALE

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

MTBE CONCENTRATION MAP

ARCADIS

FIGURE
11

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 (GIN)
- MW-1 GROUNDWATER MONITORING WELL (YEE)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- MPE-1 MULTI-PHASE EXTRACTION PILOT TEST WELL (PZ-1 IS LOCATED IN THE SAME BOREHOLE)
- MP-1 PILOT TEST MONITORING POINT
- VE-1 VAPOR EXTRACTION WELL (DESTROYED)
- VE-3 PILOT TEST VAPOR EXTRACTION WELL
- AS-2 PROPOSED AIR SPARGE WELL
- VE-4 PROPOSED VAPOR EXTRACTION WELL
- PROPOSED SYSTEM TRENCHING
- W WATER UTILITY LINE
- E ELECTRICAL UTILITY LINE

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 30' 60'

SCALE 1"=30'

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

PROPOSED REMEDIATION WELL AND TREATMENT ENCLOSURE LOCATIONS

ARCADIS

FIGURE 12

ARCADIS

Appendix **A**

Agency Correspondence

-----Original Message-----
From: Wickham, Jerry, Env. Health [mailto:jerry.wickham@acgov.org]
Sent: Monday, February 10, 2014 2:02 PM
To: Brandt, Katherine
Cc: TimBishop@chevron.com
Subject: Re: RO231/321/484 Harrison Street Co-mingled Plume

Katherine,

Based on your request, the schedule for submittal of a Remedial Action Plan for the case referenced above is extended to April 18, 2014.

Regards,
Jerry Wickham
Alameda County Environmental Health

Sent from my iPad

On Feb 10, 2014, at 12:29 PM, "Brandt, Katherine" <Katherine.Brandt@arcadis-us.com<mailto:Katherine.Brandt@arcadis-us.com>> wrote:

Jerry,

As we discussed on the phone today, ARCADIS and Chevron requests a 30 day extension for the Remedial Action Plan due March 18, 2014.
Thank you
Kathy

Katherine Brandt, P.G. | Geologist, Certified Project Manager | katherine.brandt@arcadis-us.com<mailto:katherine.brandt@arcadis-us.com>

ARCADIS U.S., Inc. | 2000 Powell Street, 7th Floor | Emeryville, CA 94608
T: 510.596.9675 | M. 925.202.7948 | F. 510.652.4906 Connect with us! www.arcadis-us.com<http://www.arcadis-us.com/> |
LinkedIn<http://www.linkedin.com/company/2906179?trk=tyah> |
Twitter<http://www.twitter.com/arcadis_us> | Facebook<http://www.facebook.com/ArcadisUS>

Professional Registration/PG-CA, #9132

ARCADIS, Imagine the result

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 2, 2013

RO0000231 Responsible Parties:

Timothy Bishop
Chevron Environmental Management Company
6101 Bollinger Canyon Road
San Ramon, CA 94583
(*Sent via E-mail to:* *TimBishop@Chevron.com*)

Ed Ralston
Phillips 66 Company
76 Broadway
Sacramento, CA 95818
(*Sent via E-mail to: Ed.C.Ralston@p66.com*)

Muhammad Usman
800 Harrison Street
Oakland, CA 94607

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

RO0000321 Responsible Parties:

Peter Yee
1000 San Antonio Avenue
Alameda, CA 94501

Kin Chan
4328 Edgewood Avenue
Oakland, CA 94602-1316

RO0000484 Responsible Parties:

Bo Gin
342 Lester Avenue
Oakland, CA 94606-1317

Subject: Pilot Test Summary Report 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 case file for the above-referenced site including the most recent document entitled, "*Multi-Phase Extraction and Air Sparge/Soil Vapor Extraction Pilot Test Summary Report 800, 726, and 706 Harrison Street, Oakland*," dated October 9, 2013. The Pilot Test Report, which was prepared on behalf of Chevron Environmental Management Company by ARCADIS, presents results from a pilot test conducted in September 2013.

Based on the results of the pilot test activities, the Pilot Test Report recommends preparation of a Remedial Action Plan. We concur and request that you submit a Remedial Action Plan no later than March 18, 2014.

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:

- **March 18, 2014** – Remedial Action Plan
  File to be named: RAP_R_yyyy-mm-dd RO231

- **April 29, 2014** – Semi-annual Groundwater Monitoring Report – First Quarter 2014
  File to be named: GWM_R_yyyy-mm-dd RO231

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum ST system, and require your compliance with this request.

If you have any questions, please call me at (510) 567-6791 or send me an electronic mail message at jerry.wickham@acgov.org. Online case files are available for review at the following website: http://www.acgov.org/aceh/index.htm.

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*)

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**

Historical Site Investigations and Remedial Actions

Appendix B
Union Oil of California
Station No. 0752/Yee/Gin Co-mingled
706/726/800 Harrison Street
Oakland, California

Site History, Previous Investigations and Remedial Actions

800 Harrison Street (Active Unocal)

In November 1990, two gasoline USTs and one waste oil UST were removed from the site. The tanks consisted of one 10,000 gallon regular unleaded gasoline storage tank, one 10,000 gallon super unleaded gasoline storage tank, and one 280 gallon waste oil tank. The waste oil tank was reported to contain one, 1/8 -inch square hole. Based on confirmation soil sampling during the UST removal, the majority of the source area was the soil beneath the former UST pit.

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 after sustained operation at the maximum vacuum (Stantec 2009).

In November 1996, one 1,100- gallon waste oil UST and associated product dispensers piping were removed from the site. No apparent holes or cracks were observed in the waste oil tank, or piping at this time.

Gettler-Ryan Inc., in their April 23, 2001 *Site Conceptual Model for 800 Harrison Street*, referenced the source area leak as a potential UST spill bucket containment failure stating that there were several historically documented maintenance reports in which residual rainwater was noted in the spill tank basin after overflow. The spill bucket containment was repaired in November 2001. Since the repair, hydrocarbon concentrations decreased in the short term, but there have been several additional elevated concentrations observed in 2004, which suggests that the spill bucket containment failure was not likely the single contributing source release.

726 Harrison Street (Former Shell)

In October 1995, four gasoline USTs and one waste UST were removed from the site. The tanks consisted of two 5,000-gallon single-walled bare-steel premium unleaded gasoline storage tanks, one 5,000-gallon single-walled bare-steel plus unleaded gasoline storage tank, one 8,000-gallon single-walled bare-steel regular unleaded gasoline storage tank, and one 1,000-gallon single-walled bare-steel waste oil tank. The State of California UST Permit Applications indicate that the USTs contain no spill or overfill preventative containment equipment for any of the former USTs.

Elevated hydrocarbon concentrations were detected in soil beneath each of the former gasoline USTs. Elevated concentrations of Total Oil and Grease (TOG) were detected in soil beneath the waste oil UST. Approximately 530 tons of impacted soil was removed from the excavations to a maximum depth of 20 feet below ground surface (bgs) in December 1995. Seven confirmation soil samples were collected from the bottom and side walls of the excavation to determine the removal of impacted soil. Two of the seven samples contained elevated concentrations of

petroleum hydrocarbons at the northern and southern portion of the excavation (Aqua Science Engineers, Inc. [ASE] 2007). Over excavation was not possible due the building location to the southeast and the street to the northwest.

In July 1997, a groundwater monitoring well was installed at the southern edge of the former USTs. Groundwater samples from the well contained elevated concentrations of petroleum hydrocarbons. In December 1998, three additional wells were installed along the southern property boundary between 706 and 726 Harrison Street. Newly installed wells (MW-3 and MW-4) contained much lower detections of hydrocarbons. MW-2 did not contain hydrocarbons detected above laboratory detection limits.

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 90 minute pilot test activities (ASE 2001).

<u>706 Harrison Street (Former ARCO)</u>

In January 1991, four 1,000-gallon gasoline USTs, two 6,000-gallon gasoline USTs, and one unknown size waste oil tank were removed from the site. Confirmation soil samples were collected beneath the tanks, and elevated petroleum hydrocarbon concentrations were observed in confirmation samples. In December 1991, the UST pipes were removed and a limited subsurface investigation was performed to resample the former tank pit areas (Conestoga-Rovers and Associates [CRA] 2007).

In February 1993, an over excavation of unknown volume was performed from three excavations in the vicinity of the former UST locations. Limitations during the excavation related to shoring prevented removal of all impacted soil (CRA 2007). Soil samples collected at 16 feet bgs contained elevated concentrations of hydrocarbons.

In July 1993, monitoring wells (MW-1 through MW-3) and soil vapor extraction (SVE) wells (VW-1 and VW-2) were installed. Soil samples collected during the installation contained elevated total petroleum hydrocarbons as gasoline and benzene (6,000 parts per million [ppm] and 210 ppm, respectively). In December 1993, additional soil samples were collected from the former pump island locations containing concentrations of organic lead with a maximum of 17 ppm at 2 feet bgs.

In April 1994, a SVE pilot test was conducted and SVE was determined to be an effective remedial alternative. In November 1994, additional groundwater monitoring wells, SVE wells,

and air sparge (AS) wells were installed for on-site remediation. Operation the AS/SVE began in May 1998 and continued into February 2001. The SVE portion was shut down but the AS system continued to inject air to increase oxygen concentrations to enhance aerobic biodegradation.

Groundwater samples collected from SVE wells determined that the system was effective and the AS system was shut down.

The Co-mingled Plume Investigation (800, 726, and 706 Harrison Street):

In June 2011, ARCADIS conducted site assessment activities to address data gaps presented in Stantec's Work Plan (Stantec 2011) for the site. ARCADIS oversaw the advancement of four soil borings associated with the 800 and 706 Harrison Street properties (Figure 2). ASE oversaw the installation of one monitoring well and one soil boring associated with 726 Harrison Street with observations by ARCADIS (Figure 2).

Soil concentrations for the site assessment were elevated in soil boring GP-2 located at 800 Harrison Street. Total purgeable petroleum hydrocarbons (TPPH) and methyl tertiary butyl ether (MTBE) were detected at 3,200 milligrams per kilograms (mg/kg) and 0.0060 mg/kg, respectively. Groundwater samples were collected from two locations (GP-3 and MW-6) located on the 726 Harrison Street property. Elevated groundwater concentrations for benzene (1,800 micrograms per liter (µg/L)), toluene (2,000 µg/L), ethylbenzene (1,500 µg/L), xylenes (5,000 µg/L) (collectively BTEX), and MTBE (4,600 µg/L) were from soil boring GP-3.

On March 28, 2012, additional site assessment activities were conducted. ARCADIS oversaw the advancement of three soil borings (GP-1, GP-9 and GP 10) on the 800 Harrison and 640 Harrison Street properties.

800 Harrison Street Summary

Soil borings GP-1 and GP-2 were advanced to a depth of approximately 20 feet bgs to delineate the soil stratigraphy and extent of petroleum hydrocarbon impacts to vadose-zone soil. Soil samples collected from boring GP-2 indicate elevated concentrations for TPPH, toluene, ethylbenzene, xylenes, and MTBE at sample depths ranging from 10 feet to 17 feet bgs. Concentrations were detected above ESLs for two of the five analytes; TPPH and MTBE at sample depths of 14 feet and 17 feet bgs. Soil collected from GP-1 had concentrations below the detection limit for all analyses. Because TOG and Hydraulic Oil were not detected above detection limits, no additional samples were analyzed for Title 22 Metals or SVOCs per the Work Plan (Stantec 2011) specifications. Soil boring GP-1 is located southeast of MW-2 within the smog shop, and soil boring GP-2 is located northeast of MW-1 and southeast of the former USTs.

726 Harrison Street Summary

Soil boring GP-3 was advanced to a depth of approximately 20 feet bgs to delineate the soil stratigraphy and extent of petroleum hydrocarbon impacts to vadose-zone soil. Soil collected

from GP-3 had concentrations below the detection limit for all analytes except MTBE at 7 feet bgs which had a concentration above the method detection Limit (MDL) but below the ESL.

The soil samples were collected at depths of 6.5, 11, and 16 feet bgs from MW-6. The newly installed well was placed south of EW-1, which previously had the highest detected MTBE groundwater concentrations for the comingled plume. Soil samples were not detected at the 6.5 and 11 feet bgs intervals. Elevated concentrations of TPPH and MTBE were detected at 16 feet bgs but concentrations were below the ESLs.

Groundwater samples were collected from boring GP-3 and from monitoring well MW-6. Concentrations of BTEX and MTBE were detected in excess of the MCL in GP-3 and MTBE was detected at a concentration of 990 micrograms per liter at MW-6. Groundwater was encountered at approximately 20 feet bgs at GP-3 and MW-6.

706 Harrison Street Summary

Soil boring locations GP-5 through GP-7 were advanced and sampled to assess the effectiveness of past site remediation events including several over-excavations to remove impacted hydrocarbon soil and the installation of a SVE and AS well system to remediate the property. Data collected from the assessment work indicates that soil has limited impacts in the vadose-zone. Soil samples collected from soil borings GP-6 located southwest of MW-2 within the former UST basin and GP-7 located in the southwestern corner along the fence line of the property, indicated that all analytes were not detected at concentrations in excess of the MDL. GP-5 located northeast of MW-4 and within the former UST basin, showed concentrations detected above MDLs for TPPH, ethylbenzene and MTBE at 20 feet bgs.

Downgradient Delineation

Groundwater samples were collected from boring GP-9 located from the 640 Harrison Street property. Groundwater samples collected from GP-9 had concentrations below the detection limit for all analytes. Groundwater was encountered at approximately 20 feet bgs.

References

Aqua Science Engineers, Inc. 2007. "*Subsurface Utility Study, Area Well Study, and Work Plan for Additional Soil and Groundwater Assessment for 726 Harrison Street, Oakland, California."* December 6.

Conestoga-Rovers and Associates. 2007. "*Onsite Characterization Work Plan for 706 Harrison Street, Oakland. California*." October 5.

Gettler-Ryan, Inc. 2001. "*Site Conceptual Model for 800 Harrison Street, Oakland, California*." April 23.

Stantec Consulting Corporation (Stantec). 2009. "*Site Conceptual Model 800, 726, and 706 Harrison Street Comingled Plume Oakland." California*, September 30, 2009.

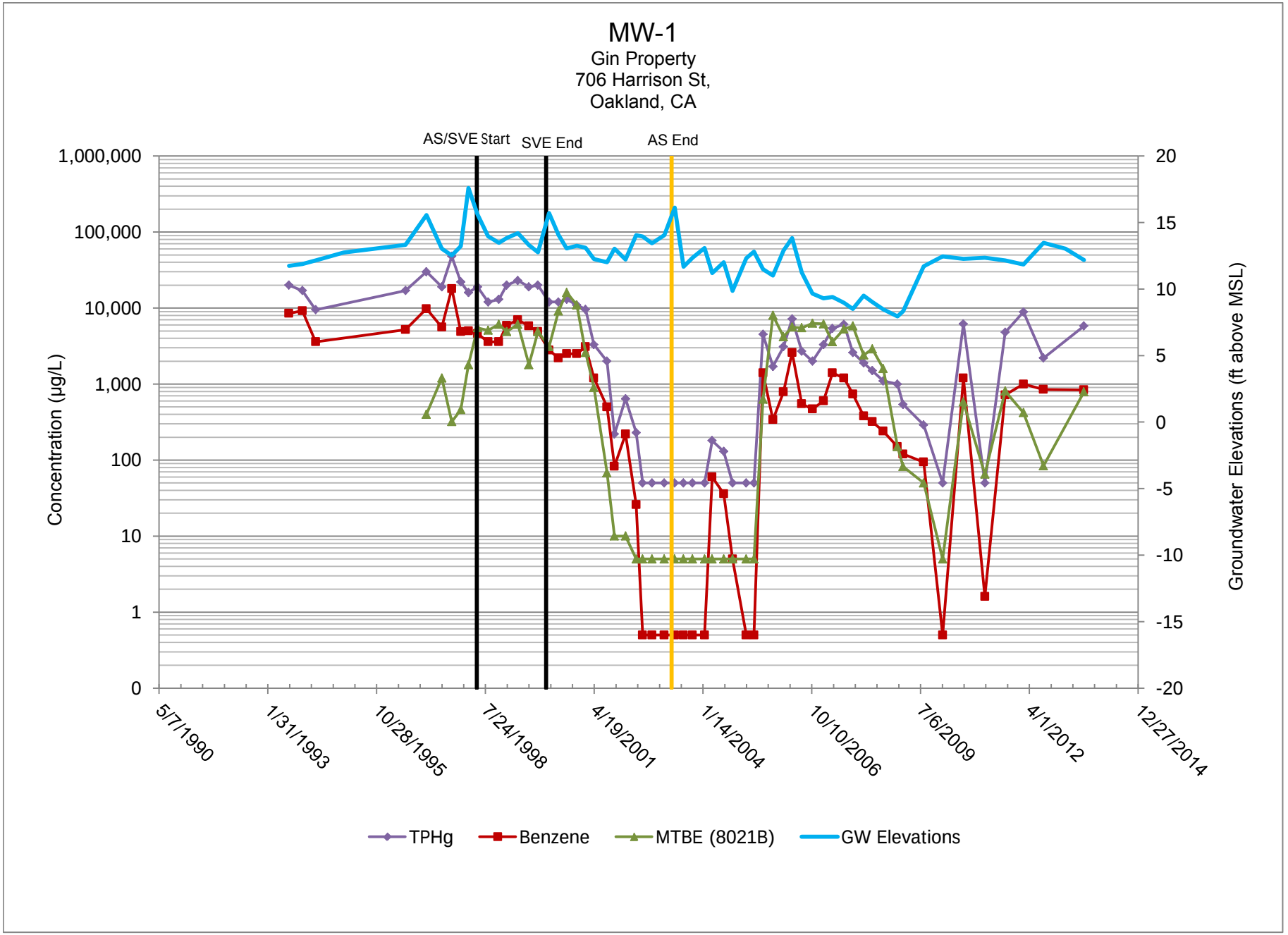
Stantec. 2011. "*Commingled Plume Assessment Work Plan*, *800, 726, and 706 Harrison Street." Oakland, California*. 2011.

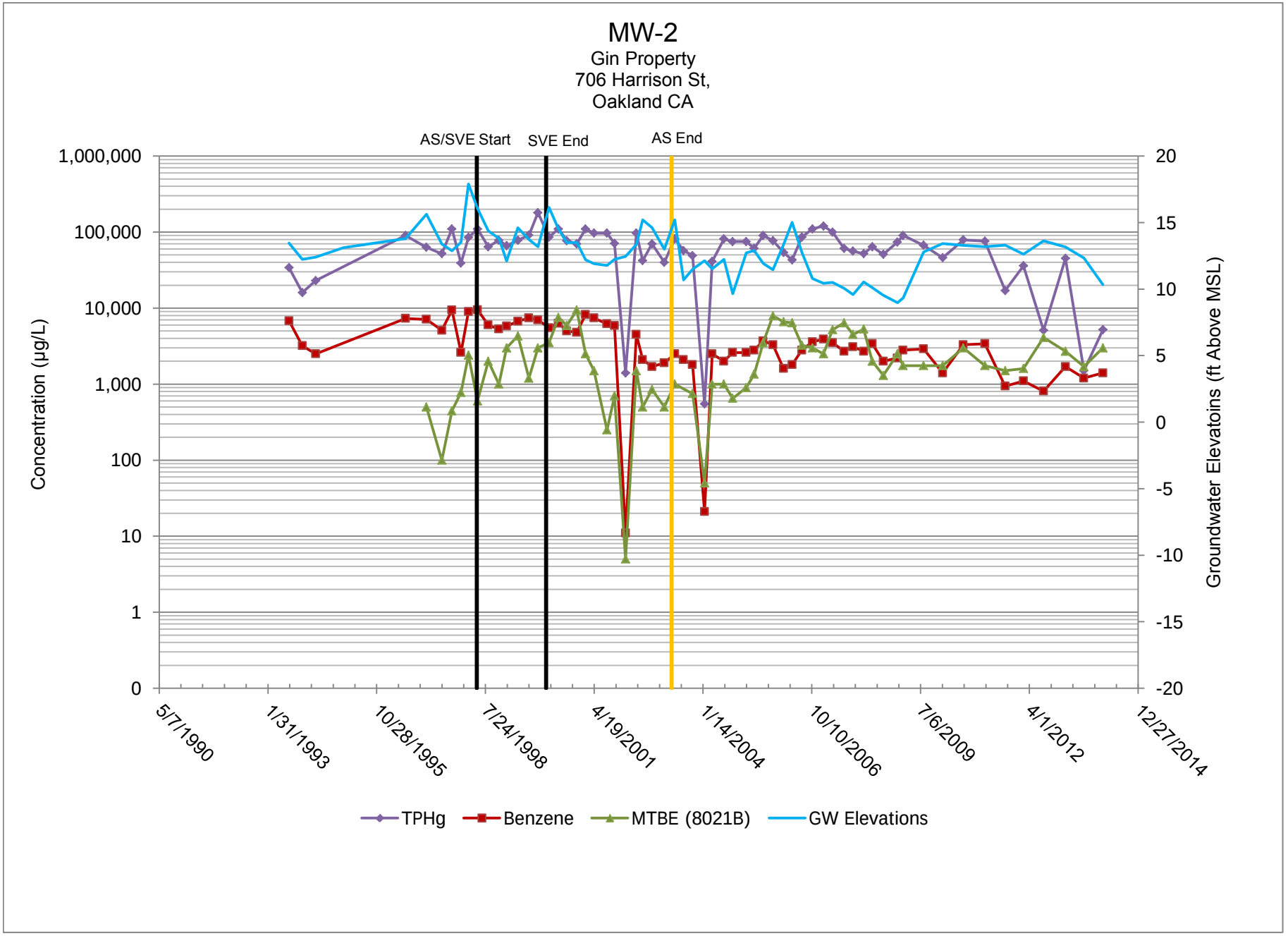
U.S. Geological Survey. 2000. USGS, R.W, Graymer, Geologic Mand and Map Database of the Oakland Metropolitan Area, Alameda, Contra Costa, and San Francisco Counties, California.

ARCADIS

Appendix **C**

Hydrographs


MW-1
Gin Property
706 Harrison St,
Oakland, CA
AS/SVE Start
SVE End
AS End
1,000,000
100,000
10,000
1,000
100
10
1
0
Concentration (µg/L)
20
15
10
5
0
-5
-10
-15
-20
Groundwater Elevations (ft above MSL)
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
TPHg
Benzene
MTBE (8021B)
GW Elevations


MW-2
Gin Property
706 Harrison St,
Oakland CA
AS/SVE Start
SVE End
AS End
Concentration (µg/L)
Groundwater Elevatoins (ft Above MSL)
1,000,000
100,000
10,000
1,000
100
10
1
0
20
15
10
5
0
-5
-10
-15
-20
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
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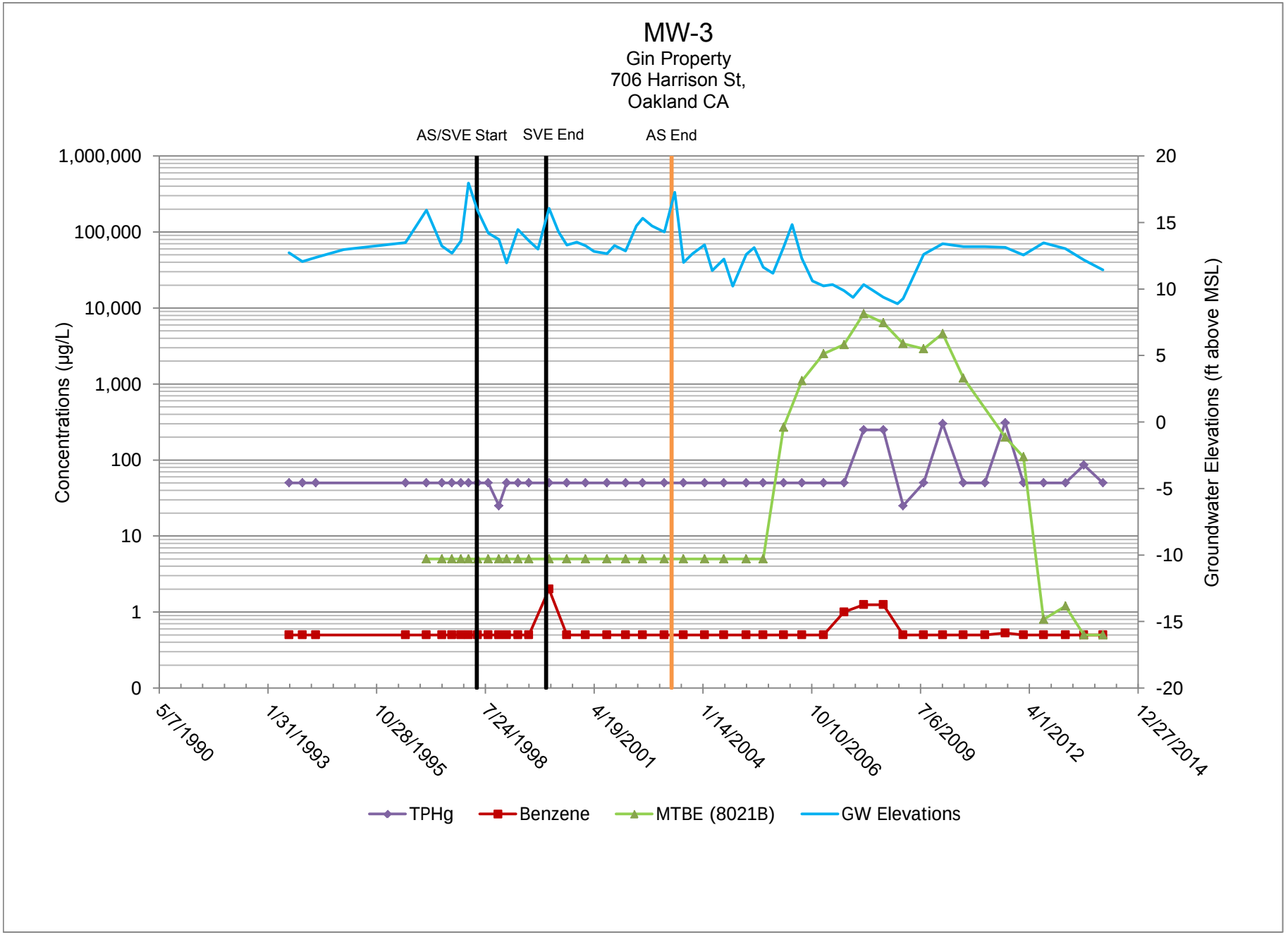
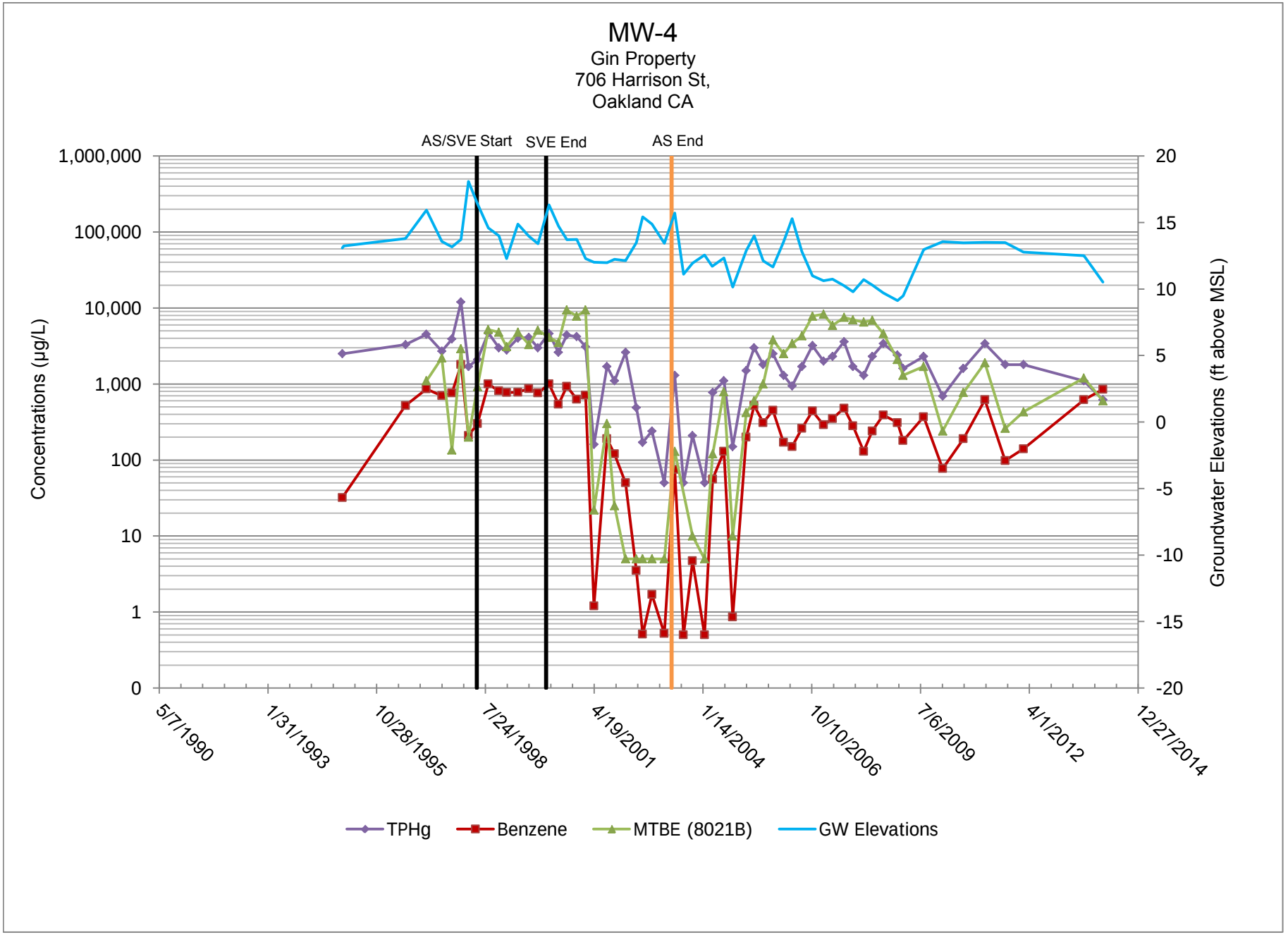
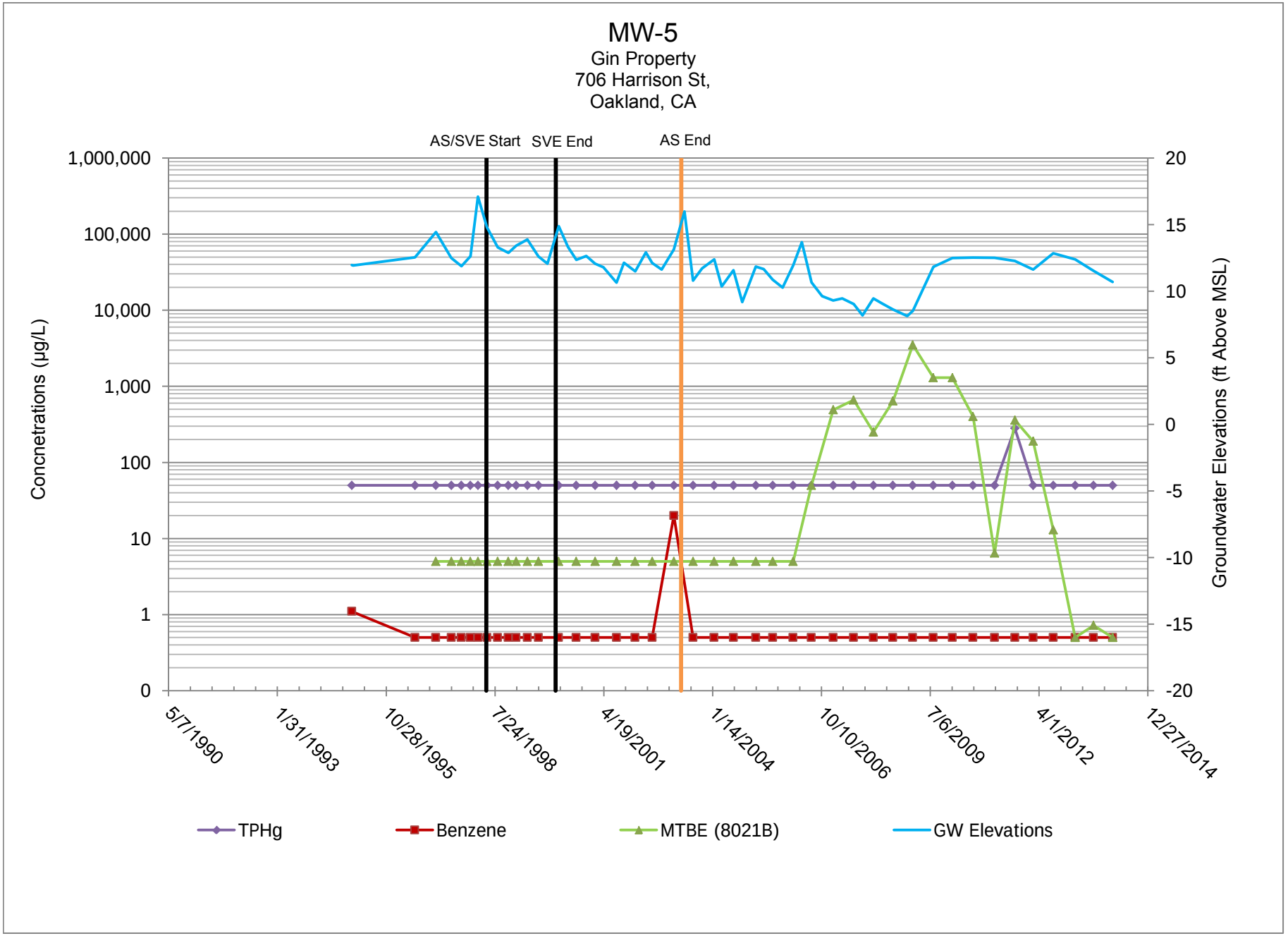
7/6/2009
4/1/2012
12/27/2014
TPHg
Benzene
MTBE (8021B)
GW Elevations


MW-3
Gin Property
706 Harrison St,
Oakland CA
AS/SVE Start
SVE End
AS End
1,000,000
100,000
10,000
1,000
100
10
1
0
Concentrations (µg/L)
20
15
10
5
0
-5
-10
-15
-20
Groundwater Elevations (ft above MSL)
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
TPHg
Benzene
MTBE (8021B)
GW Elevations


MW-4
Gin Property
706 Harrison St,
Oakland CA
AS/SVE Start
SVE End
AS End
Concentrations (µg/L)
Groundwater Elevations (ft above MSL)
1,000,000
100,000
10,000
1,000
100
10
1
0
20
15
10
5
0
-5
-10
-15
-20
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
TPHg
Benzene
MTBE (8021B)
GW Elevations


MW-5
Gin Property
706 Harrison St,
Oakland, CA
AS/SVE Start
SVE End
AS End
Concnetrations (µg/L)
Groundwater Elevations (ft Above MSL)
1,000,000
100,000
10,000
1,000
100
10
1
0
20
15
10
5
0
-5
-10
-15
-20
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
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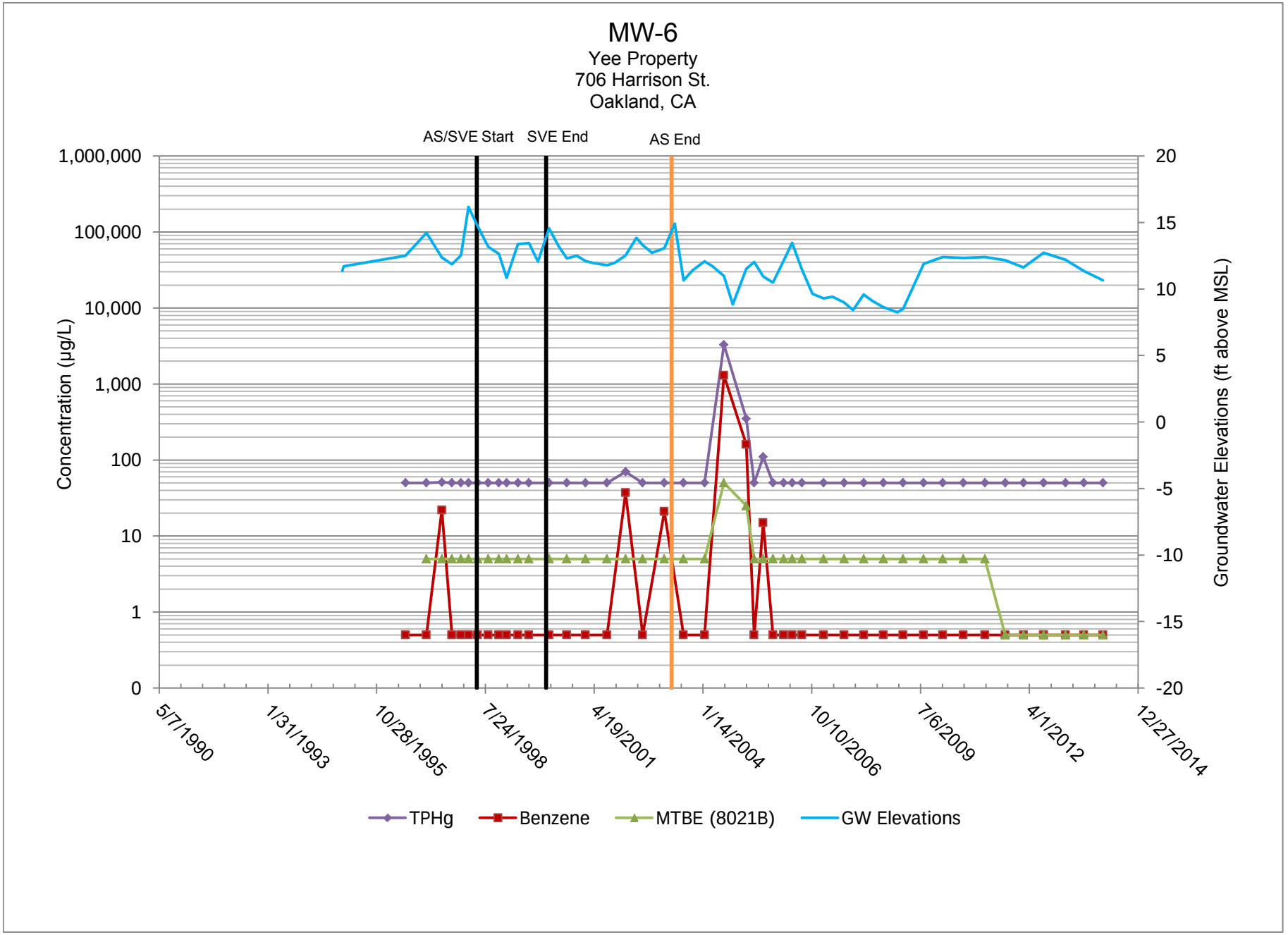
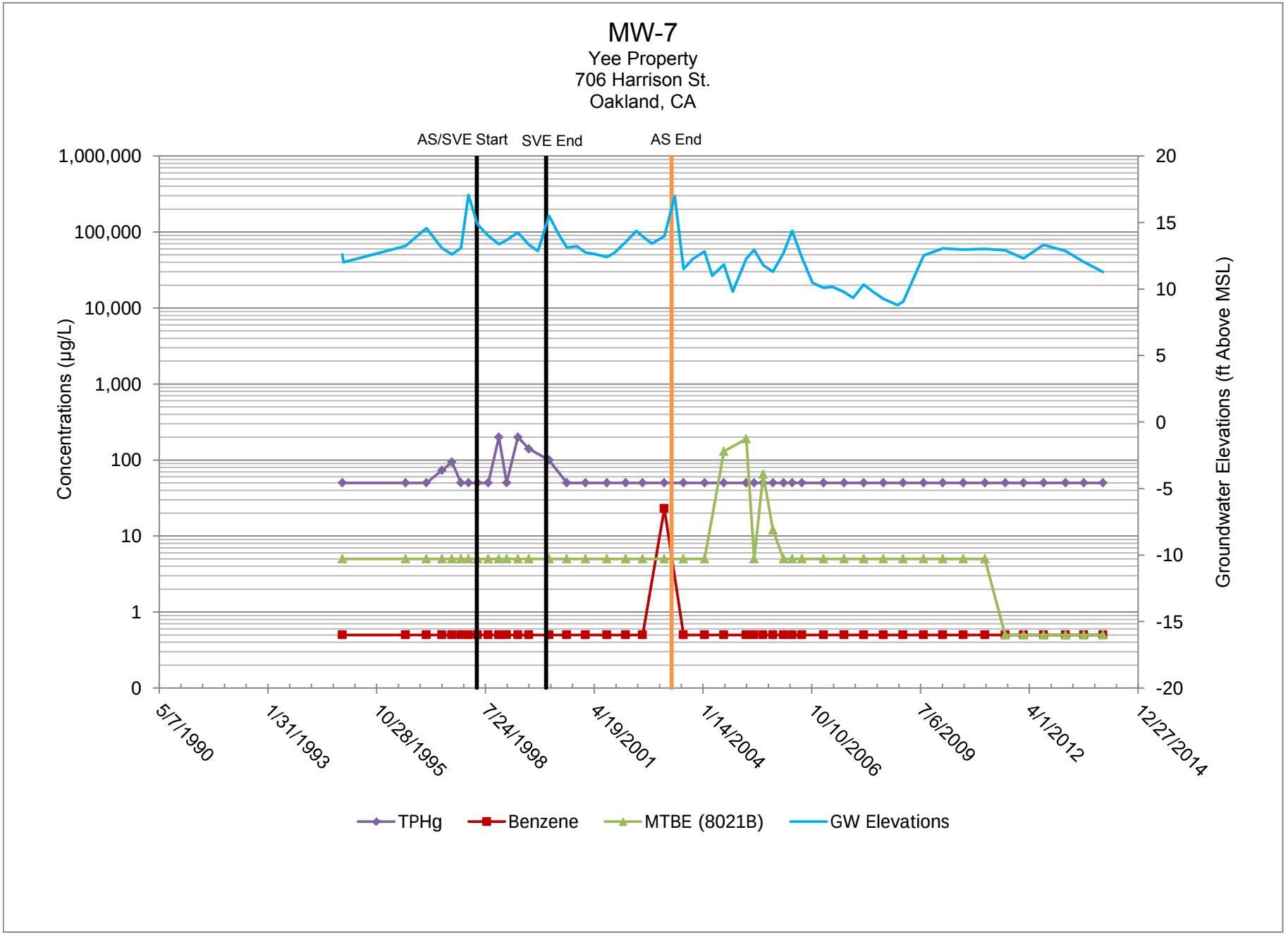
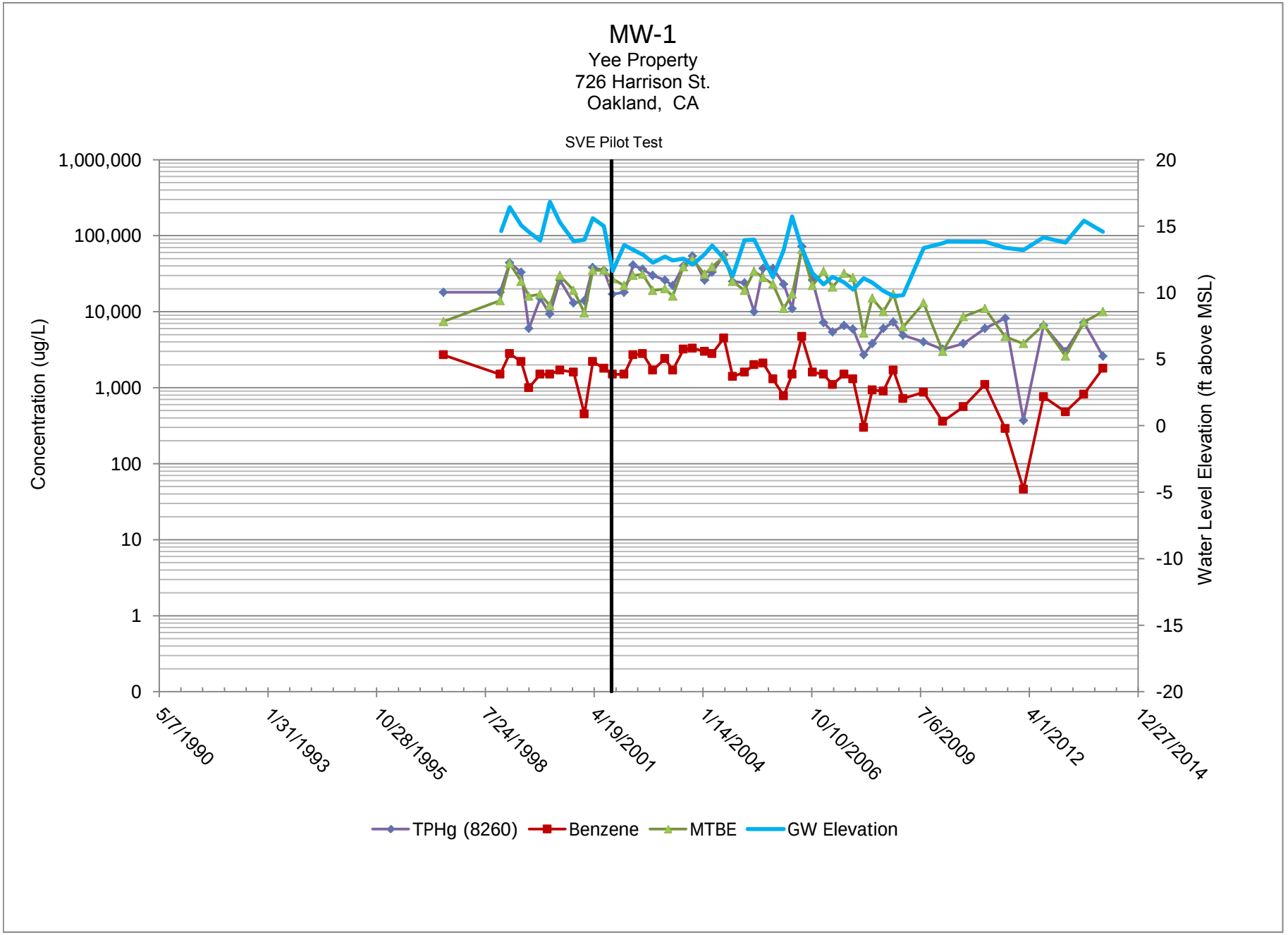
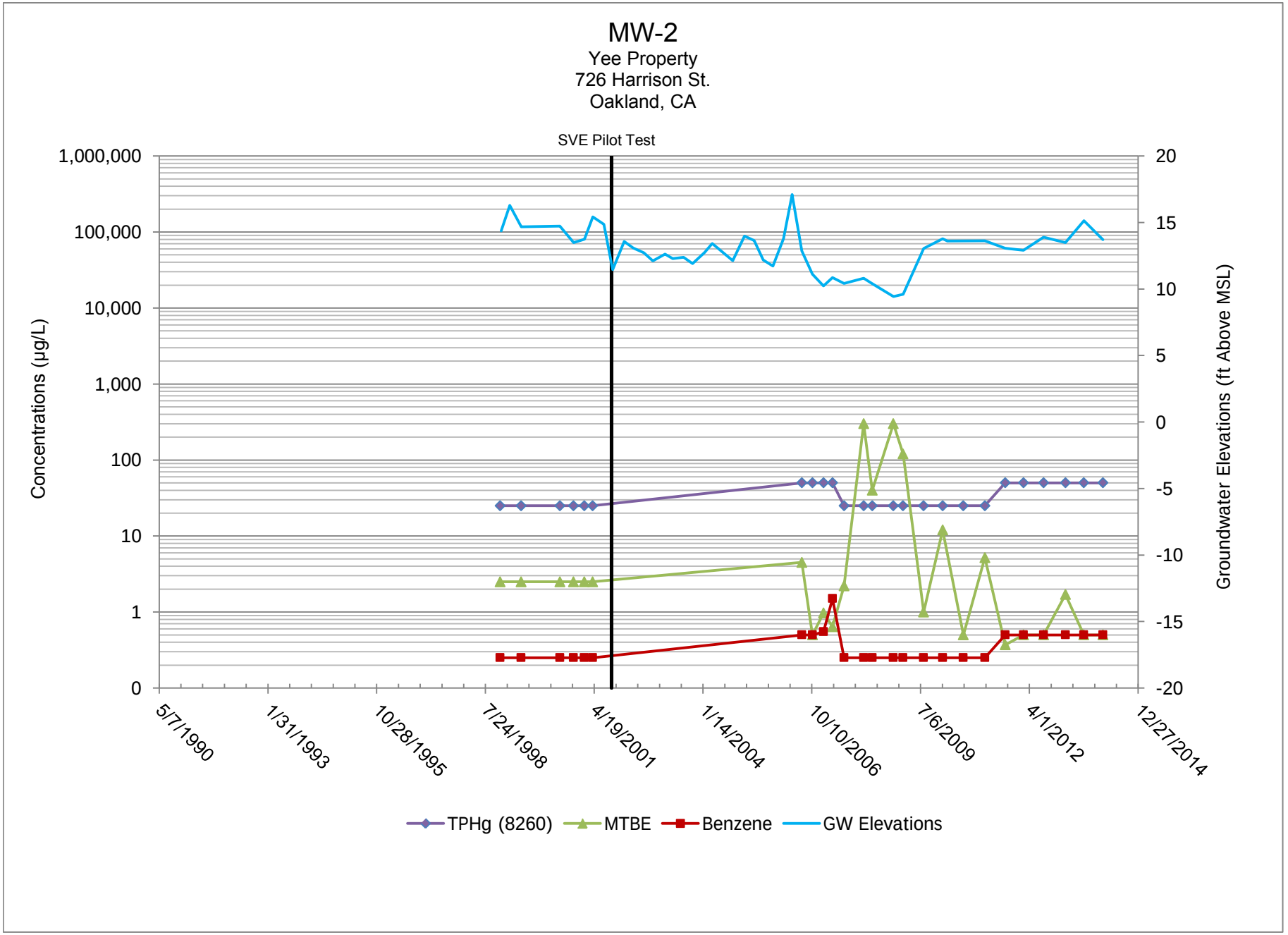
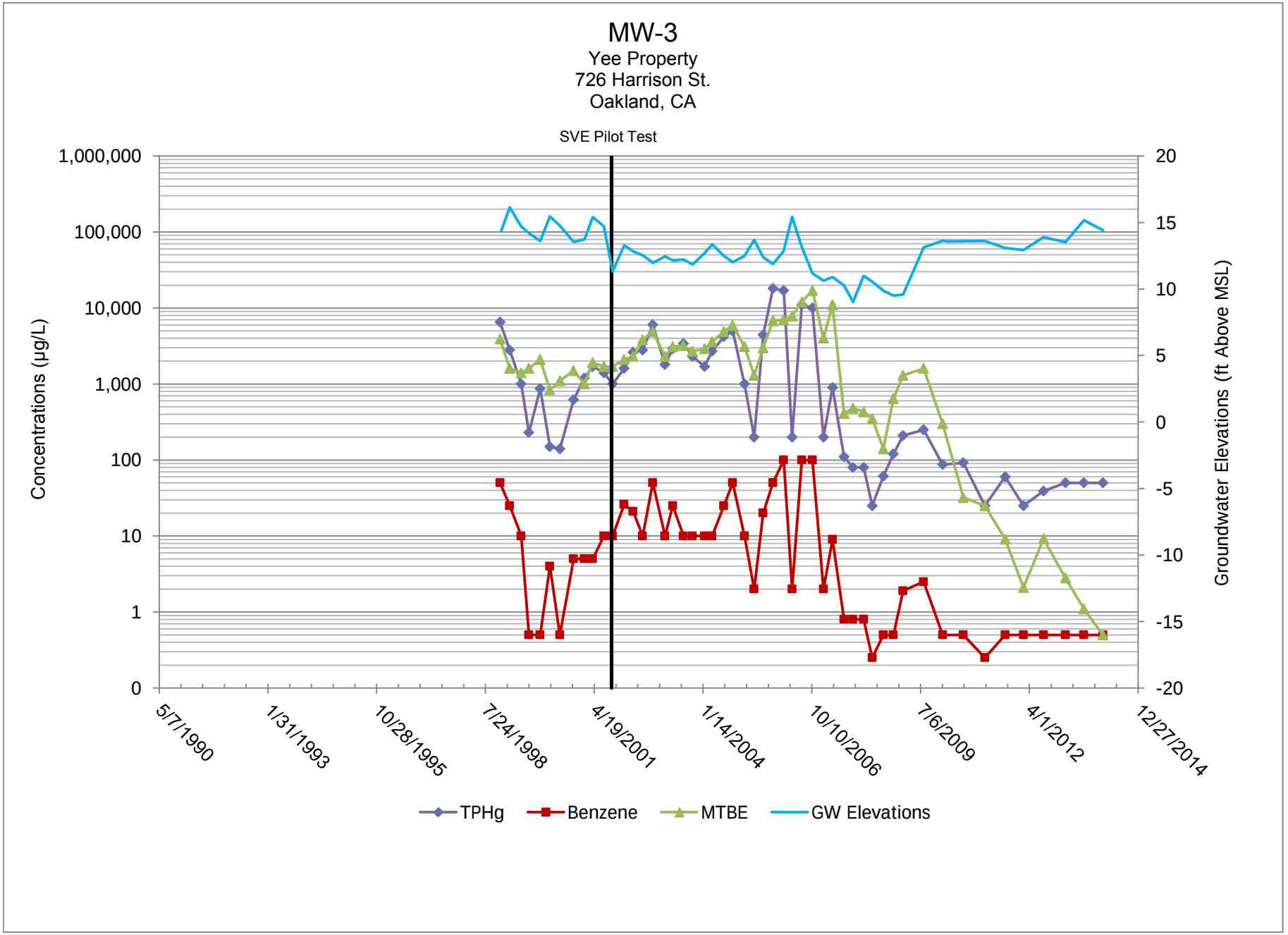
7/6/2009
4/1/2012
12/27/2014
TPHg
Benzene
MTBE (8021B)
GW Elevations

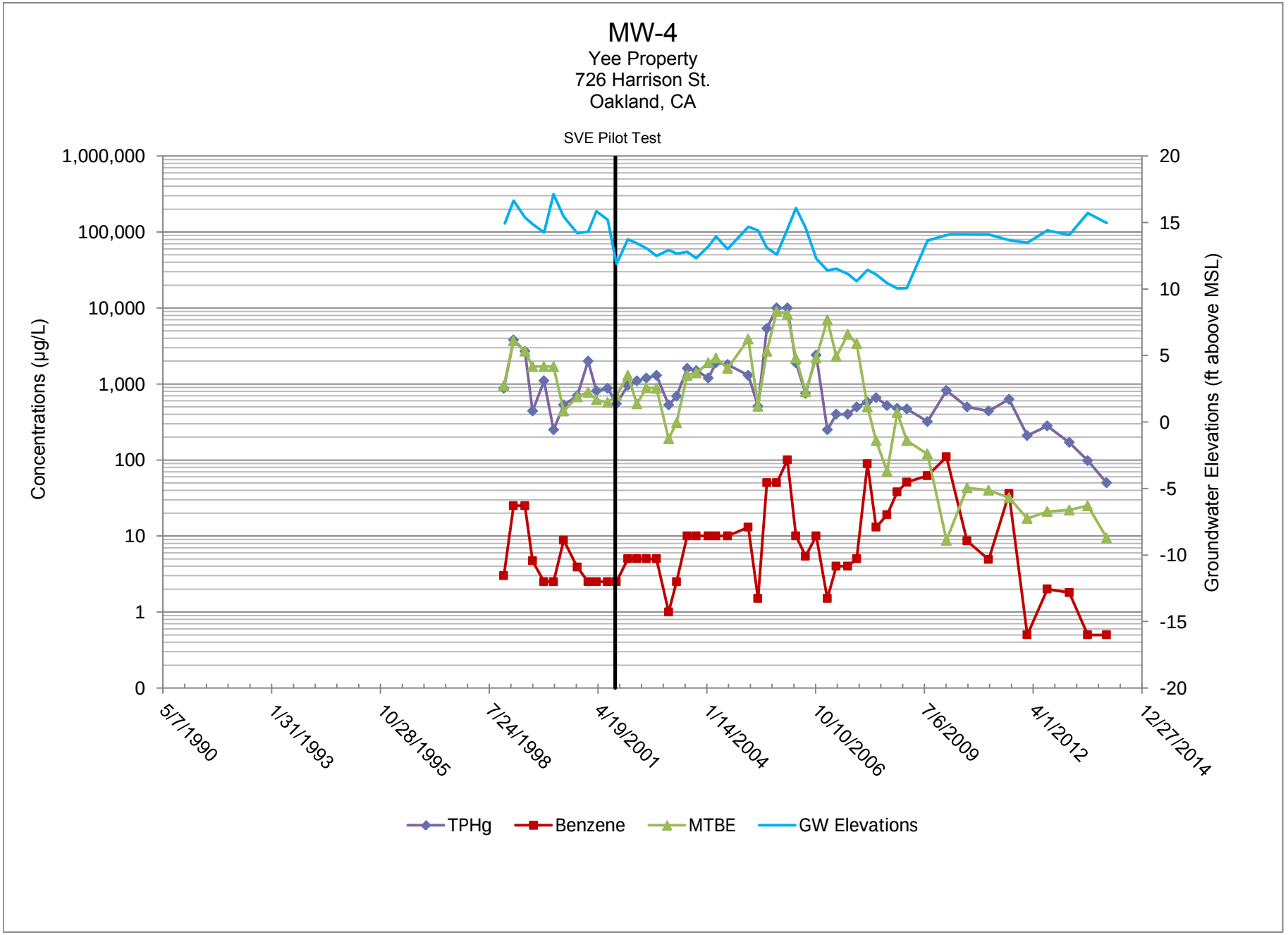

MW-6
Yee Property
706 Harrison St.
Oakland, CA
AS/SVE Start
SVE End
AS End
1,000,000
100,000
10,000
1,000
100
10
1
0
Concentration (µg/L)
20
15
10
5
0
-5
-10
-15
-20
Groundwater Elevations (ft above MSL)
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
TPHg
Benzene
MTBE (8021B)
GW Elevations


MW-7
Yee Property
706 Harrison St.
Oakland, CA
AS/SVE Start
SVE End
AS End
1,000,000
100,000
10,000
1,000
100
10
1
0
Concentrations (µg/L)
20
15
10
5
0
-5
-10
-15
-20
Groundwater Elevations (ft Above MSL)
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
TPHg
Benzene
MTBE (8021B)
GW Elevations


MW-1
Yee Property
726 Harrison St.
Oakland, CA
SVE Pilot Test
Concentration (ug/L)
Water Level Elevation (ft above MSL)
1,000,000
100,000
10,000
1,000
100
10
1
0
20
15
10
5
0
-5
-10
-15
-20
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
TPHg (8260)
Benzene
MTBE
GW Elevation


MW-2
Yee Property
726 Harrison St.
Oakland, CA
SVE Pilot Test
Concentrations (µg/L)
Groundwater Elevations (ft Above MSL)
1,000,000
100,000
10,000
1,000
100
10
1
0
20
15
10
5
0
-5
-10
-15
-20
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
TPHg (8260)
MTBE
Benzene
GW Elevations


MW-3
Yee Property
726 Harrison St.
Oakland, CA
SVE Pilot Test
Concentrations (µg/L)
Groundwater Elevations (ft Above MSL)
1,000,000
100,000
10,000
1,000
100
10
1
0
20
15
10
5
0
-5
-10
-15
-20
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
TPHg
Benzene
MTBE
GW Elevations


MW-4
Yee Property
726 Harrison St.
Oakland, CA
SVE Pilot Test
Concentrations (µg/L)
Groundwater Elevations (ft aboove MSL)
1,000,000
100,000
10,000
1,000
100
10
1
0
20
15
10
5
0
-5
-10
-15
-20
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
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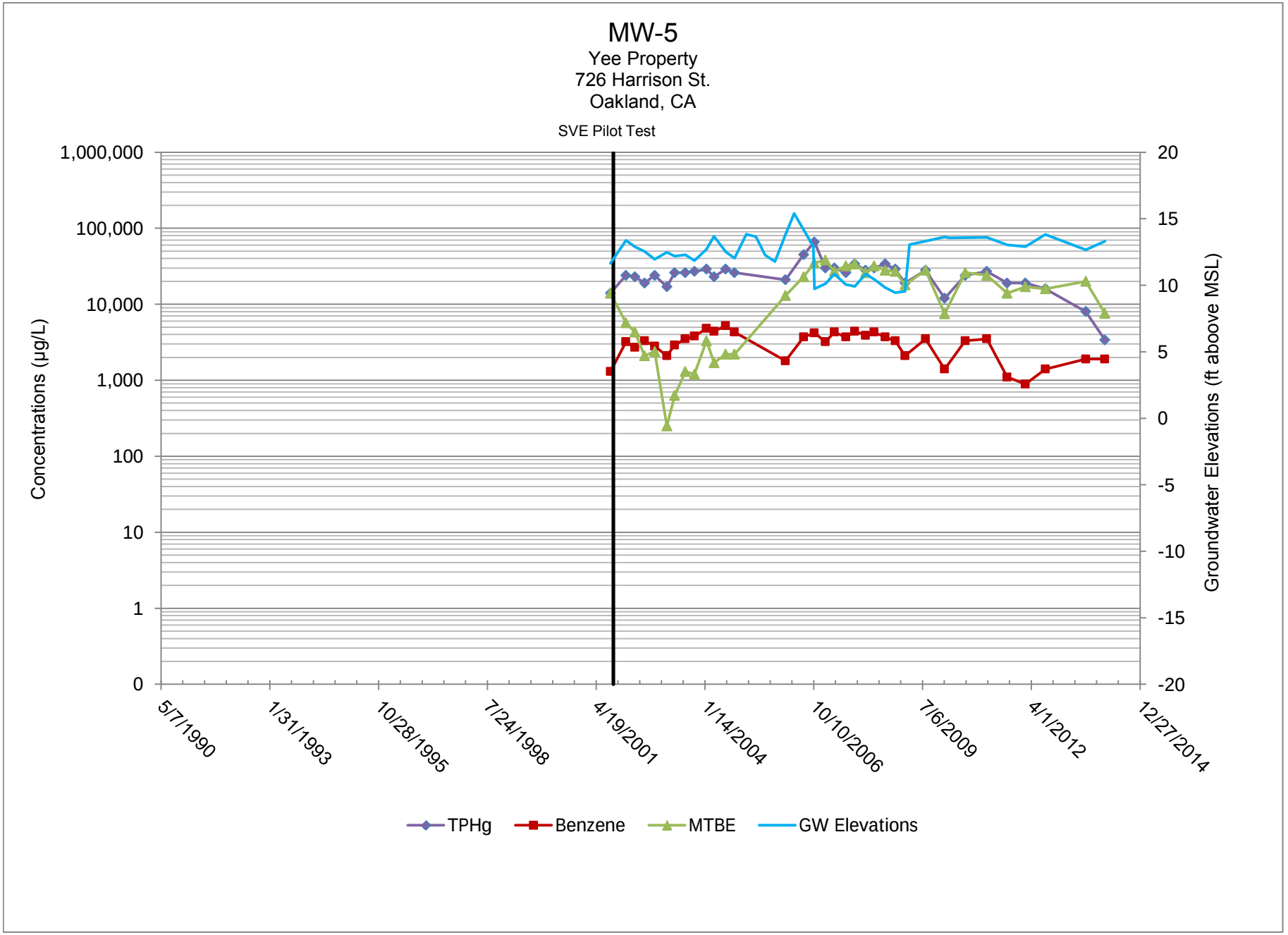
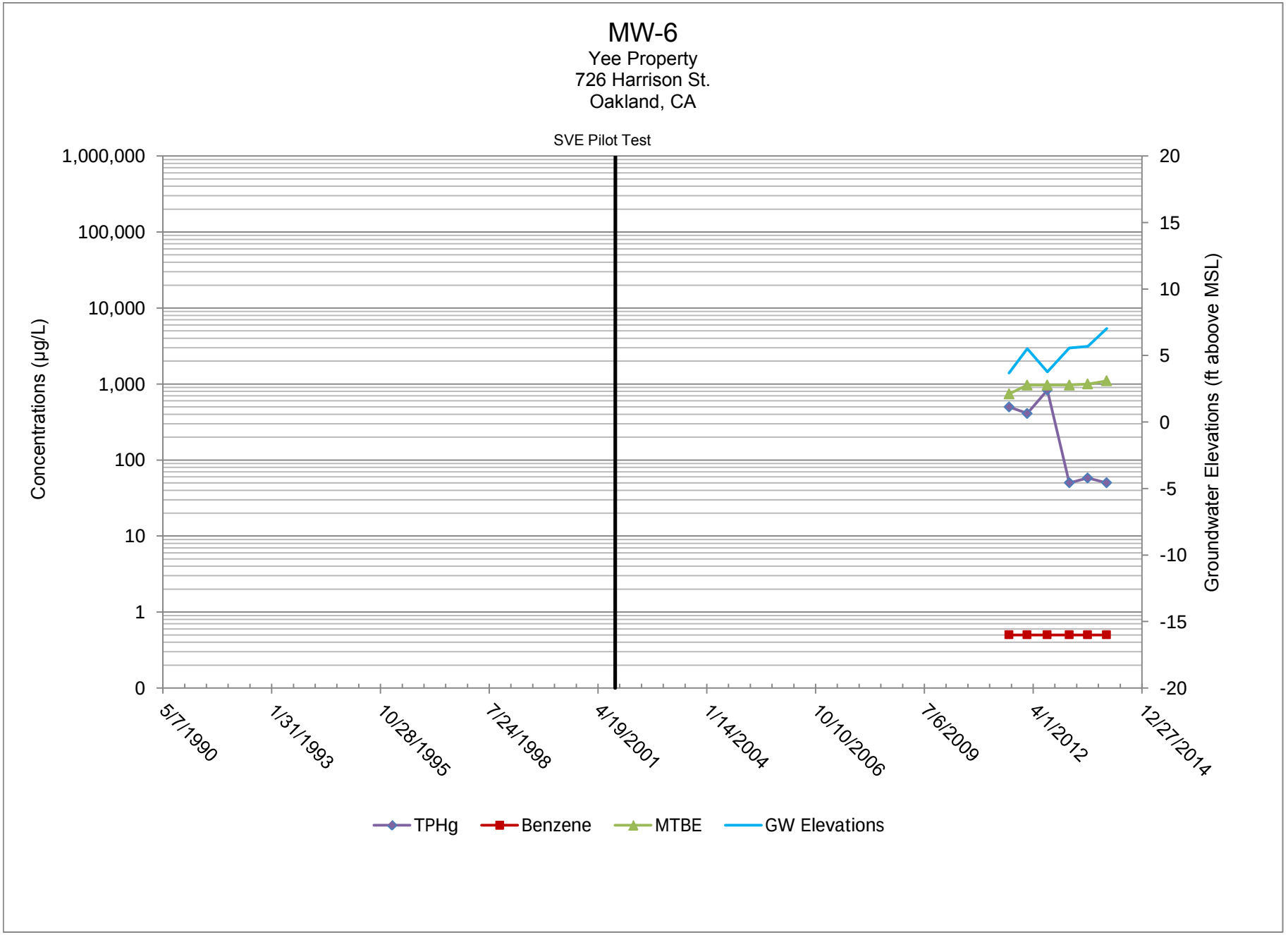
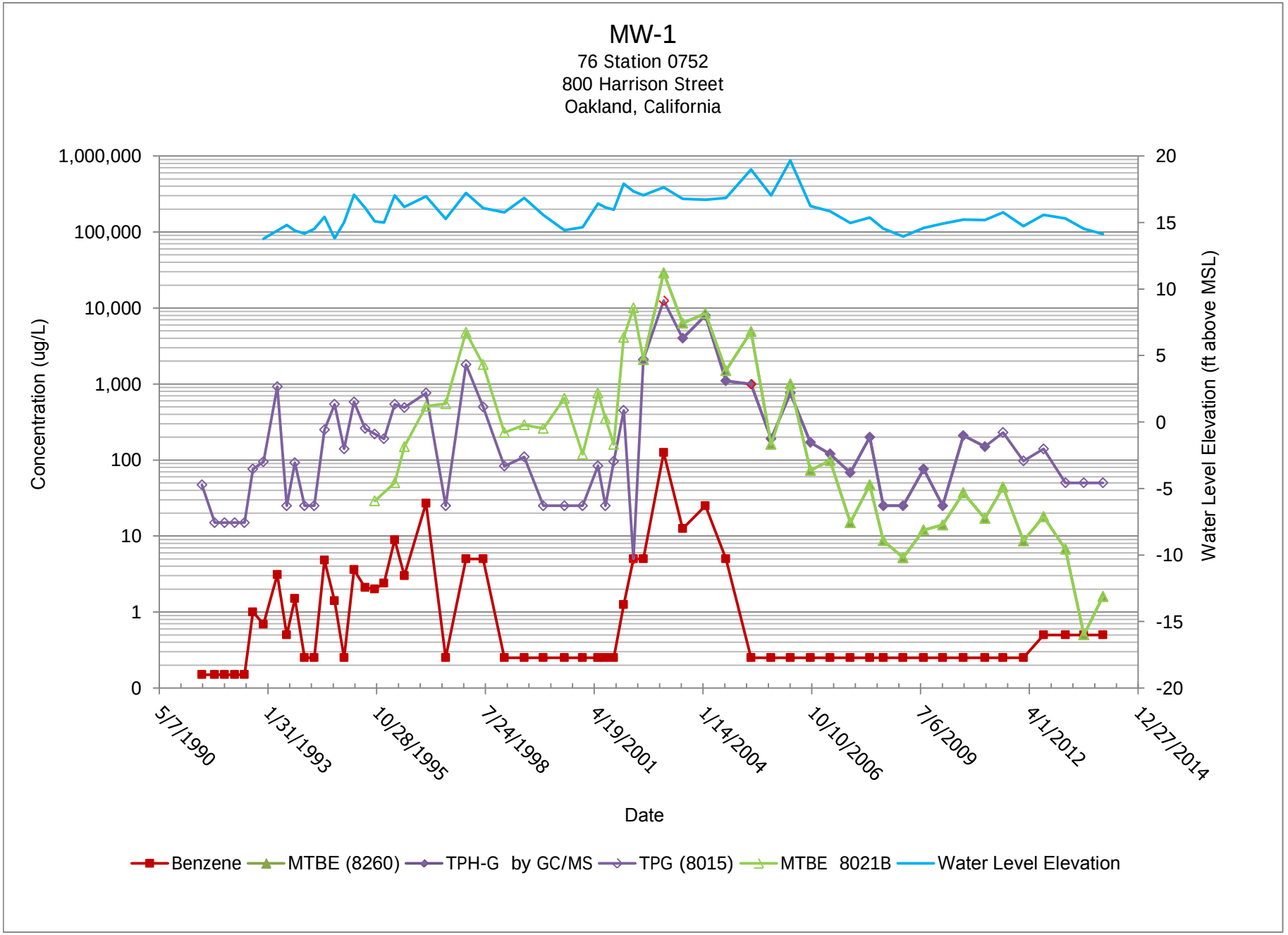
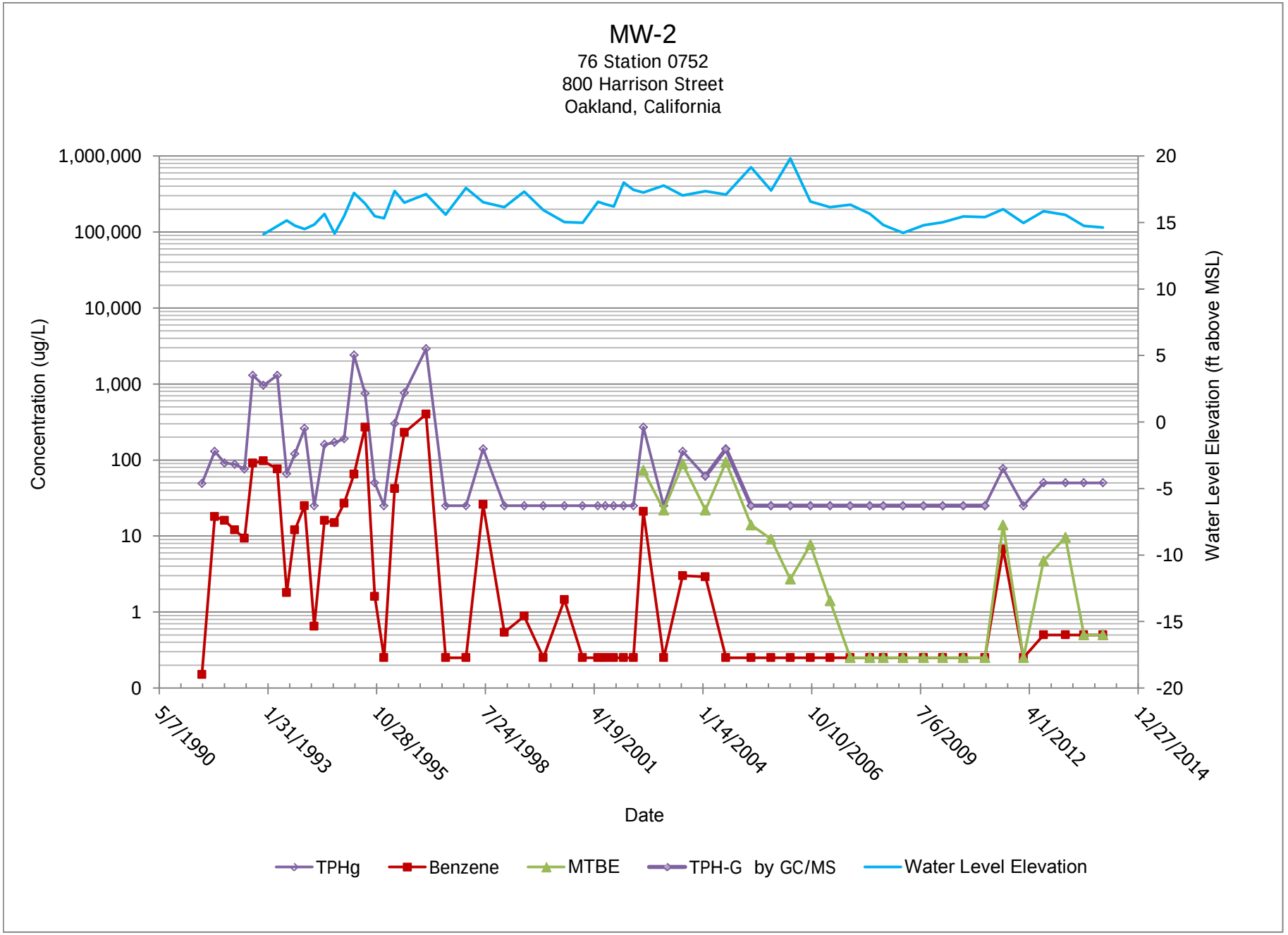
10/10/2006
7/6/2009
4/1/2012
12/27/2014
TPHg
Benzene
MTBE
GW Elevations


MW-5
Yee Property
726 Harrison St.
Oakland, CA
SVE Pilot Test
Concentrations (µg/L)
Groundwater Elevations (ft aboove MSL)
1,000,000
100,000
10,000
1,000
100
10
1
0
20
15
10
5
0
-5
-10
-15
-20
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
TPHg
Benzene
MTBE
GW Elevations


MW-6
Yee Property
726 Harrison St.
Oakland, CA
SVE Pilot Test
Concentrations (µg/L)
Groundwater Elevations (ft aboove MSL)
1,000,000
100,000
10,000
1,000
100
10
1
0
20
15
10
5
0
-5
-10
-15
-20
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
TPHg
Benzene
MTBE
GW Elevations


MW-1
76 Station 0752
800 Harrison Street
Oakland, California
Concentration (ug/L)
1,000,000
100,000
10,000
1,000
100
10
1
0
Water Level Elevation (ft above MSL)
20
15
10
5
0
-5
-10
-15
-20
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
Date
Benzene
MTBE (8260)
TPH-G by GC/MS
TPG (8015)
MTBE 8021B
Water Level Elevation


MW-2
76 Station 0752
800 Harrison Street
Oakland, California
Concentration (ug/L)
1,000,000
100,000
10,000
1,000
100
10
1
0
Water Level Elevation (ft above MSL)
20
15
10
5
0
-5
-10
-15
-20
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
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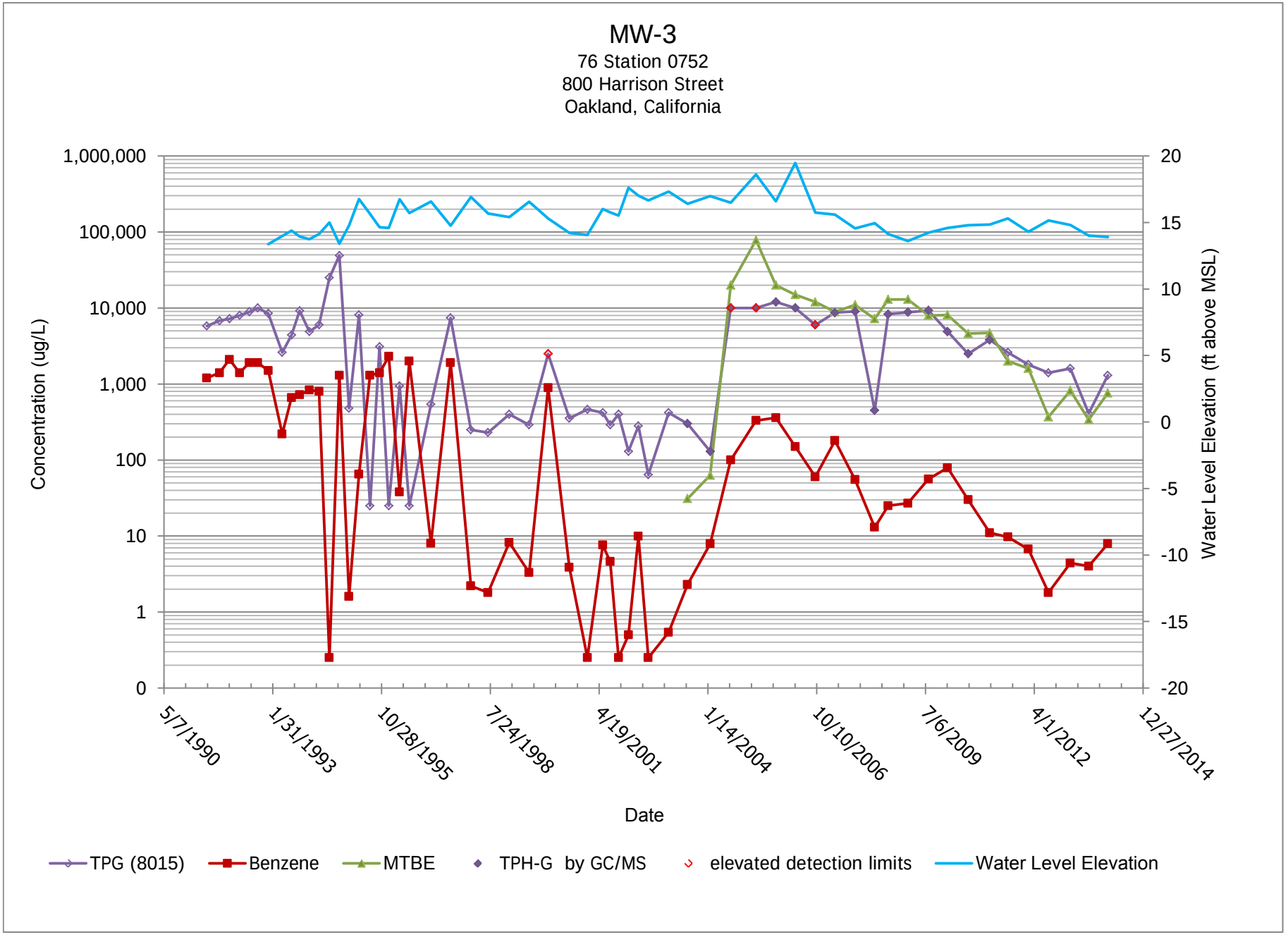
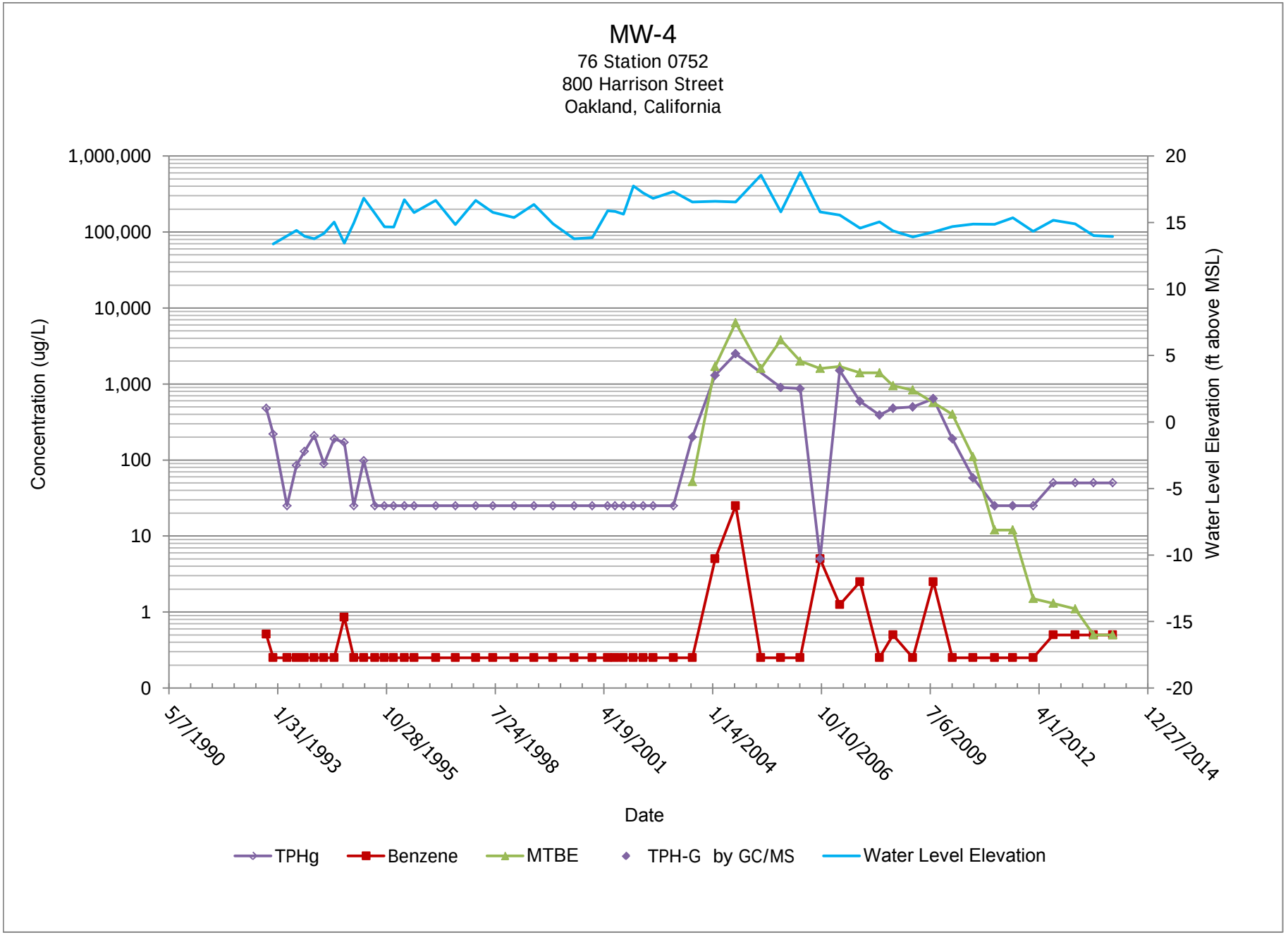
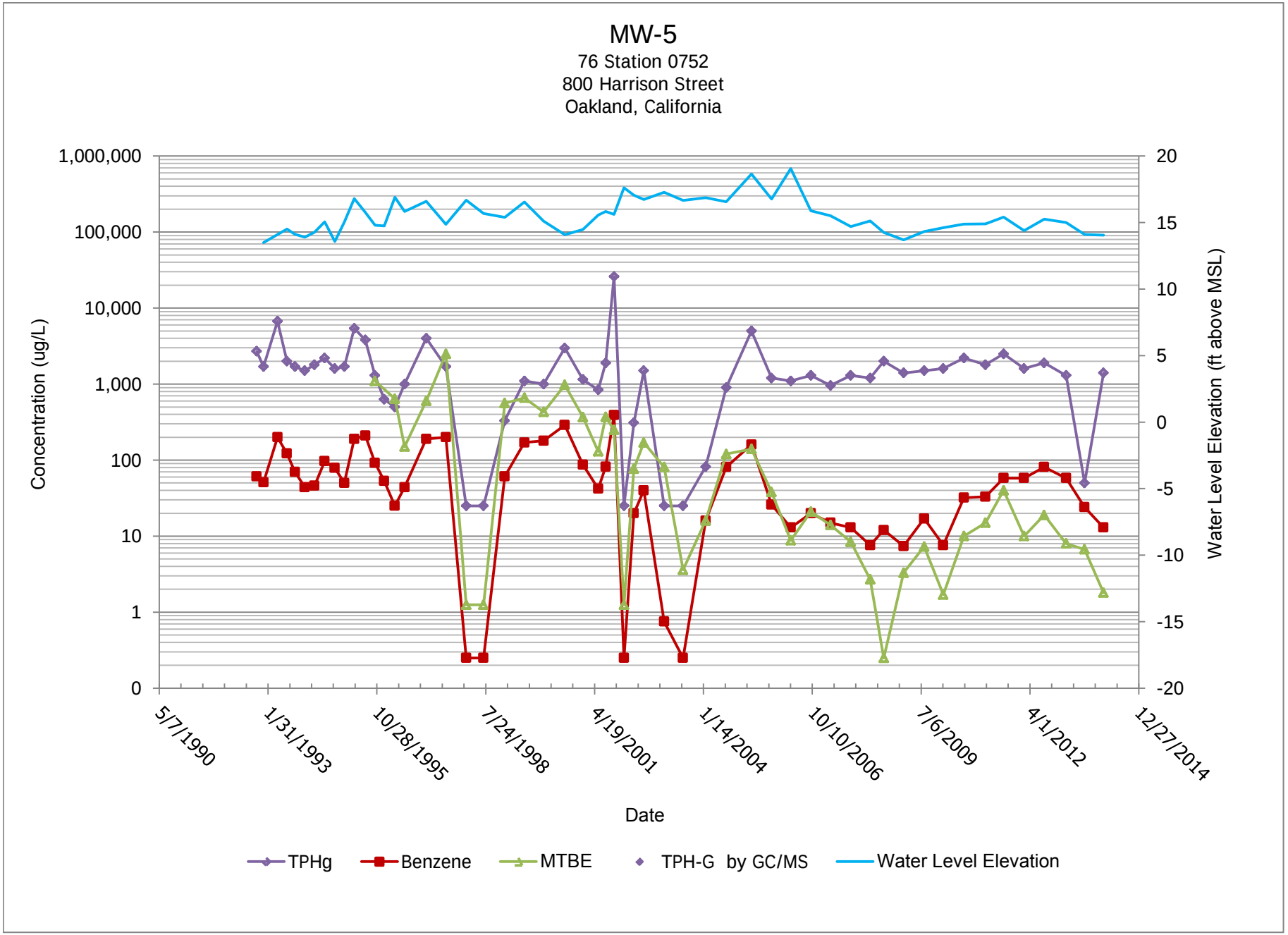
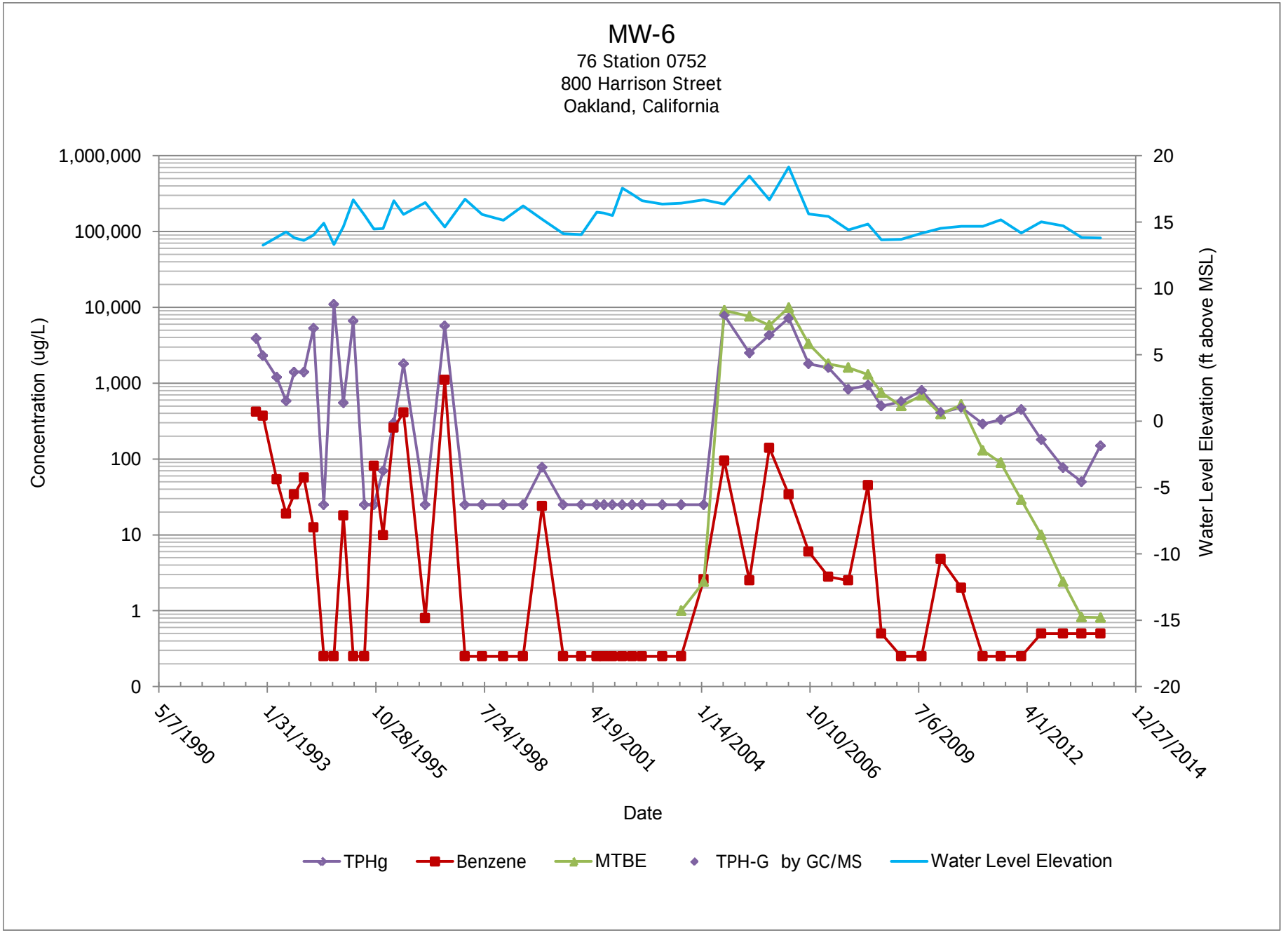
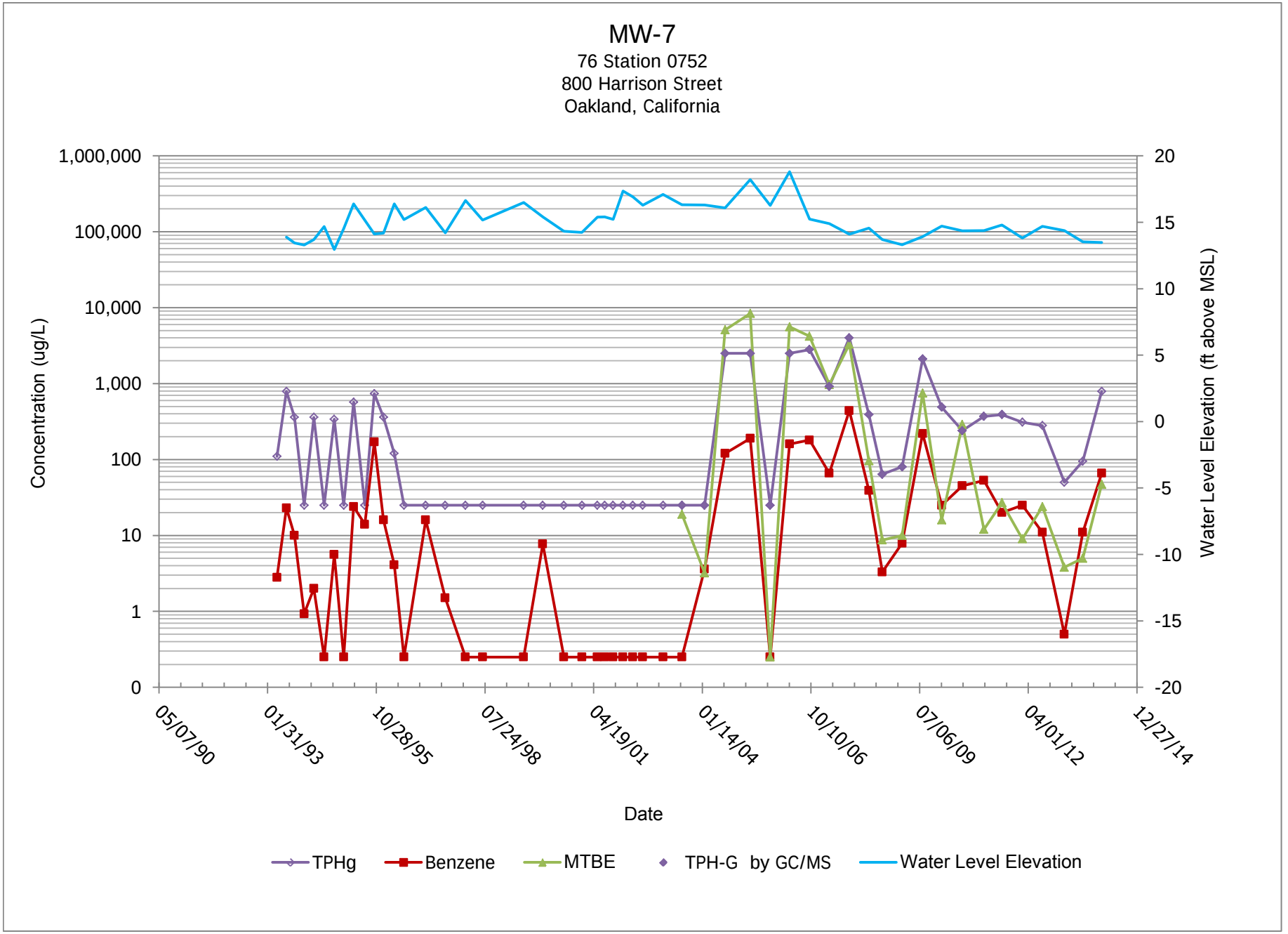
TPHg
Benzene
MTBE
TPH-G by GC/MS
Water Level Elevation

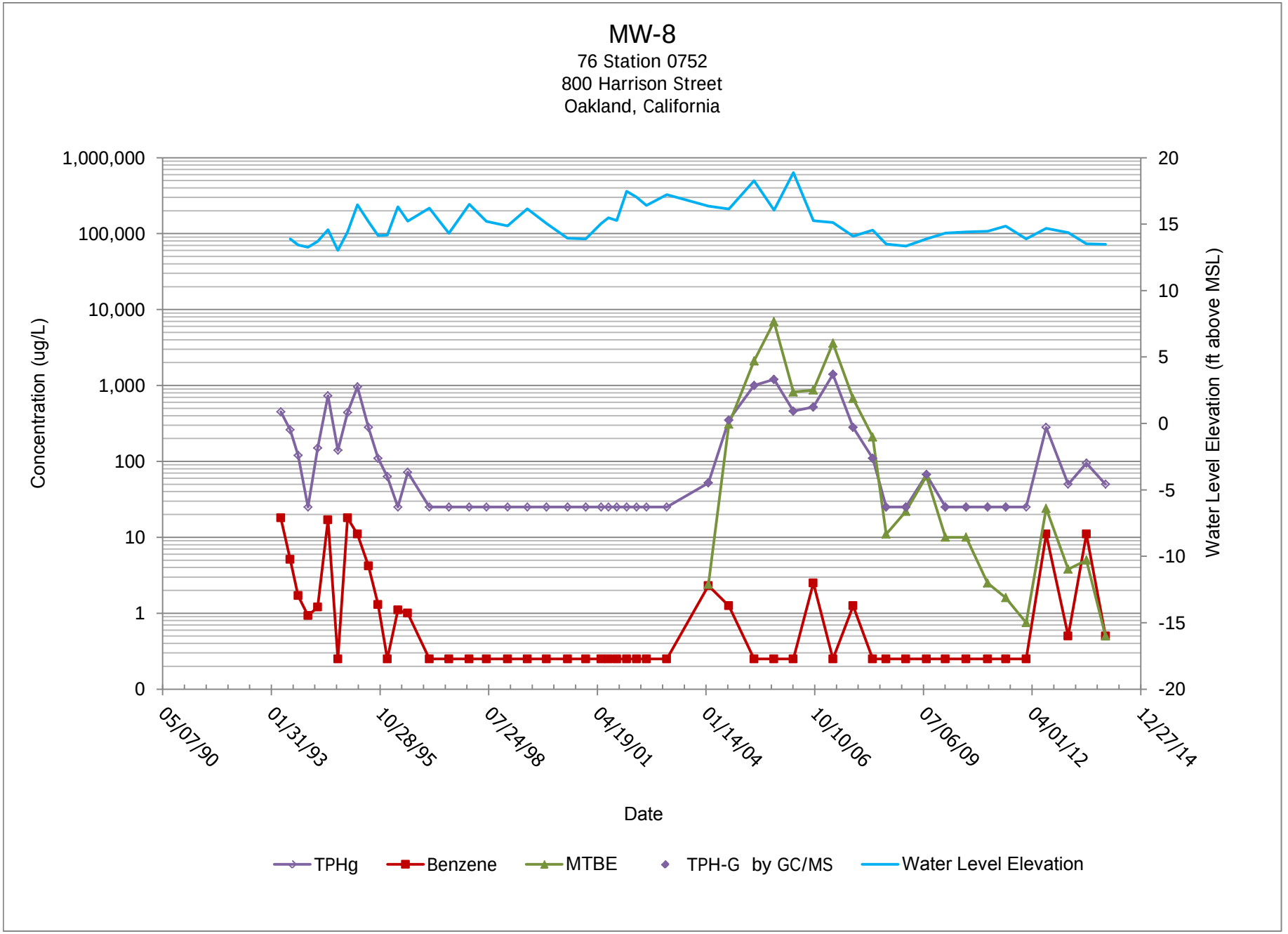

MW-3
76 Station 0752
800 Harrison Street
Oakland, California
Concentration (ug/L)
1,000,000
100,000
10,000
1,000
100
10
1
0
Water Level Elevation (ft above MSL)
20
15
10
5
0
-5
-10
-15
-20
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
Date
TPG (8015)
Benzene
MTBE
TPH-G by GC/MS
elevated detection limits
Water Level Elevation


MW-4
76 Station 0752
800 Harrison Street
Oakland, California
Concentration (ug/L)
1,000,000
100,000
10,000
1,000
100
10
1
0
Water Level Elevation (ft above MSL)
20
15
10
5
0
-5
-10
-15
-20
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
Date
TPHg
Benzene
MTBE
TPH-G by GC/MS
Water Level Elevation


MW-5
76 Station 0752
800 Harrison Street
Oakland, California
Concentration (ug/L)
1,000,000
100,000
10,000
1,000
100
10
1
0
Water Level Elevation (ft above MSL)
20
15
10
5
0
-5
-10
-15
-20
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
Date
TPHg
Benzene
MTBE
TPH-G by GC/MS
Water Level Elevation


MW-6
76 Station 0752
800 Harrison Street
Oakland, California
Concentration (ug/L)
1,000,000
100,000
10,000
1,000
100
10
1
0
Water Level Elevation (ft above MSL)
20
15
10
5
0
-5
-10
-15
-20
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
Date
TPHg
Benzene
MTBE
TPH-G by GC/MS
Water Level Elevation

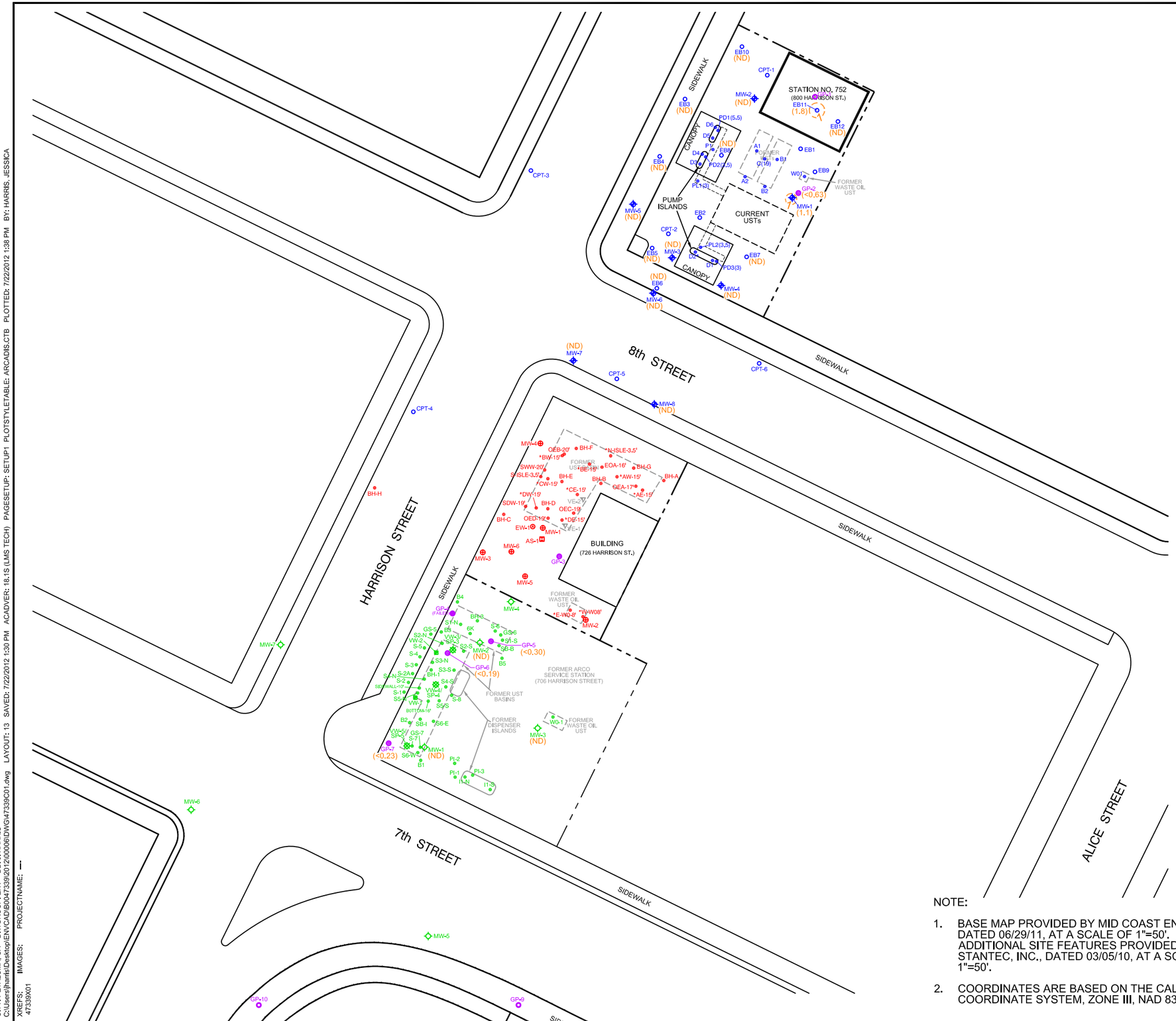

MW-7
76 Station 0752
800 Harrison Street
Oakland, California
Concentration (ug/L)
1,000,000
100,000
10,000
1,000
100
10
1
0
Water Level Elevation (ft above MSL)
20
15
10
5
0
-5
-10
-15
-20
05/07/90
01/31/93
10/28/95
07/24/98
04/19/01
01/14/04
10/10/06
07/06/09
04/01/12
12/27/14
Date
TPHg
Benzene
MTBE
TPH-G by GC/MS
Water Level Elevation


MW-8
76 Station 0752
800 Harrison Street
Oakland, California
Concentration (ug/L)
1,000,000
100,000
10,000
1,000
100
10
1
0
Water Level Elevation (ft above MSL)
20
15
10
5
0
-5
-10
-15
-20
05/07/90
01/31/93
10/28/95
07/24/98
04/19/01
01/14/04
10/10/06
07/06/09
04/01/12
12/27/14
Date
TPHg
Benzene
MTBE
TPH-G by GC/MS
Water Level Elevation

ARCADIS

Appendix **D**

Soil Isopleth Contour Maps



LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 GROUNDWATER MONITORING WELL (UNOCAL)
- MW-1 GROUNDWATER MONITORING WELL (YEE)
- MW-1 GROUNDWATER MONITORING WELL (GIN)
- B1 SOIL SAMPLE LOCATION (UNOCAL)
- EB1 EXPLORATORY BORING LOCATION (UNOCAL)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- BHA SOIL SAMPLE LOCATION (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)
- B1 SOIL SAMPLE LOCATION (GIN)
- GP-2 GEOPROBE™ (JUNE 2011)
- GP-9 GEOPROBE™ (MARCH 2012)
- (1.1) TPH-G/TPPH CONCENTRATION (mg/kg)
- 1 TPH-G/TPPH ISOPLETH CONTOUR (mg/kg; DASHED WHERE INFERRED)
- (ND) NON-DETECT
- < LESS THAN LABORATORY REPORTING LIMIT
- TPH-G TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
- TPPH TOTAL PURGEABLE PETROLEUM HYDROCARBONS
- mg/kg MILLIGRAMS PER KILOGRAM
- BGS BELOW GROUND SURFACE

0 50’ 100’
GRAPHIC SCALE

NOTE:

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

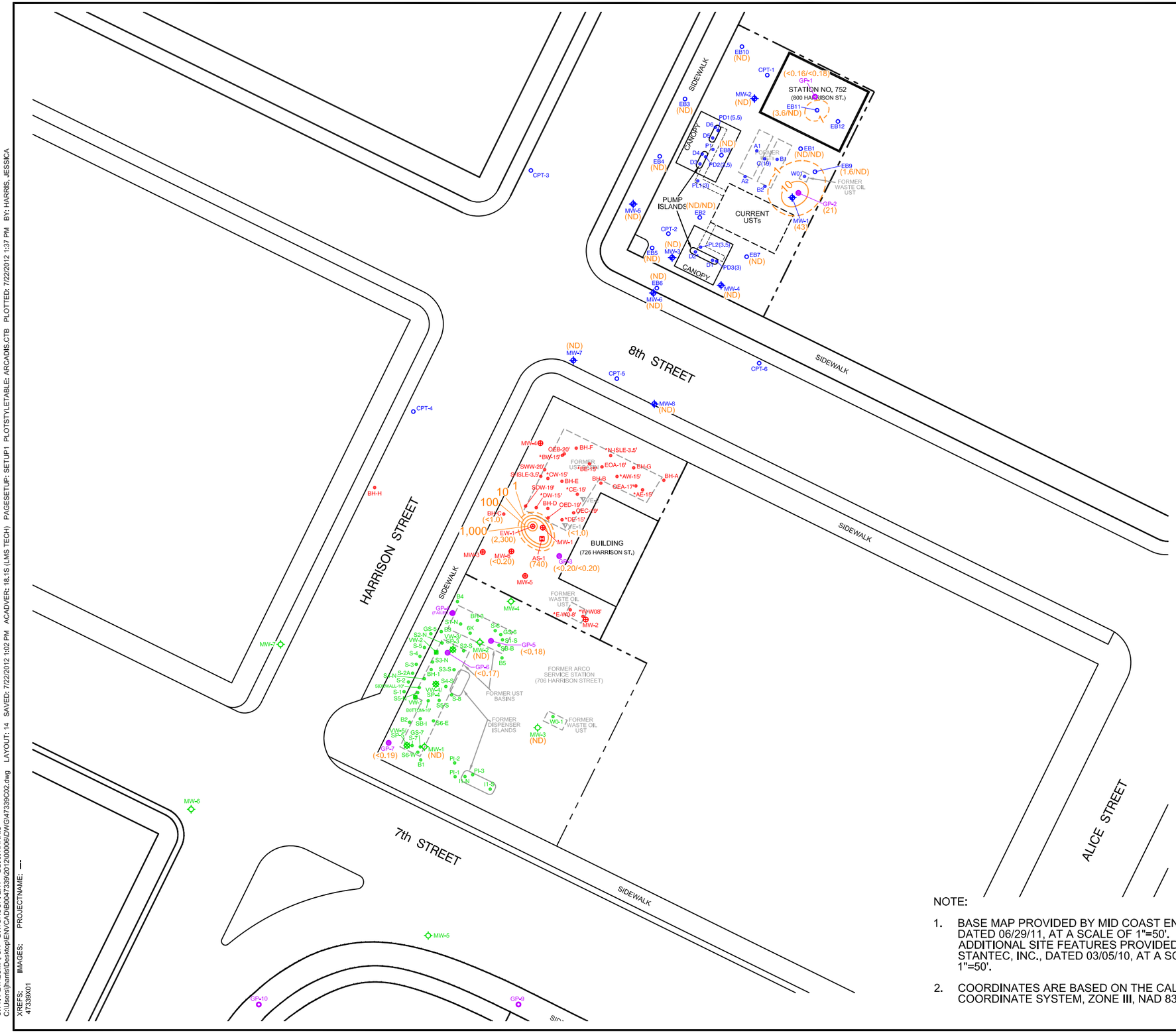
UNION OIL OF CALIFORNIA
STATION NO. 0752/YEE/GIN COMMINGLED
706/726/800 HARRISON STREET
OAKLAND, CALIFORNIA

TPH-G/TPPH SOIL ISOPLETH CONTOUR MAP (0.0'-5.0' BGS)

ARCADIS

FIGURE 13

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENV\CAD\B0047339\2012\00006\DWG\47339C01.dwg LAYOUT: 13 SAVED: 7/22/2012 1:30 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/22/2012 1:38 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)
- B1 SOIL SAMPLE LOCATION (UNOCAL)
- EB1 EXPLORATORY BORING LOCATION (UNOCAL)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- BHA SOIL SAMPLE LOCATION (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)
- B1 SOIL SAMPLE LOCATION (GIN)
- GP-2 GEOPROBE™ (JUNE 2011)
- GP-9 GEOPROBE™ (MARCH 2012)
- (21) TPH-G/TPPH CONCENTRATION (mg/kg)
- (<0.20/<0.20) TPH-G/TPPH CONCENTRATIONS COLLECTED AT MULTIPLE DEPTHS WITHIN TARGET RANGE (mg/kg)
- 1 TPH-G/TPPH ISOPLETH CONTOUR (mg/kg; DASHED WHERE INFERRED)
- (ND) NON-DETECT
- < LESS THAN LABORATORY REPORTING LIMIT
- TPH-G TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
- TPPH TOTAL PURGEABLE PETROLEUM HYDROCARBONS
- mg/kg MILLIGRAMS PER KILOGRAM
- BGS BELOW GROUND SURFACE

0 50' 100'
GRAPHIC SCALE

NOTE:

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

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

TPH-G/TPPH SOIL ISOPLETH CONTOUR MAP (5.0'-10.0' BGS)

ARCADIS

FIGURE 14

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENVCAD\B0047339\2012\00006\DWG\47339C02.dwg LAYOUT: 14 SAVED: 7/22/2012 1:02 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/22/2012 1:37 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)
- B1 SOIL SAMPLE LOCATION (UNOCAL)
- EB1 EXPLORATORY BORING LOCATION (UNOCAL)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- BHA SOIL SAMPLE LOCATION (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)
- B1 SOIL SAMPLE LOCATION (GIN)
- GP-2 GEOPROBE™ (JUNE 2011)
- GP-9 GEOPROBE™ (MARCH 2012)
- (250) TPH-G/TPPH CONCENTRATION (mg/kg)
- 1 TPH-G/TPPH ISOPLETH CONTOUR (mg/kg; DASHED WHERE INFERRED)
- (ND) NON-DETECT
- < LESS THAN LABORATORY REPORTING LIMIT
- TPH-G TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
- TPPH TOTAL PURGEABLE PETROLEUM HYDROCARBONS
- mg/kg MILLIGRAMS PER KILOGRAM
- BGS BELOW GROUND SURFACE

0 50’ 100’
GRAPHIC SCALE

NOTE:

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

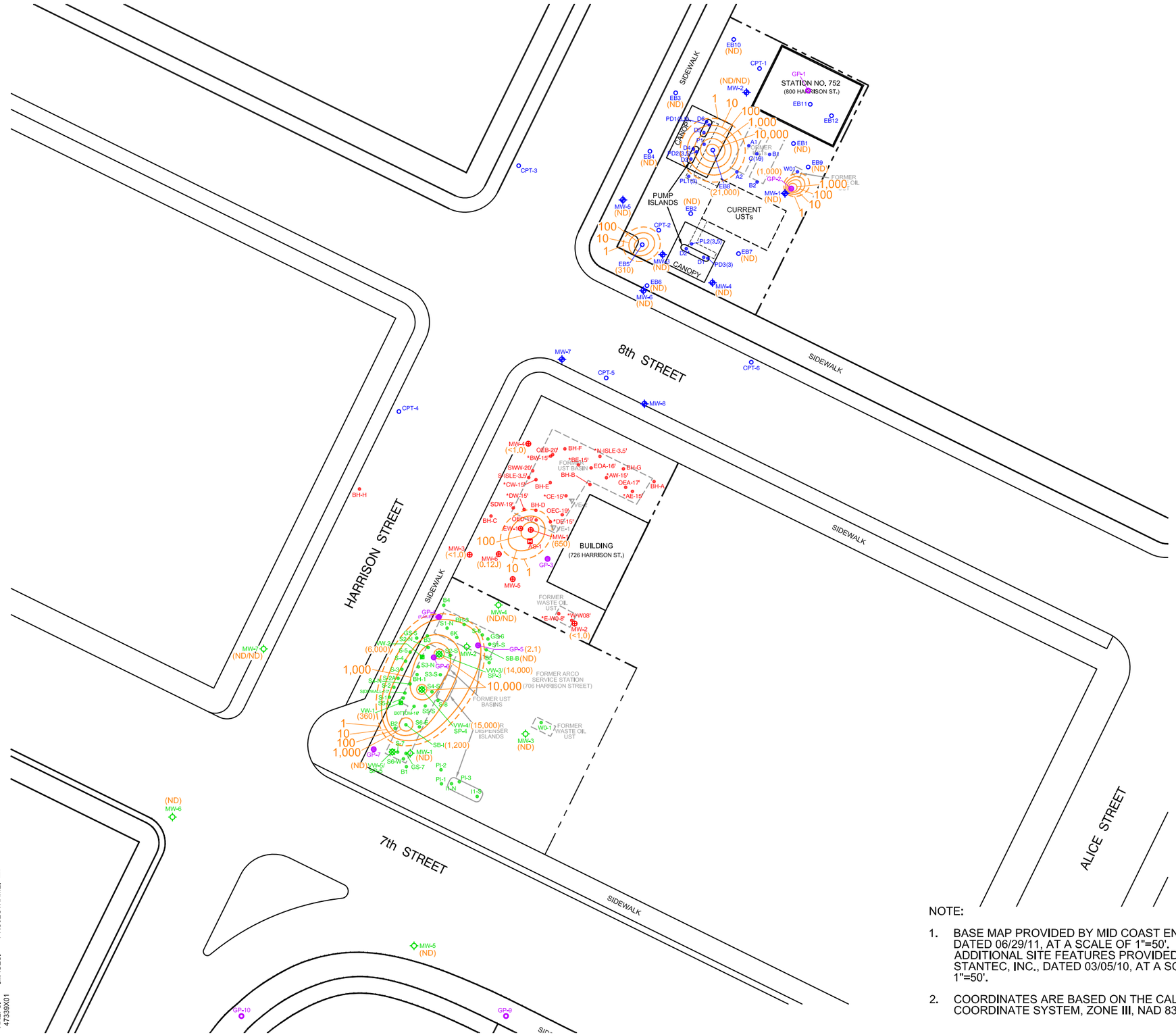
UNION OIL OF CALIFORNIA
STATION NO. 0752/YEE/GIN COMMINGLED
706/726/800 HARRISON STREET
OAKLAND, CALIFORNIA

TPH-G/TPPH SOIL ISOPLETH CONTOUR MAP (10.0'-15.0' BGS)

ARCADIS

FIGURE 15

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENV\CAD\B0047339\2012\00006\DWG\47339C03.dwg LAYOUT: 15 SAVED: 7/22/2012 2:04 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/22/2012 2:04 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)
- B1 SOIL SAMPLE LOCATION (UNOCAL)
- EB1 EXPLORATORY BORING LOCATION (UNOCAL)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- BHA SOIL SAMPLE LOCATION (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)
- B1 SOIL SAMPLE LOCATION (GIN)
- GP-2 GEOPROBE™ (JUNE 2011)
- GP-9 GEOPROBE™ (MARCH 2012)
- (310) TPH-G/TPPH CONCENTRATION (mg/kg)
- (ND/ND) TPH-G/TPPH CONCENTRATIONS COLLECTED AT MULTIPLE DEPTHS WITHIN TARGET RANGE (mg/kg)
- 1 TPH-G/TPPH ISOPLETH CONTOUR (mg/kg; DASHED WHERE INFERRED)
- (ND) NON-DETECT
- < LESS THAN LABORATORY REPORTING LIMIT
- J ESTIMATED VALUE; LESS THAN LABORATORY REPORTING LIMIT AND GREATER THAN OR EQUAL TO THE METHOD DETECTION LIMIT

TPH-G	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
TPPH	TOTAL PURGEABLE PETROLEUM HYDROCARBONS
mg/kg	MILLIGRAMS PER KILOGRAM
BGS	BELOW GROUND SURFACE

0 50’ 100’
GRAPHIC SCALE

NOTE:

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

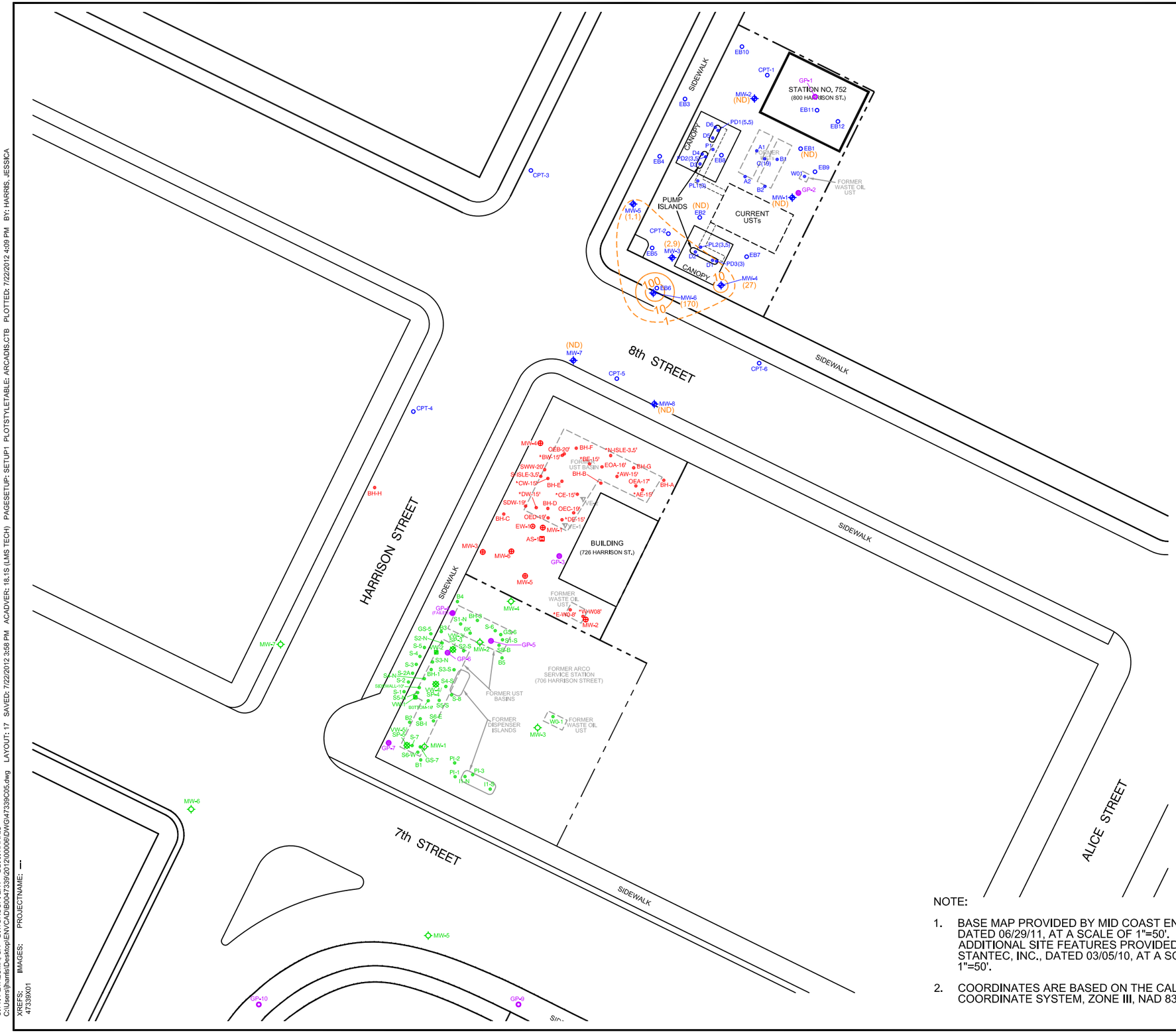
UNION OIL OF CALIFORNIA
STATION NO. 0752/YEE/GIN COMMINGLED
706/726/800 HARRISON STREET
OAKLAND, CALIFORNIA

TPH-G/TPPH SOIL ISOPLETH CONTOUR MAP (15.0'-20.0' BGS)

ARCADIS

FIGURE 16

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENVCAD\B0047339\2012\000006\DWG\47339C04.dwg LAYOUT: 16 SAVED: 7/22/2012 3:31 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/22/2012 3:36 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)
- B1 SOIL SAMPLE LOCATION (UNOCAL)
- EB1 EXPLORATORY BORING LOCATION (UNOCAL)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- BHA SOIL SAMPLE LOCATION (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)
- B1 SOIL SAMPLE LOCATION (GIN)
- GP-2 GEOPROBE™ (JUNE 2011)
- GP-9 GEOPROBE™ (MARCH 2012)
- (27) TPH-G/TPPH CONCENTRATION (mg/kg)
- 1 TPH-G/TPPH ISOPLETH CONTOUR (mg/kg; DASHED WHERE INFERRED)
- (ND) NON-DETECT
- TPH-G TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
- TPPH TOTAL PURGEABLE PETROLEUM HYDROCARBONS
- mg/kg MILLIGRAMS PER KILOGRAM
- BGS BELOW GROUND SURFACE

0 50’ 100’

GRAPHIC SCALE

NOTE:

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

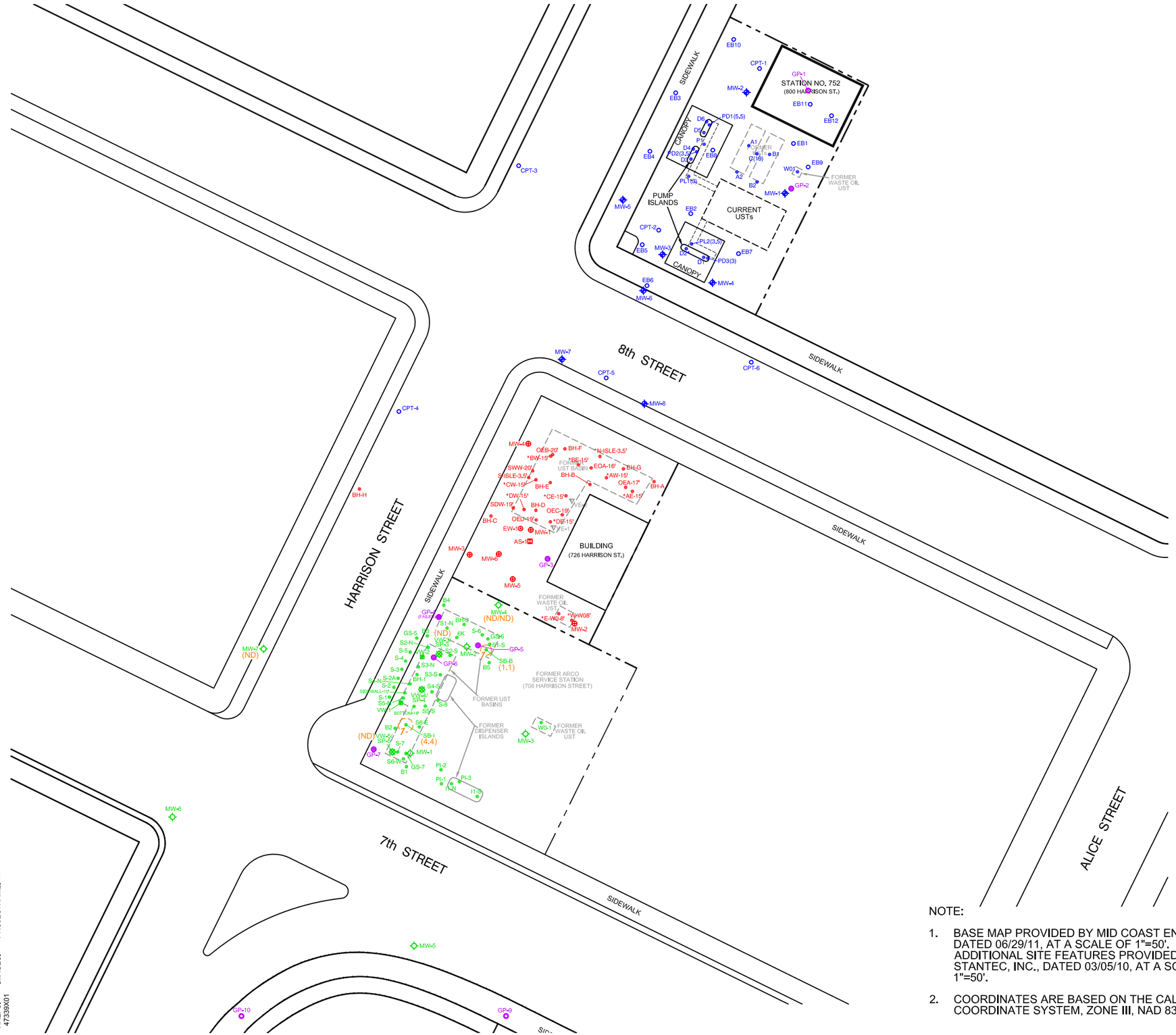
UNION OIL OF CALIFORNIA
STATION NO. 0752/YEE/GIN COMMINGLED
706/726/800 HARRISON STREET
OAKLAND, CALIFORNIA

TPH-G/TPPH SOIL ISOPLETH CONTOUR MAP (20.0'-25.0' BGS)

ARCADIS

FIGURE 17

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENVCAD\B0047339\2012\00006\DWG\47339C05.dwg LAYOUT: 17 SAVED: 7/22/2012 3:58 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/22/2012 4:09 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)
- B1 SOIL SAMPLE LOCATION (UNOCAL)
- EB1 EXPLORATORY BORING LOCATION (UNOCAL)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- BHA SOIL SAMPLE LOCATION (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)
- B1 SOIL SAMPLE LOCATION (GIN)
- GP-2 GEOPROBE™ (JUNE 2011)
- GP-8 GEOPROBE™ (MARCH 2012)
- (4,4) TPH-G/TPPH CONCENTRATION (mg/kg)
- (ND/ND) TPH-G/TPPH CONCENTRATIONS COLLECTED AT MULTIPLE DEPTHS WITHIN TARGET RANGE (mg/kg)
- 1 TPH-G/TPPH ISOPLETH CONTOUR (mg/kg; DASHED WHERE INFERRED)
- (ND) NON-DETECT
- TPH-G TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
- TPPH TOTAL PURGEABLE PETROLEUM HYDROCARBONS
- mg/kg MILLIGRAMS PER KILOGRAM
- BGS BELOW GROUND SURFACE

0 50' 100'
GRAPHIC SCALE

NOTE:

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

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

TPH-G/TPPH SOIL ISOPLETH CONTOUR MAP (25.0'-30.0' BGS)

ARCADIS

FIGURE 18

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENVCAD\B0047339\2012\000006\DWG\47339C06.dwg LAYOUT: 18 SAVED: 7/22/2012 4:01 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/22/2012 4:09 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)
- B1 SOIL SAMPLE LOCATION (UNOCAL)
- EB1 EXPLORATORY BORING LOCATION (UNOCAL)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- BHA SOIL SAMPLE LOCATION (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)
- B1 SOIL SAMPLE LOCATION (GIN)
- GP-2 GEOPROBE™ (JUNE 2011)
- GP-9 GEOPROBE™ (MARCH 2012)
- (<0.016) BENZENE CONCENTRATION (mg/kg)
- (ND) NON-DETECT
- < LESS THAN LABORATORY REPORTING LIMIT
- mg/kg MILLIGRAMS PER KILOGRAM
- BGS BELOW GROUND SURFACE

0 50' 100'
GRAPHIC SCALE

NOTE:

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

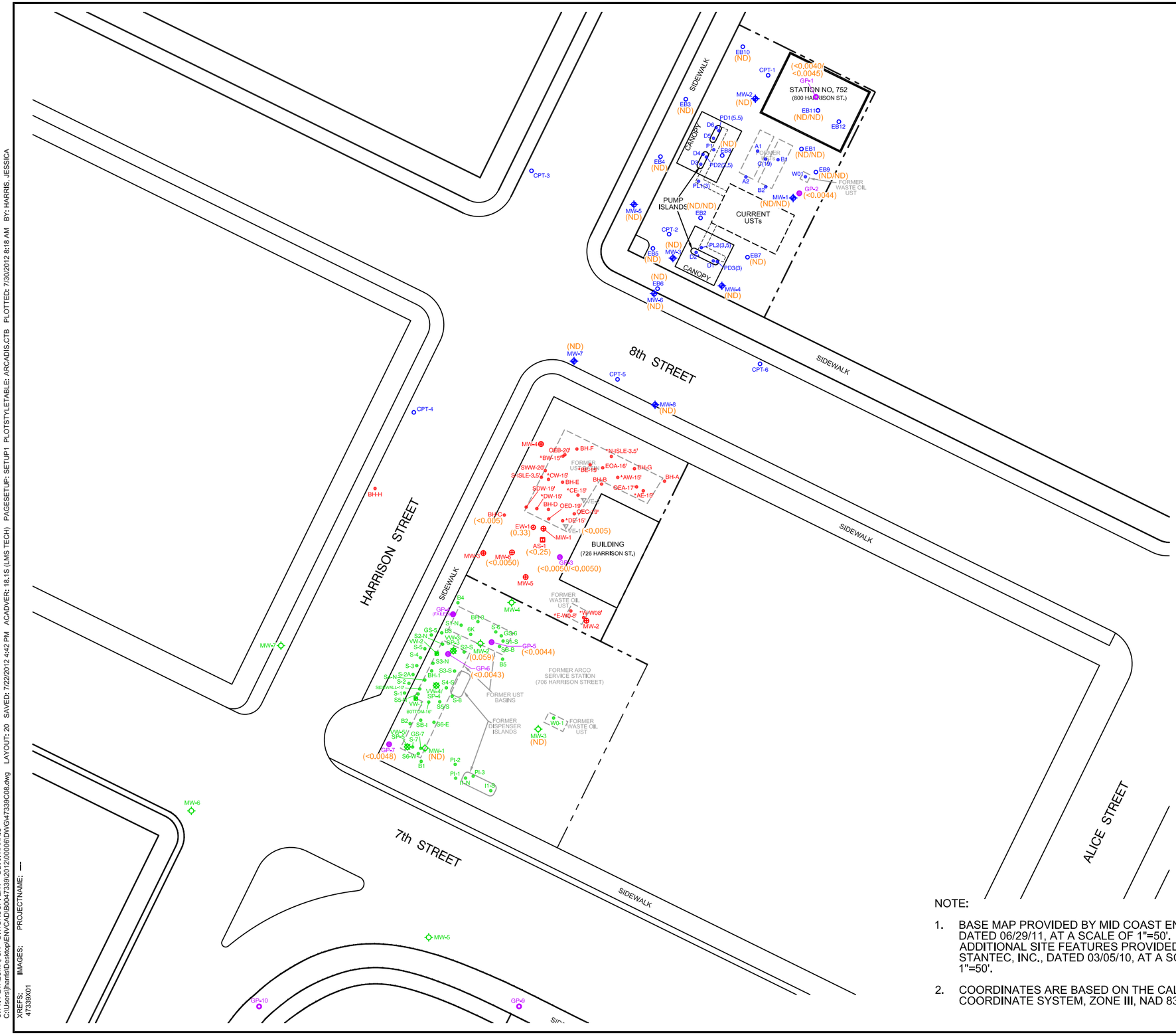
UNION OIL OF CALIFORNIA
STATION NO. 0752/YEE/GIN COMMINGLED
706/726/800 HARRISON STREET
OAKLAND, CALIFORNIA

BENZENE SOIL ISOPLETH CONTOUR MAP (0.0'-5.0' BGS)

ARCADIS

FIGURE 19

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENVCAD\B0047339\2012\00006\DWG\47339C07.dwg LAYOUT: 19 SAVED: 7/22/2012 4:24 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/22/2012 4:25 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)
- B1 SOIL SAMPLE LOCATION (UNOCAL)
- EB1 EXPLORATORY BORING LOCATION (UNOCAL)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- BHA SOIL SAMPLE LOCATION (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)
- B1 SOIL SAMPLE LOCATION (GIN)
- GP-2 GEOPROBE™ (JUNE 2011)
- GP-8 GEOPROBE™ (MARCH 2012)
- (0.33) BENZENE CONCENTRATION (mg/kg)
- (<0.0050/<0.0050) BENZENE CONCENTRATIONS COLLECTED AT MULTIPLE DEPTHS WITHIN TARGET RANGE (mg/kg)
- (ND) NON-DETECT
- < LESS THAN LABORATORY REPORTING LIMIT
- mg/kg MILLIGRAMS PER KILOGRAM
- BGS BELOW GROUND SURFACE

0 50’ 100’

GRAPHIC SCALE

NOTE:

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

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

BENZENE SOIL ISOPLETH CONTOUR MAP (5.0'-10.0' BGS)

ARCADIS

FIGURE 20

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENV\CAD\B0047339\2012\00006\DWG\47339C08.dwg LAYOUT: 20 SAVED: 7/22/2012 4:42 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/30/2012 8:18 AM BY: HARRIS, JESSICA
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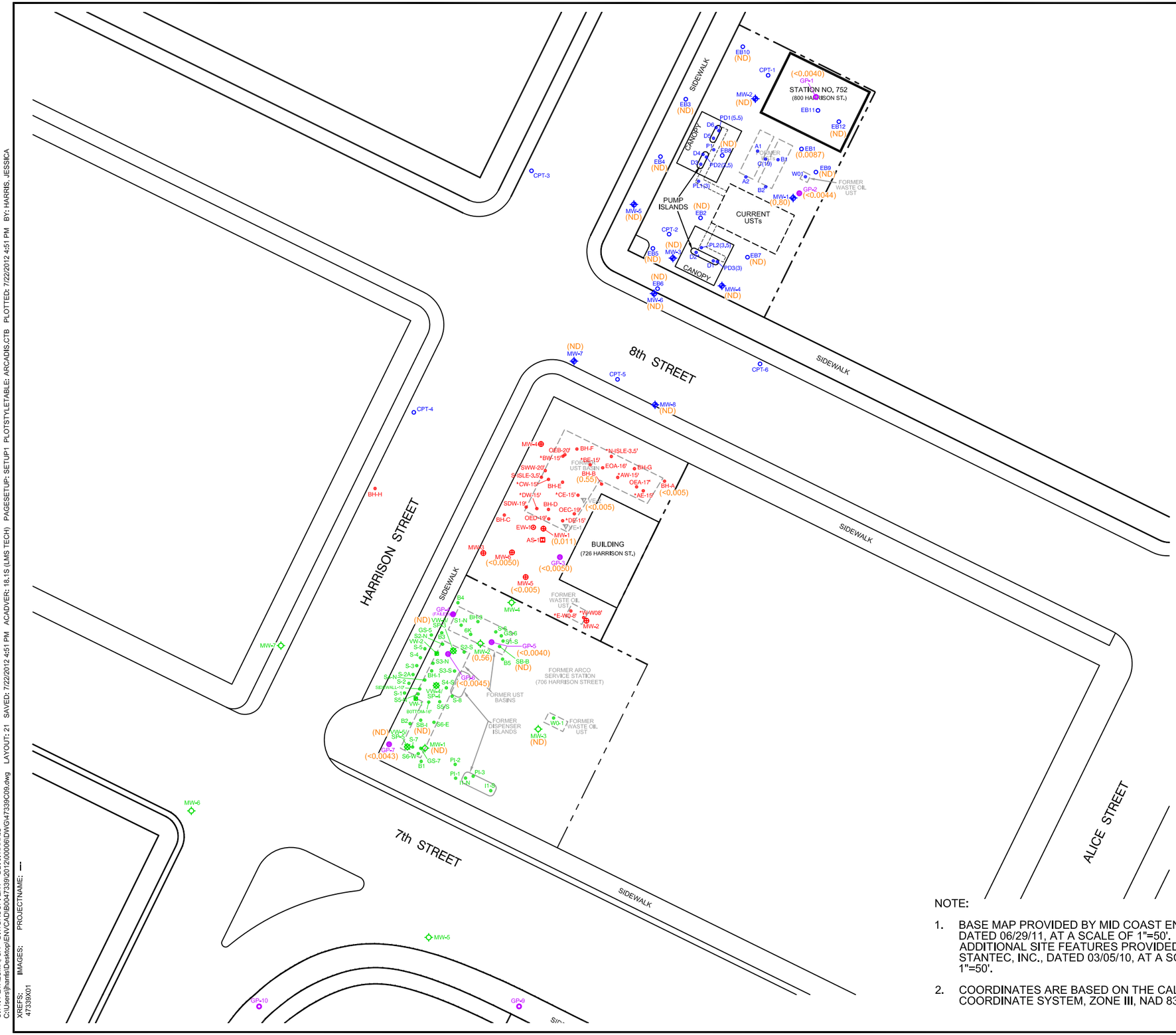

LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 GROUNDWATER MONITORING WELL (UNOCAL)
- MW-1 GROUNDWATER MONITORING WELL (YEE)
- MW-1 GROUNDWATER MONITORING WELL (GIN)
- B1 SOIL SAMPLE LOCATION (UNOCAL)
- EB1 EXPLORATORY BORING LOCATION (UNOCAL)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- BHA SOIL SAMPLE LOCATION (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)
- B1 SOIL SAMPLE LOCATION (GIN)
- GP-2 GEOPROBE™ (JUNE 2011)
- GP-9 GEOPROBE™ (MARCH 2012)
- (0.011) BENZENE CONCENTRATION (mg/kg)
- (ND) NON-DETECT
- < LESS THAN LABORATORY REPORTING LIMIT
- mg/kg MILLIGRAMS PER KILOGRAM
- BGS BELOW GROUND SURFACE

0 50' 100'
GRAPHIC SCALE

NOTE:

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

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

BENZENE SOIL ISOPLETH CONTOUR MAP (10.0'-15.0' BGS)

ARCADIS

FIGURE 21

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENV\CAD\B0047339\2012\00006\DWG\47339C09.dwg LAYOUT: 21 SAVED: 7/22/2012 4:51 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/22/2012 4:51 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)
- B1 SOIL SAMPLE LOCATION (UNOCAL)
- EB1 EXPLORATORY BORING LOCATION (UNOCAL)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- BHA SOIL SAMPLE LOCATION (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)
- B1 SOIL SAMPLE LOCATION (GIN)
- GP-2 GEOPROBE™ (JUNE 2011)
- GP-9 GEOPROBE™ (MARCH 2012)
- (18) BENZENE CONCENTRATION (mg/kg)
- (0.015/0.0086) BENZENE CONCENTRATIONS COLLECTED AT MULTIPLE DEPTHS WITHIN TARGET RANGE (mg/kg)
- 1 BENZENE ISOPLETH CONTOUR (mg/kg; DASHED WHERE INFERRED)
- (ND) NON-DETECT
- < LESS THAN LABORATORY REPORTING LIMIT
- mg/kg MILLIGRAMS PER KILOGRAM
- BGS BELOW GROUND SURFACE

0 50’ 100’
GRAPHIC SCALE

NOTE:

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

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

BENZENE SOIL ISOPLETH CONTOUR MAP (15.0'-20.0' BGS)

ARCADIS

FIGURE
22

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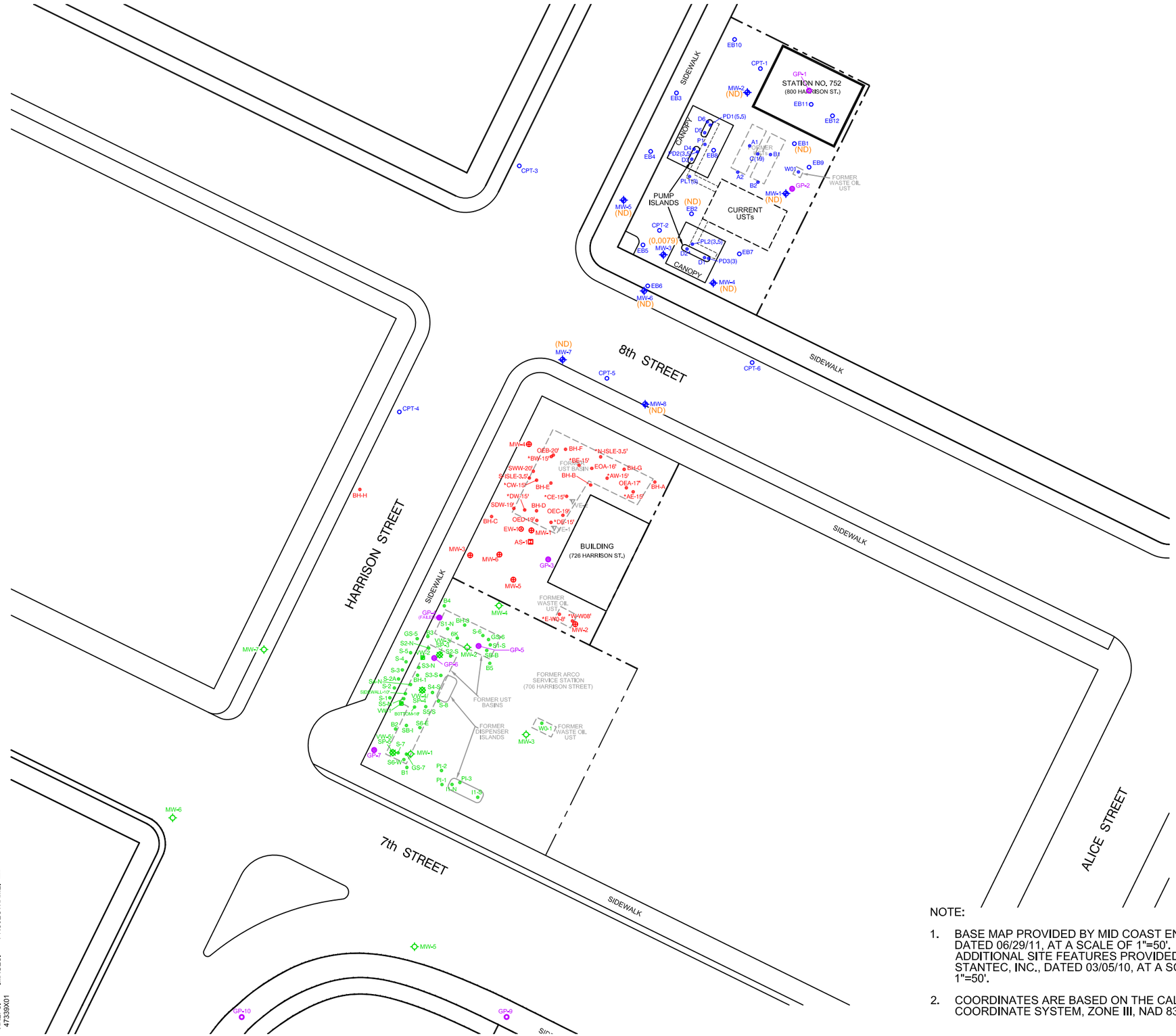

LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 GROUNDWATER MONITORING WELL (UNOCAL)
- MW-1 GROUNDWATER MONITORING WELL (YEE)
- MW-1 GROUNDWATER MONITORING WELL (GIN)
- B1 SOIL SAMPLE LOCATION (UNOCAL)
- EB1 EXPLORATORY BORING LOCATION (UNOCAL)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- BHA SOIL SAMPLE LOCATION (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)
- B1 SOIL SAMPLE LOCATION (GIN)
- GP-2 GEOPROBE™ (JUNE 2011)
- GP-9 GEOPROBE™ (MARCH 2012)
- (0.0079) BENZENE CONCENTRATION (mg/kg)
- (ND) NON-DETECT
- mg/kg MILLIGRAMS PER KILOGRAM
- BGS BELOW GROUND SURFACE

NOTE:

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

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

BENZENE SOIL ISOPLETH CONTOUR MAP (20.0'-25.0' BGS)

ARCADIS

FIGURE 23

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENVCAD\B0047339\2012\000006\DWG\47339C11.dwg LAYOUT: 23 SAVED: 7/22/2012 5:51 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/22/2012 5:51 PM BY: HARRIS, JESSICA
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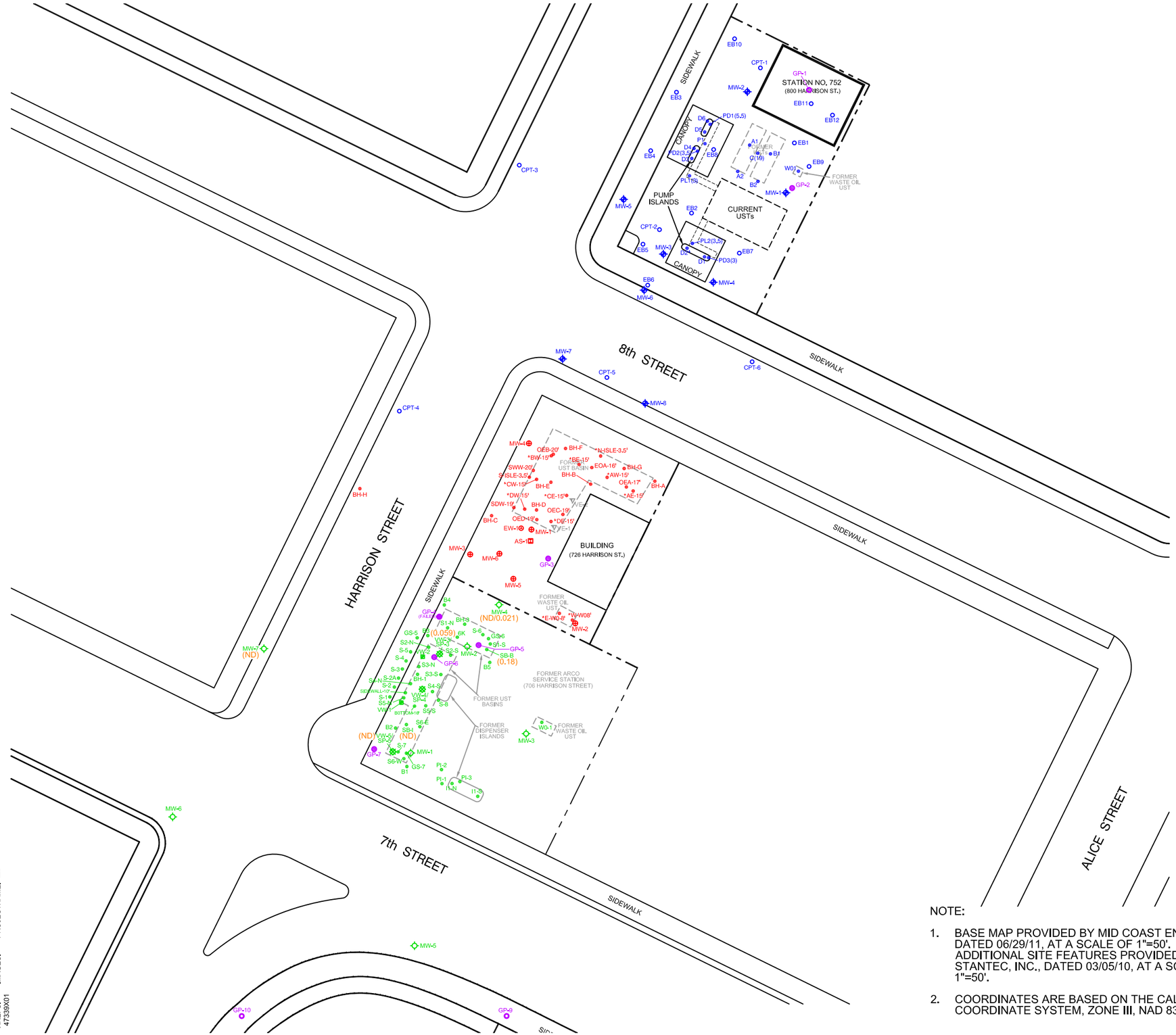

LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 GROUNDWATER MONITORING WELL (UNOCAL)
- MW-1 GROUNDWATER MONITORING WELL (YEE)
- MW-1 GROUNDWATER MONITORING WELL (GIN)
- B1 SOIL SAMPLE LOCATION (UNOCAL)
- EB1 EXPLORATORY BORING LOCATION (UNOCAL)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- BHA SOIL SAMPLE LOCATION (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)
- B1 SOIL SAMPLE LOCATION (GIN)
- GP-2 GEOPROBE™ (JUNE 2011)
- GP-9 GEOPROBE™ (MARCH 2012)
- (0.18) BENZENE CONCENTRATION (mg/kg)
- (ND/0.021) BENZENE CONCENTRATIONS COLLECTED AT MULTIPLE DEPTHS WITHIN TARGET RANGE (mg/kg)
- (ND) NON-DETECT
- mg/kg MILLIGRAMS PER KILOGRAM
- BGS BELOW GROUND SURFACE

0 50’ 100’

GRAPHIC SCALE

NOTE:

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

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

BENZENE SOIL ISOPLETH CONTOUR MAP (25.0'-30.0' BGS)

ARCADIS

FIGURE 24

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENV\CAD\B0047339\2012\00006\DWG\47339C12.dwg LAYOUT: 24 SAVED: 7/22/2012 5:55 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/22/2012 5:55 PM BY: HARRIS, JESSICA
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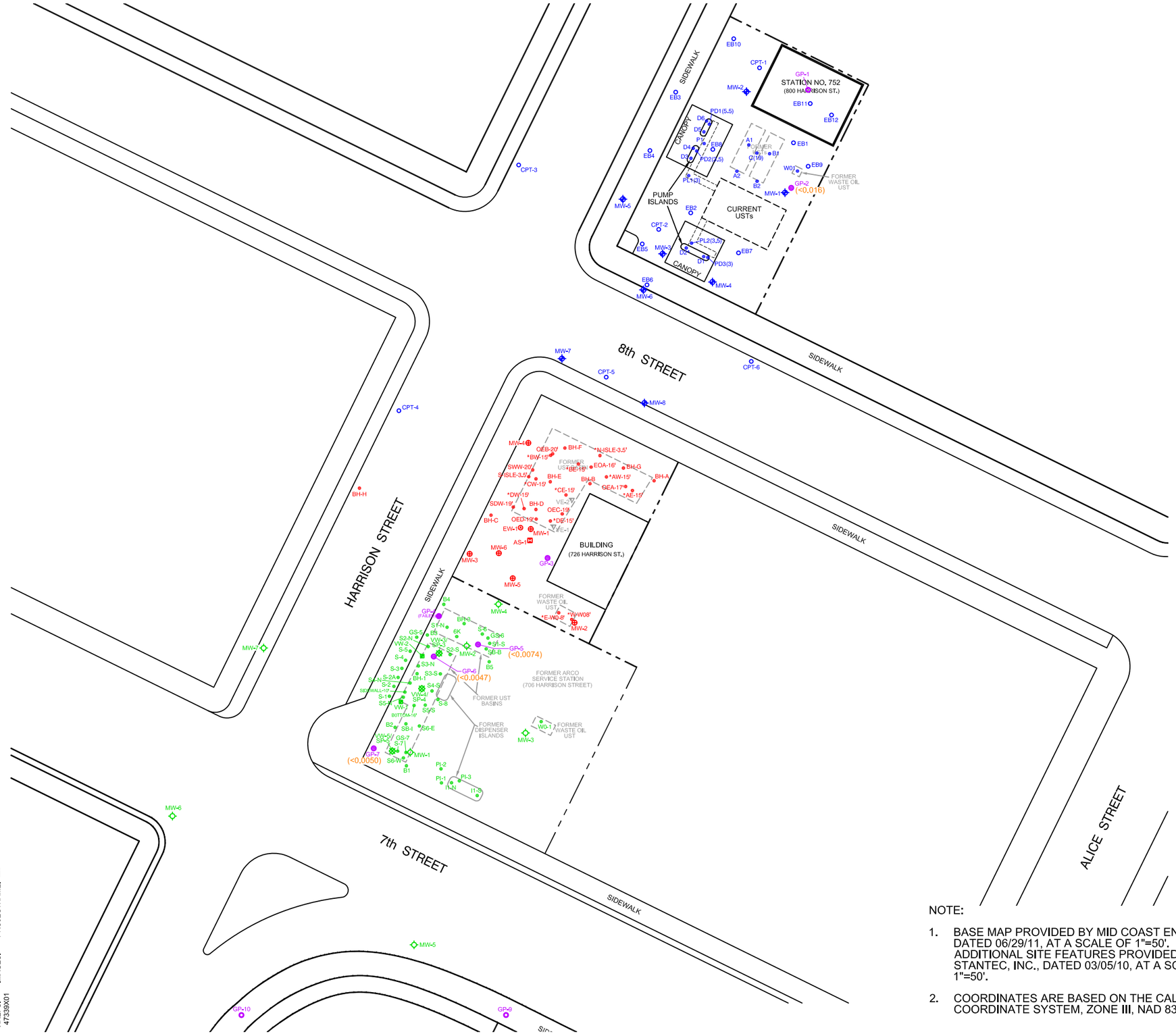

LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 GROUNDWATER MONITORING WELL (UNOCAL)
- MW-1 GROUNDWATER MONITORING WELL (YEE)
- MW-1 GROUNDWATER MONITORING WELL (GIN)
- B1 SOIL SAMPLE LOCATION (UNOCAL)
- EB1 EXPLORATORY BORING LOCATION (UNOCAL)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- BHA SOIL SAMPLE LOCATION (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)
- B1 SOIL SAMPLE LOCATION (GIN)
- GP-2 GEOPROBE™ (JUNE 2011)
- GP-9 GEOPROBE™ (MARCH 2012)
- (<0.0074) MTBE CONCENTRATION (mg/kg)
- < LESS THAN LABORATORY REPORTING LIMIT
- MTBE METHYL TERTIARY BUTYL ETHER
- mg/kg MILLIGRAMS PER KILOGRAM
- BGS BELOW GROUND SURFACE

NOTE:

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

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

MTBE SOIL ISOPLETH CONTOUR MAP (0.0'-5.0' BGS)

ARCADIS

FIGURE 25

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENVCAD\B0047339\2012\00006\DWG\47339C13.dwg LAYOUT: 25 SAVED: 7/22/2012 7:34 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/23/2012 6:10 AM BY: HARRIS, JESSICA
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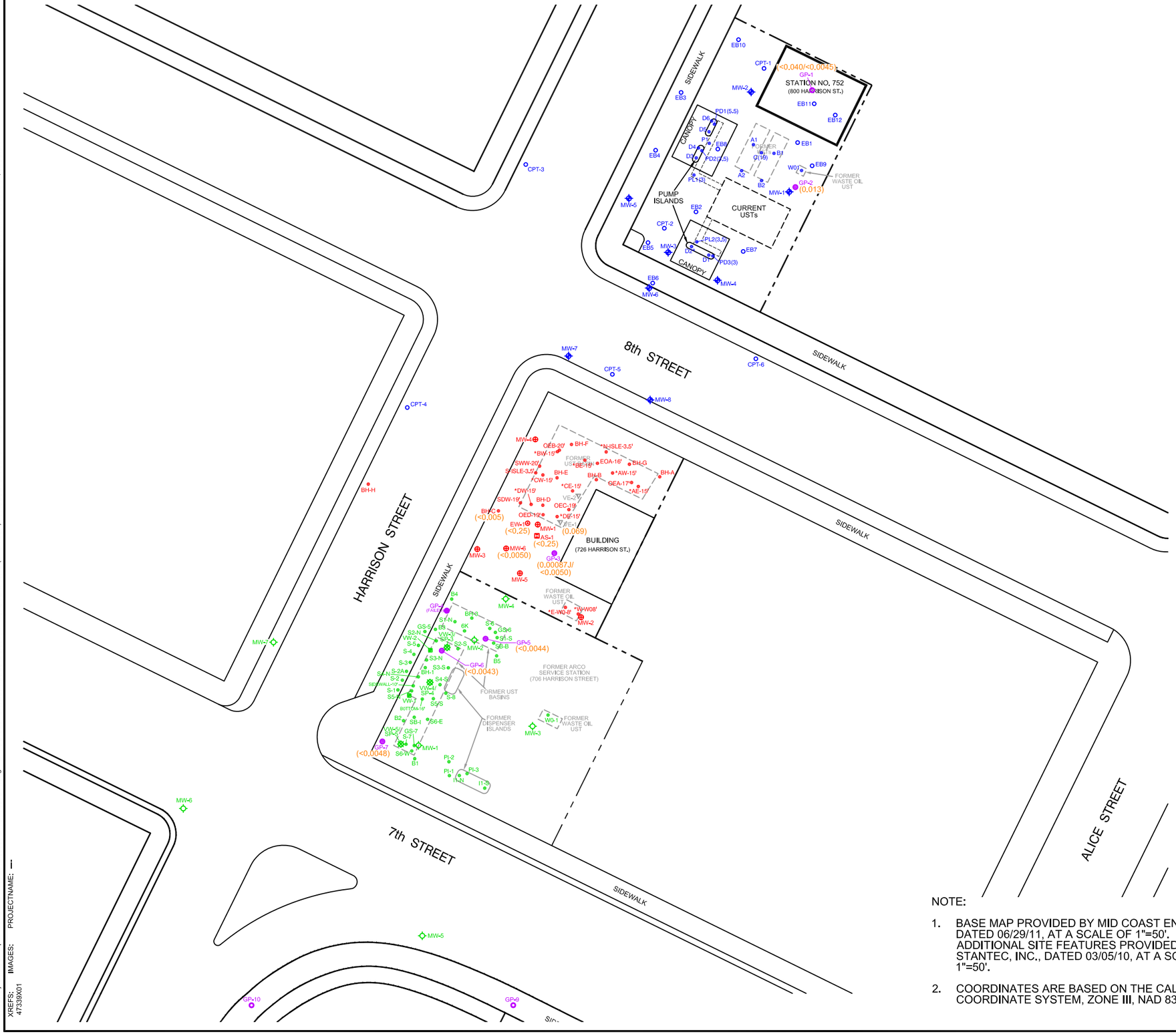

LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 GROUNDWATER MONITORING WELL (UNOCAL)
- MW-1 GROUNDWATER MONITORING WELL (YEE)
- MW-1 GROUNDWATER MONITORING WELL (GIN)
- B1 SOIL SAMPLE LOCATION (UNOCAL)
- EB1 EXPLORATORY BORING LOCATION (UNOCAL)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- BHA SOIL SAMPLE LOCATION (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)
- B1 SOIL SAMPLE LOCATION (GIN)
- GP-2 GEOPROBE™ (JUNE 2011)
- GP-9 GEOPROBE™ (MARCH 2012)
- (0.0069) MTBE CONCENTRATION (mg/kg)
- (<0.0040/<0.0045) MTBE CONCENTRATIONS COLLECTED AT MULTIPLE DEPTHS WITHIN TARGET RANGE (mg/kg)
- < LESS THAN LABORATORY REPORTING LIMIT
- J ESTIMATED VALUE; LESS THAN LABORATORY REPORTING LIMIT AND GREATER THAN OR EQUAL TO THE METHOD DETECTION LIMIT

MTBE METHYL TERTIARY BUTYL ETHER

mg/kg MILLIGRAMS PER KILOGRAM

BGS BELOW GROUND SURFACE

NOTE:

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

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

MTBE SOIL ISOPLETH CONTOUR MAP (5.0'-10.0' BGS)

ARCADIS

FIGURE 26

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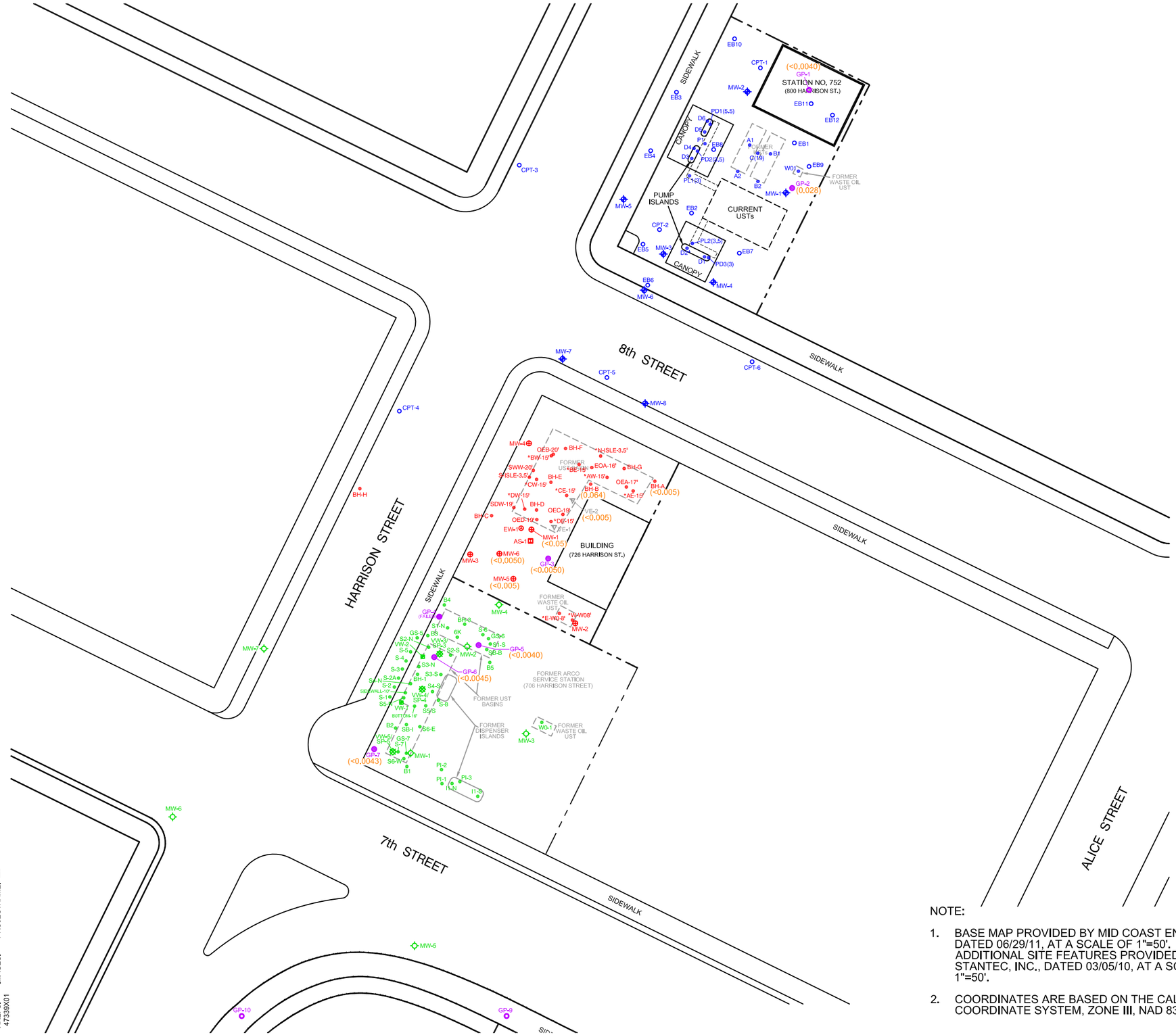

LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 GROUNDWATER MONITORING WELL (UNOCAL)
- MW-1 GROUNDWATER MONITORING WELL (YEE)
- MW-1 GROUNDWATER MONITORING WELL (GIN)
- B1 SOIL SAMPLE LOCATION (UNOCAL)
- EB1 EXPLORATORY BORING LOCATION (UNOCAL)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- BHA SOIL SAMPLE LOCATION (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)
- B1 SOIL SAMPLE LOCATION (GIN)
- GP-2 GEOPROBE™ (JUNE 2011)
- GP-8 GEOPROBE™ (MARCH 2012)
- (0.028) MTBE CONCENTRATION (mg/kg)
- < LESS THAN LABORATORY REPORTING LIMIT
- MTBE METHYL TERTIARY BUTYL ETHER
- mg/kg MILLIGRAMS PER KILOGRAM
- BGS BELOW GROUND SURFACE

0 50' 100'

GRAPHIC SCALE

NOTE:

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

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

MTBE SOIL ISOPLETH CONTOUR MAP (10.0'-15.0' BGS)

ARCADIS

FIGURE 27

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENVCAD\B0047339\2012\00006\DWG\47339C15.dwg LAYOUT: 27 SAVED: 7/23/2012 6:17 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/23/2012 6:17 AM BY: HARRIS, JESSICA
XREFS: IMAGES: PROJECTNAME: ---
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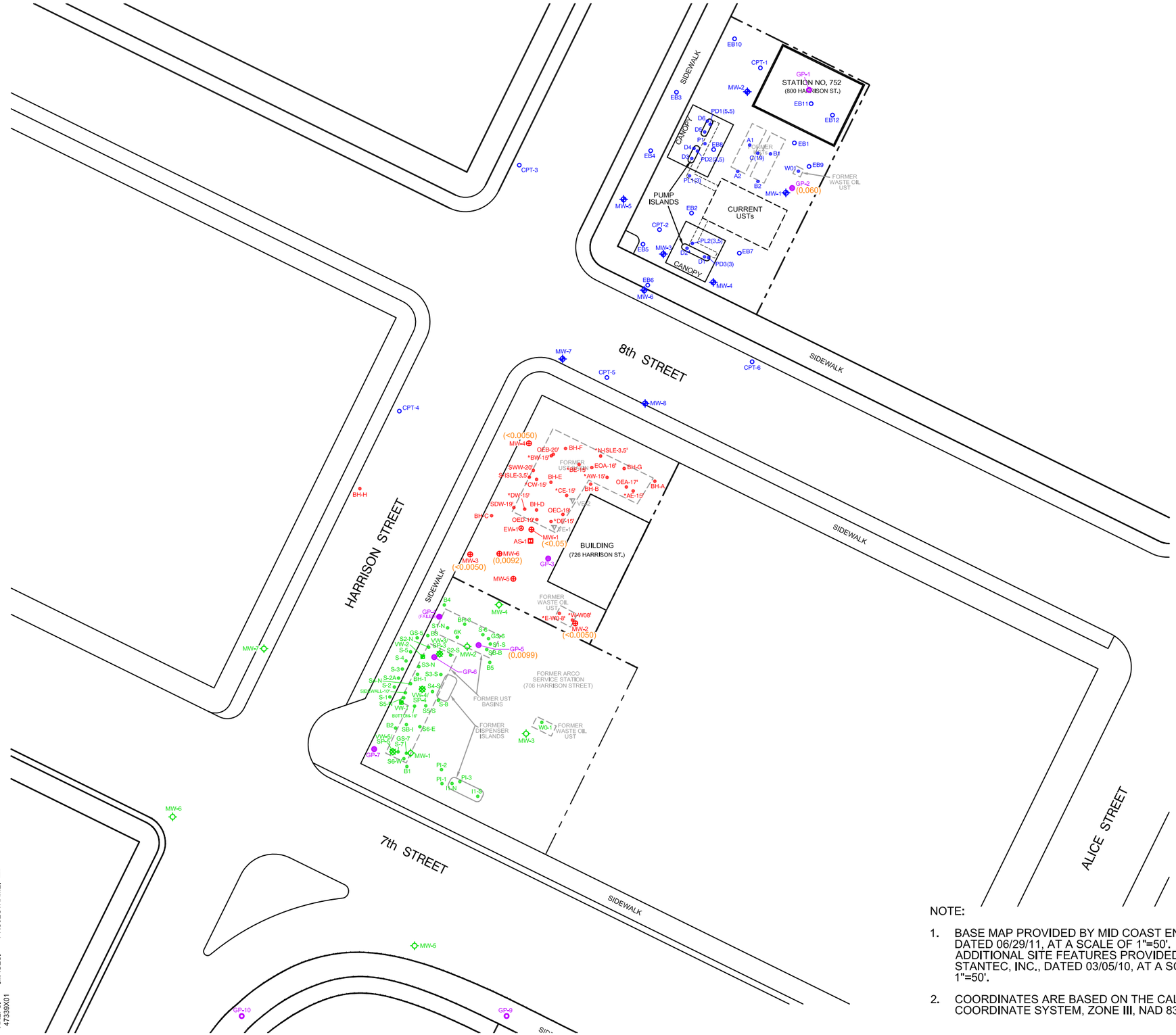


LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 GROUNDWATER MONITORING WELL (UNOCAL)
- MW-1 GROUNDWATER MONITORING WELL (YEE)
- MW-1 GROUNDWATER MONITORING WELL (GIN)
- B1 SOIL SAMPLE LOCATION (UNOCAL)
- EB1 EXPLORATORY BORING LOCATION (UNOCAL)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- BHA SOIL SAMPLE LOCATION (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)
- B1 SOIL SAMPLE LOCATION (GIN)
- GP-2 GEOPROBE™ (JUNE 2011)
- GP-9 GEOPROBE™ (MARCH 2012)
- (0.060) MTBE CONCENTRATION (mg/kg)
- < LESS THAN LABORATORY REPORTING LIMIT
- MTBE METHYL TERTIARY BUTYL ETHER
- mg/kg MILLIGRAMS PER KILOGRAM
- BGS BELOW GROUND SURFACE

0 50' 100'
GRAPHIC SCALE

NOTE:

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

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

MTBE SOIL ISOPLETH CONTOUR MAP (15.0'-20.0' BGS)

ARCADIS

FIGURE 28

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENVCAD\B0047339\2012\00006\DWG\47339C16.dwg LAYOUT: 28 SAVED: 7/23/2012 6:17 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/23/2012 6:20 AM BY: HARRIS, JESSICA
XREFS: IMAGES: PROJECTNAME: ---
47339X01

ARCADIS

Appendix **E**

Air Sparge/Soil Vapor Extraction
System Design Package

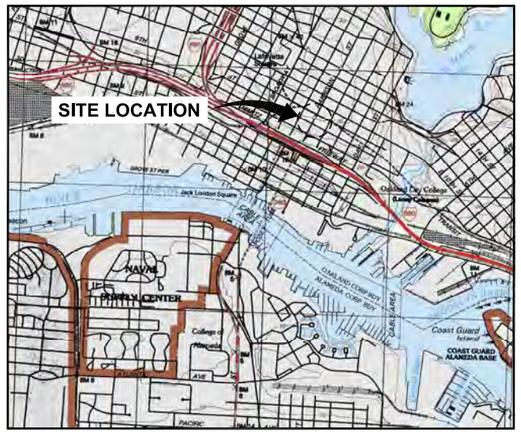
CONSTRUCTION DRAWINGS FOR

SOIL VAPOR EXTRACTION AND AIR SPARGE SYSTEM

UNION OIL COMPANY OF CALIFORNIA

STATION NO. 0752
706/726/800 HARRISON STREET
OAKLAND, CALIFORNIA

APRIL 2014



LOCATION MAP

ARCADIS

ARCADIS U.S., INC.

DRAFT - NOT FOR CONSTRUCTION

KEY CONTACTS:

APPLICANT:
TIMOTHY BISHOP, PROJECT MANAGER
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
MARKETING BUSINESS UNIT
6101 BOLLINGER CANYON ROAD
SAN RAMON, CALIFORNIA 947583
TELEPHONE: 925.790.6463

LANDOWNERS:
706 HARRISON STREET: MR. BO GIN
726 HARRISON STREET: MR. PETER YEE
800 HARRISON STREET: MR. MUHAMMAD USMAN

EQUIPMENT OWNER:
UNION OIL COMPANY OF CALIFORNIA (UNION OIL)
6101 BOLLINGER CANYON ROAD
SAN RAMON, CALIFORNIA 94583
CONTACT: TIMOTHY BISHOP
TELEPHONE: 925.790.6463

PREPARER'S INFORMATION:
ARCADIS U.S., INC. (ARCADIS)
2000 POWELL STREET, SUITE 700
EMERYVILLE, CALIFORNIA 94608

PROPERTY DATA:

PROPERTY ADDRESSES AND PARCEL NUMBER:
PARCEL NUMBER 001-018502600
706 HARRISON STREET
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LAND USE: COMMERCIAL
SURROUNDING LAND USE:
MIXED RESIDENTIAL/COMMERCIAL

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INDEX TO DRAWINGS

1.0 INTRODUCTION

1.1 GENERAL

THE ENCLOSED DRAWINGS AND SPECIFICATIONS CONTAIN INFORMATION FOR THE CONSTRUCTION AND INSTALLATION OF A SOIL VAPOR EXTRACTION AND AIR SPARGE SYSTEM (SVE/AS) TREATMENT FACILITY. THE FOLLOWING DRAWINGS DEPICTING THE TREATMENT FACILITY ARE REQUIRED FOR CONSTRUCTION AND INSTALLATION:

DRAWING NO.	TITLE
G-1A	CONSTRUCTION NOTES AND SPECIFICATIONS
G-1B	CONSTRUCTION NOTES AND SPECIFICATIONS
G-1C	CONSTRUCTION NOTES AND SPECIFICATIONS
G-1D	CONSTRUCTION NOTES AND SPECIFICATIONS
G-2	MAJOR EQUIPMENT AND INSTRUMENT LIST
C-1	SITE PLAN
C-2	SITE PLAN WITH PROPOSED REMEDIATION SYSTEM
C-3	REMEDIATION SYSTEM DETAILS
C-4	SOIL VAPOR EXTRACTION WELL, VAULT AND WELLHEAD DETAILS
C-5	AIR SPARGE WELL, VAULT, AND WELL HEAD DETAILS
C-6	TRENCHING DETAILS
C-7	MANIFOLD CONNECTION DETAILS
C-8	TREATMENT COMPOUND ELEVATIONS
M-1	PROCESS AND INSTRUMENTATION DIAGRAM LEGEND AND SYMBOLS
M-2	PROCESS AND INSTRUMENTATION DIAGRAM
M-3	PLAN VIEW OF EQUIPMENT LAYOUT
E-1	ELECTRICAL LEGEND AND NOTES
E-2	ELECTRICAL ONE LINE DIAGRAM
S-1	TREATMENT ENCLOSURE FOUNDATION AND ANCHOR DETAILS

1.2 DEFINITIONS
CHEVRON: CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
ENGINEER: ARCADIS
CONTRACTOR: TO BE DETERMINED BY BID
EQUIPMENT OWNER: UNION OIL COMPANY OF CALIFORNIA

THIS PACKAGE ALSO CONTAINS THE FOLLOWING SPECIFICATIONS REQUIRED FOR CONSTRUCTION AND INSTALLATION:

2.0 GENERAL CONSTRUCTION SPECIFICATIONS

2.1 THE CONTRACTOR SHALL REVIEW THE SVE/AS FACILITY DESIGN PLANS, AND FIELD VERIFY ALL DIMENSIONS AND SITE CONDITIONS BEFORE STARTING WORK. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCY.

2.2 ALL MATERIALS USED FOR CONSTRUCTION OF THE SVE/AS FACILITY SHALL BE NEW UNLESS OTHERWISE NOTED.

2.3 THE ENGINEER WILL REQUEST A PLAN CHECK, IF APPLICABLE. THE ENGINEER SHALL APPLY FOR AND OBTAIN ALL DISCHARGE PERMITS FOR TREATED WATER AND AIR, AS APPLICABLE. THE ENGINEER WILL OBTAIN THE REQUIRED WELL INSTALLATION PERMITS.

2.4 THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL BUILDING PERMITS. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY INSPECTIONS, INCLUDING ROUGH ELECTRICAL, MECHANICAL, CIVIL, OR OTHER APPLICABLE INSPECTIONS, AND OBTAIN A FINAL SIGNED OFF INSPECTION CARD FROM THE LOCAL AUTHORITY.

2.5 THE CONTRACTOR SHALL PROVIDE A ONE YEAR WARRANTY ON ALL CONTRACTOR-PROVIDED MATERIALS AND SUPPLIES. THE CONTRACTOR SHALL PROVIDE A WARRANTY ON WORKMANSHIP FOR A PERIOD OF NOT LESS THAN ONE YEAR. ALL DEFECTS IN CONTRACTOR SUPPLIED AND INSTALLED MATERIALS AND SUPPLIES SHALL BE REPAIRED AT CONTRACTOR EXPENSE.

2.6 IN ADDITION TO THE REMEDIATION DESIGN PLANS, THE ENGINEER WILL SUPPLY THE CONTRACTOR WITH MANUFACTURER'S EQUIPMENT HANDLING AND INSTALLATION PROCEDURES. THE CONTRACTOR WILL INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURERS' SPECIFICATIONS AND INSTRUCTIONS.

2.7 THE ENGINEER WILL CLEARLY INDICATE IN THE REMEDIATION DESIGN PLANS THE ITEMS TO BE PROVIDED BY CEMC, THE ENGINEER AND OTHERS. ALL OTHER ITEMS AND EQUIPMENT NOT CLEARLY INDICATED AS PROVIDED BY OTHERS IN THE REMEDIATION DESIGN PLANS SHALL BE PROVIDED BY AND INSTALLED BY THE CONTRACTOR.

2.8 THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING THE SITE FREE OF EXCESSIVE DEBRIS AND WASTE DURING CONSTRUCTION. THE CONTRACTOR IS TO TAKE THE NECESSARY PRECAUTIONS TO CONTROL DUST AND STORMWATER RUNOFF FROM EXCAVATION AND CONSTRUCTION ACTIVITIES.

2.9 THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INDEPENDENT LOCATION OF ALL UTILITIES AND SHALL TAKE APPROPRIATE MEASURES TO PROTECT THEM FROM DAMAGE. THE CONTRACTOR SHALL FORMALLY CONTACT THE REGIONAL UNDERGROUND UTILITY NOTIFICATION SERVICE, SUCH AS THE UNDERGROUND SERVICE ALERT (USA), ONE CALL, AND OBTAIN ALL NECESSARY CLEARANCES BEFORE BREAKING GROUND. SHOULD ANY UTILITIES, INCLUDING BUT NOT LIMITED TO, ELECTRICAL CONDUITS, TELEPHONE LINES, WATER LINES, SEWER, OR STORM DRAIN LINES BE DAMAGED DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE AFFECTED PARTIES AND COMPLETING REPAIRS, IF APPLICABLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REPAIR COSTS.

2.10 CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR REPAIRING ALL DAMAGE MADE BY THE CONTRACTOR TO MONITORING WELLS, WELL SEALS, MANHOLE BOXES, AND ALL ABOVE GROUND STRUCTURES AS THE RESULT OF ACCIDENT OR NEGLECT.

2.11 THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO MATCH THE PRE-CONSTRUCTION CONDITIONS AND THE SURROUNDING AREA. THIS INCLUDES DISTURBED LAWNS, TREES, SHRUBS, PLANTINGS, FENCES, SIDEWALKS, AND OTHER STRUCTURES.

2.12 UPON COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL ASSIST THE ENGINEER IN PREPARING "AS-BUILT" DRAWINGS (RED LINES). THE "AS-BUILT" DRAWINGS SHALL SHOW THE ACTUAL CONSTRUCTION DETAILS, INCLUDING FINAL TRENCH AND WELL LOCATIONS, COMPOUND LAYOUT, AND PIPING DETAILS.

2.13 A FINAL INSPECTION WILL BE PERFORMED BY THE ENGINEER AND/OR A CEMC REPRESENTATIVE. ALL ITEMS NOT MEETING THE SPECIFICATIONS AND THE REMEDIATION DESIGN PLANS SHALL BE PROMPTLY REPAIRED AND/OR REPLACED BY THE CONTRACTOR AT NO EXPENSE TO CEMC.

2.14 THE CONTRACTOR SHALL PROVIDE AN ELECTRICIAN FOR A MINIMUM OF TWO DAYS FOR THE STARTUP OF THE EQUIPMENT, UNLESS THIS WORK CAN BE SAFELY ACCOMPLISHED IN LESS TIME. THE ELECTRICIAN SHALL BE PREPARED TO DEMONSTRATE PROPER MOTOR ROTATION, PROPER CONNECTIONS OF EQUIPMENT TO CIRCUIT BREAKERS, AND BE AVAILABLE TO TROUBLESHOOT ELECTRICAL PROBLEMS WITH THE SYSTEM.

2.15 ALL NECESSARY CONSTRUCTION INSPECTIONS SHALL BE OBTAINED AND PAID FOR BY THE CONTRACTOR, INCLUDING INSPECTIONS FOR ELECTRICAL, MECHANICAL, AND CIVIL CONSTRUCTION. THE ENGINEER WILL OBTAIN THE REQUIRED WELL INSTALLATION PERMITS.

2.16 ALL WORK SHALL BE CONDUCTED UNDER CEMC "PERMIT TO WORK" SYSTEM. CONTRACTOR WILL NOT CONDUCT ANY WORK WITHOUT A VALID PERMIT TO WORK.

2.17 THE CONTRACTOR SHALL PROVIDE A TECHNICIAN FOR 8 HOURS DURING THE STARTUP OF THE SVE/AS REMEDIATION SYSTEM.

2.18 THE CONTRACTOR SHALL CONFIRM A CONSTRUCTION SCHEDULE WITH ARCADIS AT LEAST 14 DAYS PRIOR TO ANY WORK AT THE SITE.

2.19 THE PROPOSED CONSTRUCTION SCHEDULE SHALL BE PRESENTED IN A TIMELINE FORMAT SHOWING ESTIMATED START DATE, DURATION, AND COMPLETION TIMES FOR EACH ACTIVITY. ANY DEVIATION FROM THE ORIGINALLY PROPOSED SCHEDULE MUST BE COMMUNICATED TO ARCADIS WITHIN 24 HOURS.

3.0 TRENCHING AND BACKFILL

3.1 GENERAL

3.1.1 TRENCHING AND BACKFILL SPECIFICATIONS WILL BE DEVELOPED BY THE ENGINEER, AND BE PRESENTED IN THE DESIGN PLANS.

3.1.2 THE TRENCHING AND BACKFILL SPECIFICATIONS ARE SUBJECT TO APPROVAL BY THE LOCAL AUTHORITY DURING PLANNING AND BUILDING DEPARTMENT PERMIT REVIEWS.

3.1.3 ALL MECHANIZED EQUIPMENT OPERATION (I.E., BACKHOE, EXCAVATOR, OR OTHER POWERED EQUIPMENT) SHALL BE PERFORMED BY COMPETENT PERSONNEL AND/OR PERSONNEL LICENSED TO PERFORM SUCH WORK. ALL CONSTRUCTION SHALL BE PERFORMED BY TRAINED PERSONNEL OPERATING UNDER A LICENSED CONTRACTOR.

3.2 PAVEMENT CUTTING

3.2.1 EXISTING PAVEMENT SHALL BE SAW CUT TO PROVIDE A NEAT VERTICAL FACE FOR REPAVING. WHEN WET-CUTTING, BEST MANAGEMENT PRACTICES (BMPS) SHALL BE IMPLEMENTED TO PREVENT CUTTING WATER FROM ENTERING STORM DRAINS OR MIGRATING FROM THE SITE.

3.2.2 THE CONTRACTOR SHALL MAKE EVERY EFFORT TO USE EXISTING PAVEMENT EDGES AND JOINTS WHEN SAW CUTTING TO REDUCE UNNECESSARY CUTS. PAVEMENT REMOVED FROM TRENCHES OR OTHER EXCAVATIONS SHALL BE REPLACED TO MATCH THE EXISTING MATERIAL.

3.2.3 CONCRETE OR ASPHALT TRENCH CUTS SHALL NOT EXCEED A NOMINAL WIDTH OF 36 INCHES, AND SHALL BE NOT LESS THAN 18 INCHES WIDE (NOMINAL) UNLESS SPECIFIED OTHERWISE IN THE DESIGN PLANS. TRENCHES SHALL BE CUT TO THE MINIMUM WIDTH NECESSARY TO ACCOMMODATE ALL PIPING SHOWN IN THE DESIGN PLANS.

3.3 TRENCH EXCAVATION

3.3.1 TRENCHES SHALL BE EXCAVATED TO THE SPECIFIED WIDTHS AND DEPTHS SPECIFIED IN THE DESIGN PLANS. ANY DEVIATION FROM THE TRENCHING PLANS SHALL BE APPROVED BY THE ENGINEER BEFORE WORK COMMENCES. ALL DEVIATIONS SHALL BE DOCUMENTED ON THE "AS-BUILT DRAWINGS.

3.3.2 CONTRACTOR SHALL STOP WORK IMMEDIATELY IF PRODUCT PIPING OR TANK FIELD IS ENCOUNTERED DURING EXCAVATION. FURTHER EXCAVATION SHALL NOT BE CONDUCTED WITHOUT THE APPROVAL OF CEMC AND ENGINEER.

3.3.3 ALL EXCAVATION ACTIVITIES SHALL BE IN STRICT ACCORDANCE WITH OSHA REGULATIONS AND ALL FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.

3.3.4 ALL EXCAVATED SOIL SHALL BE MONITORED BY THE ENGINEER IN ACCORDANCE WITH BAY AREA AIR QUALITY MANAGEMENT DISTRICT (BAAQMD). IF HYDROCARBON IMPACTED SOIL IS DETECTED, THE SOIL SHALL BE STOCKPILED IN AN AREA DESIGNATED BY THE ENGINEER. THE IMPACTED SOIL SHALL BE PLACED ON 6 MIL PLASTIC SHEETING AND SECURELY COVERED USING A MINIMUM OF 6 MIL THICK PLASTIC SHEETING. ALTERNATIVELY, IMPACTED SOIL MAY BE PLACED IN PROPERLY LABELED DOT-APPROVED 55 GALLON STEEL DRUMS OR ROLL-OFF BINS. THE ENGINEER SHALL BE RESPONSIBLE FOR SAMPLING AND CHEMICALLY ANALYZING THE EXCAVATED SOIL FOR HYDROCARBONS FOR WASTE PROFILING. CEMC WILL BE RESPONSIBLE FOR DISPOSAL/TREATMENT OF HYDROCARBON IMPACTED SOIL.

3.3.5 THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOADING SOIL INTO TRUCKS AND OFF-SITE DISPOSAL OR RECYCLING OF ALL HYDROCARBON-FREE SOIL AND CONSTRUCTION DEBRIS.

3.3.6 THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGING EXISTING UNDERGROUND UTILITIES, PIPING, AND UNDERGROUND STRUCTURES DURING EXCAVATION ACTIVITIES.

3.3.7 THE CONTRACTOR SHALL HAND-EXCAVATE TO EXPOSE ALL EXISTING PRODUCT, VENT, ELECTRICAL CONDUIT, WATER, AND SEWER LINES BEFORE EXCAVATING WITH MECHANICAL EQUIPMENT.

3.3.8 ONCE ALL EXISTING LINES HAVE BEEN LOCATED, THE TRENCHES SHALL BE NEATLY CUT BY A BACKHOE, EXCAVATOR, BOBCAT, OR OTHER APPROVED METHOD TO PROVIDE A SQUARE CUT TRENCH.

3.3.9 THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY AND INTEGRITY OF TRENCHES AND TRENCH PLATES PLACED OVER OPEN TRENCHES DURING WORKING AND NON-WORKING HOURS. IF TRENCHES MUST REMAIN OPEN AFTER NORMAL WORK HOURS THE CONTRACTOR SHALL IMPLEMENT THE FOLLOWING MEASURES:

- ACTIVE TRAFFIC AREAS - OPEN TRENCHES SHALL BE COVERED BY STEEL TRENCH PLATES CAPABLE OF SUPPORTING VEHICULAR TRAFFIC. TRENCH PLATES ARE TO BE PLACED SO THAT THERE ARE NO GAPS BETWEEN PLATES. THE EDGES OF THE PLATES SHALL BE SECURED WITH TEMPORARY ASPHALT PATCH TO MINIMIZE DISPLACEMENT BY VEHICLES CROSSING THE PLATES.
- NON-TRAFFIC AREAS - OPEN TRENCHES SHALL BE COVERED BY STEEL TRENCH PLATES (NON-SKID PLATES IN FREQUENTLY USED PEDESTRIAN AREAS) OR ¾-INCH THICK PLYWOOD.

3.3.10 THE CONTRACTOR SHALL TAKE PRECAUTIONS TO MINIMIZE SURFACE WATER ENTERING EXCAVATIONS AND PREVENTING OVERSATURATION OF TRENCHES.

3.3.11 WHEN REQUIRED BY LOCAL AUTHORITY, THE ENGINEER WILL IMPLEMENT A STORM WATER POLLUTION PREVENTION PLAN (SWPPP). THE CONTRACTOR SHALL STRICTLY FOLLOW THE REQUIREMENTS OF THE SWPPP. IF NO SWPPP IS REQUIRED, THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES TO ENSURE THAT ALL STORM WATER RUNOFF FROM CONSTRUCTION DEBRIS, EXCAVATED SOIL, OR DISTURBED SURFACES WILL NOT TO ENTER A STORM DRAIN OR RUNOFF THE SITE.

3.3.12 EXCAVATION SHALL NOT INTERFERE WITH 45-DEGREE ZONE OF INFLUENCE ON ANY EXISTING FOUNDATION OR FOOTING. EXISTING FOOTINGS OR FOUNDATIONS THAT MAY BE AFFECTED BY ANY EXCAVATION SHALL BE UNDERPINNED ADEQUATELY OR OTHERWISE PROTECTED AGAINST SETTLEMENT AND SHALL BE PROTECTED AGAINST LATERAL MOVEMENT PER APPLICABLE BUILDING CODE.

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name
Professional Engineer's No.

State	Date Signed	Project Mgr.
CA		
Designed by	Drawn by	Checked by
	MTH	

ARCADIS U.S., INC.

UNION OIL COMPANY OF CALIFORNIA STATION NO. 0752 706/726/800 HARRISON STREET OAKLAND, CALIFORNIA
CONSTRUCTION DOCUMENTS

CONSTRUCTION NOTES AND SPECIFICATIONS

DRAFT - NOT FOR CONSTRUCTION

ARCADIS Project No.
B0047339.0001

Date
APRIL 2014

ARCADIS
2000 POWELL STREET SUITE 700
EMERYVILLE, CALIFORNIA 94608

G-1A

3.4 BACKFILL

3.4.1 TRENCHES SHALL BE BACKFILLED AS SOON AS PRACTICAL AFTER PRESSURE TESTING THE UNDERGROUND PIPE RUNS, AND FOLLOWING ANY REQUIRED INSPECTIONS. TRENCHES SHALL NOT REMAIN OPEN LONGER THAN NECESSARY TO PREVENT SIDEWALL CAVING. IF CAVING IS ANTICIPATED, THE CONTRACTOR SHALL USE A COMMERCIAL SOIL SEALANT/BINDER OR FORMS TO PREVENT CAVING. CHEMICAL SOIL BINDERS/SEALANTS SHALL BE APPROVED BY CEMC.

3.4.2 PRIOR TO BACKFILLING, THE CONTRACTOR SHALL CONFIRM THAT THE UNDERGROUND PIPE IS BURIED TO A MINIMUM DEPTH OF 18 INCHES FROM THE TOP OF THE PIPE, UNLESS OTHERWISE NOTED IN THE DESIGN PLANS AND LOCAL BUILDING CODES.

3.4.3 UNDERGROUND PIPING SHALL BE BEDDED IN CLEAN SAND, OR THE ENGINEER-APPROVED EQUIVALENT, TO A MINIMUM DEPTH OF 2-INCHES BELOW THE BOTTOM OF THE PIPING AND 2-INCHES ABOVE THE PIPING. THE SAND SHALL BE CLEAN, ROCK-FREE (100 PERCENT PASSING NO. 4 SIEVE), AND FREE OF SILT AND CLAY.

3.4.4 TRENCH BACKFILL MATERIAL WILL CONSIST OF CDF SLURRY MIX. BACKFILL MATERIALS SHALL NOT CONTAIN RUBBLE, VEGETATION, TRASH, BOULDERS, OR OTHER DEBRIS.

3.4.5 NATIVE SOIL MAY BE USED AS BACKFILL WITH APPROVAL OF CEMC AND THE ENGINEER. IT IS RECOMMENDED THAT NATIVE SOIL BE TESTED FOR GEOTECHNICAL PROPERTIES TO DETERMINE IF THE MATERIAL IS SUITABLE FOR BACKFILL.

3.4.6 BACKFILL SOIL SHALL BE COMPACTED TO 95 PERCENT OF THE MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT (BASED ON ASTM D1557) OR IN ACCORDANCE WITH THE LOCAL CODES.

3.4.7 CDF MAY BE USED AS BACKFILL MATERIAL WITH THE APPROVAL OF CEMC AND THE ENGINEER. THE CDF SHALL BE 1.5 TO 2 SACK SLURRY. NO COMPACTION TESTING IS REQUIRED FOR CDF.

3.4.8 CLASS 2 AGGREGATE BASE SHALL BE PLACED UNDER NEW ASPHALT PAVEMENT. THE AGGREGATE BASE THICKNESS SHOULD EQUIVALENT TO THE EXISTING AGGREGATE BASE THICKNESS OR SIX INCHES WHICHEVER IS GREATER.

3.4.9 PRIOR TO PAVING, THE CONTRACTOR SHALL REMOVE ALL VEGETATION, SURPLUS SOIL, RUBBLE, TRASH, DEBRIS AND OTHER MATERIALS AND PROVIDE A FLAT, UNYIELDING SUBGRADE SURFACE FOR PAVING. SATURATED, SOFT OR PUMPING SOILS SHALL BE REMOVED AND REPLACED WITH SUITABLE MATERIAL IN ACCORDANCE THESE SPECIFICATIONS.

3.4.10 THE CONTRACTOR SHALL PREPARE THE SUB-GRADE ELEVATION TO MATCH THE BASE OF THE EXISTING PAVEMENT, UNLESS THE ASPHALT RESTORATION DESIGN EXCEEDS EXISTING IN-PLACE ASPHALT DESIGN.

4.0 PIPING

4.1 GENERAL

4.1.1 THE LOCAL AUTHORITY, AND BUILDING AND PLUMBING CODES, ALONG WITH ASTM SPECIFICATIONS, SHALL BE USED TO DESIGN THE TYPES OF PIPING AND INSTALLATION METHODS REQUIRED FOR EACH REMEDIATION SITE.

4.1.2 ALL PIPING WORK SHALL BE INSTALLED BY TRAINED PERSONNEL OPERATING UNDER A STATE-LICENSED CONTRACTOR.

4.1.3 ALL MATERIALS SHALL BE NEW, UNLESS OTHERWISE SPECIFIED IN THE DESIGN PLANS.

4.1.4 ALL MATERIALS AND WORK SHALL BE IN ACCORDANCE WITH THE PIPE MANUFACTURER'S SPECIFICATIONS, THE DESIGN PLANS, AND ALL APPLICABLE CODES.

4.1.5 ALL PIPING AND PLUMBING SHALL BE PERFORMED BY TRAINED AND COMPETENT PERSONNEL, WHO MEET ALL OF THE REQUIREMENTS DICTATED BY THE LOCAL AUTHORITIES. IN ADDITION, THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THE INSTALLATION OF ANY EQUIPMENT OR MATERIALS WHICH REQUIRE SPECIFIC LICENSING SHALL BE PERFORMED UNDER THE DIRECTION OF THE INDIVIDUAL WHO HOLDS A CURRENT LICENSE FOR SUCH WORK.

4.1.6 WHEN CONNECTING TO EXISTING UNDERGROUND PIPING, THE CONTRACTOR SHALL FIRST VERIFY THE EXISTING PIPING PATH. IF THE EXISTING UNDERGROUND PIPING IS TO BE USED FOR CONVEYANCE, THE CONTRACTOR SHALL ALSO FIELD VERIFY THE INTEGRITY OF THE EXISTING PIPE PRIOR TO CONNECTING TO IT.

4.1.7 ALL PROCESS PIPING SHALL BE TESTED ACCORDING TO LOCAL SPECIFICATIONS AND WITNESSED BY THE ENGINEER OR THE ENGINEER'S REPRESENTATIVE. NO TESTING WILL BE CONDUCTED THROUGH INSTRUMENTS OR EQUIPMENT. NO VACUUM OR PRESSURE TESTING WILL OCCUR WITHOUT CHEVRON'S APPROVAL.

4.1.8 THE PIPE FOR VAPOR LINES SHALL BE SLOPED TOWARDS THE WELLHEADS AT A RATIO OF 1:100 TO AVOID ACCUMULATION OF CONDENSATE IN THE PIPES. IF A TRENCH DEPTH OF GREATER THAN 4 FEET IS NEEDED TO ACHIEVE A REQUIRED SLOPE, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND IMPLEMENT MEASURES TO ADDRESS POTENTIAL CONDENSATE ACCUMULATION IN THE PIPE AS DIRECTED BY THE ENGINEER.

4.1.9 WHERE PIPING IS INSTALLED ABOVE GROUND, PIPE SUPPORTS AND CLAMPS SHALL BE USED TO SUPPORT THE PIPE AT APPROPRIATE INTERVALS TO PREVENT SAG AS SPECIFIED Y THE PIPING MANUFACTURER'S SPECIFICATIONS. WHEN UNISTRUT SUPPORTS ARE USED THE ENDS OF THE SUPPORTS SHALL BE COVERED WITH PLASTIC PROTECTIVE CAPS.

4.1.10 THE CONTRACTOR SHALL PAINT ALL ABOVE GROUND PIPING AS APPROPRIATE FOR UV PROTECTION, WHERE REQUIRED BY CODE AND TO IDENTIFY POTENTIAL HAZARDS (I.E.; OVERHEAD PIPING, POTENTIAL TRIP HAZARD). WHEN PAINTING PIPING IS APPLICABLE, THE FOLLOWING SCHEDULE SHALL BE FUSED: "GREY - SOIL VAPOR", "YELLOW – GAS SUPPLY", "AIR LINES – NOT PAINTED".

4.1.11 THE CONTRACTOR SHALL LABEL ALL ABOVE GROUND PIPING WITH INDELIBLE OR PERMANENT MARKING INDICATING THE CONTENTS OF THE PIPE (I.E., "GROUNDWATER," "VAPOR," OR "TREATED WATER", COMPRESSED AIR, GAS, ELECTRIC) AND THE FLOW DIRECTION.

4.1.12 THE CONTRACTOR SHALL MAKE ALL WELLHEAD CONNECTIONS AS SHOWN IN THE DESIGN PLANS.

4.1.13 THE CONTRACTOR WILL IDENTIFY (ID) ALL WELL MANIFOLD PIPING STEEL TAGS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO STAMP THE APPROPRIATE WELL ID'S ON THE STEEL TAGS AND ATTACH THE TAGS WITH CHAINS TO THE CORRESPONDING WELLS AT THE MANIFOLD.

4.1.14 THE PIPING MATERIALS SHALL BE SPECIFIED BY THE ENGINEER IN THE DESIGN PLANS. ANY CONFLICTS OR QUESTIONS CONCERNING PIPE MATERIAL COMPATIBILITY, AS DISCOVERED BY THE CONTRACTOR, SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.

4.1.15 THE USE OF DISSIMILAR METALS AND ALLOYS IN DIRECT CONTACT WITH EACH OTHER IS PROHIBITED ON ALL PIPE LINES CONTAINING LIQUIDS DUE TO THE POTENTIAL FOR GALVANIC CORROSION. WHERE DISSIMILAR METALS MUST BE JOINED, DI-ELECTRIC UNIONS OR COUPLERS SHALL BE USED.

4.1.16 TRACER WIRE TERMINALS WILL BE TAGGED AND IDENTIFIED IN THE EQUIPMENT COMPOUND, AT JUNCTION BOXES, AND WELL BOXES.

4.1.17 ALL UNDERGROUND PIPING SHALL BE IDENTIFIED USING TRACER WIRE AND METALLIC TAPE PLACED ABOVE THE PIPING AT THE TOP OF THE BEDDING MATERIAL ABOVE THE PIPING. TRACER WIRE TERMINALS WILL BE TAGGED AND IDENTIFIED IN THE EQUIPMENT COMPOUND, AT JUNCTION BOXES, AND WELL BOXES.

4.1.18 THE CONTRACTOR SHALL ENSURE THAT ALL FOREIGN MATERIALS HAVE BEEN REMOVED FROM THE UNDERGROUND PIPING FOLLOWING INSTALLATION AND BEFORE BACKFILLING.

4.1.19 ALL ABOVE GROUND PIPING SHALL BE PERMANENTLY LABELED WITH DIRECTIONAL FLOW ARROWS AND LINE CONTENTS AT 5 FOOT INTERVALS. (I.E. KNOCKOUT WATER, SOIL VAPOR, AND PRODUCT)

4.1.21 WHERE PIPING IS ROUTED ABOVEGROUND INSIDE THE EQUIPMENT ENCLOSURE, THE PIPING SHALL BE SUPPORTED BY UNI-STRUT PIPE SUPPORT AND CLAMPS. THE UNI-STRUT SUPPORTS SHALL BE FASTENED TO THE WALL OR MOUNTED ON A BASE THAT IS SECURED TO THE GROUND SURFACE AT 10 INCH MINIMUM SPACING.

4.2 POLYVINYL CHLORIDE (PVC) PIPE SPECIFICATIONS

4.2.1 ALL UNDERGROUND PVC PROCESS PIPING SHALL BE SCHEDULE 40 (UNLESS NOTED OTHERWISE IN DESIGN DRAWINGS). ALL ABOVEGROUND PVC PROCESS PIPING SHALL BE SCHEDULE 80 (UNLESS NOTED OTHERWISE IN DESIGN DRAWINGS OR REQUIRED BY APPLICABLE CODES).

4.2.2 ALL PIPE JOINTS ARE TO BE GLUED USING PVC PRIMER AND PVC SOLVENT CEMENT. CONNECTIONS TO OTHER TYPE OF PIPES ARE TO BE BY FLANGE OR MALE/FEMALE ADAPTERS SPECIFICALLY DESIGNED FOR A TRANSITION FROM PVC PIPE TO A SPECIFIC TYPE OF PIPE (I.E., GALVANIZED STEEL, COPPER).

4.2.3 PVC PIPE SHALL NOT BE USED FOR ABOVE GROUND OR UNDERGROUND COMPRESSED AIR SERVICE, OR FOR HIGH TEMPERATURE APPLICATIONS, SUCH AS BLOWER DISCHARGE PIPING.

4.3 GALVANIZED PIPE SPECIFICATIONS

4.3.1 GALVANIZED PIPE SHALL BE SCHEDULE 40 HOT-DIP GALVANIZED (HDG) STEEL PER ASTM A53.

4.3.2 GALVANIZED PIPE SHALL NOT BE USED TO CONVEY SOIL VAPOR. USE OF GALVANIZED PIPE PRIOR TO CATALYTIC OXIDIZER ABATEMENT SYSTEMS MAY INCREASE RISK OF POISONING THE CATALYTIC CELL MATERIAL. OXIDIZER VENDORS SHOULD BE CONSULTED FOR APPROPRIATE PIPING MATERIAL USE PRIOR TO INSTALLING THE OXIDIZER.

4.4 ABS COMPRESSED AIR PIPE SPECIFICATIONS

4.4.1 ABS PIPE AND FITTINGS SHALL BE DURAPLUS™ OR EQUIVALENT AND CAPABLE OF WITHSTANDING CONTINUOUS WORKING PRESSURES GREATER THAN 100 PSI.

4.4.2 ABS-COMPRESSED AIR FITTINGS SHALL BE THE SOCKET TYPE, DESIGNED FOR SOLVENT WELDING.

- FITTINGS SHALL BE DESIGNED AND MANUFACTURED TO WITHSTAND THE CONTINUOUS PRESSURES APPLICABLE TO THE MAXIMUM PRESSURE RATING OF THE PIPE.
- THE SOLVENT CEMENT SHALL BE ABS SOLVENT CEMENT AND DESIGNED TO WITHSTAND CONTINUOUS PRESSURES UP TO 185 PSI AT 73^{O} F.

4.4.3 WHEN TRANSITIONING FROM ABS TO NON-ABS PIPING MATERIAL, THE CONTRACTOR SHALL ENSURE APPROPRIATE TRANSITION FITTINGS ARE USED.

4.5 PRESSURE TESTING

4.5.1 ALL PROCESS PIPING SHALL BE PRESSURE TESTED ACCORDING TO LOCAL SPECIFICATIONS AND WITNESSED BY AN ENGINEER OR AN APPROVED REPRESENTATIVE. NO TESTING WILL BE CONDUCTED THROUGH INSTRUMENTS OR EQUIPMENT

4.5.2 ALL PVC LINES USED FOR VACUUM WILL BE TESTED AT 5 POUNDS PER SQUARE INCH (PSI) OF PRESSURE AND HELD FOR AN HOUR. IF A PRESSURE DROP OF MORE THAN 1 PSI IS OBSERVED DURING THE HOUR, THE LINE WILL BE INSPECTED AND REPAIRED AS NECESSARY PRIOR TO RETESTING THE LINE.

4.5.3 ALL PVC LINES USED FOR WATER WILL BE TESTED AT 5 PSI FOR A PERIOD OF 60 MINUTES. IF A LEAK IS OBSERVED DURING THE HDPE-TESTING TIME OR A PRESSURE DROP OF MORE THAN 1 PSI IS NOTED, THE LINE WILL BE INSPECTED AND REPAIRED AS NECESSARY PRIOR TO RETESTING THE LINE.

4.5.4 ALL ABS LINES USED FOR COMPRESSED AIR WILL BE TESTED AT 100 PSI FOR A PERIOD OF 60 MINUTES. IF A PRESSURE DROP OF MORE THAN 1 PSI IS OBSERVED DURING THE TESTING TIME, THE LINE WILL BE INSPECTED AND REPAIRED AS NECESSARY PRIOR TO RETESTING THE LINE. A CURING TIME (MINIMUM OF 24 HOURS OR PER THE MATERIAL MANUFACTURER, WHICHEVER IS THE LARGEST), WILL BE FOLLOWED PRIOR TO BEGINNING ANY TESTING ON THE ABS LINES. ONLY THREADED FITTINGS TO BE USED ON THE ABS PIPE AND TRANSITION FITTINGS ARE TO BE METAL REINFORCED.

5.0 ASPHALT PAVEMENT

5.1 GENERAL

5.1.1 HOT MIX ASPHALT CONCRETE SHALL NOT BE USED TO RESTORE ASPHALT SURFACES AFFECTED BY CONSTRUCTION ACTIVITIES. EXCEPTION: ASPHALT COLD PATCH MAY BE USED AS A TEMPORARY SURFACE FOR SMALL PAVEMENT PATCHES (NOT TO EXCEED 3 FEET BY 3 FEET) DURING SITE CONSTRUCTION ACTIVITIES. TEMPORARY ASPHALT PATCH MUST BE REMOVED PRIOR TO OR DURING FINAL SITE RESTORATION ACTIVITIES.

5.1.2 ASPHALT DRIVEWAYS, PARKING STRIPS, OR OTHER AREAS DESIGNED FOR VEHICULAR AND PEDESTRIAN TRAFFIC SHALL BE RESTORED TO MATCH EXISTING GRADES.

5.1.3 THE CONTRACTOR SHALL ASSURE THAT THE SUB-GRADE HAS BEEN PROPERLY PREPARED. NO ASPHALT SHALL BE INSTALLED ON SATURATED, SOFT OR PUMPING SOIL, FROZEN SOIL, ICE, SNOW, OR STANDING WATER.

5.1.4 FINISHED SURFACES SHALL BE SMOOTH WITH UNIFORM TEXTURE AND BE FREE OF VOIDS, MOUNDS, RIDGES, DEPRESSIONS, CRACKS, ROLLER MARKS, PITS, OR OTHER IRREGULARITIES (1/4 INCH MAXIMUM OVER 10 FEET STRAIGHT EDGE). EDGES SHALL BE CAPPED OVER AND STRAIGHT. RESTORED PAVEMENT SURFACES NOT MEETING THESE REQUIREMENTS WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

5.2 ASPHALT CONCRETE MATERIALS

5.2.1 ASPHALT CONCRETE SHALL BE A HIGH-QUALITY, CONTROLLED HOT MIXTURE OF ASPHALT AND WELL-GRADED QUALITY AGGREGATE, AND COMPACTED INTO A UNIFORMLY DENSE MASS. THE PAVING MATERIALS SHALL CONFORM TO ASTM SPECIFICATION D3515.

5.2.2 A TACK COAT BONDING AGENT SHALL BE APPLIED BETWEEN ASPHALT LAYERS, BETWEEN LAYERS OF CONCRETE OR SLURRY AND THE ASPHALT, AND BETWEEN CUT EDGES OF EXISTING ASPHALT TO BOND TO THE NEW ASPHALT TO THE OLD SURFACE. THE TACK COAT MATERIAL SHALL MEET THE SPECIFICATIONS IN ASTM D977 OR D2397 AND BE GRADES SS-1, SS-1H, CSS-1, OR CSS-1H. THE ASPHALT TACK COAT SHALL BE A DILUTED EMULSIFIED ASPHALT MIXTURE OF EQUAL PARTS EMULSION AND CLEAN WATER.

5.2.3 THE AGGREGATE USED FOR THE BASE COURSE AND SURFACE MIXTURE SHALL BE CRUSHED STONE, GRAVEL, STONE OR SLAG SCREENINGS, SAND, MINERAL FILLER, OR A COMBINATION OF THESE MATERIALS. UNCRUSHED COARSE AGGREGATE MAY BE USED IN BASE COURSE MIXTURES ONLY.

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name

Professional Engineer's No.

State	Date Signed	Project Mgr.
CA		
Designed by	Drawn by	Checked by
	MTH	

ARCADIS U.S., INC.

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

CONSTRUCTION DOCUMENTS

CONSTRUCTION NOTES AND SPECIFICATIONS

DRAFT - NOT FOR CONSTRUCTION

ARCADIS Project No. B0047339.0001

Date APRIL 2014

ARCADIS
2000 POWELL STREET SUITE 700
EMERYVILLE, CALIFORNIA 94608

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- COARSE AND FINE AGGREGATE SHALL CONFORM TO ASTM D692 AND ASTM D1073.
- MINERAL FILLER SHALL CONFORM TO ASTM D242.
- IF APPROVED FOR USE BY CHEVRON, SLAG SHALL BE BLAST FURNACE, AIR COOLED SLAG THAT IS NOT LESS THAN 70 POUNDS PER CUBIC FOOT IN MASS.

5.2.4 THE LIQUID ASPHALT USED SHALL CONFORM TO ASTM D3381 AND D946, AND SHALL BE THE APPROPRIATE GRADE FOR THE AMBIENT MEAN ANNUAL TEMPERATURE CONDITIONS.

5.3 ASPHALT CONCRETE PAVEMENT CONSTRUCTION

5.3.1 PRIOR TO PLACING NEW ASPHALT ADJACENT TO EXISTING PAVEMENT, THE CONTRACTOR SHALL SAW-CUT A CLEAN, STRAIGHT EDGE ALONG THE EXISTING PAVEMENT, AND APPLY TACK COAT TO THE VERTICAL CUT SURFACE. ALL SAW CUT DEBRIS SHALL BE REMOVED FROM THE TRENCH PRIOR TO LAYING THE NEW PAVEMENT.

5.3.2 THE TEMPERATURE OF THE ASPHALT MIXTURE SHALL NOT EXCEED 325^{o}F WHEN DISCHARGED FROM THE SPREADER. INITIAL COMPACTION SHALL BE PERFORMED WHEN THE TEMPERATURE OF THE MIXTURE IS ESTIMATED TO BE LESS THAN 250^{o}F. FINAL COMPACTION SHALL BEGIN WITH THE ASPHALT AS HOT AS POSSIBLE, BUT NOT LESS THAN 150^{o}F.

5.3.3 THE ASPHALT MIXTURE SHALL BE PLACED IN LIFTS AND COMPACTED TO A MAXIMUM NOMINAL THICKNESS OF 2 INCHES UNTIL THE NEW ASPHALT SURFACE MATCH THE EXISTING SURFACE. THE ASPHALT SHALL BE COMPACTED TO A MINIMUM OF 96 PERCENT OF THE REFERENCE DENSITY.

5.3.4 A TACK COAT OF 0.15 GALLON PER SQUARE YARD OF DILUTED EMULSIFIED ASPHALT SHALL BE APPLIED BETWEEN THE BASE COARSE SURFACE AND ASPHALT PAVEMENT. ALL VERTICAL SURFACES, WHICH WILL CONTACT THE NEW ASPHALT PAVING, SHALL BE TACK COATED. THE TACK COAT SHALL BE ALLOWED TO CURE BEFORE ASPHALT PLACEMENT, AND SHALL BE APPLIED ON SURFACES THAT CAN BE COVERED WITH AN ASPHALT MIXTURE DURING THE SAME DAY.

5.3.5 THE ASPHALT MIX SHALL BE COMPACTED IMMEDIATELY AFTER PLACEMENT. INITIAL COMPACTION SHALL BE ACCOMPLISHED USING A STEEL WHEEL TANDEM ROLLER, STEEL THREE-WHEELED ROLLER, OR VIBRATORY ROLLER. AS NEEDED, INTERMEDIATE ROLLING WITH A PNEUMATIC TIRE ROLLER SHALL BE DONE IMMEDIATELY BEHIND THE INITIAL ROLLING. IN AREAS TOO SMALL FOR THE ROLLER COMPACTOR, A VIBRATING PLATE COMPACTOR OR HAND TAMPER SHALL BE USED TO ACHIEVE THE REQUIRED COMPACTION. NOTE: THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING TRAFFIC LOADS ON NEWLY ASPHALTED SURFACES UNTIL IT HAS SUFFICIENTLY COOLED TO SUPPORT TRAFFIC.

5.3.6 THE CONTRACTOR SHALL RETURN TO THE SITE AFTER ONE WEEK AND APPLY ASPHALT JOINT SEALER TO ALL ASPHALT JOINTS.

6.0 PORTLAND CEMENT CONCRETE PAVEMENT

6.1 GENERAL

6.1.1 FINISHED CONCRETE SURFACES SHALL BE TRUE AND EVEN WITH THE EXISTING GRADE (1/4 INCH MAXIMUM OVER 10 FEET STRAIGHT EDGE). THE SURFACE GRADE AND FINISH MUST MATCH THE SURROUNDING AREA. THE FINISHED CONCRETE SHALL BE FREE OF VOIDS, MOUNDS, RIDGES, DEPRESSIONS, CRACKS, OR OTHER IRREGULARITIES. ANY CONCRETE DETERMINED TO BE SUBSTANDARD SHALL BE REMOVED AND REPLACED AT NO COST TO CEMC OR THE ENGINEER.

6.1.2 CONCRETE RESTORATION SHALL ONLY OCCUR ALONG VERTICAL FORMS OR SAW CUT WALLS. WHEN POSSIBLE, SAW CUTS SHALL FOLLOW EXISTING JOINTS AND THE LAYOUT EXISTING CONCRETE SURFACE PATTERNS. NEWLY PLACED CONCRETE PAVEMENT SHALL BE PROTECTED FROM VEHICULAR AND PEDESTRIAN TRAFFIC UNTIL IT IS SUITABLY CURED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACEMENT OF THE CONCRETE PAVEMENT NOT MEETING DESIGN DOCUMENTS AND/OR SPECIFICATIONS.

6.1.3 CONCRETE SHALL BE THOROUGHLY MIXED TO ASSURE UNIFORM MIXTURE OF COMPONENTS WITHIN THE MASS.

6.1.4 THE SELECTED CONTRACTOR SHALL VERIFY ALL DIMENSIONS FOR CONCRETE RESURFACING REQUIREMENTS.

6.1.5 A. THE REQUIREMENTS OF AMERICAN CONCRETE INSTITUTE (ACI) 301, SPECIFICATIONS FOR STRUCTURAL CONCRETE, SHALL APPLY AS MODIFIED HEREIN.

B. CONCRETE STRENGTH AT 28 DAYS: 3,000 PSI.

C. TYPE 2 PORTLAND CEMENT, 560 POUNDS PER CUBIC YARD (LB/CU YD) MINIMUM.

D. AGGREGATE: ASTM C33 SIZE 67 OR 57 (3/4 INCH OR 1 INCH)

E. REINFORCEMENT: ASTM A615, GRADE 60.

F. MAXIMUM WATER/CEMENTITIOUS MATERIAL RATIO: 0.45.

G. SLUMP: 3 INCHES +/- 1 INCH.

H. SET REINFORCEMENT ON CONCRETE DOBIE BLOCKS WITH EMBEDDED WIRE TIES

I. WATER SHALL BE POTABLE, AND FREE OF ACIDS, ALKALIES, AND ORGANIC MATERIAL.

6.2 CONCRETE MATERIALS

6.2.1 PORTLAND CEMENT SHALL CONFORM TO ASTM C-150 TYPE II.

6.2.2 FINE AND COARSE AGGREGATES FOR NORMAL WEIGHT CONCRETE SHALL CONFORM TO ASTM C-33 AND SHALL CONFORM TO THE APPROPRIATE ASTM GRADING REQUIREMENT. AGGREGATES SHALL BE CLEAN, HARD AND UNIFORMLY GRADED SAND, CRUSHED ROCK OR GRAVEL, FREE FROM LOAM, CLAY OR ORGANIC MATTER. SOUND AGGREGATE SHALL BE USED AND SHALL HAVE A MAXIMUM DIAMETER OF 1.5-INCHES.

6.2.3 WATER SHALL BE POTABLE AND FREE OF ACIDS, ALKALIS, AND ORGANIC MATERIALS.

6.2.4 THE CONCRETE MIX SHALL PASS A COMPRESSIVE STRENGTH TEST OF 2,500 PSI AFTER 28 DAYS. IN CERTAIN LOCALITIES, 3,000 PSI COMPRESSIVE STRENGTH CONCRETE IS REQUIRED BY SEISMIC CODE.

6.2.5 THE CONCRETE MIX SHALL HAVE A MINIMUM SLUMP OF 3-INCHES AND A MAXIMUM SLUMP OF 4-INCHES.

6.2.6 THE CONTRACTOR SHALL SPECIFY THE CONCRETE MIX, AND PROVIDE A COPY OF THE CONCRETE SPECIFICATIONS FOR APPROVAL FROM CEMC AND THE ENGINEER PRIOR TO PLACEMENT, IF REQUESTED. THE NUMBER OF BAGS OF CEMENT PER YARD, COMPRESSIVE STRENGTH, VOLUME OF WATER, SLUMP, TYPE AND WEIGHT OF FINE AND COARSE AGGREGATES, AND TYPE AND AMOUNT OF ADMIXTURES SHALL BE ADDRESSED IN THE SPECIFICATION.

6.3 CONCRETE JOINTS

6.3.1 JOINTS SHALL BE PROVIDED IN PAVING WHERE THEY PREVIOUSLY EXISTED AND SHALL BLEND SMOOTHLY WITH THOSE EXISTING JOINTS. AS A GENERAL RULE, JOINT SPACING SHALL NOT EXCEED 15 FEET.

6.3.2 THE CONTRACTOR SHALL INSTALL THE SAME TYPE OF JOINT AS THOSE IN EXISTING SLAB.

6.3.3 JOINTS SHALL BE PROVIDED ALONG PROPERTY LINES, WHERE ENTRY RAMPS CROSS AND AT CHANGES IN GRADE OR SLOPE

6.3.4 SAW CUT CONTROL JOINTS SHALL BE CUT 4 TO 12 HOURS AFTER CONCRETE IS POURED, OTHERWISE USE TOOLED OR PREFORMED JOINT INSERTS.

6.3.5 THE CONTRACTOR SHALL USE AQUA CRETE® OR EQUIVALENT SEALANT TO SEAL THE CONCRETE JOINTS. JOINT SURFACES SHALL BE THOROUGHLY CLEANED PRIOR TO APPLYING JOINT COMPOUND.

6.4 CONCRETE PLACEMENT

6.4.1 THE CONTRACTOR SHALL ASSURE THAT THE SUB-GRADE HAS BEEN PROPERLY PREPARED. NO CONCRETE SHALL BE POURED ON SOFT, SATURATED OR PUMPING SOIL, FROZEN SOIL, ICE, SNOW, OR STANDING WATER.

6.4.2 CONCRETE SHALL BE POURED IN ACCORDANCE WITH COMMONLY ACCEPTED INDUSTRY PRACTICES.

- THE CONTRACTOR SHALL PREVENT OVERWORKING AND AGGREGATE SEGREGATION.
- THE CONCRETE SHALL BE ADEQUATELY TAMPED OR VIBRATED TO PREVENT VOIDS OR HONEYCOMBING.
- AREA BETWEEN JOINTS SHALL BE CAST AS ONE CONTINUOUS POUR.
- CONCRETE CURBS SHALL BE MONOLITHICALLY POURED WITH THE ADJACENT CONCRETE PAVING, UNLESS PRIOR APPROVAL FROM THE ENGINEER IS OBTAINED.
- THE MAXIMUM ALLOWABLE TRAVEL TIME TO THE SITE IN HOT WEATHER WILL BE 1 HOUR AND 15 MINUTES AND COLD WEATHER WILL BE 2 HOURS.

6.5 CONCRETE FINISHING

6.5.1 THE CONTRACTOR SHALL FINISH THE CONCRETE IN ACCORDANCE WITH STANDARD INDUSTRY PRACTICES.

- AFTER ALL THE BLEED WATER HAS DISAPPEARED; THE CONTRACTOR SHALL FLOAT THE FLAT SURFACE BY HAND USING A TROWEL.
- AFTER FLOATING, A SOFT CONCRETE FINISH BROOM SHALL BE USED TO FINISH THE SURFACE TO MATCH THE EXISTING CONCRETE FINISH.

6.5.2 DRY CEMENT SHALL NOT BE USED TO REMOVE EXCESS WATER FROM THE SURFACE. FINISH WORK MUST BE DELAYED UNTIL THE WATER SHEEN HAS DISAPPEARED.

6.5.3 WATER SHALL NOT BE ADDED TO EASE THE FINISHING.

6.5.4 CARE SHALL BE USED TO NOT OVERWORK THE SURFACE.

6.5.5 CONSTRUCTION/CONTROL JOINTS AND EDGES SHALL BE HAND-TOOLED TO A ¼-INCH RADIUS.

7.0 ELECTRICAL

7.1 GENERAL

7.1.1 THE LOCAL AUTHORITY AND BUILDING CODES, INCLUDING THE NATIONAL ELECTRIC CODE (NEC), ARE USED TO DICTATE THE SPECIFIC TYPE OF ELECTRICAL ENCLOSURES AND RACEWAYS THAT ARE REQUIRED FOR USE IN SPECIFIC HAZARDOUS AND NON-HAZARDOUS LOCATIONS.

7.1.2 ALL WORK WILL BE PERFORMED IN ACCORDANCE WITH THE NEC. LOCAL CODES WILL GOVERN, BUT ANY DIFFERENCES SHOULD BE POINTED OUT TO THE LOCAL AUTHORITY. ALL WORK SHALL CONFORM TO THE REGULATIONS AND SPECIFICATIONS OF THE LOCAL POWER COMPANY PROVIDING THE SERVICE.

7.1.3 ELECTRICAL WORK SHALL ONLY BE CONDUCTED BY AN ELECTRICAL CONTRACTOR WHO IS LICENSED IN THE STATE WHERE THE WORK IS TO BE PERFORMED.

7.2 ELECTRICAL SERVICE

7.2.1 THE CONTRACTOR SHALL INSTALL A WEATHER-TIGHT MAIN ELECTRICAL BREAKER/DISCONNECT PANEL LOCATED OUTSIDE THE SVE/AS EQUIPMENT ENCLOSURE AS SHOWN ON THE SITE PLANS. THE MAIN PANEL SHALL HAVE A LOCKABLE DISCONNECT/SHUT-OFF SWITCH. THE CONTRACTOR SHALL INSTALL THE POWER AS REQUIRED BY THE ENGINEER.

7.2.2 ALL SERVICE EQUIPMENT SHALL BE ENCLOSED IN A WATER-TIGHT NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION [NEMA] ENCLOSURE, IF EXPOSED TO THE ELEMENTS.

7.2.3 THE POWER METER IS TYPICALLY SUPPLIED AND INSTALLED BY THE LOCAL POWER UTILITY COMPANY.

7.2.4 IF THREE-PHASE POWER IS REQUIRED AND ONLY SINGLE-PHASE POWER IS AVAILABLE, A PHASE CONVERTER SHALL BE USED FOR THOSE COMPONENTS REQUIRING SUCH SERVICE. THE EQUIPMENT VENDOR SHALL ENSURE THAT ALL ELECTRICAL MOTORS AND CONTROLS ARE RATED FOR CONVERTER USE, AND CAN WITHSTAND THE ADDITIONAL HEAT BUILDUP CAUSED BY PHASE CONVERTER USE.

7.3 ELECTRICAL SERVICE DISCONNECTS

7.3.1 THE CONTRACTOR SHALL INSTALL ALL SERVICE DISCONNECT SWITCHES NECESSARY TO SAFELY SHUTDOWN AND LOCKOUT THE SVE/AS EQUIPMENT.

7.3.2 AT A MINIMUM, THE SWITCHES SHALL BE CONTAINED IN A WATER-TIGHT NEMA 4 PANEL.

7.3.3 THE CONTRACTOR SHALL INSTALL AN EMERGENCY STOP SWITCH ON THE EXTERIOR OF THE COMPOUND.

7.4 ELECTRICAL ABOVE GROUND CONDUITS AND ENCLOSURES

7.4.1 THE CONTRACTOR SHALL INSTALL THREADED RIGID GALVANIZED METAL CONDUIT IN ALL ABOVEGROUND INSTALLATIONS, UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

7.4.2 THREADED JOINTS SHALL BE INSTALLED PER LOCAL CODE WITH AT LEAST FIVE THREADS FULLY ENGAGED.

7.4.3 ALL COUPLINGS, UNIONS, JUNCTION BOXES, DEVICE BOXES, AND CONDUIT BODIES SHALL HAVE TIGHT JOINTS.

7.4.4 IN UNCLASSIFIED AREAS, LIQUID-TIGHT FLEXIBLE NONMETALLIC TUBING MAY BE USED TO MAKE CONNECTIONS TO MOTORS AND OTHER ELECTRICAL EQUIPMENT. THE MAXIMUM LENGTH SHALL NOT EXCEED 18 INCHES.

7.5.5 WIRE NUTS OR TWIST-LOCK TERMINATIONS SHALL NOT BE USED FOR GROUND, MOTOR, OR POWER CONNECTIONS.

7.7 ELECTRICAL GROUNDING

7.7.1 THE CONDUIT SYSTEM AND NEUTRAL CONDUCTORS SHALL BE GROUNDED IN ACCORDANCE WITH LOCAL CODE. GROUND TESTING SHALL BE DOCUMENTED AND SUBMITTED TO THE ENGINEER.

8.0 CONSTRUCTION DETAILS

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name

Professional Engineer's No.

State	Date Signed	Project Mgr.
CA		

Designed by	Drawn by	Checked by
	MTH	

ARCADIS

ARCADIS U.S., INC.

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

CONSTRUCTION DOCUMENTS

CONSTRUCTION NOTES AND SPECIFICATIONS

DRAFT - NOT FOR CONSTRUCTION

ARCADIS Project No.
B0047339.0001

Date
APRIL 2014

ARCADIS
2000 POWELL STREET SUITE 700
EMERYVILLE, CALIFORNIA 94608

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8.1 EQUIPMENT ENCLOSURE

8.1.1 INSTALL TEMPRORARY RAILING (TYPE K) AND EQUIPMENT ENCLOSURE AS SHOWN ON THE DESIGN PLANS

8.1.2 CONTRACTOR SHALL INSTALL THE FOLLOWING SIGNAGE ON ALL SIDES OF THE EQUIPMENT BUILDING AND INSIDE THE DOOR OF THE REMEDIATION EQUIPMENT BUILDING:

- DANGER HIGH VOLTAGE
- NO SMOKING
- 24-HOUR CONTACT NUMBERS
- PROPOSITION 65 SIGN
- NFPA 704 SIGN
- EMERGENCY CONTACT INFORMATION

8.1.3 CONTRACTOR WILL SUPPLY AND INSTALL A YELLOW WALL MOUNT STORAGE BOX, KNOCK PADLOCK, FIRE BLANKET, AND FIRST AID KIT.

9.0 CONSTRUCTION SCHEDULE

9.1 THE CONTRACTOR SHALL CONFIRM A CONSTRUCTION SCHEDULE WITH THE ENGINEER LEAST ONE WEEK (5 BUSINESS DAYS) PRIOR TO ANY WORK AT THE SITE.

9.2 THE PROPOSED CONSTRUCTION SCHEDULE SHALL BE PRESENTED IN A TIME LINE FORMAT SHOWING ESTIMATED START DATE, DURATION AND COMPLETION TIMES FOR EACH ACTIVITY. ANY DEVIATION FROM THE ORIGINALLY PROPOSED SCHEDULE MUST BE COMMUNICATED TO THE ENGINEER WITHIN 24-HOURS.

9.3 THE CONTRACTOR SHALL MAKE PROPER AND TIMELY NOTIFICATION OF ALL WORK AND INSPECTIONS TO REGULATORY OR GOVERNING AGENCIES AS REQUIRED BY BUILDING AND OTHER CONSTRUCTION PERMITS.

10.0 CONTRACTOR SAFETY REQUIREMENTS

10.1 THE CONTRACTOR IS RESPONSIBLE FOR THE SAFETY OF HIS PERSONNEL AND SUBCONTRACTOR PERSONNEL. THE CONTRACTOR SHALL CONFORM WITH THE ENGINEER'S AND CEMC BEHAVIOR BASED SAFETY PROGRAM REQUIREMENTS. AT A MINIMUM THE CONTRACTOR SHALL:

- DEVELOP AND HAVE AVAILABLE SITE SPECIFIC HEALTH AND SAFETY PLAN (HASP) AND JOURNEY MANAGEMENT PLAN (JMP) WHICH CONFORMS TO THE ENGINEER'S AND CEMC STANDARDS.
- DEVELOP AND HAVE AVAILABLE ON SITE JOB SAFTEY ANALYSIS FORMS OUTLINING THE TASKS TO BE PERFORMED, THE JOB STEPS, THE HAZARDS, AND THE MITIGATING PROCEDURES TO MINIMIZE RISK AND MAXIMIZE SAFETY.
- COMPLETE THE CEMC PERMIT-TO-WORK PROCESSES AND PROCEDURES.
- CONDUCT AND DOCUMENT A TAILGATE SAFETY MEETING EACH MORNING AND AFTERNOON WHEN SITE WORK IS TO BE PERFORMED.
- ENSURE COMPLIANCE WITH ALL FEDERAL AND STATE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND LOCAL SAFETY REGULATIONS.
- MEET REQUIREMENTS OF CEMC SHORT SERVICE EMPLOYEE (SSE) PROCESS.
- ENSURE THE APPROPRIATE PERSONNEL HAVE RECEIVED DEFENSIVE DRIVING TRAINING.

10.2 WORK HOURS SHALL BE DURING DAYLIGHT HOURS ONLY, UNLESS APPROVED BY THE CHEVRON PROJECT MANAGER AND ENGINEER PRIOR TO THE WORK BEING PERFORMED. WEEKEND WORK WILL NOT BE ALLOWED, UNLESS APPROVED BY CHEVRON PROJECT MANAGER AND ENGINEER PRIOR TO THE WORK BEING PERFORMED. WORK HOURS MAY BE DICTATED BY THE LOCAL PLANNING DEPARTMENT OR THE BUILDING PERMIT.

10.3 THE CONTRACTOR SHALL HAVE SUFFICIENT QUANTITIES AND QUALITY OF HARD HATS, GOGGLES, SAFETY GLASSES, REFLECTIVE VESTS, AND GLOVES ON SITE TO OUTFIT ALL CONTRACTOR WORKERS, AND PROVIDE FOR A SECURE WORK AREA.

10.4 THE CONTRACTOR SHALL SECURE ALL WORK AREAS WITH BARRICADES, SNOW FENCE, OR TEMPORARY CHAIN LINK FENCE TO PROTECT THE WORK AREA FROM INTRUSION BY UNAUTHORIZED VEHICLES OR PEDESTRIANS. WHEN CONDITIONS WARRANT, THE CONTRACTOR SHALL PROVIDE TRAFFIC FLAGGERS IN ADDITION TO BARRICADES TO CONTROL INGRESS AND EGRESS FROM THE WORK AREA. A TRAFFIC CONTROL PLAN SHALL BE INCLUDED IN THE CONTRACTOR HASP.

10.5 A PRE-CONSTRUCTION SAFETY MEETING SHALL BE HELD AT THE SITE WITHIN TWO WEEKS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION. THE PRE-CONSTRUCTION SAFETY MEETING SHALL BE ATTENDED BY CEMC, THE ENGINEER, THE CONTRACTOR, AND OTHER INTERESTED PARTIES.

- IF THE SITE IS AN ACTIVE BUSINESS, THE SITE OWNER/MANAGER MUST BE PRESENT TO DISCUSS IMPACTS TO THE FACILITY ACTIVITIES.
- THE BASIS FOR THE JMP IS TO BE DISCUSSED DURING THE MEETING. INGRESS AND EGRESS FOR EQUIPMENT AND DELIVERIES, EXCLUSION ZONES, IMPACTS ON VEHICLE AND PEDESTRIAN TRAFFIC, AND EMERGENCY RESPONSE ARE TO BE DISCUSSED AND DOCUMENTED DURING THE MEETING.

10.6 THE CONTRACTOR SHALL HAVE ACCESS TO AT LEAST ONE 20-POUND DRY CHEMICAL TYPE-ABC FIRE EXTINGUISHER AT THE SITE, WITH CURRENT INSPECTION TAGS, DURING ALL CONSTRUCTION ACTIVITIES.

10.7 THE CONTRACTOR SHALL CONTAIN LOOSE DEBRIS AND STORE CONSTRUCTION MATERIALS ON A DAILY BASIS MAKE SURE THAT THE WORK AREA IS CLEAN AND ORDERLY PRIOR TO DEPARTURE FROM THE SITE.

11.0 EQUIPMENT

11.1 EQUIPMENT, TO BE PROVIDED TO THE CONTRACTOR BY THE ENGINEER FOR INSTALLATION, IS DESCRIBED ON SHEET M-1, M-2, AND M-3 (PROCESS AND INSTRUMENTATION DIAGRAM) AND IS INCLUDED ON SHEET G-2 (MAJOR EQUIPMENT AND INSTRUMENT LIST). EQUIPMENT NOT EXPLICITLY DETAILED AS SUPPLIED BY THE ENGINEER ON SHEETS M-1, M-2, M-3, AND G-2 SHALL BE SUPPLIED BY THE CONTRACTOR.

11.2 CONTRACTOR TO SUPPLY AND INSTALL A MINIMUM OF TWO (2) 20-POUND CLASS ABC FIRE EXTINGUISHERS IN ALL WEATHER FIRE EXTINGUISHER CABINETS IN ACCORDANCE WITH CEMC REQUIREMENTS AND LOCAL FIRE CODE.

12 SAFETY/CLEANUP

12.1 THE CONTRACTOR SHALL CONDUCT TASK IMPROVEMENT PROCESS (TIP) IN ACCORDANCE WITH ARCADIS POLICY AND PROCEDURES.

12.2 ALL EMPLOYEES OF THE CONTRACTOR SHALL BE CURRENT WITH THEIR 40-HOUR HAZWOPER TRAINING AND 8-HOUR REFRESHER.

12.3 CONTRACTOR SHALL MARK ALL POTENTIAL OVERHEAD AND/OR TRIP HAZARDS IN YELLOW.

12.4 THE CONTRACTOR SHALL HAVE SUFFICIENT QUANTITIES OF PERSONAL PROTECTIVE EQUIPMENT (PPE) AND SAFETY EQUIPMENT ON SITE TO OUTFIT ALL CONTRACTOR AND SUBCONTRACTOR WORKERS, AND PROVIDE FOR A SECURE WORK AREA.

12.5 THE CONTRACTOR SHALL HAVE ACCESS TO AT LEAST ONE FIRST AID KIT, EYEWASH STATION, AND 20-POUND CLASS ABC FIRE EXTINGUISHER, WITH CURRENT INSPECTION TAGS AT THE SITE, DURING ALL CONSTRUCTION ACTIVITES.

13 INSPECTIONS

13.1 ALL SITE INSPECTIONS REQUIRE A MINIMUM OF 24 HOURS NOTICE BEFORE START OF WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR SCHEDULING, FACILITATING, AND OBTAINING ALL REQUIRED INSPECTIONS, INCLUDING CITY OF OAKLAND, ALAMEDA COUNTY.

SCALE(S) AS INDICATED

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Professional Engineer's Name

Professional Engineer's No.

State	Date Signed	Project Mgr.
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Designed by	Drawn by	Checked by
	MTH	

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EMERYVILLE, CALIFORNIA 94608

G-1D

AS/SVE TREATMENT SYSTEM MAJOR EQUIPMENT AND INSTRUMENT LISTING

ITEM	ITEM DESCRIPTION	QUANTITY	CROSS-REFERENCE DETAIL NO.	CROSS-REFERENCE DRAWING NO.	RESPONSIBILITY
1.	VAPOR LIQUID SEPARATOR VLW SERIES 90 GALLONS	1	1	M-2	ENGINEER
2.	TRANSFER PUMP: GOULDS 1ST, 1/2 HORSE POWER, 480 VOLTS, 3 PHASE, 60 HZ	1	1	M-2	ENGINEER
3.	PUMP DISCHARGE PRESSURE GAUGE	1	1	M-2	ENGINEER
4.	SVE BLOWER: BUSCH 1502, 300 SCFM	1	1	M-2	ENGINEER
5.	AIR COMPRESSOR	1	1	M-2	ENGINEER
6.	INLET VACUUM GAUGE	1	1	M-2	ENGINEER
7.	AIR FLOW TRANSMITTER	1	1	M-2	ENGINEER
8.	SVE MANIFOLD	1	1,2.3	C-8	ENGINEER
9.	BUSCH ROTARY CLAW COMPRESSOR, MODEL 1107 BP, 65 SCFM AT 23.5 PSI	1	1	M-2	ENGINEER
10.	10 HORSE POWER 480 VOLT, 3 PHASE, 60 HZ TEFC MOTOR	1	1	M-2	ENGINEER
11.	DISCHARGE PRESSURE GAUGE	1	1	M-2	ENGINEER
12.	DISCHARGE TEMPERATURE GAUGE	1	1	M-2	ENGINEER
13.	DISCHARGE MANIFOLD	1	4,5,6	C-8	CONTRACTOR
14.	WELL VAULT, 1' SQUARE TRAFFIC RATED	14	1	C-5	CONTRACTOR
15.	SOLENOID VALVES	3	1	M-2	CONTRACTOR
16.	INTELLISHARE MODEL ECO300 ELECTRIC CATALYTIC OXIDIZER, UP TO 300 SCFM,480 VOLTS, 3 PHASE	1	1	M-2	ENGINEER
17.	INLET VACUUM GAUGE	1	1	M-2	ENGINEER
17.	SENSAPHONE SKYMETRY WTU-14 WIRELESS TELEMETRY UNIT	1	1	E-2	ENGINEER
18.	NEMA 4U.L.® 508A DOOR-IN-DOOR SYSTEM CONTROL PANEL, 480 VOLT, 3 PHASE, 60 HZ	1	1	E-2	ENGINEER

EQUIPMENT ENCLOSURE

ITEM	ITEM DESCRIPTION	QUANTITY	CROSS-REFERENCE DETAIL NO.	CROSS-REFERENCE DRAWING NO.	RESPONSIBILITY
1.	SAFETY DOCUMENT CABINET, LAB SAFETY SUPPLY ITEM # 11620, HAZARD INFORMATION CENTER	1	2,5	C-2	CONTRACTOR
2.	FIRE EXTINGUISHER, 10 LB, CLASS A,B,C	3	2,5	C-2	CONTRACTOR
3.	23.5' X 23.5' 9 GAUGE WIRE CHAIN LINK FENCE. FENCE POSTS TO BE 4' SCHEDULE 40 GALVANIZED STEEL. ENCLOSURE TO INCLUDE ONE 5' SINGLE SWING GATE AND ONE 10' DOUBLE SWING GATE. ALL FENCE POSTS WILL BE CAPPED. 10 FIXED AND 3 REMOVABLE BOLLARDS.	1	1,2,3,4	C-3	CONTRACTOR
4.	EMERGENCY CONTACT INFORMATION SIGN	1	1	C-3	ENGINEER
5.	DANGER HIGH VOLTAGE SIGN	1	2	C-3	CONTRACTOR
6.	EMERGENCY SHUTOFF SIGN	1	1,2	C-3	CONTRACTOR
7.	NFPA 704 SIGN	1	1	C-3	CONTRACTOR
8.	PROPOSITION 65 SIGN	1	1	C-3	CONTRACTOR

WELL SCHEDULE

STATUS	WELL	TOTAL DEPTH (FT BGS)	CASING DIAMETER (IN)	SCREEN INTERVAL (FT BGS)
706 HARRISON ST.				
SVE WELLS				
EXISTING	VW-3	18	2.0	8-18
EXISTING	VW-4	18	2.0	8-18
EXISTING	VW-5	17	2.0	7-17
PROPOSED	VE-5	15	2.0	5-15
AIR SPARGE WELLS				
EXISTING	SP-3	28	1	27-28
EXISTING	SP-5	29.5	1	28.5-29.5
PROPOSED	AS-7	33	2.0	28-30
PROPOSED	AS-8	33	2.0	28-30
PROPOSED	AS-9	33	2.0	28-30
PROPOSED	AS-10	33	2.0	28-30
PROPOSED	AS-11	33	2.0	28-30
PROPOSED	AS-12	33	2.0	28-30
PROPOSED	AS-13	33	2.0	28-30
PROPOSED	AS-14	33	2.0	28-30
726 HARRISON ST.				
SVE WELLS				
EXISTING	VE-3	15	2.0	5-15
PROPOSED	VE-4	15	2.0	5-15
AIR SPARGE WELLS				
EXISTING	AS-1	30	2.0	28-30
PROPOSED	AS-2	33	2.0	28-30
PROPOSED	AS-3	33	2.0	28-30
PROPOSED	AS-4	33	2.0	28-30
PROPOSED	AS-5	33	2.0	28-30
PROPOSED	AS-6	33	2.0	28-30

NOTES:

1. ACTUAL WELL DEPTH MAY VARY BASED ON FIELD CONDITIONS.
2. ALL AIR SPARGE WELLS WILL BE COMPLETED WITH A 3 FOOT SUMP.

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name

Professional Engineer's No.

State	Date Signed	Project Mgr.
CA		
Designed by	Drawn by	Checked by
	MTH	

ARCADIS U.S., INC.

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

CONSTRUCTION DOCUMENTS

MAJOR EQUIPMENT AND INSTRUMENT LIST

DRAFT - NOT FOR CONSTRUCTION

ARCADIS Project No. B0047339.0001

Date APRIL 2014

ARCADIS
2000 POWELL STREET SUITE 700
EMERYVILLE, CALIFORNIA 94608

G-2

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 (GIN)
- MW-1 GROUNDWATER MONITORING WELL (YEE)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- GP-2 GEOPROBE™ (JUNE 2011)
- MPE-1 MULTI-PHASE EXTRACTION PILOT TEST WELL (PZ-1 IS LOCATED IN THE SAME BOREHOLE)
- MP-1 PILOT TEST MONITORING POINT
- VE-1 VAPOR EXTRACTION WELL (DESTROYED)
- VE-3 PILOT TEST VAPOR EXTRACTION WELL

NOTE:

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

0 50' 100'

SCALE 1"=50'

CITY: LAKEWOOD, CO DIV/GROUP: ENV DB: ENVCAD
G:\ENVCAD\Lakewood-COACT\B0047339\Design\20140205 from roseville\47339B22.dwg LAYOUT: 2 SAVED: 3/28/2014 8:30 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: ARCADIS-DEN.CTB PLOTTED: 3/28/2014 1:34 PM BY: HOEFER, MATTHEW
XREFS: 47339X01 47339X00
IMAGES:
PROJECTNAME: ---

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name

Professional Engineer's No.

State	Date Signed	Project Mgr.
CA		
Designed by	Drawn by	Checked by
	MTH	

ARCADIS U.S., INC.

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

CONSTRUCTION DOCUMENTS

SITE PLAN

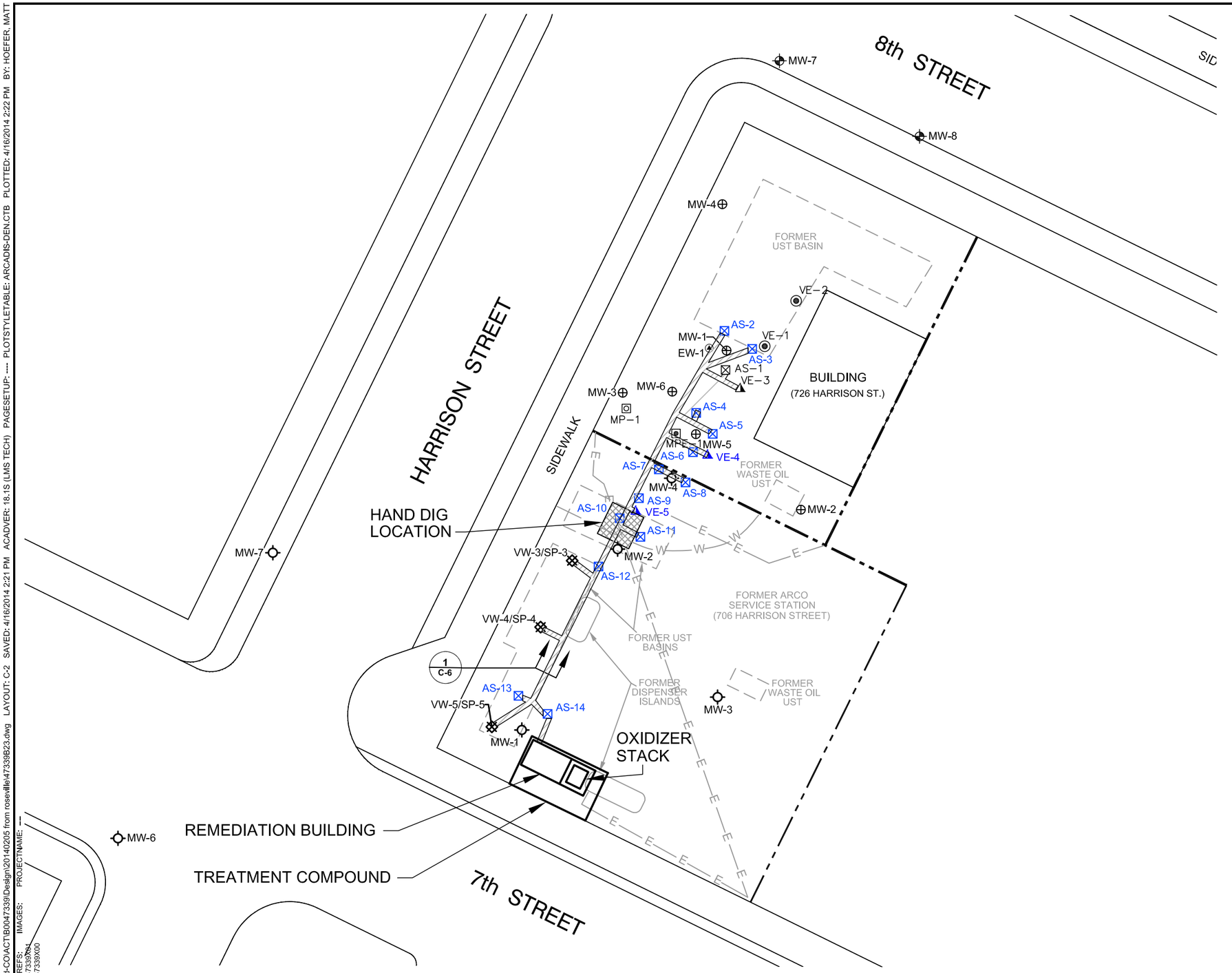
DRAFT - NOT FOR CONSTRUCTION

ARCADIS Project No.
B0047339.0001

Date
APRIL 2014

ARCADIS
2000 POWELL STREET SUITE 700
EMERYVILLE, CALIFORNIA 94608

C-1



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 (GIN)
- MW-1 GROUNDWATER MONITORING WELL (YEE)
- AS-1 AIR SPARGE WELL (YEE)
- EW-1 EXTRACTION WELL (YEE)
- MPE-1 MULTI-PHASE EXTRACTION PILOT TEST WELL (PZ-1 IS LOCATED IN THE SAME BOREHOLE)
- MP-1 PILOT TEST MONITORING POINT
- VE-1 VAPOR EXTRACTION WELL (DESTROYED)
- VE-3 PILOT TEST VAPOR EXTRACTION WELL
- AS-2 PROPOSED AIR SPARGE WELL
- VE-4 PROPOSED VAPOR EXTRACTION WELL
- PROPOSED SYSTEM TRENCHING
- W WATER UTILITY LINE
- E ELECTRICAL UTILITY LINE

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 30' 60'

SCALE 1"=30'

CITY: LAKEWOOD, CO DIV/GROUP: ENV DB: ENVCAD
G:\ENVCAD\Lakewood-COVACT\B0047339\Design\20140205 from roseville\47339B23.dwg LAYOUT: C-2 SAVED: 4/16/2014 2:21 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ARCADIS-DEN.CTB PLOTTED: 4/16/2014 2:22 PM BY: HOEFER, MATT
XREFS: 47339X84 47339X00 IMAGES: PROJECTNAME: --

SCALE(S) AS INDICATED

No.	Date	Revisions	By	Ckd

Professional Engineer's Name		
Professional Engineer's No.		
State CA	Date Signed	Project Mgr.
Designed by	Drawn by MTH	Checked by

ARCADIS U.S., INC.

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

CONSTRUCTION DOCUMENTS

SITE PLAN WITH PROPOSED REMEDIATION SYSTEM

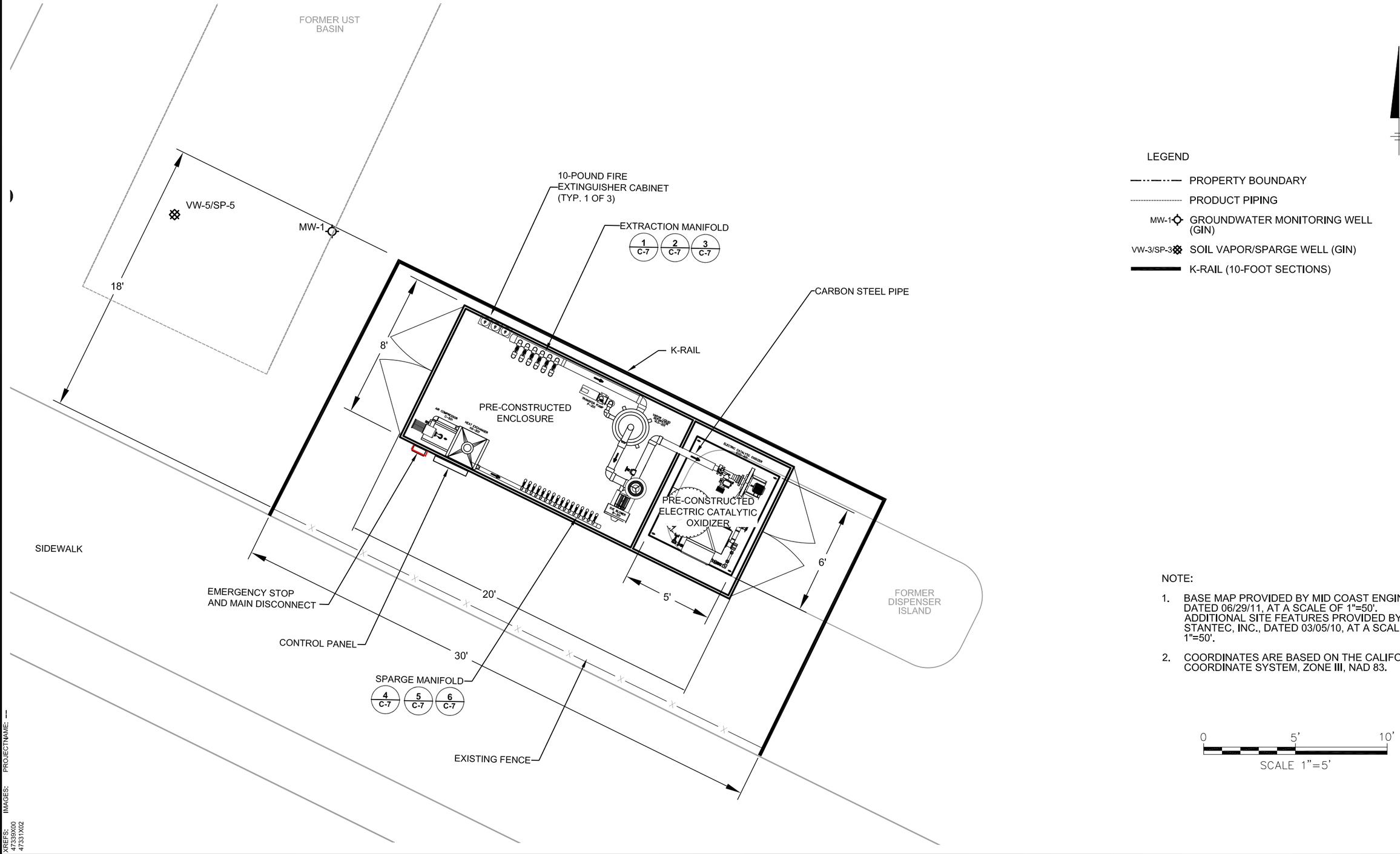
DRAFT - NOT FOR CONSTRUCTION

ARCADIS Project No. B0047339.0001

Date APRIL 2014

ARCADIS
2000 POWELL STREET SUITE 700
EMERYVILLE, CALIFORNIA 94608

C-2



LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 GROUNDWATER MONITORING WELL (GIN)
- VW-3/SP-3 SOIL VAPOR/SPARGE WELL (GIN)
- K-RAIL (10-FOOT SECTIONS)

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 5' 10'

SCALE 1"=5'

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XREFS: IMAGES: PROJECTNAME: ---
47339X00
47331X02

SCALE(S) AS INDICATED

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name		
Professional Engineer's No.		
State: CA	Date Signed	Project Mgr.
Designed by	Drawn by: MTH	Checked by

ARCADIS U.S., INC.

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

CONSTRUCTION DOCUMENTS

REMEDIATION SYSTEM DETAILS

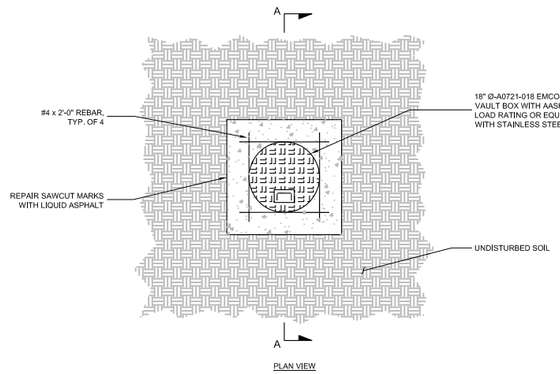
DRAFT - NOT FOR CONSTRUCTION

ARCADIS Project No. B0047339.0001

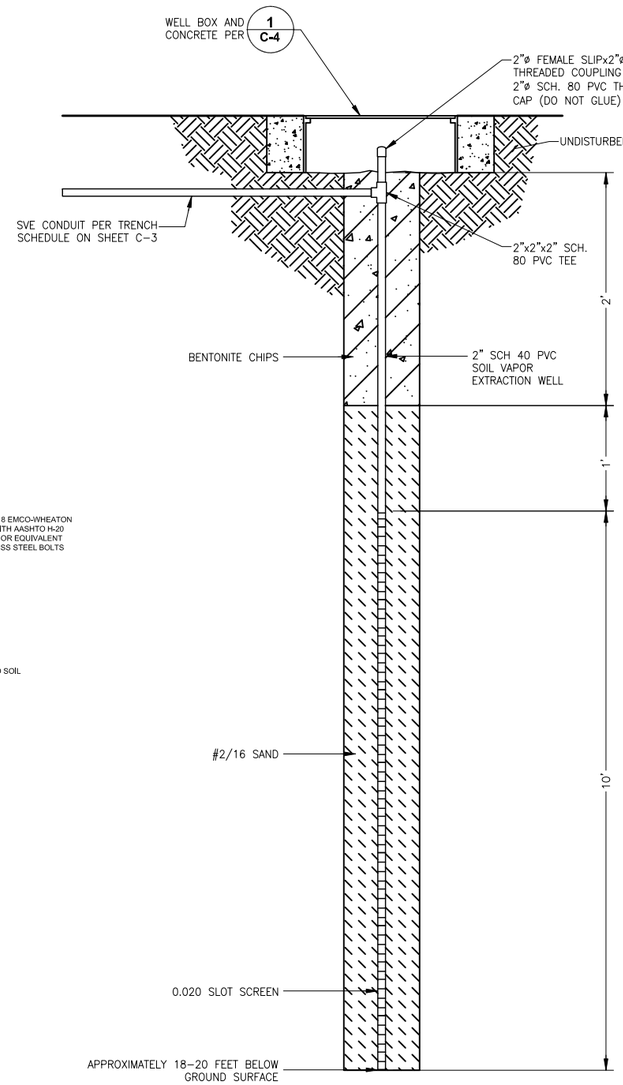
Date APRIL 2014

ARCADIS 2000 POWELL STREET SUITE 700 EMERYVILLE, CALIFORNIA 94608

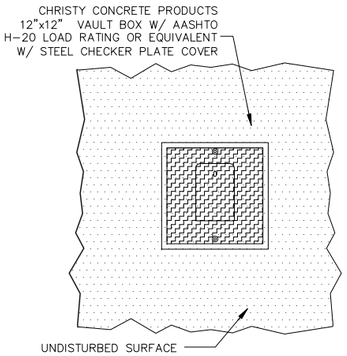
C-3



1/C-4 EXISTING WELL DETAIL
NOT TO SCALE

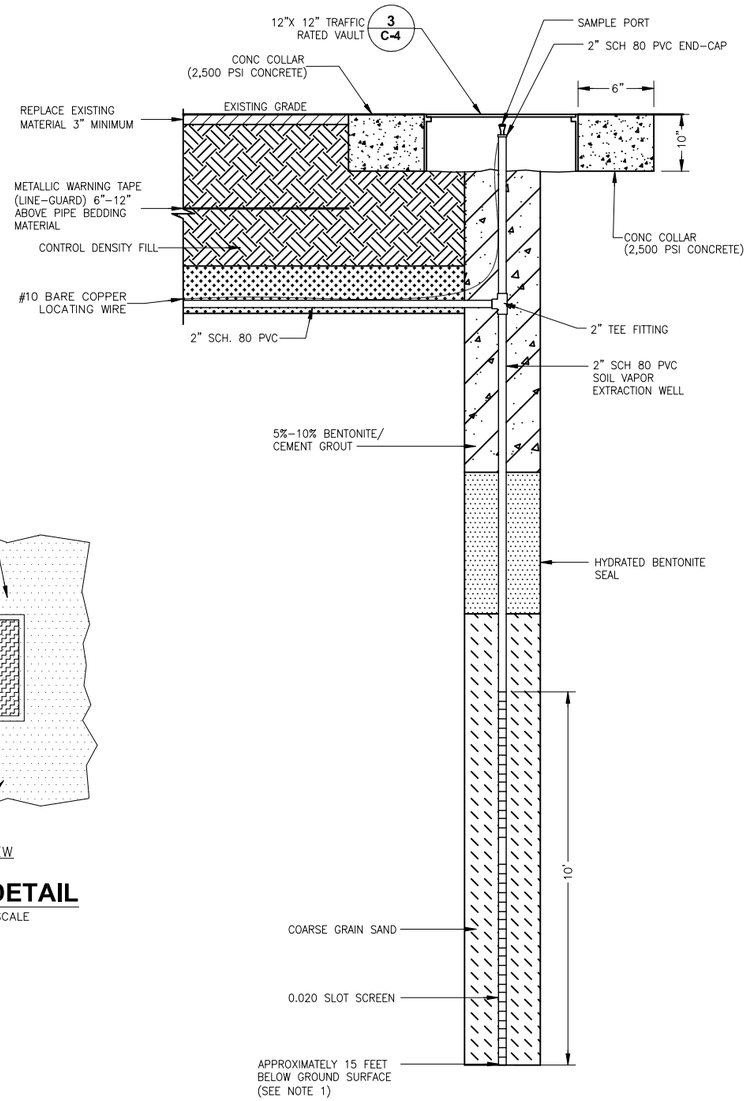


2/C-4 EXISTING SVE SECTION
NOT TO SCALE



PLAN VIEW

3/C-4 VAULT DETAIL
NOT TO SCALE



4/C-4 PROPOSED SVE SECTION
NOT TO SCALE

NOTES:
1. ACTUAL WELL DEPTH MAY VARY BASED ON FIELD CONDITIONS.

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: ——— USE TO VERIFY FIGURE REPRODUCTION SCALE

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Professional Engineer's Name		
Professional Engineer's No.		
State: CA	Date Signed	Project Mgr.
Designed by	Drawn by: MTH	Checked by

ARCADIS

ARCADIS U.S., INC.

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

CONSTRUCTION DOCUMENTS

SOIL VAPOR EXTRACTION WELL, VAULT AND WELLHEAD DETAILS

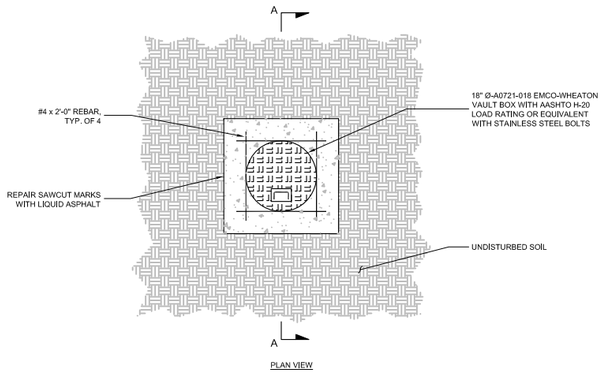
DRAFT - NOT FOR CONSTRUCTION

ARCADIS Project No. B0047339.0001

Date APRIL 2014

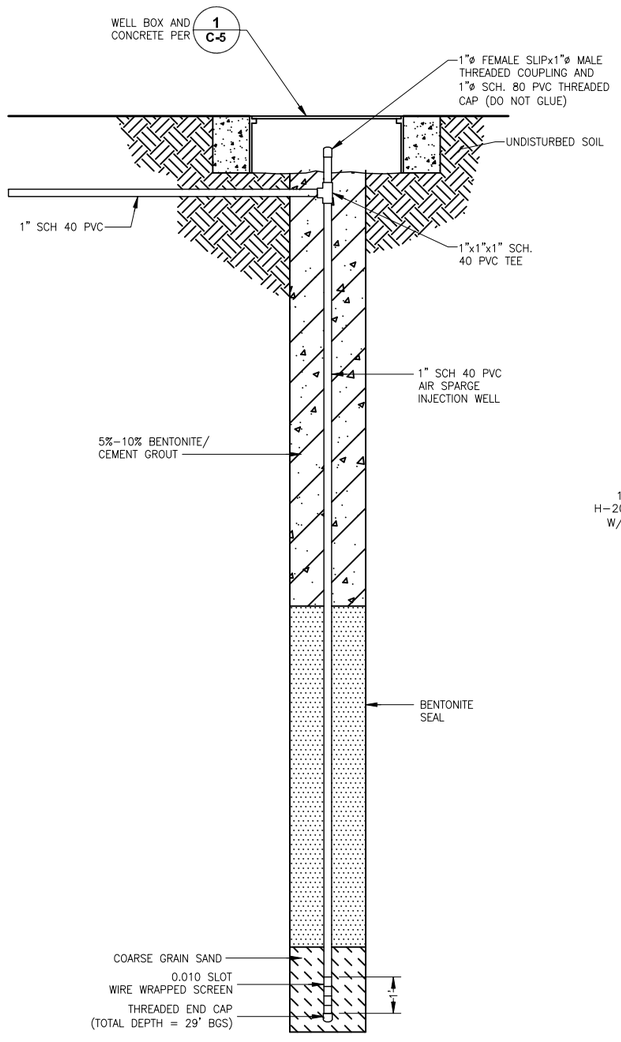
ARCADIS
2000 POWELL STREET SUITE 700
EMERYVILLE, CALIFORNIA 94608

C-4



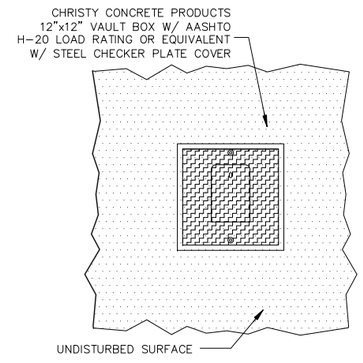
1 C-5 EXISTING WELL DETAIL

NOT TO SCALE



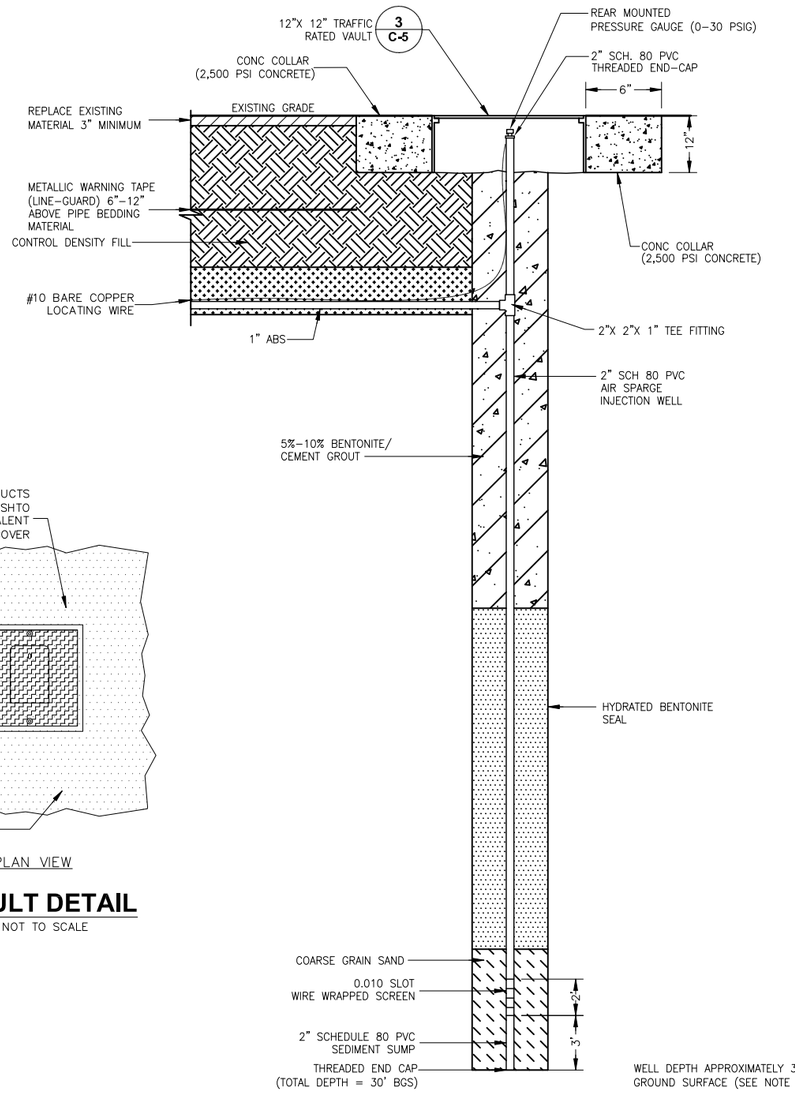
2 C-5 EXISTING AS SECTION

NOT TO SCALE



3 C-5 VAULT DETAIL

NOT TO SCALE



4 C-5 PROPOSED AS SECTION

NOT TO SCALE

NOTES:
1. EXISTING WELL DEPTHS VARY BETWEEN 29.5 TO 35 FEET BELOW GROUND SURVACE.
2. ACTUAL WELL DEPTH MAY VARY BASED ON FIELD CONDITIONS. THE BOTTOM OF THE SCREEN INTERVAL WILL BE PLACED AT THE CLAY INTERFACE ON THE SUBSURFACE LITHOLOGY.

CITY: LAKEWOOD, CO DIV/GROUP: ENVCAD DB: J. HARRIS, G. STEINBERGER, J. HARRIS/BAR
G:\ENVCAD\Lakewood-COACT\B0047339\Design\20140205 from roseville\47339C03.dwg LAYOUT: C-5 SAVED: 3/28/2014 8:54 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ARCADIS-DEN.CTB PLOTTED: 3/28/2014 1:08 PM BY: HOEFER, MATTHEW
XREFS: 47339X00 IMAGES: PROJECTNAME: ---

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name

Professional Engineer's No.

State	Date Signed	Project Mgr.
CA		
Designed by	Drawn by	Checked by
	MTH	

ARCADIS U.S., INC.

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

CONSTRUCTION DOCUMENTS

AIR SPARGE WELL, VAULT AND WELLHEAD DETAILS

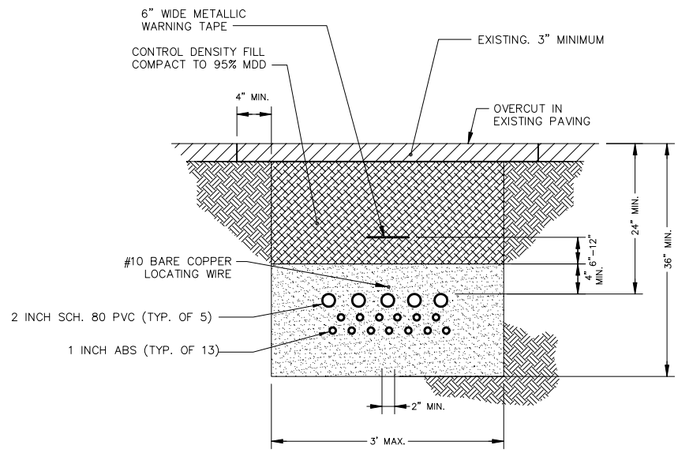
DRAFT - NOT FOR CONSTRUCTION

ARCADIS Project No. B0047339.0001

Date APRIL 2014

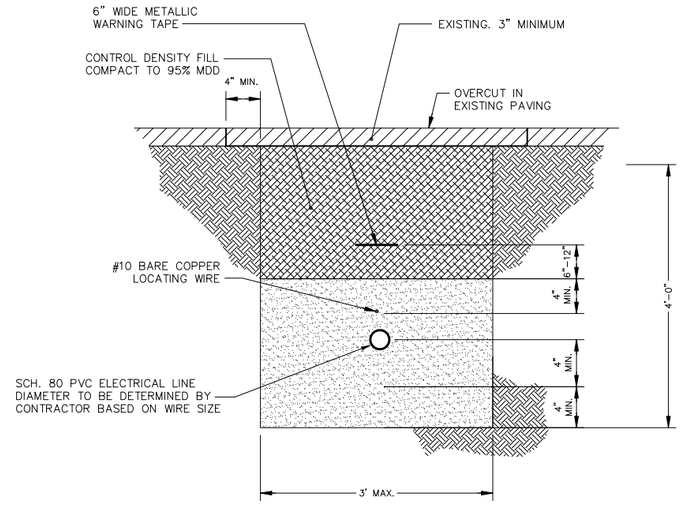
ARCADIS
2000 POWELL STREET SUITE 700
EMERYVILLE, CALIFORNIA 94608

C-5



1 C-6 MULTIPLE AS/SVE PIPING TRENCH DETAILS (TYP.)

NOT TO SCALE



2 C-6 ELECTRICAL TRENCH DETAILS

NOT TO SCALE

NOTE:

1. ELECTRICAL LINES WILL BE INSTALLED ACCORDING TO PG&E GREENBOOK SPECIFICATIONS.

CITY: LAKEWOOD, CO DIV/GROUP: ENVCAD DB: J. HARRIS, G. STEINBERGER, J. HARRIS/BAR
G:\ENVCAD\Lakewood-COVACT\B0047339\Design\20140205 from roseville\47339C22.dwg LAYOUT: C-6 SAVED: 4/16/2014 2:38 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ARCADIS-DEN.CTB PLOTTED: 4/16/2014 4:54 PM BY: HOEFER, MATTHEW
XREFS: IMAGES: PROJECTNAME: ---
47339X00

SCALE(S) AS INDICATED

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name		
Professional Engineer's No.		
State CA	Date Signed	Project Mgr.
Designed by	Drawn by MTH	Checked by

ARCADIS

ARCADIS U.S., INC.

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

CONSTRUCTION DOCUMENTS

TRENCHING DETAILS

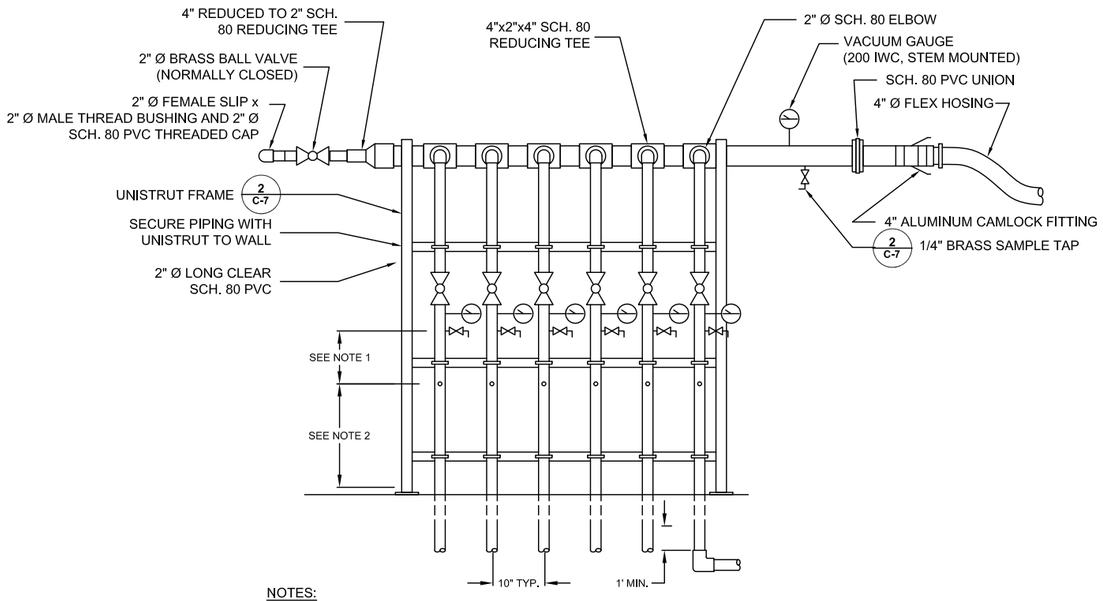
DRAFT - NOT FOR CONSTRUCTION

ARCADIS Project No. B0047339.0001

Date APRIL 2014

ARCADIS
2000 POWELL STREET SUITE 700
EMERYVILLE, CALIFORNIA 94608

C-6

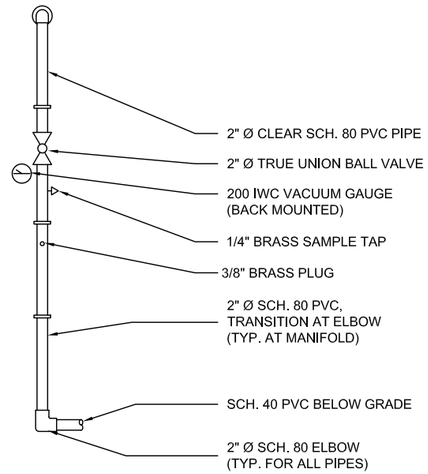


NOTES:

1. MINIMUM 5 PIPE DIAMETERS WITH NO BENDS, COUPLINGS, FITTINGS OR UNIONS.
2. MINIMUM 10 PIPE DIAMETERS WITH NO BENDS, COUPLINGS, FITTINGS OR UNIONS, MINIMUM 1' ABOVE GROUND.
3. A TOTAL OF 6 SVE LINES ARE SET IN MANIFOLD
4. TWO EXISTING GWE STUBOUTS WILL BE CONVERTED TO SVE PIPING AND ADDED TO SVE MANIFOLDS.

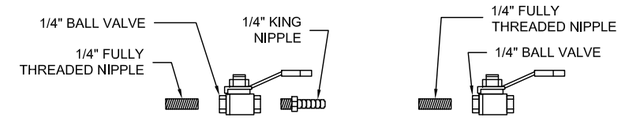
1 C-7 SVE PIPING MANIFOLD DETAIL

NOT TO SCALE



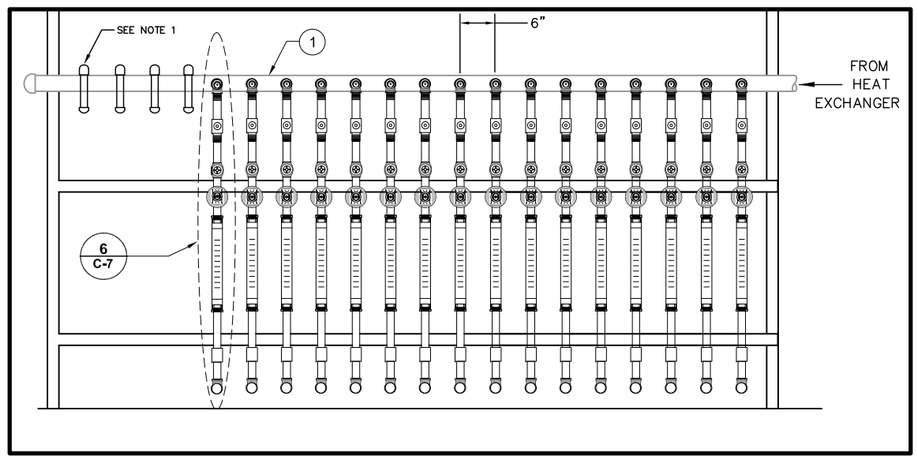
2 C-7 SVE PIPING MANIFOLD COMPONENTS

NOT TO SCALE



3 C-7 SAMPLE PORT AND PLUG DETAIL

NOT TO SCALE

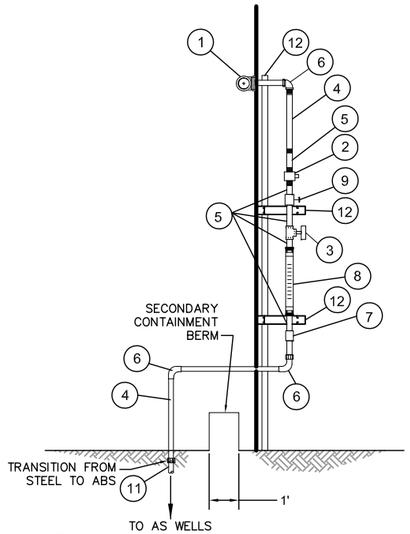


NOTES:

1. A TOTAL OF 16 AS LINES WILL BE SITUATED IN MANIFOLD, WITH 4 CAPPED STUBOUTS.

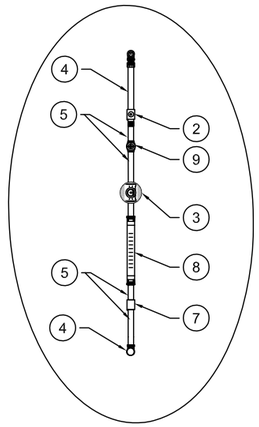
4 C-7 AS PIPE MANIFOLD

NOT TO SCALE



5 C-7 AS MANIFOLD CONNECTION DETAIL

NOT TO SCALE



AS MANIFOLD COMPONENTS

(1): 2" WELDED STEEL DISTRIBUTION MANIFOLD (MOUNTED ON UNISTRUT)
(2): 1" DIRECT-ACTING SOLENOID VALVE
(3): PRESSURE GAUGE (0-30 PSIG)
(4): 1" SCH 40 GALVANIZED STEEL PIPE
(5): 1" X 4" SCH 40 GALVANIZED STEEL NIPPLE
(6): 1" 90° SCH 40 GALVANIZED STEEL ELBOW
(7): CHECK VALVE
(8): VARIABLE AREA IN-LINE FLOW INDICATOR (4-23 SCFM)
(9): 1" GATE VALVE
(10): 1" ABS 90° ELBOW
(11): 1" ABS PIPE
(12): UNISTRUT

NOTES:

" - INCH/INCHES
' - FOOT/FEET
Ø - DIAMETER

6 C-7 AS MANIFOLD COMPONENTS

NOT TO SCALE

CITY: LAKEWOOD, CO DIV/GROUP: ENVCAD DB: J. HARRIS, G. STEINBERGER, J. HARRIS/BAR
G:\ENVCAD\Lakewood-COVACT\B0047339\Design\20140205 from roseville\47339C07.dwg LAYOUT: C-7 SAVED: 3/28/2014 10:17 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: ARCADIS-DEN.CTB PLOTTED: 3/28/2014 1:10 PM BY: HOEFER, MATTHEW
XREFS: IMAGES: PROJECTNAME: ---
47339X00

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING:

USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name		
Professional Engineer's No.		
State: CA	Date Signed	Project Mgr.
Designed by	Drawn by: MTH	Checked by

ARCADIS U.S., INC.

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

CONSTRUCTION DOCUMENTS

MANIFOLD CONNECTION DETAILS

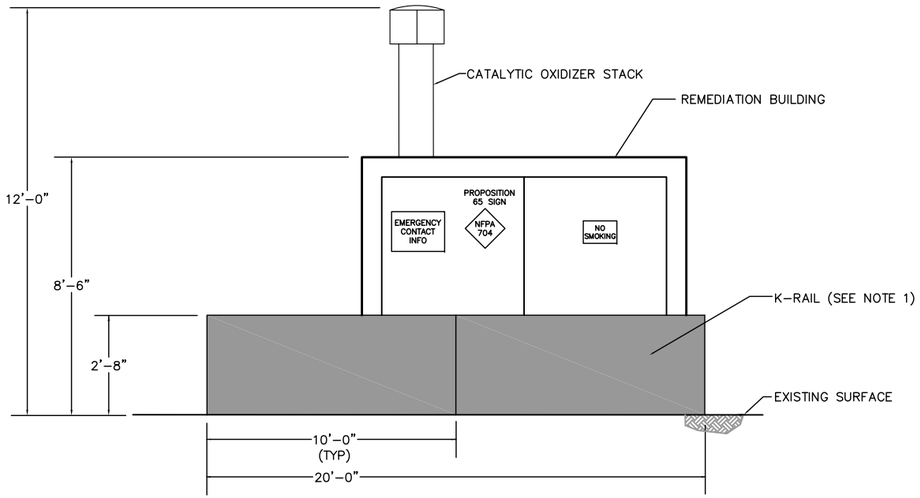
DRAFT - NOT FOR CONSTRUCTION

ARCADIS Project No. B0047339.0001

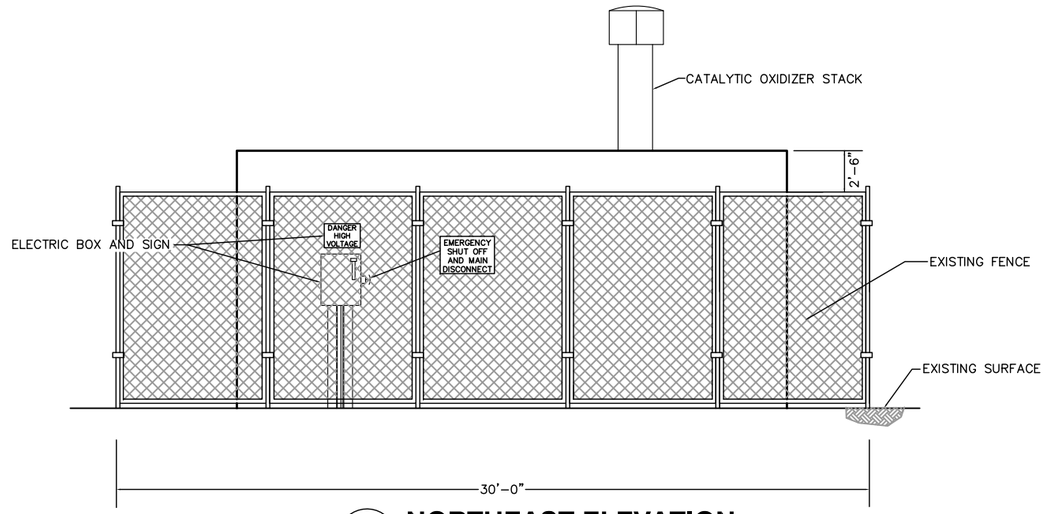
Date APRIL 2014

ARCADIS
2000 POWELL STREET SUITE 700
EMERYVILLE, CALIFORNIA 94608

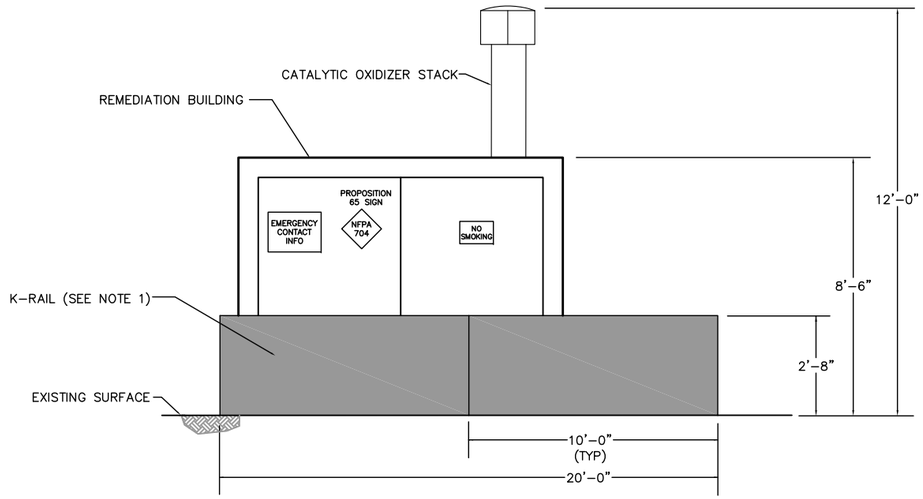
C-7



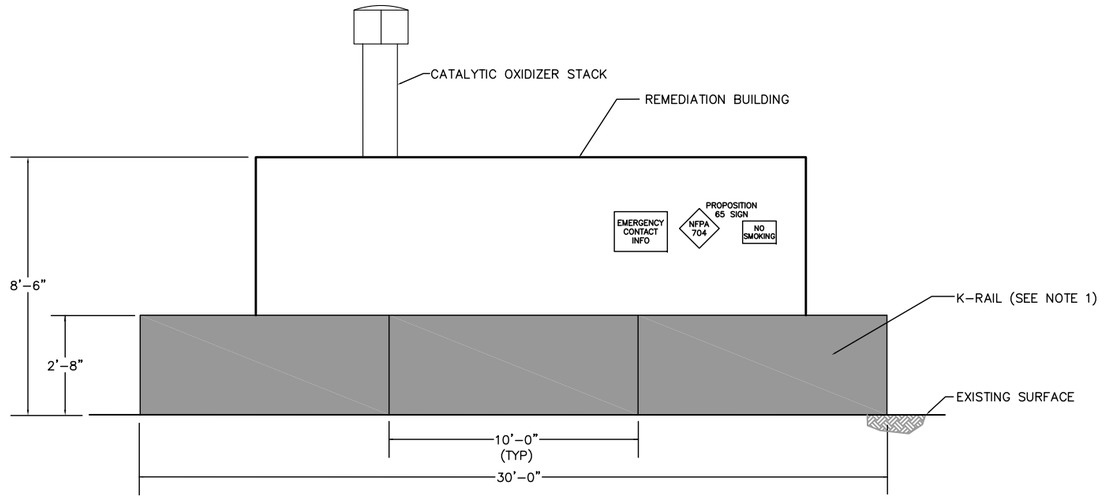
1 C-8 **SOUTHEAST ELEVATION**
NOT TO SCALE



2 C-8 **NORTHEAST ELEVATION**
NOT TO SCALE



3 C-8 **NORTHWEST ELEVATION**
NOT TO SCALE



4 C-8 **SOUTHEAST ELEVATION**
NOT TO SCALE

NOTES:
1. STANDARD TEMPORARY RAILING (TYPE K). 32" HIGH X 24" WIDE X 10' LONG.

CITY: LAKEWOOD, CO DIV/GROUP: ENV DB: ENVCAD
G:\ENVCAD\Lakewood-CO\ACTIVITY\B0047339\Design\20140205 from roseville\47339C09.dwg LAYOUT: C-8 SAVED: 4/17/2014 11:35 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: ARCADIS-DEN.CTB PLOTTED: 4/17/2014 11:53 AM BY: HOEFER, MATTHEW
XREFS: IMAGES: PROJECTNAME: ---
47339X00

SCALE(S) AS INDICATED

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name		
Professional Engineer's No.		
State: CA	Date Signed	Project Mgr.
Designed by	Drawn by: MTH	Checked by

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UNION OIL COMPANY OF CALIFORNIA STATION NO. 0752 706/726/800 HARRISON STREET OAKLAND, CALIFORNIA
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TREATMENT COMPOUND ELEVATIONS

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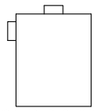
C-8

VALVES AND PIPING

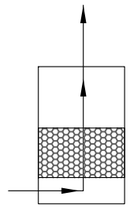
NO NC

BALL VALVE -
GATE VALVE -
GLOBE VALVE -
NEEDLE VALVE -
SLIDE VALVE -
SOLENOID VALVE -
BUTTERFLY VALVE -
SWING CHECK VALVE -
WAFER CHECK VALVE -
SPRING CHECK VALVE -
WYE STRAINER -
SAMPLE PORT -
PRESSURE RELIEF VALVE -
VACUUM RELIEF VALVE -
CAMLOCK CONNECTION -
FERNCO CONNECTION - FERNCO
FLEXIBLE CONNECTION -
FLANGED CONNECTION -
REDUCER -
UNION -
ADSORBENT FILTER - A DRAIN
COALESCING FILTER - DRAIN
PARTICULATE FILTER - I DRAIN
FILTER, SILENCER -
PRESSURE REGULATOR -
REGULATOR W/ FILTER -

EQUIPMENT



VAPOR/LIQUID, SEPARATOR



ELECTRIC CATALYTIC OXIDIZER

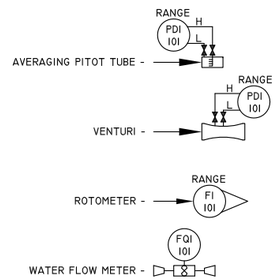
EQUIPMENT

CENTRIFUGAL PUMP -
PROGRESSIVE-CAVITY PUMP -
CENTRIFUGAL, REGENERATIVE BLOWER -
ROTARY CLAW BLOWER -
ROTARY-SCREW COMPRESSOR -
ROTARY-VANE COMPRESSOR -
RECIPROCATING COMPRESSOR -
PASSIVE COOLING FINS -

EQUIPMENT

BLD - BUILDING, TRAILER OR SKID
FLT - FILTER VESSEL
MFD - MANIFOLD
OX - OXIDIZER
TNK - TANK
VLS - VAPOR/LIQUID SEPARATOR
VPC - VAPOR-PHASE CARBON VESSEL

FLOW MEASUREMENT



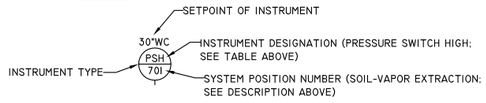
INSTRUMENT DESIGNATION

	INPUT	1ST MODIFIER	2ND MODIFIER	3RD MODIFIER	OUTPUT	1ST MODIFIER	
A							A
B						BLOWER	B
C	CYCLE					COMPRESSOR	C
D		DIFFERENTIAL				AIR DRYER	D
E							E
F	FLOW					FAN	F
G	GAS (LEL)		GAUGE				G
H				HIGH	HAND	HEATER	H
I	CURRENT		INDICATOR				I
J							J
K							K
L	LEVEL			LOW			L
M					MOTORIZED		M
N							N
O							O
P	PRESSURE				PNEUMATIC	PUMP	P
Q		QUANTITY					Q
R							R
S	SPEED		SWITCH		SOLENOID		S
T	TEMPERATURE		TRANSMITTER				T
U							U
V						VALVE	V
W							W
X							X
Y							Y
Z	POSITION						Z

INSTRUMENT IDENTIFICATION

- INDICATING INSTRUMENT
- DIGITAL INPUT TO CONTROL PANEL
- DIGITAL INPUT CAUSING ALARM
- ** DIGITAL INPUT CAUSING SYSTEM SHUTDOWN ALARM
- ANALOG INPUT TO CONTROL PANEL
- DISCRETE OUTPUT FROM CONTROL PANEL

EXAMPLE



SYSTEM POSITION DESIGNATION

100 - VACUUM INLET MANIFOLD
400 - VAPOR/LIQUID SEPARATOR
700 - SOIL-VAPOR EXTRACTION
800 - THERMAL CATALYIC OXIDIZER
2200 - AIR SPARGE
2800 - SPARGE OUTLET MANIFOLD

ABBREVIATIONS:

ABS = ACRYLONITRILE BUTADIENE STYRENE
AG = ABOVEGROUND
CP = CONTAINMENT PAD
CS = CONTAINMENT SUMP
CV = CHECK VALVE
DCV = DIGITAL CONTROL VALVE
EFF = EFFLUENT
FA = FLAME ARRESTER
FI = FLOW INDICATOR
FS = FLOW SWITCH
HHLS = HIGH-HIGH LEVEL SWITCH
HLS = HIGH LEVEL SWITCH
HX = HEAT EXCHANGER
INF = INFLUENT
LLS = LOW LEVEL SWITCH
P = TRANSFER PUMP
PI = PRESSURE INDICATOR
PRV = PRESSURE RELIEF VALVE
PS = PRESSURE SWITCH
SP = SAMPLE POINT
SS = STAINLESS STEEL
SV = SOLENOID VALVE
SVE = SOIL VAPOR EXTRACTION
TC = THERMOCOUPLE
TCO = THERMAL/CATALYTIC OXIDIZER
TI = TEMPERATURE INDICATOR
UG = UNDERGROUND
VI = VACUUM INDICATOR
VLS = VAPOR/LIQUID SEPARATOR
VRV = VACUUM RELIEF VALVE

SCALE(S) AS INDICATED

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Professional Engineer's Name
Professional Engineer's No.

State	Date Signed	Project Mgr.
CA		
Designed by	Drawn by	Checked by
	MTH	

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LEGEND AND SYMBOLS

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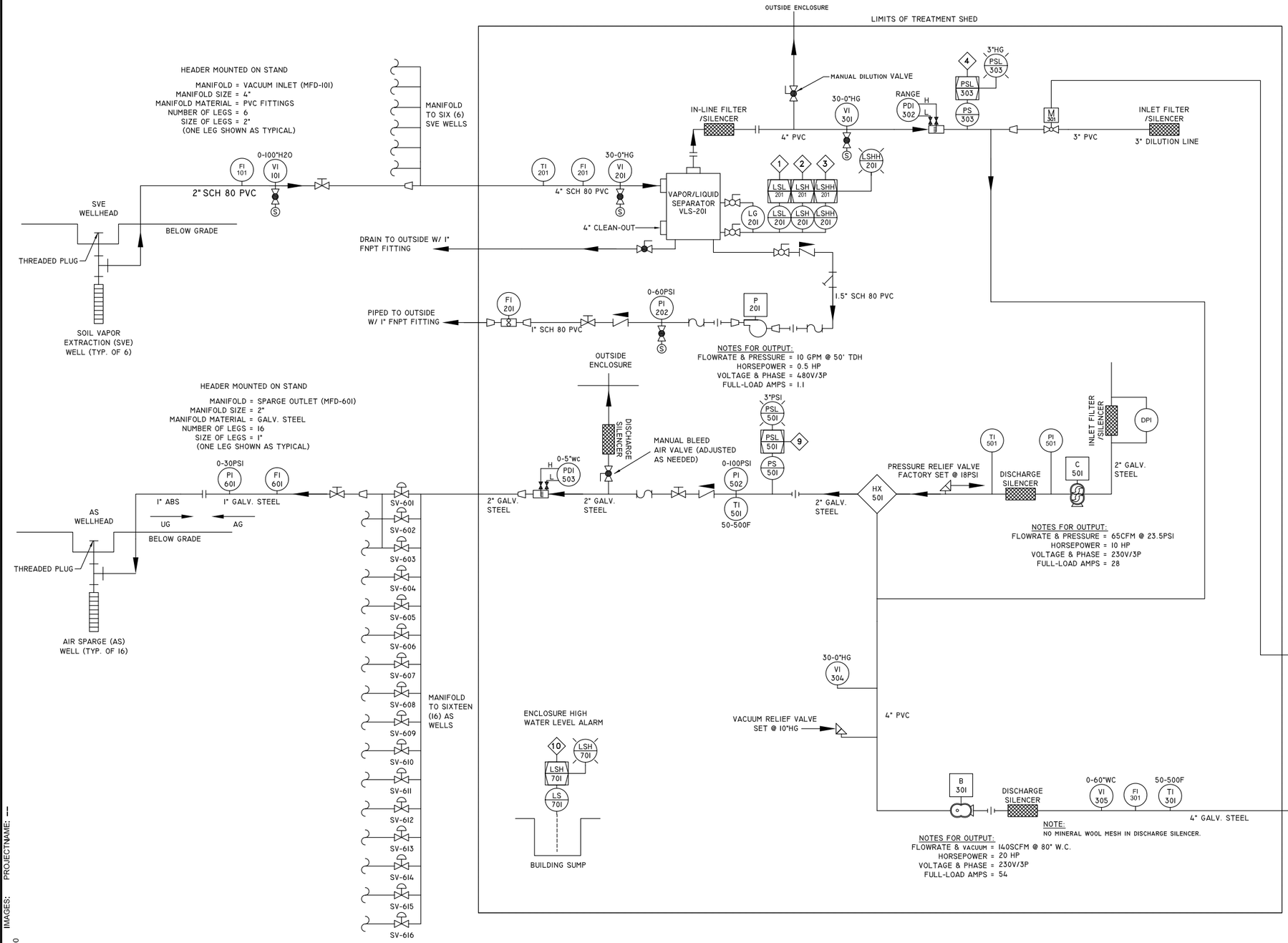

BUILDING EQUIPMENT AND CONTROL PANEL

CONTROL PANEL

TO BE LOCATED ON TREATMENT SHED. PANEL TO BE A MINIMUM OF 36" FROM ANY HAZARDOUS PROCESS EQUIPMENT, AND A MINIMUM OF 36" ABOVE GRADE.

F 790I

WIRING AND SPECIAL PROJECT NOTES

IS INPUT WIRING TO BE WIRED FOR INDOORS, ACCORDING NEC FOR HAZARDOUS LOCATIONS.

WIRING TO BE CLASS I DIVISION 2, AS PER THE NEC.

INTERLOCK NOTES:

1. DE-ENERGIZE P-201
2. ENERGIZE P-201
3. HIGH-HIGH LEVEL SWITCH - VLS SHUTS DOWN BLOWER AT HIGH LEVEL, AUTODIALER CALLOUT
4. LOW PRESSURE, AUTODIALER CALLOUT, DISABLES AIR SPARGE BLOWER
5. FLOWSWITCH DISABLES HEATING ELEMENT IF THERE IS NO AIR FLOW, AUTODIALER CALLOUT
6. FLAME ARRESTER PREVENTS UPSTREAM PROPAGATION OF FLAME
7. ELECTRIC CATALYTIC OXIDIZER TEMPERATURE CONTROL VIA ADUSTMENTS TO MAKE-UP AIR
8. LOW/HIGH TEMPERATURE ALARM, SYSTEM SHUTS DWON, AUTODIALER CALLOUT
9. LOW PRESSURE, AUTODIALER CALLOUT
10. ENCLOSURE HIGH WATER LEVEL ALARM, SYSTEM SHUTDOWN, AUTODIALER CALLOUT

CITY: LAKEWOOD, CO DIV/GROUP: ENV DB: ENVCAD
G:\ENVCAD\Lakewood-CO\ACTIVE\B0047339\Design\20140205 from roseville\47339M02.dwg LAYOUT: MODEL SAVED: 3/28/2014 12:46 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ARCADIS-DEN.CTB PLOTTED: 3/28/2014 1:00 PM BY: HOEFER, MATTHEW
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Designed by:	Drawn by: MTH	Checked by:

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

CONSTRUCTION DOCUMENTS

PROCESS AND INSTRUMENTATION DIAGRAM

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ARCADIS Project No.: B0047339.0001

Date: APRIL 2014

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2000 POWELL STREET SUITE 700
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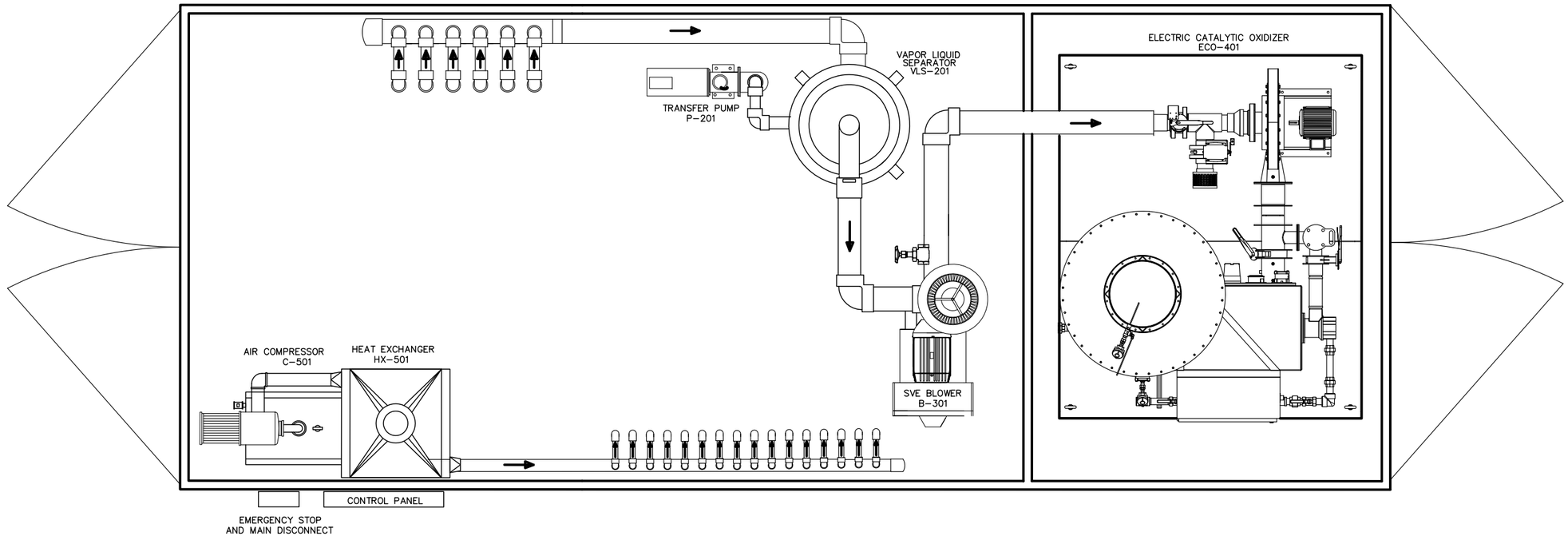

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UNION OIL COMPANY OF CALIFORNIA STATION NO. 0752 706/726/800 HARRISON STREET OAKLAND, CALIFORNIA

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PLAN VIEW OF EQUIPMENT LAYOUT

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MECHANICAL

ARCADIS Project No.
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M-3

SCHEMATICS

- WIRING CONNECTED
- WIRING NOT CONNECTED
- MECHANICAL CONNECTION
- MECHANICAL INTERLOCK CONNECTION
- GROUPING OF LEADS
- TERMINAL
- MCC BUS CONNECTION
- MOTOR STARTER CONTACTOR (M)
- RELAY COIL
  - CR – CONTROL RELAY
  - TDR – TIME DELAY RELAY
  - RCR – REPEAT CYCLE TIMER
  - LR/L – LATCHING RELAY/LATCH COIL
  - LR/U – LATCHING RELAY/UNLATCH COIL
  - ETM – ELAPSED TIME METER
- OL'S — OVERLOADS
- SOLENOID VALVE
- AC MOTOR – SQUIRREL CAGE INDUCTION TYPE SINGLE AND THREE PHASE
- GROUNDING POINT
- HORN OR SIREN
- PM/C — POWER MONITORING/CONTROL
- V — VOLTMETER
- VS — VOLTMETER SWITCH
- A — AMMETER
- AS — AMMETER SWITCH
- ATD — AMMETER AND AMPERE THERMAL DEMAND METER
- WH — WATTHOUR METER
- XX A. — FUSE– NUMERAL INDICATES AMPERE RATING
- DIODE
- DISCONNECT
- NON–AUTOMATIC CIRCUIT BREAKER (MOLDED CASE BREAKER)
- CIRCUIT BREAKER WITH THERMAL TRIP
- CIRCUIT BREAKER WITH MAGNETIC TRIP
- CIRCUIT BREAKER WITH THERMAL AND MAGNETIC TRIP

- CONTROL POWER TRANSFORMER
- CURRENT TRANSFORMER
- ON OFF — 2 POSITION SELECTOR SWITCH
- H A — 3 POSITION SELECTOR SWITCH
- PUSH BUTTON, MOMENTARY CONTACT, SINGLE CIRCUIT, NORMALLY CLOSED
- PUSH BUTTON, MOMENTARY CONTACT, SINGLE CIRCUIT, NORMALLY OPEN
- PUSH BUTTON, MAINTAINED CONTACT, DOUBLE CIRCUIT, NORMALLY OPEN & CLOSED
- PUSH BUTTON, MOMENTARY CONTACT, MUSHROOM HEAD, NORMALLY CLOSED
- PILOT LIGHT, NON PUSH–TO–TEST
  COLORS: G–GREEN, R–RED, A–AMBER
  W–WHITE, B–BLUE
- PILOT LIGHT, PUSH–TO–TEST
  COLORS: G–GREEN, R–RED, A–AMBER
  W–WHITE, B–BLUE
- INSTANT OPERATING CONTACT, NORMALLY CLOSED
- INSTANT OPERATING CONTACT, NORMALLY OPEN
- LIMIT SWITCH, NORMALLY CLOSED
- LIMIT SWITCH, NORMALLY CLOSED, HELD OPEN
- LIMIT SWITCH, NORMALLY OPEN
- LIMIT SWITCH, NORMALLY OPEN, HELD CLOSED
- PRESSURE OR VACUUM SWITCH, NORMALLY CLOSED MAKES ON PRESSURE DROP
- PRESSURE OR VACUUM SWITCH, NORMALLY OPEN MAKES ON PRESSURE RISE
- LEVEL OR FLOAT SWITCH, NORMALLY CLOSED MAKES ON LEVEL DROP
- LEVEL OR FLOAT SWITCH, NORMALLY OPEN MAKES ON LEVEL RISE
- TEMPERATURE ACTUATED SWITCH OR THERMOSTAT NORMALLY CLOSED
- TEMPERATURE ACTUATED SWITCH OR THERMOSTAT NORMALLY OPEN
- FLOW SWITCH, NORMALLY OPEN
- FLOW SWITCH, NORMALLY CLOSED
- LIGHT SENSITIVE SWITCH OR PHOTOCELL NORMALLY CLOSED
- LIGHT SENSITIVE SWITCH OR PHOTOCELL NORMALLY OPEN
- SOLENOID OPERATED DEVICE
- TORQUE SWITCH, NORMALLY CLOSED
- TORQUE SWITCH, NORMALLY OPEN
- TIMED CONTACT – NORMALLY OPEN, TIMED TO CLOSE ON ENERGIZE
- TIMED CONTACT – NORMALLY CLOSED, TIMED TO OPEN ON ENERGIZE
- TIMED CONTACT – NORMALLY OPEN, TIMED TO OPEN ON DE–ENERGIZE
- TIMED CONTACT – NORMALLY CLOSED, TIMED TO CLOSE ON DE–ENERGIZE
- THERMAL OVERCURRENT TRIP ELEMENT ON CIRCUIT BREAKERS OR STARTERS

ONE–LINE DIAGRAMS

- SERVICE CONNECTION
- FUSE CUTOUT, DRY, HIGH VOLTAGE WITH FUSE LINK
- PULL–OUT TYPE FUSE
- DISCONNECTING CONTACTS, DISCONNECT OR PLUG IN CIRCUIT BREAKER OR OTHER DEVICE
- CIRCUIT BREAKER (15) NUMERAL DENOTES AMPERE RATING
- INTERRUPTER SWITCH
- PRIMARY FUSIBLE SWITCH
- (5) MOTOR NUMERAL DENOTES HORSEPOWER RATING "G" DENOTES GENERATOR
- MOTOR STARTER W/ MOTOR CIRCUIT PROTECTOR, OVERLOADS AND MOTOR
- MOTOR STARTER W/ AUTOTRANSFORMER, MOTOR CIRCUIT PROTECTOR, OVERLOADS AND MOTOR
- DISCONNECT SWITCH
- FUSIBLE DISCONNECT SWITCH
- TRANSFORMER
- DELTA TRANSFORMER WINDING
- WYE TRANSFORMER WINDING
- XX — POWER FACTOR CAPACITOR (NUMERALS INDICATE KVAR)
- CURRENT TRANSFORMER
- POTENTIAL TRANSFORMER
- ARRESTOR, LIGHTNING OR SURGE
- MULTIPURPOSE FIRE EXTINGUISHER

PLANS

- OVERHEAD RUN
- EXPOSED CONDUIT HOME RUN
- RACEWAY TURNS AWAY FROM OBSERVER
- RACEWAY TURNS AWAY FROM OBSERVER
- UNDERGROUND OR CONCEALED CONDUIT HOME RUN
- CROSSING CONDUITS
- C — CONCRETE ENCASED DUCTBANK HOME RUN
- D — DRAIN LINE
- G — GROUND CABLE
- POWER POLE
- TELEPHONE POLE
- LIGHT POLE
- ANCHOR AND GUY WIRE
- ANTENNA
- GROUND ROD
- ESW XX — ENCLOSED SAFETY SWITCH– LETTER DENOTES FUSIBLE OR NON–FUSIBLE
- ECB CB — ENCLOSED CIRCUIT BREAKER
- EMC — ENCLOSED MOTOR CONTROLLER
- EMC — COMBINATION ENCLOSED MOTOR CONTROLLER
- CS — START–STOP CONTROL STATION
- CS — START–STOP CONTROL STATION WITH PILOT LIGHT
- CS — ON–OFF CONTROL STATION WITH PILOT LIGHT
- CS — LOCAL–REMOTE/H–O–A CONTROL STATION WITH PILOT LIGHT
- DTT — DRY–TYPE TRANSFORMER OR SMALL POWER CENTER
- CAP — POWER FACTOR CAPACITOR
- ELECTRIC HEATER
- PB — BRANCH CIRCUIT PANELBOARD
- DPB — DISTRIBUTION PANELBOARD–EITHER FUSIBLE SWITCH OR CIRCUIT BREAKER
- MSSB — MOTOR STARTER SWITCHBOARD
- SWB — SERVICE ENTRACE PANELBOARD
- TLC — TRANSFORMER LOAD CENTER
- MCC — MOTOR CONTROL CENTER
- XX — LUMINAIRES – LETTER DESIGNATES TYPE OF FIXTURE
- XX — DENOTES NIGHT LIGHT
- EMERGENCY LIGHT
- EXIT LIGHT–CEILING MOUNTED ARROW DENOTES DIRECTION
- EXIT LIGHT–WALL MOUNTED ARROW DENOTES DIRECTION
- DOUBLE FACE EXIT LIGHT–CEILING MOUNTED
- DC MOTOR – ARMATURE CONTROLLED
- AC MOTOR – SQUIRREL CAGE INDUCTION TYPE SINGLE AND THREE PHASE
- CONDUIT SEAL–OFF

- T — THERMOSTAT OR TEMPERATURE SWITCH
- ZS — LIMIT SWITCH
- PS — PRESSURE OR VACUUM SWITCH
- LS — LEVEL OR FLOAT SWITCH
- FS — FLOW SWITCH
- PC — PHOTOCELL
- TS — TORQUE SWITCH
- SV — SOLENOID OPERATED DEVICE
- DP — DIFFERENTIAL PRESSURE TRANSMITTER
- P — PRESSURE TRANSMITTER
- M — MAGNETIC FLOW METER
- DEMOLITION / REMOVE
- J — JUNCTION BOX
- SB — SPLICE BOX
- TB — TERMINAL BOX
- PB — PULL BOX
- T — TELEPHONE JACK
- E — ETHERNET JACK
- W — TELEPHONE JACK FOR WALL PHONE
- FLUSH COVER COMMUNICATION OUTLET WITH TELEPHONE JACK
- SD — SMOKE DETECTOR
- OS — OCCUPANCY SENSOR
- HORN PAGING SPEAKER
- MH — MANHOLE
- HH — HANDHOLE
- D — DOOR, MOTOR OPERATED
- HTR — ELECTRIC SPACE HEATER
- WH — ELECTRICL WATER HEATER
- B — BALLAST, SEPERATELY MOUNTED FOR HID LIGHTING
- EWC — ELECTRIC WATER COOLER
- OPERATOR COMPUTER STATION
- DUPLEX CONVENIENCE RECEPTACLE
- CR — CORROSION RESISTANT DUPLEX CONVENIENCE RECEPTACLE
- WP — IN–USE WEATHER PROOF DUPLEX CONVENIENCE RECEPTACLE
- SINGLE RECEPTACLE–SEE PLAN FOR CONFIGURATION AND RATING
- SINGLE POLE WALL SWITCH
- DP — DOUBLE POLE WALL SWITCH
- 3 — THREE–WAY WALL SWITCH
- 4 — FOUR–WAY WALL SWITCH
- DT — SINGLE POLE, DOUBLE THROW, CENTER–OFF WALL SWITCH
- D — DIMMER WALL SWITCH
- M — MANUAL MOTOR CONTROLLER
- D 3 — 3–WAY ELECTRONIC DIMMER FOR FLUORESCENT LAMPS WITH ELECTRONIC, 277 VOLT DIMMING BALLASTS
- CORD WITH PLUG CAP TO MATCH RECEPTACLE

WP – WEATHERPROOF
CR – CORROSION RESISTANT
EP – EXPLOSION PROOF
GFI – GROUND FAULT INTERRUPT
T – TWISTLOCK

GENERAL NOTES

1. THIS IS A GENERAL ELECTRICAL SYMBOLS AND GENERAL NOTES SHEET. SOME SYMBOLS AND/OR NOTES MAY NOT BE USED IN THIS SET OF DRAWINGS.
2. LIGHT LINES (———) DESIGNATE EXISTING CONDITIONS AND EQUIPMENT.
3. HEAVY LINES (———) DESIGNATE PROPOSED WORK OR EQUIPMENT.
4. ALL HOMERUNS TO THE LIGHTING PANELS AND MINI POWER CENTERS AND WIRE/CONDUIT RUNS BETWEEN ALL SINGLE PHASE EQUIPMENT (TYPICALLY SMALLER THAN 1/2 HP MOTORS AND EQUIVALENT LOADS) SHALL BE 2 #12, 1#12 GND.–3/4" C. UNLESS OTHERWISE NOTED.
5. ALL HOMERUNS TO THE DISTRIBUTION PANELBOARDS, MOTOR CONTROL CENTERS AND MOTOR STARTER SWITCHBOARDS AND WIRE/CONDUIT RUNS BETWEEN ALL THREE PHASE EQUIPMENT (TYPICALLY 1/2 HP AND LARGER AND EQUIVALENT LOADS) SHALL BE 3 #12, 1 #12 GND.–3/4" C. UNLESS OTHERWISE NOTED.
6. ALL HOMERUNS TO THE INSTRUMENTATION PANEL (IP), RMP'S, RTU'S ETC. AND BETWEEN INSTRUMENTATION TYPE EQUIPMENT SHALL BE TWO PAIR #20 AWG SHIELDED CABLE, 1 #12 GND.–3/4" C. UNLESS OTHERWISE NOTED.
7. ALL SURFACE MOUNTED AND PENDANT MOUNTED LIGHTING FIXTURES SHALL BE MOUNTED TO AVOID INTERFERENCE WITH OTHER EQUIPMENT IN THE SAME LOCATION.
8. ALL TABLES ARE SHOWN FOR REFERENCES ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILTY TO PROVIDE ALL OF THE ITEMS SHOWN ON THE INDIVIDUAL DRAWINGS.
9. ALL HOMERUNS TO LIGHTING PANELS AND THE HOMERUNS TO THE INSTRUMENTATION PANELS CAN BE COMBINED IN THEIR RESPECTIVE HOMERUN CONDUITS TO MINIMIZE THE TOTAL NUMBER OF CONDUITS ENTERING THE PANEL, PROVIDED THE INTEGRITY OF REDUNDANCY IS MAINTAINED AND PRIOR APPROVAL IS OBTAINED FROM THE ENGINEER. CONTRACTOR MUST DERATE THE CONDUCTORS IN ACCORDANCE WITH MOST RECENT NEC REQUIREMENTS.
10. NUMERALS ADJACENT TO RECEPTACLES, LIGHTING FIXTURES, AND MISC. EQUIPMENT DENOTE BRANCH CIRCUIT NUMBERS. e.g. 3 FA 3
11. ALL INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND SHALL CONFORM TO THE LATEST EDITIONS OF THE NATIONAL ELECTRICAL CODE, LOCAL ORDINANCE, AND STATE CODES.
12. ALL EXPOSED CONDUIT SHALL BE INSTALLED AT RIGHT ANGLES.

SCALE(S) AS INDICATED

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UNION OIL COMPANY OF CALIFORNIA STATION NO. 0752 706/726/800 HARRISON STREET OAKLAND, CALIFORNIA
CONSTRUCTION DOCUMENTS

ELECTRICAL LEGEND AND NOTES

DRAFT - NOT FOR CONSTRUCTION
ELECTRICAL

ARCADIS Project No.
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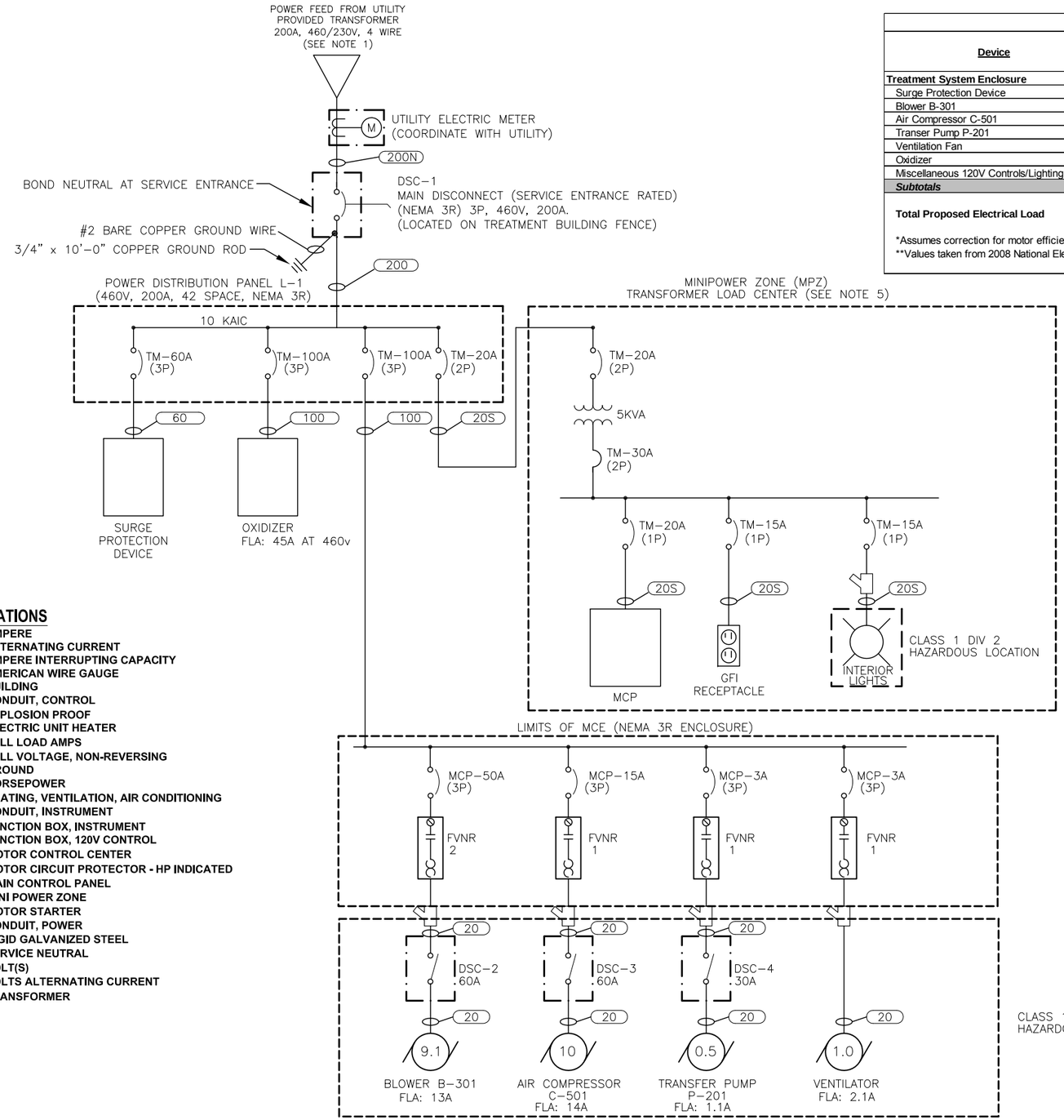


LOAD SCHEDULE

Device	Voltage	Phase	HP	Breaker Size	Source Panel	Connected Load - 120V (Amps)**	Connected Load - 460V (Amps)**	kVA	KW
Treatment System Enclosure									
Surge Protection Device	460	3	--	60	L-1	--	--	--	--
Blower B-301	460	3	9.1	15	MCE	--	13.00	10.36	8.80
Air Compressor C-501	460	3	10	15	MCE	--	14.00	11.15	9.48
Transer Pump P-201	460	3	0.5	3	MCE	--	1.10	0.88	0.74
Ventilation Fan	460	3	1	3	MCE	--	2.10	1.67	1.42
Oxidizer	460	3	1	100	L-1	--	45.00	35.85	30.48
Miscellaneous 120V Controls/Lighting	460	3	N/A	20	L-1	15.00	--	11.95	10.16
Subtotals						***15.00***	***75.20***	***86.44***	***61.09***

Total Proposed Electrical Load **103.97** **Running Amps**

*Assumes correction for motor efficiency (calculated at 85%) 129.97 Minimum Amps
**Values taken from 2008 National Electrical Code (NEC) 200.00 Main Breaker

CONDUCTOR SCHEDULE

SYMBOL	WIRE QUANTITY	WIRE SIZE	GROUND	CONDUIT	COMMENTS
20S	2	12	1#12	3/4"	
20	3	12	1#12	3/4"	
30	3	10	1#10	3/4"	
40	3	8	1#8	1"	Include (3) #12 AWG THHN for 120V controls
50	3	6	1#8	3/4"	
60	3	4	1#8	1"	
100	3	2	1#6	1 1/4"	
200	3	3/0	1#4	2"	
200N	4	3/0	1#4	2"	

ABBREVIATIONS

A, AMP	AMPERE
AC	ALTERNATING CURRENT
AIC	AMPERE INTERRUPTING CAPACITY
AWG	AMERICAN WIRE GAUGE
BLDG	BUILDING
C-X	CONDUIT, CONTROL
EP	EXPLOSION PROOF
EUH	ELECTRIC UNIT HEATER
FLA	FULL LOAD AMPS
FVNR	FULL VOLTAGE, NON-REVERSING
GND	GROUND
HP	HORSEPOWER
HVAC	HEATING, VENTILATION, AIR CONDITIONING
I-X	CONDUIT, INSTRUMENT
JB-IX	JUNCTION BOX, INSTRUMENT
JB-CX	JUNCTION BOX, 120V CONTROL
MCC	MOTOR CONTROL CENTER
MCP-2 HP	MOTOR CIRCUIT PROTECTOR - HP INDICATED
MCP	MAIN CONTROL PANEL
MPZ	MINI POWER ZONE
MS	MOTOR STARTER
P-X	CONDUIT, POWER
RGS	RIGID GALVANIZED STEEL
S.N.	SERVICE NEUTRAL
V	VOLT(S)
VAC	VOLTS ALTERNATING CURRENT
XFMR	TRANSFORMER

NOTES:

1. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY TO PROVIDE NEW 480/277V ELECTRIC SERVICE TO TREATMENT BUILDING.
2. POWER DISTRIBUTION PANEL AND MCE TO BE MOUNTED TO OUTSIDE WALL OF TREATMENT ENCLOSURE.
3. ALL CONDUITS PENETRATING WALL OF TREATMENT ENCLOSURE SHALL BE INSTALLED IN ACCORDANCE TO CLASS 1 DIV 2 REQUIREMENTS FOR HAZARDOUS LOCATIONS.
4. PROVIDE 5KVA MPZ WITH 480V PRIMARY AND 120/240V, 1PH SECONDARY, 10 SINGLE POLE SPACES.

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name
Professional Engineer's No.
State: CA | Date Signed | Project Mgr.
Designed by | Drawn by: MTH | Checked by

ARCADIS U.S., INC.

UNION OIL COMPANY OF CALIFORNIA STATION NO. 0752 706/726/800 HARRISON STREET OAKLAND, CALIFORNIA
CONSTRUCTION DOCUMENTS

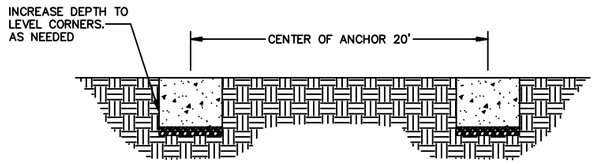
ELECTRICAL ONE LINE DIAGRAM

DRAFT - NOT FOR CONSTRUCTION

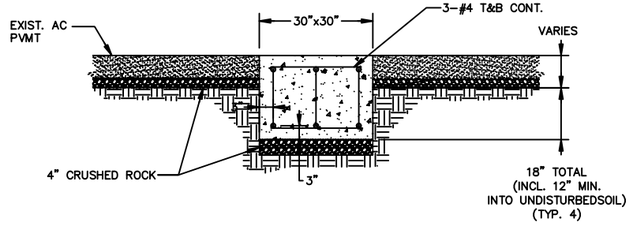
ELECTRICAL

ARCADIS Project No. B0047339.0001
Date APRIL 2014
ARCADIS 2000 POWELL STREET SUITE 700 EMERYVILLE, CALIFORNIA 94608

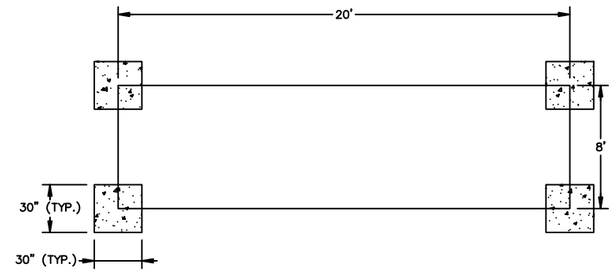
E-2



1 S-1 **SLAB PROFILE**
NOT TO SCALE



2 S-1 **TYPICAL FOOTING**
NOT TO SCALE



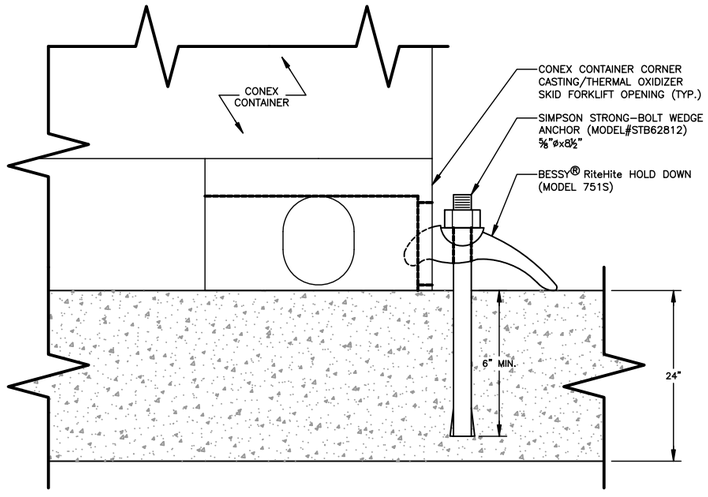
3 S-1 **PLAN VIEW**
NOT TO SCALE

SCOPE: ALTERNATE CONCRETE FOUNDATION FOR ~8'x20' BUILDING

REINFORCEMENT: AS SHOWN

CONCRETE: 4000 PSI TO MIN 12" UNDISTURBED SOIL AT EACH CORNER FOOTING. COMPENSATE FOR SLOPE BY INCREASED FOOTING DEPTH AT LOW END. 8"x20" PERIMETER TO REDUCE INCREMENTAL SETTLING AT DOORS.

ANCHOR: USE ⅝" SIMPSON STRONG-BOLT WEDGE ANCHOR IN ACCORDANCE WITH ICC-ES REPORT 2322 FOR CONCRETE WORK. DRILL AND EMBED THE ALL THREAD RODS A MINIMUM OF 6" INTO CONCRETE FOUNDATIONS. USE 3" SQUARE ¼" THICK PLATE WASHERS TYPICAL 4 CORNERS.



4 S-1 **CONEX BOX/THERMAL OXIDIZER SKID ANCHOR DETAIL (ELEVATION)**
NOT TO SCALE

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: ——— USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name

Professional Engineer's No.

State	Date Signed	Project Mgr.
CA		
Designed by	Drawn by	Checked by
	MTH	

ARCADIS

ARCADIS U.S., INC.

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

CONSTRUCTION DOCUMENTS

TREATMENT ENCLOSURE FOUNDATION AND ANCHOR DETAILS

DRAFT - NOT FOR CONSTRUCTION

STRUCTURAL

ARCADIS Project No.
B0047339.0001

Date
APRIL 2014

ARCADIS
2000 POWELL STREET SUITE 700
EMERYVILLE, CALIFORNIA 94608

S-1

ARCADIS

Appendix **F**

ARCADIS Standard Operating Procedures

ARCADIS
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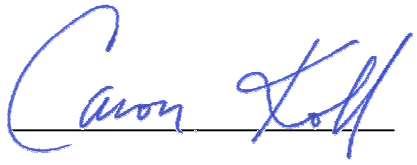
Imagine the result

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: _____

ARCADIS
Infrastructure, environment, buildings

Imagine the result

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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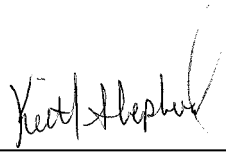
Field Equipment Decontamination

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.